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EDITORIAL

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The "Principles" of the Esch-Pomerene Bill

The Traffic Club of Chicago, which is composed of both railway men and shippers, has adopted resolutions endorsing the "principles" of the Esch-Pomerene bill. At the same time the Club suggests that the Interstate Commerce Commission be directed, in regulating rates, to give weight to the cost of capital, as well as to the cost of labor and other operating costs. To endorse the "principles" of a bill is manifestly something different from endorsing the bill itself. As we understand it, what those who drafted this resolution meant by the use of this language was simply that while in principle the bill is, for the most part, sound, it does not go far enough in some directions and goes too far in others. For example, as the resolution regarding "cost of capital" shows, the Club evidently believed that more definite and comprehensive instructions as to how rates should be regulated should be given by Congress to the Interstate Commerce Commission than are given in the Esch-Pomerene bill. There is hardly a provision of the Esch-Pomerene bill that would not make some improvement in the present system of regulation; and yet if it were adopted as it stands the improvement in regulation it would effect might be so small as to prove almost valueless.

Electric Operation Data

The subject of electric operation is constantly demanding more attention. Its consideration has been forced upon a few roads by terminal and trunk line congestion and many more are considering it on a basis of ton-mile costs. The design of electric traction equipment is an exact science. An electric locomotive is essentially a constant speed machine. It is possible to design one for hauling a train of a given weight over certain curves and grades and have the actual operation agree with the predetermined schedule within two or three per cent. This means better handling of traffic and a general tuning up of operating conditions. More freight can be hauled on a given piece of track and there are many other points of advantage. On the other hand, it is not possible to design flawless equipment or to predetermine what the cost of electric operation will be with the same accuracy that running schedules may be adhered to. Even a new type of steam locomotive must be thoroughly tried out before it can be considered dependable. In the same way it is necessary to give electric locomotives a thorough work-out, so that imperfections of design can be corrected. Outside of the United States electrification is being considered in Brazil, Chile, France, Belgium, England, Australia, Italy, Jamaica, Switzerland and Sweden. The operating men in these countries are desirous of obtaining any operating data that may be available. During the war no one felt it his privilege to give out any such information and American railroad officers seem still to be wondering if the data belongs to them or not. When this question is decided they will be in a position to render a great service to operating officers in this country and abroad who are considering electrification projects by making public the operating results of electrified lines.

Gen. Atterbury's Social Platform

Brigadier General W. W. Atterbury has delivered two addresses which fully justify the title of doctor of laws, which has been conferred upon him by the University of Pennsylvania; one on the need of compulsory military education and one advising the wives and daughters of Pennsylvania Railroad employees to continue, for the benefit of railroad men, the welfare work which they have been doing for soldiers and soldiers' families. This commendation is predicated, not alone on the soundness of the views presented—there is room for discussion on some of them—but on the scholarly character of the essays and on the frank way in which General Atterbury acknowledges his indebtedness to the experiences of the past two years as an education for his mind and his heart. Our immediate point is his platform or six "points," for guidance in dealing with "labor" controversies which he has laid down in the last-mentioned essay, and which is quoted on another page. This is a liberal platform proposed by a strong-minded conservative. Who will say that it is not well-balanced, with the maximum of reasonableness? The force of the sixth point—fair division of profits—wholly depends of course, on the interpretation of "fair"; and it will be noted that the officers of a corporation, up to the president himself, are classed as laborers. The fifth point—the employee's participation in fixing working conditions—deserves the attention of all railroad officers. Attempts of officers to take the employee into their confidence have often been marred by clumsy work. On the other hand, those leaders of employees and those theorists who aim to lead public sentiment, who vaguely demand a "voice in the management" should be sharply challenged to give a more precise meaning to their words. Has not General Atterbury given full recognition to the real desire of all right-minded employees?

Baltimore & Ohio Financing

The passing of the dividend on Baltimore & Ohio common stock follows a long uphill financial fight in which a procession of difficulties came one after another with fateful persistency. Baltimore & Ohio, organized in 1831, has paid dividends on its common stock every year since and including 1859 with three exceptions. It is essentially an investment stock and on this ground the directors were justified in continuing the payment of dividends through periods of temporary depression, and, where necessary, out of accumulated surplus. The government's guarantee of rental would, under ordinary circumstances, be sufficient for the continuance of 4 per cent dividends on Baltimore & Ohio common stock, but the Baltimore & Ohio is in a peculiar position. When Daniel Willard went to the property in 1910, the balance sheet showed $18,121,000 surplus. This was largely a bookkeeping surplus, as is evidenced by the fact that in the first year of Mr. Willard's administration $8,516,000 was written off the equipment account as representing an excess of book value over appraisal value. At that time, the Baltimore & Ohio had the millstone of the Cincinati, Hamilton & Dayton hanging around its neck. The financial structure of the Cin-

cinnati, Hamilton & Dayton was topheavy enough in 1910 to make it a source of danger to the Baltimore & Ohio, and the floods which washed out stretches of the line added greatly to the burden of high fixed charges. The Cincinnati, Hamilton & Dayton went into the hands of receivers and the Baltimore & Ohio took a loss on its books of $10,892,000. The Baltimore & Ohio property, itself, needed tremendously costly addition and betterment expenditures, and the state of the railroad bond market made it so difficult to do permanent financing that a $40,000,000 note issue was resorted to. This fell due in the midst of the European war, but the company managed to refund it with $60,000,000 5 per cent bonds. In the years 1914 and 1917, the company failed to earn its full common dividends but they were made up from surplus. Much of the Baltimore & Ohio stock is owned by conservative investors of the class who own New York, New Haven & Hartford stock. These investors are, in many cases, dependent for their living on their income from investments. To such as these the passing of the Baltimore & Ohio common dividend comes as a blow. Unlike the New Haven case, the blow cannot be attributed to ambitious or mistaken policies of expansion except in regard to the loss through the Cincinati, Hamilton & Dayton purchase and guarantee. This, of itself, would not have been fatal, and since 1910 the history of the Baltimore & Ohio, in regard to financing, has been an open story of a hard struggle against circumstances which have proved irresistible.

A Commission Expert on Railroad Troubles

The *Railway Age* has long contended that the railroad troubles of the country, and especially the decline of railroad expansion, which has been the immediate cause of many of our worst railroad troubles, have been due chiefly to the fact that the regulating authorities have steadily refused to permit the railways as a whole to earn adequate revenues. Support for this view has come from an unexpected but highly expert source. We publish elsewhere in this issue a letter from W. J. Meyers, formerly statistician of the Interstate Commerce Commission. Mr. Meyers was in charge of the Division of Statistics of the Interstate Commerce Commission during the years 1910-1915, inclusive. It was principally during these years, according to our contention, that the decisions of the Interstate Commerce Commission and the state commissions reducing or preventing advances in rates caused the decline in net operating income and the railroad bankruptcies, which, in turn, caused the decline of railroad development. No other man living knows as well as Mr. Meyers what the statistics of the railways, as compiled for the Commission showed during that period; and the opening sentence of Mr. Meyers' letter to the *Railway Age* is, "According to my view of the matter the fundamental cause of the difficulties in which our railway system is now involved is to be found in inadequate revenues." Elsewhere Mr. Meyers says: "The Act to Regulate Commerce declares that all rates charged by railways shall be just and reasonable, . . . but . . . it contains little to guide an administrative commission in determining what constitutes a just and reasonable rate, and the Interstate Commerce Commission, lacking statutory guidance in this regard, has been largely influenced by the dicta in the Supreme Court's opinion in Smythe vs. Ames, a case brought for the prevention of confiscation. It thus has happened that the action of the Commission in disposing of rate cases brought before it has frequently resulted in rates too low to produce the amounts of revenue necessary for efficient operation and development of the railways." This is exactly the contention of the *Railway Age* and the basis of our argument in favor of Congress adopting a clear statutory rule requiring that rates shall be so regulated as to be not only non-discriminatory but sufficient to yield the railways revenues adequate for efficient operation and for needed development.

A Service Record Worth While

No better proof of the value of timber preservation can be offered than the experience of the Southern Pacific in the removal of its wharf on the Oakland shore of San Francisco harbor, described on another page, where 67 per cent of the piling were found in such good condition after 29 years' service in a harbor infested with marine borers, that they are being redriven in other structures. It is only at intervals that records such as this are available. The Southern Pacific has therefore performed a real service in taking advantage of this opportunity to ascertain the actual resistance which the timber in this structure offered to decay and to the attacks of the teredo and limmoria. That the results of this examination are so satisfactory is a source of gratification to advocates of timber preservation. Repeating as this does in large measure the results obtained when the structure crossing Galveston Bay was dismantled a few years ago, it goes far to demonstrate the service which may reasonably be expected from sound timber properly seasoned and treated. With the railways rapidly passing from the earlier period of temporary pioneer construction to that of more permanent structures, knowledge such as is furnished by service tests of this character is of the greatest value to the engineer as a guide in the selection of the materials which will best meet the conditions to which the structures he builds will be exposed.

Why Not Provide for Adequate Revenues?

THERE IS REAL DANGER that private management of railways will not be successful after the roads are returned to their owners, because many leading members of Congress do not appreciate the necessity for making the specific requirement that rates must be made adequate and for providing for such administration of the regulatory laws as will give effect to this requirement.

The shipping and traveling public is as strongly in favor of the return of the railways to private operation as are railway owners and officers. But while the railway owners and officers and many business men want the legislation now under consideration to provide that rates must be made adequate to enable the railways to raise sufficient capital and are opposed to giving to Interstate Commerce Commission exclusive and supreme regulatory authority, some influential shippers are opposed to specifically providing that rates must be made adequate and are in favor of not only leaving the Interstate Commerce Commission all the authority it has, but of greatly increasing its authority.

Doubtless this is a natural division of opinion, but if it continues to exist it may wreck all plans for better regulation, render successful private operation impossible, and finally make government ownership unavoidable.

Those who oppose providing by law that rates must be made sufficient to enable the railways adequately to develop their facilities, and favor giving practically unlimited discretionary authority over interstate rates to the Interstate Commerce Commission, seem to have forgotten the history of railroad regulation in the United States before the war, or to overlook the fact that the conditions under which our former policy of regulation was adopted and the conditions which now exist are widely different.

The old policy of regulation was made effective by legislation adopted in the years 1906 to 1910. For some time before that the general tendency of railway profits had been upward, and the legislation enacted then was predicated on the assumption that one of the main purposes of regulation should be to prevent the carriers from making too much money. Therefore the law provided that the Interstate Commerce Commission should fix only *maximum* reasonable rates, and later, the burden of proving the need for any advance in rates was put upon the railways. Most of the men then and since appointed to the Commission favored administering the law in the spirit in which Congress enacted it. The result, as we pointed out in an editorial in our issue for June 20, was that in the years 1910 to 1915 the percentage of net operating income earned by the railways steadily declined and the new investment made by them declined every year between 1911 and 1916, except 1914, being in 1916 less than one-third of what it was in 1911.

And what is the situation today? Are the railways earning a large and increasing net operating income? On the contrary, after eighteen months of government operation, they are earning at the rate of about 1½ per cent upon the investment. In other words, on the basis of present earnings and expenses, they are bankrupt. Therefore, whatever may have seemed desirable ten or fifteen years ago, it is certain that the thing the public welfare demands today is that the regulatory legislation, and the administration of it, shall be so changed as to permit a large increase of railway net operating income. Some people propose that instead of the rates being made adequate to enable the companies, after private operation is resumed, to earn sufficient profits the government guarantees shall be temporarily continued. But to continue the guarantees will be to leave the future of the railroads in the same uncertainty as now, and as long as that uncertainty exists there will be no substantial revival of the expansion of railroad facilities.

The history of railway regulation during the eleven years before this country entered the war, the conditions which now exist, and statements which recently have emanated from certain members of the Interstate Commerce Commission, constitute an unanswerable argument against giving the Interstate Commerce Commission practically unlimited discretion to determine the standard according to which railway rates shall be regulated in future. The Commission persistently refused, while acting under existing laws, to let the railways earn adequate net returns. That the attitude of some of its members is still anything but encouraging is shown by recent utterances of Commissioners McChord and Woolley. Commissioner McChord has attempted in the teeth of conclusive evidence to the contrary, to show that the Commission did let the railways earn adequate returns. Commissioner Woolley, who is a new member, has argued in a recent public address that rates should not even be advanced enough to prevent the railways from incurring deficits which must be paid from taxes. While it is well known that Commissioner Woolley and his colleagues differ wisely about some important matters, we know of no reasons for questioning that Commissioner McChord expressed the views of most of his colleagues. If a majority of the Commission does not today recognize the fact that the policy of regulating rates which prevailed before the adoption of government control was mistaken and harmful, there is no ground for hoping that without some new and definite instructions from Congress it would regulate them fairly and in the public interest in the future.

The *Railway Age* did not advocate the proposal for the creation of a Secretary of Transportation because it doubted if there was a good chance of its adoption and because it questioned the expediency of giving political government officer such authority over the railways as was proposed. We hoped the Commission, as a body, would make it so clear that it had learned much by the experience of recent years as to convince everybody there was no need of the creation of another body or official to which should be transferred some of its important functions. But recent utterances of Commissioners McChord and Woolley, tend powerfully to justify the feeling of mistrust regarding the Commission which the railway executives and many business and financial interests have manifested. The members of the Commission are intelligent, high-minded men. But practically all of them went upon the Commission either with very little knowledge of the railroad business or with a strong prejudice against the railway companies; in their official capacity they have dealt largely with the pathology of the railroad business; and, therefore, the information they have acquired in the work of regulation does not seem greatly to have increased their knowledge of railroading as a going industry or to have mitigated the hostile feeling toward the companies which some of them had when they were appointed.

In view of these facts the conclusion is unavoidable that the railroad problem cannot be solved by giving the Commission as at present constituted, practically unlimited discretionary authority over the regulation of rates and operation as is virtually proposed by the Esch-Pomerene bill. If the problem is to be solved, either Congress must give the Commission a specific mandate to so regulate rates as to enable the railway companies to raise sufficient capital adequately to develop their facilities, or it must delegate the determination of what return public expediency demands the railways shall be allowed to earn, to some other governmental official or board. If the Commission should regulate rates in the future as it regulated them in the past, the railroad industry would not and could not prosper, and the transportation facilities provided would not be sufficient to handle the commerce of the country.

Do not Congress and the public want rates so regulated as to enable the railway companies to provide adequate facilities and render good service? If they do want rates so regulated, why not definitely say so in the law? It could not do any harm to say so. It may do much harm not to say so.

Thoughts on Maintenance of Way

THE DIRECTOR GENERAL has thrown down the gauntlet to the corporate officers of the railroads insofar as the controversy regarding the adequate maintenance of the fixed properties of the railroads under federal control is concerned, by his recent repeated statements that the Railroad Administration has complied fully with its obligations in this respect. He has gone even further, and implied that the government has exceeded its obligations so far that severe retrenchment is necessary. This position is in such marked contrast with the belief of maintenance engineers connected both with the Administration and the railway corporations as expressed to the *Railway Age* that it demands careful attention.

Maintenance of way expenditures may be divided roughly into two general classes: those incidental to the routine repair and upkeep of the property, which are chargeable entirely to operating expenses, and those incidental to the replacement of the larger buildings or structures, which are chargeable entirely or only in part to operating expenses. The Railroad Administration has concentrated its attention largely on the former class of work, although, even as to this, as noted in previous issues, there have been relatively large deficiencies in the renewal of ties, rails and other basic materials. While better progress has been made this year than last, it is very questionable if the routine work of this

character can be brought up to a full compliance with the terms of the contract by the end of this year.

A more serious deficiency is to be found in the replacement of structures. Many units of railway property wear out, many others require replacement because they become obsolete or inadequate for the service required of them. These latter processes are continuous, and experience has demonstrated the necessity for the railways to make large expenditures for replacements from year to year if their properties are to be maintained in a way to meet the demands upon them. It is possible to postpone replacement work for short periods, but it must be undertaken with redoubled energy later in order to make up for the time which has been lost. The war-time conditions under which we were laboring last year made it necessary for the roads to postpone much work of this character. No criticism is to be attached to the Railroad Administration for this. Our problem then was to win the war and all work which could safely be postponed was properly postponed. As a result, the rebuilding of stations and other buildings not immediately necessary for the handling of traffic, the replacement of steel bridges with those of heavier design, and other similar work was almost entirely suspended. It is work of this character, with its relatively heavy maintenance charges which has been most seriously neglected, and must now be renewed. An investigation of expenditures for replacements in the test period, or in the longer period of ten years before government control was adopted, as has been suggested by some, will show that the roads have in the past spent tremendous sums for replacement work, which is chargeable to maintenance and is considered a part of the normal maintenance program. Any reasonable interpretation of the standard contract must include attention to expenditures of this character, for the fact that they were postponed as a war-time measure does not in any way constitute a release from the obligation to make them good now.

Another condition which must be considered before closing the books is the depletion of the stocks of material. When the government took over the roads on January 1, 1918, most of them had on hand their normal working supplies of ties, rails and other materials. The extreme difficulty of securing materials of all kinds last year made it necessary as a war measure to curtail purchases to the minimum and this resulted in seriously depleting stocks of all kinds. Since that time the financial limitations under which the Administration has been laboring have caused it to curtail purchases still further, with the result that the already depleted supplies on the various roads are being pooled to meet the most urgent needs of all. When the roads are returned to their owners, these stocks must be restored to what they were when government control was adopted, or proper compensation rendered therefor. It is to be assumed that this compensation will be on the basis of the existing prices of materials rather than on the basis of the prices paid for these materials originally, as has been suggested in certain Administration quarters. This restoration of stocks will constitute another large charge to maintenance which the Railroad Administration must bear under the terms of its contract.

Therefore, instead of the railways being over maintained, or even adequately maintained in the broad sense in which maintenance of way should be considered, it is difficult to see how one can arrive at a conclusion other than that, in the aggregate, the government is so far in arrears in its expenditures for maintenance that even by the most strenuous efforts it will be impossible for it to take up during the present working season the accumulation of deferred maintenance which has already occurred. Obviously every effort should now be made to comply in full with the contract requirements in order that the financial adjustment at the end of the period of Federal control may be as small as possible.

Pittsburgh & Lake Erie

THE PITTSBURGH & LAKE ERIE, operating through the heart of the most congested railroad territory in the United States during the war, spent less for coal for locomotives in 1918 than in 1917. The property has, for many years, been remarkable for the low operating ratio which it maintained under difficult conditions of operation. The operating ratio in 1918 was held down to 68 per cent. The property has often been likened to a complicated and extensive yard. The density of traffic is heavy. In 1918, 13,312,000 ton miles were moved per mile of road, an increase over 1917 of 1,543,000 ton miles. The revenue freight haul is comparatively short—an average of 63 miles in 1918 and a little over 61 miles in 1917 . The average train load, however, is extraordinarily heavy; in 1918 it was 1,532 tons which was an increase of 31 tons over 1917.

More than half of the total tonnage of the Pittsburgh & Lake Erie is products of mines. The total tonnage of all commodities carried in 1918 amounted to 45,894,000, an increase of 4,349,000 tons. The increase in bituminous coal tonnage accounted for over three-quarters of the total increase and the increase in the tonnage of ores for the remainder. There were offsetting increases and decreases in other classes of commodities.

Total operating expenses of the property in 1918 amounted $22,365,000, an increase of $5,713,000 over 1917. This increase in expenses, however, was only a little more than commensurate with the increase in revenues. Total operating revenues amounted, in 1918, to $32,992,000, which was $7,371,000 more than the revenues in 1917, or an increase of 29 per cent. The operating ratio (percentage of expenses to revenues) was 67.79 in 1918 comparing with 64.99 in 1917. Railway operating income amounted to $9,743,000 in 1918, comparing with $7,634,000 in 1917 and comparing with $8,980,000, the rental which the government is paying for the use of the property. Leaving aside the question of hire and rentals of equipment, the government made a substantial profit from the operation of the Pittsburgh & Lake Erie in 1918 after paying the company its rental. Setting aside an item—miscellaneous income—with which the Pittsburgh & Lake Erie annual report credits the government income account, non-operating income amounted to about $429,000, and deductions from gross income to $293,000, so that the profit for the government was a little better than the comparison between railway operating income and rental would show.

The particularly interesting thing about the operation of the property in 1918 is the ability which the federal management showed in holding down transportation expenses. These expenses in 1917 amounted to $8,255,000 and increased in 1918 to $10,218,000, or by about 24 per cent; but this was much less than the percentage of increase of wages and of the unit costs of materials to most railroad companies. As previously mentioned, the Pittsburgh & Lake Erie spent less for its locomotive fuel in 1918 than in 1917. The amount spent for fuel for train locomotives was $753,000, a decrease of $117,000, as compared with 1917, and the amount spent for fuel for yard locomotives was $987,000, an increase of only $5,000. The relative amount of fuel used in train service and yard service is a good commentary on the character of the transportation service performed by this property. The largest important increase in transportation expenses was in the wages of yard conductors and brakemen. This amounted to $1,806,000 in 1918, an increase of $422,000 over 1917. Compare this with the increase in wages of train enginemen. These wages in 1918 amounted to $597,000, an increase of only $71,000 over the previous year. The wages of trainmen amounted to $878,000, an increase of $188,000.

The increased cost of maintenance on the Pittsburgh &

Lake Erie is comparable to that of other eastern roads. Maintenance of way cost $4,374,000, an increase of $1,481,000 or about 50 per cent. The cost of maintenance of equipment was $7,038,000 in 1918, an increase of $2,243,000 or about 47 per cent.

The annual rental which the corporation received was ample to continue 10 per cent dividends and to carry a safe amount over into surplus. In deducting interest, war taxes and corporate expenses from rental and about half a million dollars for corporate income, there was $6,825,000 remaining. The 10 per cent dividend calls for $3,599,000. In addition to this, the company also subtracted in its income account $1,767,000 as revenue and expenses applicable to the period prior to January 1.

The government, on December 31, 1918, still owed the Pittsburgh & Lake Erie $7,580,000 out of the $8,980,000 rental, and, in addition, the government owed the company for cash, materials and supplies, etc., taken over on January 1, 1918, $13,333,000. The corporation had in its own treasury $398,000 cash at the end of 1918. The company had loans and bills payable of $5,375,000 at the end of 1918, $1,799,000 of unmatured dividends declared, and owed the government a total of $11,836,000, which included $7,025,000 liabilities of the corporation paid by the government, and $1,786,000 advanced by the government for additions and betterments.

The following table shows the principal figures for operation of the property under federal management. This is not the corporate income account.

	1918	1917
Mileage operated	225	225
Freight revenue	$28,513,514	$21,139,925
Passenger revenue	2,287,179	2,349,133
Total operating revenues	32,992,273	25,621,654
Maintenance of ways and structures	4,374,228	2,893,049
Maintenance of equipment	7,038,496	4,795,678
Traffic expenses	187,253	194,455
Transportation expenses	10,217,617	8,254,964
General Expenses	502,055	452,138
Total operating expenses	22,365,184	16,652,502
Taxes	884,277	1,334,963
Operating income	9,742,766	7,634,163
Gross income	*11,940,692	7,856,878
Net income	11,647,561	7,435,472

*After the company has credited the government with $1,768,848, "miscellaneous income," in addition to the rentals which the government received from equipment.

CORPORATE INCOME ACCOUNT

	1918.
Rental	$8,980,219
Gross income	9,544,051
Net income	6,825,489
Dividends	3,598,560
Surplus	*3,226,929

*The company subtracts from this surplus, on its own income account, $1,767,378 as revenues and expenses applicable to the period prior to January 1, 1918, paid for by the Railroad Administration on account of the corporation.

New Books

Trautwine's Civil Engineer's Pocketbook. Twentieth Edition, by John C. Trautwine, revised by John C. Trautwine, Jr., and John C. Trautwine, third. Bound in flexible leather, 6 in. by 4 in., 1528 pages. Published by Trautwine Company, 257 South Fourth street, Philadelphia. Price $6.

The first issue of the twentieth edition of this well-known reference to civil engineering constitutes the 140th thousand. Aside from a desire to bring the work up to date, the object of this revision is to extend the section on railway engineering. Thus the portion on track and track work has been increased from 35 to 94 pages, the matter on curves from 10 to 108 pages, while the subjects of train resistance, train operating costs (railway economics) constitutes a new department covering 38 pages. Railway construction costs which previously received but minor mention have been extended to 36 pages. The treatment and arrangement of the matter in this issue conform very closely to the typographical standards of previous editions.

Letters to the Editor

Railroad Troubles Due to "Inadequate Revenues"

NEW YORK.

TO THE EDITOR:

According to my view of the matter the fundamental cause of the difficulties in which our railway system is now involved is to be found in inadequate revenues. This is probably due to a long series of historical causes, principal among which is the way in which the problem has been presented to the Federal courts. Owing to the fact that the courts have been resorted to to prevent confiscation it has come to be quite largely accepted that the railways, instead of receiving what their services are fairly worth, should be allowed to charge for them only sufficient to save their properties from confiscation. People who would ordinarily scorn to demand something for nothing have been educated to believe that it is proper to require a railway company to work for a bare living, and many times the wage allowed has been pared so thin as to reduce the railway to poverty and in some cases to force it into bankruptcy.

It is perfectly true that the railway service is so much a part of our present life that it is affected with a public interest, but this does not mean that the railway must work for starvation wages. It means that it must treat all citizens of the country without preference or prejudice—without discrimination as between persons. It must not charge one person one price and another a different price for a like service. It must not render one better service for a given price than it gives another for the same price. It is as much bound to treat all equally as is the county clerk or the judge of the court. Nor can it be allowed to take advantage of its strength and extort or otherwise oppress those who are dependent on it. But if it charges only what its services are fairly worth, it cannot be considered to be guilty of oppression or extortion. And if traffic is freely offered to it at a particular rate the rate surely cannot be considered extortionate.

Many people seem to believe that the fairness or unfairness of a rate of charge for a particular service is dependent on the cost undergone by the servitor in rendering that service, but a moment's consideration should be sufficient to show the absurdity of that view. Very few producers of identically equal services or commodities produce at equal costs, yet this demand that the price shall be based on the cost of the thing offered carries necessarily the corollary that the low cost producer must sell at a correspondingly lower price, and that the high cost producer is entitled to receive a higher price for a product no better. This not only tends to encourage incompetence but directly to promote inefficiency. It is merely another form of the same vice as underlies all propositions calling for a government guarantee.

What should be given the railways and all other public service corporations is not a government guarantee but an opportunity to earn what their services are fairly worth. Let the government get off their backs and give them a chance to render efficient service at a fair price. They need only to be unshackled. It is not necessary to ask the taxpayers to support them. The right rule is to reward the producer in accordance with the value of his product, and the value of his product does not depend on what it cost him to produce it but upon its utility and on what it would cost to duplicate it.

When the foregoing considerations are applied to railway

rates it becomes apparent that whatever else may be said of it, it is not true that a railway rate is extortionate or excessive or unfair if traffic moves freely under it and it bears proper relation to other rates; *i.e.*, does not involve unreasonable preference or discrimination in favor of one class of traffic or one rate payer as against another. There are those who are concerned lest under such a system of rates the carriers should grow too rich. I cannot believe that anybody can become too rich by producing and selling either services or goods at fair prices, and it seems to me that the alarm of these people is based at least in part on envy. However, it is perfectly apparent that none of the railways can operate without enjoying special franchises to cross public highways, and I willingly concede the right of the government to exact for the use of such privileges their fair value, just as I contend that the carrier should receive for its services their fair value.

The Act to Regulate Commerce declares that all rates charged by railways shall be just and reasonable and it prohibits unjust and unreasonable charges and exactions, but aside from the "long and short haul" clause in section 4 it contains little to guide an administrative commission in determining what constitutes a just and reasonable rate and the Interstate Commerce Commission lacking statutory guidance in this regard has been largely influenced by the dicta in the Supreme Court's opinion in Smythe vs. Ames, a case brought for the prevention of confiscation. It thus has happened that the action of the Commission in disposing of rate cases brought before it has frequently resulted in rates too low to produce the amounts of revenue necessary for efficient operation and development of the railways.

I believe that the object which should be principally sought in the revision of the Act to Regulate Commerce is the best method of securing efficient service at fair and non-discriminatory rates, and that the foremost essential to efficient service is adequate revenue. Next in importance perhaps is stability of rates, particularly in freight service, so that the commercial and industrial elements of the community may know what to expect in the way of transportation charges and may be governed accordingly in making their contracts and other business arrangements. The provision requiring thirty days' publication of proposed changes in rates is sound, and if there were any demand for it I see no valid objection to requiring a longer notice, but the provision authorizing the Commission to suspend proposed increases in rates should be stricken out. Such a provision merely invites litigation and controversy. It also operates unequally as between the carrier and the shippers. If an increase in a rate is unjustified the shipper can always recover from the carrier, but if it is justified the carrier is unable to recover from the shipper for the difference between the old rate and the new during the period of suspension.

Another matter of great importance is the prevention of dishonest financing. A large part of the prejudice under which the railways have suffered in times past has been due to the disgust aroused in the minds of the public by scandals such as those resulting from the methods used in financing the Alton, the New Haven, the Rock Island and the Frisco. Many if not all of the breaches of trust found in those cases might have been prevented by thoroughgoing publicity such as is provided for in the British "Companies' Acts," and those statutes should be carefully considered in revising the Federal statutes relating to railways.

I favor the Federal incorporation of railways engaged in interstate and foreign commerce for the reason that the present system of regulating such railways is too cumbersome and it seems to me necessary that railway systems whose lines lie in two or more states be relieved from the complications involved in state control. I do not believe that this can be effectually done while such carriers are incorporated under state laws.

The necessity for Federal incorporation is not so great in the case of a railway whose lines are wholly within a single state. All that seems to be necessary in such a case is that its rate structure shall be harmonious throughout and that the rates for its intrastate traffic shall not be inconsistent with those for its interstate traffic and that of its competitors. Such carriers should be permitted to continue to engage in interstate commerce on condition that they make their intrastate rates conform to interstate rates so far as they affect interstate or foreign commerce.

W. J. MEYERS,
Formerly Statistician of the Interstate Commerce Commission.

S. J. Konenkamp, president of the Commercial Telegraphers' Union of America, addressing a meeting of 175 strikers in New York City last Sunday, declared that the operators' strike was going more successfully in the West than in the East. He said that in one instance strikers had threatened a "scab" with the alternative of leaving town or having a rope put around his neck. He related also how an automobile full of strikebreakers had crashed into a telephone pole in Jacksonville, Fla., and said that seven persons were sent to the hospital. Mr. Konenkamp said he didn't know how it came about, "but that our people were fined $10 and costs." He said the fight now was between unionism and Burleson. "Mr. Burleson's logic is that you must use force. Our fight now is not so much against the telegraph companies as it is against the Government. It was the Government that refused us." Except for the statements of Mr. Konencamp little or no evidence of a strike of telegraphers is published.

From the Atlanta Constitution

Congress' Little Problem of Reconstruction

Grand Trunk 0-6-0 Type Switching Locomotives

Twenty-five Engines, with 36,700 Lb. Tractive Effort, Building at the Point St. Charles Shops

AN ORDER OF 25 SIX-WHEEL SWITCHERS is being filled for the Grand Trunk Railroad at its Point St. Charles shops, Montreal. These engines, which are known as the road's class F9, have a tractive effort of 36,700 lb., and weigh 166,000 lb. in working order. Compared with the next preceding class of switchers, it will be seen in the table that the tractive effort has been increased from 31,460 lb., or 5,240 lb. This has been effected by an increase of 10 lb. in the boiler pressure, one inch in the diameter of the cylinders, and a decrease from 56 in. to 51 in. in the diameter of the drivers. In addition, a boiler of considerably more liberal proportions has been provided; the evaporating heating surface has been increased from 1,423 sq. ft. to 1,945 sq. ft. and the grate area from 27.4 sq. ft. to 50.6 sq. ft.

COMPARISON OF GRAND TRUNK SWITCHING LOCOMOTIVES

	New type	Previous type
Cylinders, dia. and stroke, in.	22 in. by 26 in.	21 in. by 26 in.
Diameter of drivers, in.	51 in.	56 in.
Steam pressure, lb.	175	165
Grate area, sq. ft.	50.62	27.44
Water heating surface, sq. ft.	1,945	1,423
Superheating surface, sq. ft.	408	268
Weight on drivers, lb.	166,000	139,500
Tractive effort, lb.	36,703	31,460

The boiler is of the extended wagon top type, designed for 175 lb. per sq. in. working pressure. It contains 178 two-inch tubes and 28 5⅜-in. flues, 12 ft. 4 in. in length. The firebox has a sloping mudring, which extends forward over the rear pair of drivers. It is 96⅞ in. long by 75¼ in. wide, and is fitted with a brick arch carried on four three-inch tubes. The boiler is fitted with a 28-element type A superheater, and has a power operated firedoor. Other boiler accessories are Hancock lifting type injectors, double turret valves, for the convenience of both the engineman and fireman, and two Okadee blow-off valves, both of which are fitted in the throat sheet of the firebox.

The design of the frames and running gear is straightforward and substantial, and the frames are well braced with cast steel crossties between the drivers. The front ends of the frames are bolted to a heavy cast steel deck plate, and the bumper beam is also a steel casting. The pedestal jaws are fitted with adjustable driving box wedges.

In order to provide for a main rod of ample length with the short wheel base, the main drivers have been placed at the rear. The steam is distributed by 12-in. piston valves driven by the Baker valve gear, and the distribution is controlled by a Ragonnet valve gear. The valve chambers and cylinders are both bushed with Hunt-Spiller gun iron and the same material is used for both piston and valve packing rings. The piston rods are fitted with King metallic packing.

Considerable attention has been given to the design of the cab in order to provide ample room for the crew, and especially to secure ample deck space for the fireman. Care has been used in the location of all of the cab fittings and particularly to the throttle lever, reverse lever and brake valve, and the steam, air and water gages, to place them so that they may easily be read by both the engineman and fireman.

The tender is carried on four-wheel trucks of the equalized pedestal type, with 5½-in. by 10-in. journals. The tender frame is built up of structural section with 13-in. channel center sills and side sills of 10-in. channel section. The rear end of the frame is finished with a cast steel bumper beam. The engine and tender connection is fitted with the Radial buffer.

The tank has a capacity of 6,000 gal. and is fitted with a coal space of nine tons capacity. The tank is of the rectangular type, and has been built long and low in order to provide for an unobstructed view looking forward from the cab. For the same reason the tank has been built with a coal space of the water leg type, the sides of which are built up straight above the top of the tank, thus leaving a clear view over the top of the tank at the sides of the coal space from either side of the cab.

Six-wheel Switcher, Designed and Built by the Grand Trunk Railway

The principal dimensions and data are as follows:

General Data

Gage	4 ft. 8½ in.
Service	Switch
Fuel	Bituminous coal
Tractive effort	36,700 lb.
Weight in working order	166,000 lb.
Weight on drivers	166,000 lb.
Weight of engine and tender in working order	296,000 lb.
Wheel base, driving	11 ft. 6 in.
Wheel base, total	11 ft. 6 in.
Wheel base, engine and tender	45 ft. 9½ in.

Ratios

Weight on drivers ÷ tractive effort	4.5
Tractive effort × diam. drivers ÷ equivalent heating surface*	732.0
Equivalent heating surface* ÷ grate area	50.5
Firebox heating surface ÷ equivalent heating surface,* per cent	7.6
Weight on drivers ÷ equivalent heating surface*	64.9
Volume both cylinders	11.4 cu. ft.
Equivalent heating surface* ÷ vol. cylinders	223.5
Grate area ÷ vol. cylinders	4.4

Cylinders

Kind	Simple
Diameter and stroke	22 in. by 26 in.

Valves

Kind	Piston
Diameter	12 in.

Wheels

Driving diameter over tires	51 in.
Driving, thickness of tires	3½ in.
Driving journals, main, diameter and length	9½ in. by 12 in.
Driving journals, others, diameter and length	9½ in. by 12 in.

Boiler

Style	Wagon top
Working pressure	175 lb. per sq. in.
Outside diameter of first ring	68 9/16 in.
Firebox, length and width	96⅞ in. by 75⅛ in.
Firebox plates, thickness	tube ½ in., crown, sides and back, ⅜ in.
Firebox, water space	front 5⅝ in., back and sides 4½ in.
Tubes, number and outside diameter	178 2 in.
Flues, number and outside diameter	28 5½ in.
Tubes and flues, length	12 ft. 4 in. over sheets
Heating surface, tubes and flues	1,751 sq. ft.
Heating surface, firebox, including arch tubes	194 sq. ft.
Heating surface, total	1,945 sq. ft.
Superheater heating surface	408 sq. ft.
Equivalent heating surface*	2,557 sq. ft.
Grate area	50.6 sq. ft.

Tender

Tank	Water bottom
Frame	Steel channel
Weight	130,000 lb.
Wheels, diameter	33 in.
Journals, diameter and length	5½ in by 10 in.
Water capacity	6,000 gals.
Coal capacity	9 tons

*Equivalent heating surface = total evaporative heating surface + 1.5 times the superheating surface.

Co-Operation*

By W. W. Atterbury

Vice-President of The Pennsylvania Railroad Company

ORIGINALLY IN DISCUSSING the Women's War Relief it seemed to me that of all the work, that of welfare was the most important, and of such a character as could, after the war, be made of great permanent value. It should be so organized as to permit, after the war, a permanent organization of the women of the Pennsylvania Railroad for welfare work among its employes. As a result of my experience of the last two years I have had no reason to change my mind. The industries of the world have been destroyed. Their immediate rehabilitation is essential. The wheels of industry must be started. The matter is now being studied by our most able financiers, who themselves realize that unless a solution is found our own destruction will ensue. I am confident that in a short time a successful solution will have been evolved.

Many years ago the question was asked "Am I my brother's keeper?" The universal answer has been "Do others or they will do you"—"Each for himself and the Devil take the hindmost." And selfishness—national and individual—was triumphant. The selfishness of one nation got beyond bounds and tried to impose itself upon all the other nations. The war was the result. Blood has washed the slate. What answer to that age-old question will now be written?

For nearly two years I watched with breathless interest labor conditions as they developed on the other side—England in the throes of a social revolution; France with her industrial population ripe for anything; Italy at any moment ready to break into anarchy. . . . In four wars America has fought for life, liberty and for the right to the pursuit of happiness. Trying to put myself in the other fellow's place, I have tried to define what that right means. It seemed to me that the following at least were essentials: (1) Steady employment; (2) At a good wage; (3) Time for recreation; (4) Opportunity to elevate myself in my employment; (5) A voice in determining the rules and regulations under which I should work; (6) A fair division of any profits after a reasonable wage had been earned and a sufficient amount paid to Capital to attract it to an expanding business. Given these, would it mean contentment to me and to my family? Would they enable me to give to my children greater advantages than I had myself enjoyed? Would these principles, if universally applied, give to our country and to the world at large what we believe to be our inherent right?

Society can no longer regard labor as a commodity. I hate the word "Labor" as ordinarily used, as it represents class distinction, for which there is no place in our American life. We all labor—some with our hands; some with our heads. Therefore, when I say labor I mean "all who labor." Heretofore it has been considered a commodity, subject to the law of supply and demand; but from now on we must so set our house in order that all may have steady employment—a difficult job, I grant you, but one not impossible of solution by collaboration between producers, consumers and transporters. . . .

In every man's breast, latent or active, is the desire to improve his condition. It has been our boast that America meant Opportunity. I believe this is as true today as it ever was; but industrial competition has forced us to methods which, as applied to many individuals, have made their work so monotonous and uninteresting that the seed of ambition has failed to germinate. On these the sunlight of opportunity, by education and change of employment, must be allowed to shine.

I asked myself: Ought not I to be taken into the confidence of my employer; be advised as to his aims and his troubles; be permitted to make suggestions in the light of my experience, and conferred with in regard to conditions of work so intimately a part of my every-day life? I could but answer "Yes!"—and with the feeling that I could thereby be a better man for my employer; for thus I become an active, intelligent and willing instrument for the success of my employer, instead of an unintelligent and unwilling tool.

The success of any business is gauged generally speaking, by its profits. There are two elements to an established business: the capital invested and the personnel employed. A stable return to capital is as essential as is steady employment to the individual. Capital has no brains and does not think. To the personnel of the business it is entrusted by its owners, who do think; and what they think gauges their point of view as investors. If stable and certain, a low return is asked. If the business is uncertain, and any return a chance, a high return is asked.

Nor can we change this. By revolution and anarchy we can wipe capital out, but with it go all rights to property of any kind, and even civilization itself.

Therefore, we as individuals, unless we are anarchists, are interested in the success of the business by which we are employed.

It is difficult, however, to make the large mass of those who labor appreciate the truth of this. So something more tangible and direct is necessary to bring about the individual interest so essential to the success of the business, than mere logic and economics. Profit-sharing in a small business is comparatively simple, but with industrial combinations—so essential to modern business life, if we are to meet the world competition—it is difficult to allocate to one efficient man his individual share in the profits, although we know that on the efficiency, or lack of it, of the individuals taken collectively, depends the success or failure of the business. Granting, however, the principle, we shall have taken the first long step, and with mutual confidence established I am certain that the way can be made clear.

*An address given before Department No 2, Pennsylvania Railroad Women's Division for War Relief at Philadelphia, Pa., June 26, abridged.

Tie Purchasing Methods Subject of Conferences

Correspondence Between Producers and Division of Purchases Reveals Positions of Both

THE CENTRALIZATION of the purchase of cross ties for all of the railroads under federal control in the hands of the Division of Purchases of the United States Railroad Administration has resulted in the introduction of many radical changes in the methods of producing and selling ties, as was described in the *Railway Age* of May 30, page 1305. Some of these changes have been opposed by the producers of ties. For the purpose of presenting their views to the Division of Purchases, a committee from the National Association of Railroad Tie Producers waited upon the director of the division on April 15, presenting a brief and certain recommendations, which have recently been made public. An abstract of this brief and of the correspondence which has followed subsequently is given below.

Tie Producers' Brief

The more reputable tie producers have always agreed upon the necessity and desirability of both standard specifications and standard inspection for controlling the purchase of cross-ties. Prior to the creation of the United States Railroad Administration it was impossible to reach any universal agreement upon standard specifications among the producers or the railroads. It is a source of satisfaction to us that standard cross-tie specifications are now an accomplished fact, and we desire to express our unqualified endorsement of the principle of a standard specification.

The purchase of all cross-ties by the line upon which they are produced, and restrictions as to the sale of these ties to the producing road only, is a direct limitation of markets. The effect of this ruling created radical changes in the very fundamentals of operation that had been in effect by numbers of tie organizations for a considerable period in the past, and some small measure of these radical changes can be determined by the realization that if the railroads prior to the war had attempted to decide, by common agreement, with power invested exclusively in themselves, that they would nationally agree on the prices and methods of purchase, there would have been grounds for legal recovery of damages to such concerns as the tie producers.

The producer is told he must absolutely deal with a certain railroad or certain officers; that he must deal with them under their own prices and terms; that the conditions are arbitrarily imposed and subject to change without his partaking in any way in establishing the prices or conditions affecting, very fundamentally, not only his possible profit and volume of business, but also the value of his standing timber, which he has carried on his books as an asset based upon his knowledge of timber values as they have existed in the past.

The limitation of the markets for cross-ties has not only been applied to the disposition of ties for use by the United States Railroad Administration, but producers have also been instructed to refer all inquiries from trolley lines and industries for cross-ties to the United States Railroad Administration for fulfillment. One of the most serious questions that must be answered by co-operation between the tie producers and the railroads is the disposition of cross-ties which do not conform to the present specifications.

The establishing of a proper price, neither too high nor too low, on all of the various kinds and grades of ties, in the numerous and extensive tie-producing territories, is a matter that cannot be brought about by any arbitrary power, no matter in what man or group of men that power might be invested. The real basis for the proper price to be paid for a commodity is the law of supply and demand. The proper price to pay for cross-ties, or any other commodity, must be justified in the final analysis by reconciliation with this cardinal rule of business prudence.

The purchaser of cross-ties must necessarily have for his main objective the obtaining of certain kinds and grades of cross-ties delivered at the lowest possible cost at the point of consumption.

There is a well defined and clearly established basis of comparison of values of certain grades and kinds of cross-ties produced in the various regions. For example, a sap pine tie produced in Louisiana is known to be of the same value to the railroads as a sap pine tie produced in Mississippi. Under the present schedule of prices and freight rates, the purchaser of cross-ties must pay $1 for a No. 3 Louisiana sap pine tie delivered at Chicago, while the same tie when shipped from Mississippi will cost him only 79 cents. This difference of 21 cents per tie cannot be accounted for in service to the railroad, and neither can the producer from either territory justify any reason why the purchaser should be required to make any difference in price as long as there is no difference in value.

The cross-tie circular of the St. Louis-San Francisco, in the Southwestern region, shows prices effective to June 30, 1919. There is no mention made, nor has there been any assurance given, that the cross-ties on hand as of June 30, 1919, made on the basis of the prices published, would be taken up and paid for at prices named in the circular. Cross-ties are not produced in a day, but it takes an average of six months from the stump to the right of way, and often longer. Should producers quit making ties and devote their efforts to hauling their ties, wherever this is possible, so as to deliver them before June 30? Under the former system of purchase of ties, the producer had a contract assuring him of a market for his ties, in most instances before they were produced.

Specific Suggestions

(A) The producing roads should continue to purchase, at the present prices, such ties as are offered up to Nov. 1, 1919.

(B) Any railroad may immediately enter into contracts with individual tie producers at prices not to exceed those prices now in effect at point of shipment for deliveries up to November 1, 1919, providing that the quantities and kinds of ties contracted for are approved by the United States Railroad Administration.

(C) All cross-ties should be inspected by the regional inspectors at point of shipment.

(D) The purchase of cross-ties for deliveries after November 1, 1919, should be made in accordance with the following plan:

(1) All railroads should register their annual cross-tie requirements with a central advisory purchasing committee, and all railroad ties should be purchased in accordance with nationally standard specifications.

(2) All railroad ties should be inspected by regional inspectors, in accordance with standard rules for the application of the specifications.

(3) The individual roads should enter into contracts for their cross-tie requirements directly with responsible tie producers, filing copies of any contracts made with the proper department of the United States Railroad Administration.

(4) All contracts should be awarded only after fair and open competition has developed the lowest price per tie obtainable from responsible tie producers. Reasonable assurance of the producer's ability to meet his obligations in the time required should determine the quantity of the ties to be covered in any contract.

(5) In the event of a producer being delinquent in the specified deliveries of certain kinds of ties, the United States Railroad Administration may prohibit his acceptance of any additional business for the same kind of ties.

(6) The purchase of all cross-ties by the individual roads

should be effected through nationally standard forms of contracts approved by the United States Railroad Administration.

The Railroad Administration's Reply

The reply of the Railroad Administration to this brief was made by H. B. Spencer, director of the Division of Purchases under date of May 29, of which the following is an abstract:

Before answering your various suggestions in detail, it seems desirable to review briefly the situation which led to the conditions which you now seek to improve. The federal authorities took control of the railroads on January 1, 1918. The organization of the Division of Finance and Purchases was completed about ten weeks later. We were immediately confronted with the following situation: For at least two years the production of railroad cross ties in the country had not kept pace with the requirements of the railroads. The business of supplying the railroads with cross-ties was almost entirely in the hands of contractors, who in spite of their best efforts and for reasons which they could only partially control, such as a depleted labor supply and congested transportation conditions, had been unable to supply the needs of the railroads in full. This had brought about a most demoralizing and destructive condition. The railroad companies had repeatedly revised and increased the prices paid under existing contracts, in order to obtain deliveries, and the more aggressive railroads were profiting in that respect at the expense of the weaker lines. Shipments were being held back by producers in the expectation of higher prices and instances were discovered where the same lot of ties had been repeatedly sold to several different roads, each time at a higher figure or under laxer inspection. A survey of the whole situation showed hundreds of unfilled contracts aggregating millions of cross ties, which had been sold by the contractors to individual railroads for delivery during 1915, 1916 and 1917, and which had not been delivered. The production was diminishing instead of increasing and it was vitally necessary that instant action should be taken to correct and improve these conditions.

With the introduction of federal control and operation of the railroads, competition between the individual lines for their supply of cross ties instantly and automatically ceased and the administration's problem was reduced to stimulating and increasing the production of ties as rapidly as possible, establishing a common standard, and distributing the available supply among the individual railroads in proportion to their relative necessities. The steps taken by the administration to solve this problem have resulted in the situation which led to our recent conference.

Proceeding now to answer the specific suggestions presented by your committee: The attitude of the Railroad Administration is not one of antagonism to the large tie producers. On the contrary, it is recognized that their established organizations, their knowledge and experience in the business can be of the utmost assistance to the administration in bringing about the results which are necessary to the proper maintenance of the railroads, and it has been and is the desire of the administration to utilize all of the facilities and the best efforts of the large tie producers to the fullest extent compatible with the best interests of the railroads themselves in securing their supply of cross ties.

In the matter of standard specifications, we were in substantial accord.

With regard to the limitation of markets, we could not agree to the proposition that the individual roads should be released from the regulation of obtaining through the agency of the central administration and the traversing roads such cross ties as they may have to draw from territory beyond that which they themselves traverse, and that they be permitted to deal and contract with any and all tie producers independently of that regulation. The necessity for central control of the distribution of available ties between federally-controlled roads according to their relative needs, as referred to above, is the vital reason for refusing to permit direct contracts between the individual railroads and individual contractors, except on the producing roads.

The so-called fixed prices are maximum ones only and even in that respect they are not absolute and beyond reconsideration. Prices in any given territory have been arrived at after careful consideration and by negotiation between the buying roads and the producers. They may be made the subject of negotiation again if that should become necessary.

The prices originally published obviously were not determined upon to strangle production, but on the contrary were made on a level high enough to induce tie producers of all classes to increase production. It was our belief that production was low rather for want of labor than on account of unremunerative prices. Now when labor recently has become more plentiful, cross tie production has increased remarkably and ties are coming to the roads at present in larger quantities than at any time in the past.

At the moment no objection could be seen to complying with your request that such ties should be bought at an f. o. b. price based upon certain commercial delivery centers to which through freight rates are in existence, but such an arrangement would require a detailed study of each situation. The railroad administration is prepared to consider each locality in detail whenever presented.

Upon the uncertainty as to future prices, it was stated that a duration of time for purchasing ties could not well be given or maintained for purchases made under publicly posted prices. In many cases, however, contracts have been made for a specific number of ties, the delivery of which extends under the contract for a definite period, in some cases to June 30 next, in other cases until the end of the calendar year.

We are not undertaking to dictate to steam roads not under federal control and trolley lines how they should buy their ties, nor to control them in their methods, nor to combine with them. We have consulted with them only where our interests are common and are endeavoring only to increase the output of suitable and satisfactory ties for our respective needs, taking into consideration the interests of all classes of tie producers.

At the end of our interview, we defined our position with respect to the specific suggestions made to you, by summing up as follows:

1: That the administration will not agree to discontinue the purchase of ties direct from the small producer.

2: The price to be paid for cross ties, whether to the small producer or to the larger producer, is a matter of negotiation between such producers and purchasing agents of the roads traversing the producing territory, and that this negotiation is done under the supervision of the regional purchasing committees and in conjunction with them.

3: The administration will adhere to the policy of publishing the prices the roads will pay for cross ties, such prices to have been arrived at by negotiation as above.

4: The director of purchasers will make contracts in the name of the administration with large tie producers for given quantities of cross ties for allotment to the different roads, if satisfactory terms for delivery, prices, quality, etc., can be arrived at.

Tie Producers' Rebuttal

In behalf of the National Association of Railroad Tie Producers, J. W. Fristoe, president of that organization, replied to Mr. Spencer as follows on June 11:

There are certain fundamental principles connected with the purchasing of cross ties that involve the question of how far the concentration of the purchasing power of the government may be developed into one single agency before it becomes an oppressive factor in the conduct of purchases for the railroads. The intent and purpose of well known federal statutes, such as the Sherman Anti-Trust law, and the Clayton law, covering the method of purchasing to be employed by common carriers, has taught us to look upon the limitations of our markets, and the fixing of cross tie prices by the railroads, as the exercising of a power temporarily justified as an emergency war measure, but an authority which would be immediately abolished together with the dissipation of similar restrictions originally placed upon other commodities purchased by the railroads.

We, of course, cannot question your authority to limit our markets and fix cross tie prices, but we feel justified in

questioning the propriety and fairness of any such restrictions. Our attitude in this matter appears to be in substantial accord with the recent statements of the director general in speaking broadly of the purchasing policy of the United States Railroad Administration, which we take the liberty of quoting herewith: "It (the United States Railroad Administration) is trying to handle this purchasing matter in a reasonable, businesslike way largely through the methods which were employed under private management and with an effort to prevent any concentration of the purchasing power by the Government into one single agency in such a way as to be a disturbing or an oppressive factor in the conduct of purchases for the railroads."

The plan we suggested for your consideration surely complied with all of the principles that might be inferred from the statement of the director general, with the added advantage to the administration that the supervision of a centralized purchasing agency was conceded in the hope that this supervision would not become oppressive.

In reference to the definition of your position as summarized in your letter, we wish to make the following statements: We did not suggest, nor do we subscribe to, any plan making a distinction between the large and small producer There is a specific provision in item 4 of the plan we suggested wherein the railroads could purchase in as small quantities as may be desired. The advisability of purchasing from tie producers of various capacities would prove itself in each instance, and the advantages should be so clearly self-evident as to carry their own weight when measured by common business prudence.

We wish to correct at this time any inference that the price to be paid for cross ties is or has been a matter of negotiation, if by negotiation is meant a mutual agreement based upon the usual rights of buyer and seller. The objections to the prices published by the administration arises from the fact that the administration is by far the largest purchaser of cross ties in the United States, and when it establishes maximum prices that will be paid for cross ties, it places our industry in the undesirable and unusual position of having the price of a commodity established by the largest consumer.

Reward of Being Conspicuously Good

By L. F. Loree

President, The Delaware and Hudson

I DO NOT PROPOSE to weary you with a review of the achievements of the railroads. The enormous improvements in the science and art of railway transportation are the product of the managers of the American railways. These men have been pioneers in fields exclusively their own and have so far succeeded that the American railway system fas able at the end of 1917, to handle far greater tonnage with relatively lower expenditure of power, including labor and fuel, at a lower capital cost per unit of traffic, and to carry both passengers and freight at the lowest rates in the world, while paying the highest rates of wages anywhere received by men similarly qualified.

It may well be asked why, in the light of these achievements, the institution should have been for the past fifteen years the favorite object of vilification and abuse.

I cannot help but feel that to a large extent the railways fell a victim of their own virtues The extent to which they energize and stimulate development, the growing dependence of the community on their proper functioning, and the high standard of the conduct of their business, all place them at the extreme on the side of goodness.

Consider the case of Aristides. Here was a man who, 500 years before Christ, was a leader among the Greeks. He had been the strategist of their army at Marathon; he had been archon, the highest magistrate of Athens, and he was standing as a candidate for re-election. A voter, not recognizing him, approached him and asked him to inscribe the name of Aristides on the negative ballot that he was to cast, and the archon put to him the question, "Why are you against Aristides? Has he done you an injury?" And the man said, "No, I do not even know him, but it irritates me to hear Aristides everywhere spoken of as 'the just.'"

The history of twenty-five centuries, the history of a thousand saints and martyrs, all demonstrate that it is at least as hazardous for a man or an institution to be conspicuously good as to be conspicuously bad.

Whatever may be our feeling about this matter, I am sure we will all unite in recognizing as a question of present greatest importance the railroad problems of to-day. The experience of the past 18 months has very definitely cleared away some of the fantasies. We are not going to have government ownership. We are not going to have a five-years continuation of the present impossible conditions. We are not going to have a Secretary of Transportation, with an elaborate departmental staff. We are not going to have federal incorporation and a consequent excessive centralization. With these major suggestions go many and various minor vagaries of the speculative mind, the chief of which was perhaps the notion that the railroads of the country as a whole could be reconstructed new at substantially less cost than the total of their capital securities. The fact is that under present conditions $35,000,000,000 would be inadequate to reproduce the properties that are now represented by about $18,000,000,000 of securities.

In all their variety the railroad problems hang on the one fundamental condition—the credit of the properties. There must be such a basis of rates as will yield a return adequate to command the confidence of the investor whose capital is solicited for new enterprises or for the expansion and improvement of the old ones. To ensure this it will be necessary, in my judgment, to secure the following changes in the present Act to Regulate Interstate Commerce:

1. The power of the Interstate Commerce Commission should be extended to cover state rates which in any way affect interstate commerce.

2. The power of the Interstate Commerce Commission should be extended to labor disputes, so as to require the wages and conditions of employment should be just and reasonable. Employes should be forbidden to conspire to interrupt interstate commerce. Strikes should be permitted only on the condition that the dispute must first have been submitted to the Interstate Commerce Commission and, subsequent to its decision (or its failure to decide within six months), there must be a vote to strike which vote should be by secret ballot on a question defined by the commission, the taking and counting of the vote being supervised by a Bureau of Interstate Transportation.

3. A Bureau of Interstate Transportation should be created to operate under the direction of a chief, to be designated from among the members of the Interstate Commerce Commission, but during the period of such designation not to perform any duties as commissioner; this bureau to take over all the executive and administrative functions of the commission.

4. The Interstate Commerce Commission should become wholly an adjudicating body; the term of office after the retirement of the present commission should be extended to nine years. The country might be divided into five interstate commerce regions, the natural traffic divisions of the United States, and one Commissioner should have his office in each of those regions, leaving three to sit in Washington. Commissioners assigned to regions should perform only such duties as may be assigned to them by the three remaining in Washington, and these three to exercise all the powers of the commission except those thus assigned.

5. The Interstate Commerce Commission should no longer

*From an address at the Scranton Club, Scranton, Pa., June 12, 1919.

be permitted to institute proceedings of its own volition. The Bureau of Interstate Transportation (as well as persons) to be a complainant before the commission.

6. The Interstate Commerce Commission should be required as soon as practicable to fix, either for the United States as a whole or for each interstate commerce region, the percentage by which existing rates ought generally to be increased in order to meet expenses and provide proper revenues. No rates not exceeding the present rates by more than these percentages should be regarded as unreasonable in themselves but any rate may be condemned in case it is found to produce unjust discrimination. Until these maximum percentages are given effect, the secretary of the treasury should pay to each system surrendered from Federal control the difference between the actual income and the standard return under the Federal control act if the actual income proves to be less.

7. The secretary of the treasury should be authorized to settle and pay claims on account of acts or omissions of Federal officers during Federal control, and on account of just compensation for the use of the properties. Many such matters will be left open at the end of Federal control and there should be an expeditious method of obtaining just settlement without litigation similar to that under which the War Department is empowered to settle claims growing out of orders for munitions, etc. Appeal to the court of claims should, however, be allowed in cases in which agreement is found to be impracticable. Provision should also be made for funding of balances due the United States on account of additions and betterments to the properties during the period of Federal control. The acceptance of serial notes payable within fifteen years, and bearing interest at a rate slightly above that which the Government paid on the Victory Loan, would appear to be reasonable.

8. The commodities clause, the anti-pooling clause and section ten of the Clayton act should be repealed, and the Sherman anti-trust law made inapplicable to carriers subject to the interstate commerce law.

9. The power to suspend rates pending investigation should be abolished.

10. Carriers should be given power to exchange passenger transportation for advertising in periodicals. The practice of barter should be recognized to be as legitimate as are cash or credit transactions.

American Concrete Institute Annual Convention

THE ANNUAL CONVENTION of the American Concrete Institute was held in Atlantic City, N. J., on June 27 and 28, 1918, with headquarters at the Hotel Traymore. The Friday morning session was devoted to the presentation of committee reports on plain and reinforced concrete sewers and the treatment of concrete surfaces. On Friday afternoon the members of the Institute attended the session of the American Society for Testing Materials on Ceramics, Lime and Road Materials. On Friday evening a joint meeting of the two societies was held, the session being taken up with committee reports and papers dealing with concrete and gypsum.

Three sessions were held on Saturday, the principal feature of interest to railway men being the paper on Concrete Railroad Track, presented by A. C. Irwin. The report of the Committee on Reinforced Concrete Highway Bridges and Culverts, A. B. Cohen, chairman, while devoted principally to the small highway culverts, developed some very interesting information as to types and design of highway bridges spanning over railway tracks.

Orders of the Regional Directors

VIOLATION OF HOURS OF SERVICE LAW.—Supplement 1 to Order 30 of the Southwestern regional director outlines the plan of the Interstate Commerce Commission relative to administering the 16-hour service law and suggests distributing copies of a letter signed by Clyde B. Aitchison, chairman of the Interstate Commerce Commission under date of June 13, relative to the intention of the Commission to prosecute individual officers and employees responsible for violations of this law.

Western Union Bills Against Railroads.—Order 216 canceling Order 205 of the Southwestern regional director quotes a letter from E. Marvin Underwood, general solicitor, containing an opinion from Commissioner Roper relative to the application of the tax on telegraph messages to messages transmitted under contract between telegraph companies and carriers under Federal control. The general conclusion reached by Commissioner Roper is that telegraph messages directly connected with the operation of railroads under Federal control are not subject to tax. The Northwestern regional director has issued a similar order—Supplement 3 to Circular 59.

Locomotive Maintenance Material.—Northwestern Regional Purchasing Committee Circular 68 states that many locomotives heretofore used on roads other than those to which they belong are now being returned to the owning road and that these locomotives were provided a supply of material for their maintenance peculiar to the individual engine by the using road. It is directed that this material be utilized in lieu of the purchase or manufacture of new material wherever possible.

Deferred Work in 1919 *Carryover Budget.*—Supplement 8 to Circular 25 of the Northwestern regional director outlines instructions for the handling of work reported as discontinued or deferred in the 1919 carryover budget.

Repair of Box and Refrigerator Cars.—Supplement 15 to Circular 70 of the Northwestern regional director contains instructions for the repairing of box and refrigerator cars. Car repairing forces are to be at once put on a 48-hour basis at all points where reduction has been made below that figure. Repairers who have been furloughed are to be returned to service and, where necessary, forces will be increased. After the completion of the cars now in the shops, the rebuilding of box cars of 60,000 lb. capacity or less will be discontinued until the bad order cars on hand have been repaired. The Southwestern regional director has issued similar instructions in Order 215.

Passenger Cars.—The Northwestern regional director, file 119-1-66, outlines a plan for increasing the available passenger equipment. The arrangements suggested include the withdrawal from shops or from storage of all coaches; and that no coaches be shopped during this period that are in a safe condition for service. Coaches assigned to troop movement should not be used for other purposes except by permission and the return movement of these coaches must be expedited.

Floor Racks for Refrigerator Cars.—The Northwestern regional director, file 16-1-65, states that Division of Operation, Circular CS43, has been withdrawn insofar as it applies to floor racks for refrigerator cars, and that authority should be received from the Division of Capital Expenditures before ordering material or beginning the application of floor racks in refrigerator cars not now equipped with them.

The Firemen, at their national convention, are considering a resolution to establish on a large scale co-operative stores for the benefit of all the railroad brotherhoods. The stores will be financed by sales of stock to union members.

The Wanton Destruction of Railways by the Germans*

Much More Than Required by Military Necessity; Varied with Speed at Which Enemy Retired

Translated by P. O. Buttrick

EVERYONE KNOWS THAT IN A BATTLE, a railroad line, be it on an embankment or in a cut, is always used by the infantry as a line of intrenchment or a shelter, that the rails are always employed to cover the abris (dug-out) and observation posts and that the yards and stations are always targets for the artillery and for bomb-dropping aeroplanes.

In most of the territory occupied by the Germans, the destruction has been much more comprehensive than this, and by their direct wish and action has been of a durable character.

It is good military practice for an army in retreat to destroy before the advancing enemy all lines of communications so as to impede his progress. The object should be to cause destruction of such a nature as momentarily to prevent military traffic. Rules for this are promulgated in our military engineering regulations. These covered such cases as the exploding of petards (light explosive cartridges) at certain distances along the rails and the cutting of bridges by the destruction of an arch in their middle. In fact, we have practiced such destruction where we had the occasion, for example, at Dannemarie on August 24, 1914.

The destruction practiced by the Germans was not, however, of this nature, but was carried out according to a deliberate plan, to ruin methodically the industrial regions of France occupied by them. This has been proved beyond doubt by the documents of the German General Staff in possession of the French Ministre of Finances and presented to the Interallied War Council.

The French Ministre of Public Works has stated in a report to the Senate, that there was destroyed a total of 5,600 kilometres (approximately 3,500 miles) of single track; 2,900 kilometres (approximately 1,800 miles) of narrow gage and local (as apart from main lines) track; 1,500 bridges more than 4 meters long (approximately 12 feet) and 12 tunnels.

On the lines of the North Railroad (Chemin de Fer du Nord) which runs through the sections where the fluctuations of the battle line were the greatest and the fighting the most severe (the Somme, Picardy and Flanders) 1,966 kilometres (approximately 1,250 miles) of line have been destroyed, representing a length of 2,950 kilometres (approximately 1,850 miles) of single track; 250 stations have been razed (not counting these destroyed by aeroplanes or artillery fire in regions not occupied by the Germans); all the bridges, culverts, tunnels, etc., have been destroyed, from the great bridges down to culverts of only 60 centimeters (less than 3 feet) span. In all, 860 bridges or culverts of a span greater than 4 meters and 320 of less than 4 meters have been dynamited. In addition to which 6 great viaducts and 5 tunnels have been destroyed.

An example will give an idea of the ferocity of the Germans in this destruction; on the line from d'Anor to Aulnoye (33 kilometres or approximately 20 miles) part of the line from Lille to Valenciennes, 24 works have been destroyed, 2 slightly damaged, and only a single one left intact. The destruction has not been confined to the line, and the right of way, but all the accessories of the yards and stations have also been systematically destroyed, such as signals, water towers, loading cranes and switch towers. (Practically every French railroad yard, even to the smallest, is equipped with hand or automatic loading cranes.—Translator) The switch towers were particularly marked for destruction. On these same Nord lines, there have been counted as destroyed: 1,000 hydraulic cranes, 150 switch towers, 5,400 signals and 15,500 kilometres (approximately 9,700 miles) of telegraph lines. All the buildings of the yards and stations such as waiting-rooms, store-houses for freight and railroad materials and workshops were blown up. (A more serious loss than would be the case in America, due to the fact that in France, practically all these buildings, even to the smallest, are of stone.—Translator). A detail which makes certain that the intention was to ruin everything is that the shelter houses of the watchmen at the grade crossings were demolished. These buildings could not possibly under any condition have any military value.

On the lines of the Eastern Railroad (Chemin de Fer de l'Est) where the fighting was less intense, and underwent less fluctuation, the destruction was less. The length of single trackage absolutely destroyed did not exceed 310 kilometres (approximately 195 miles) that which underwent great damage amounted to 1,475 kilometres (approximately 920 miles) but this damage manifested itself particularly in the neighborhood of the bridges, culverts, etc. Since the region traversed by the Eastern Railroad is somewhat more rugged than that traversed by the Northern Railroad, their destruction amounts to more. Where great viaducts, such as those of the Meuse in the Ardennes, are destroyed, no temporary restoration of the line is possible. This is particularly true of the line from Verdun to Givet which follows this river. There, all the bridges and other works were destroyed. From Bazeilles, near Sedan to Givet, that is to say in that part of the Meuse valley, where its walls are steepest, over a line about 80 kilometres (50 miles) in length, there were destroyed not less than 26 stone bridges, among which were 11 viaducts of more than 30 meters (approximately 100 ft.) span; 12 steel bridges and 2 tunnels. It is naturally the same in Belgium for the valley of the Sambre on the traverse of the rocky hills there. The destruction carried out in the mountains of the Ardennes (just north of the Argonne) which contain many great engineering works and through which pass the great international lines from France into Germany, has created between northern France and Lorraine, an intraversible zone. This barrier will be sooner or later overcome, but at present, one must go around its ends. The result is that although in time of peace, the lines of communication between France and the Rhine valley were numerous and rapid; they are now reduced to the single line which passes by way of Nancy.

On the lines of the Eastern Railroad, a total of about 150 bridges or culverts were destroyed. Eight tunnels were similarly destroyed, and for 2 others, the repairs made by the Germans following their destruction in 1914 give room only for a single track. Of the 8 tunnels totally destroyed, four, those near Liart, are in a soil difficult to work and their reconstruction will require a long time. The signals, the water tanks, the station buildings, the telegraph lines, in a word all the equipment of the yards and stations, were destroyed.

*From time to time the general staff of the French army issues bulletins for free circulation in its ranks. These bulletins deal with military matters or are of an instructive nature concerning certain aspects of French public affairs. This article is a translation of such a bulletin (93 new series, issued March 2, 1919), which was made by an American engineer who is now a lieutenant in a French artillery regiment.

There have been counted 3,200 signals, 100 station buildings and 150 grade crossing watchmen's shelters dynamited.

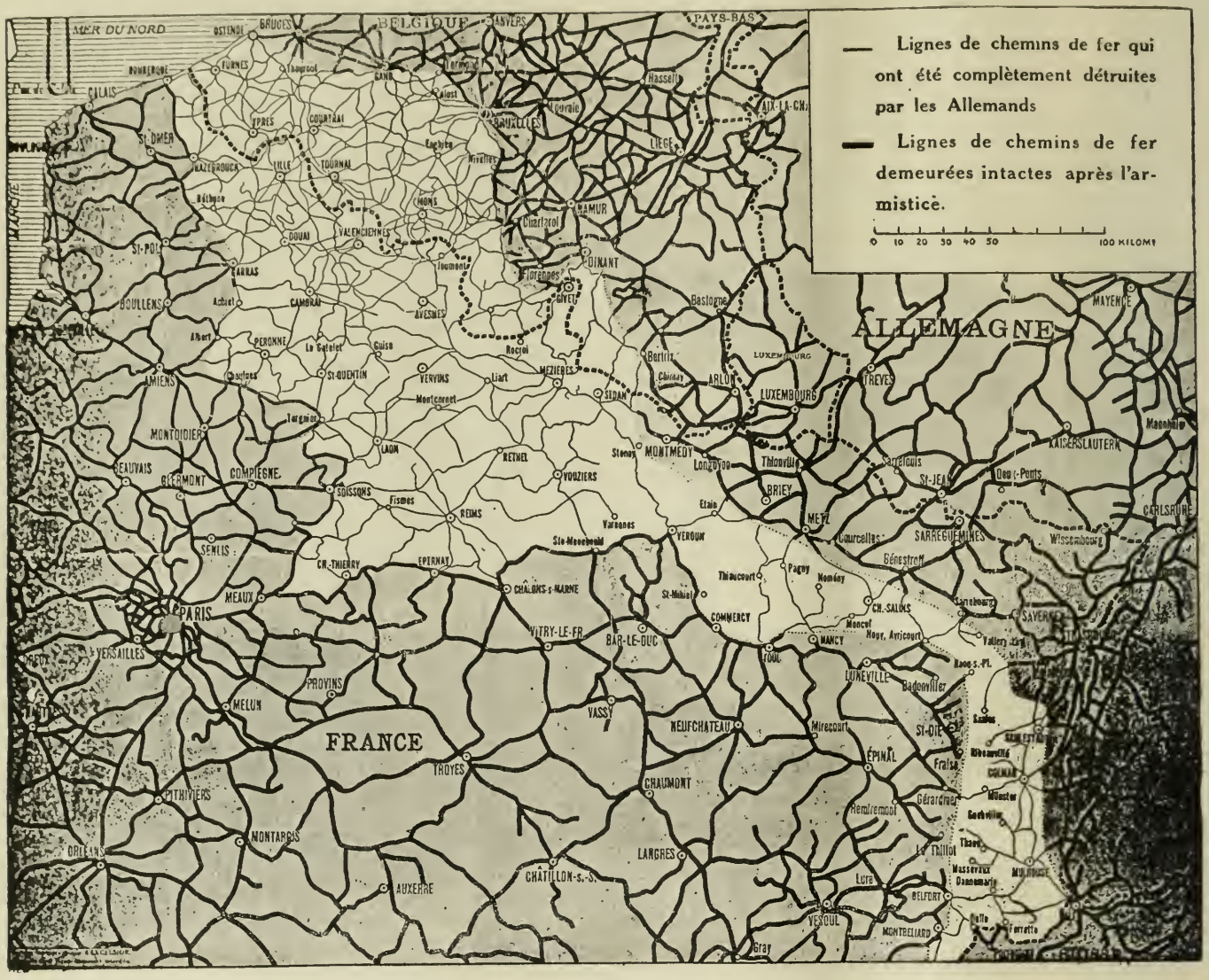
Processes of Destruction

The mere enumeration of such destruction as that of watchmen's houses, station buildings, proves that the Germans had some other object in view than a purely military one. We find still more proof in the methods with which they have conducted this destruction.

Not only have portions of the rails been removed, such as would have been sufficient to prevent the pursuit of an enemy, but often the entire track has been removed or destroyed. To separate the rails from the ties, the Boches used a special torpedoes where any two rails remained joined together, after the charrue had passed. This apparatus was employed principally on the lines of the Northern railroad. On the lines of the Eastern, the Germans confined themselves largely to torpedoing every rail joint.

To destroy the embankments, mines or torpedoes were placed from 50 to 200 metres (approximately 160 to 650 feet) apart with an explosive charge varying from 50 to 100 kilogrammes (25 to 50 lbs.). Holes capable of containing 2,000 cubic meters of material have been found in such places, where, of course, all the embankments have been destroyed clear down to the natural soil.

Toward the end of the war, when the Germans did not



Railway Lines Destroyed in France and Belgium

A map reproduced from the French newspaper Excelsior. As explained by the legend, the light lines show railroads completely destroyed by the Germans, and the heavy lines those that remained intact after the signing of the armistice.

apparatus known as a *"charrue"* (literally translated a plow —Translator). It was composed of 2 rails 6 meters long, bolted close together at one of the ends, the two other ends being separated to form a V, but united by means of two other completely united curved rails. This machine was hitched to the tender of a locomotive by means of a chain attached to the point of the V. The curved rail was then placed under the rails of the track, but above the ties by means of the removal of two rail joints. The engine then started and the charrue ripped up the track as it progressed. During this operation, a crew of men followed the locomotive and placed have time to prepare special mines, nor to carry away their artillery munitions, they made the latter up into bundles which they heaped together loosely along the tracks, in the culverts and the cellars to the stations and then exploded them.

The bridges were not simply blown out in their centre—which would have been sufficient to interrupt our pursuit for the time necessary for the Boches to retire to another defensive position—but the charges of explosive were placed beside the abutments in such a manner as to overthrow not only the masonry, but also the solid earth—natural or arti-

ficial—which supported the masonry and thus to enlarge the opening necessary to be spanned by the bridge. The great size of the charges used (1,000 to 2,000 kilogrammes or 500 to 1,000 lb.) was such that frequently the length of the span was doubled. On the lines of the Northern Railroad, culverts of 60 centimetres (less than 1 yard) were blown up with mines of such strength that the present openings have spans of 13 metres (40 feet).

The tunnels were similarly destroyed, not alone in the view to a momentary interruption, but rather in a manner to close them permanently. Such is the case of the ones at Perthes near Rethel (On one of the great international lines from France into Germany—Translator.) and at the Manse near Challeranges. They were destroyed with such a lavishness of explosives that the soil is pulverized, clear to the surface above the arch. At Perthes, there has already been removed at the two extremities 70,000 cubic metres (87,500 cubic yards more or less) of material, without having yet reached any portion of the vault still standing. At Manse, it is estimated that 175,000 to 200,000 cubic meters will have to be removed before passage can re-established.

Another scheme adopted by the Germans was to leave mines with slow acting fuses which would not cause an explosion until long after the line was again in French possession. On the lines of the Northern Railroad alone, there have been counted 250 mines with delayed fuses, most of which did not explode for several weeks or even several months, after the Germans abandoned the lines. Certain places were mined so as to be destroyed twice or even three times. For example, the Boches on leaving blew up a bridge knowing that the first care of the French would be to re-establish a passage. After the explosion, they would plant a mine with a delayed action fuse, which would explode in the same place a dozen days later. After the explosion of the second one, they figured that the French would consider it as finished this time, and recommence the work in a permanent fashion. So they placed also a second mine with delayed action fuse to explode a month later. The positions of these mines were calculated so as to enlarge each time the mine crater. This system was notably employed at a bridge at Roye, but the French were able to prevent the last explosion. Another stratagem frequently employed by the Germans was to place a mine with a retard action fuse in the crater of one already exploded. They counted upon this not only to multiply the number of victims, but also to cause a state of demoralization such that no one would dare to go near the lines.

Difficulties of Work of Reconstruction

From the extent of this destruction, one may deduce the size and difficulties of the reconstruction of these lines. It is necessary in effect to reconstruct the track *"à l'avancement"* in the same manner as were built the great trunk lines in America or the Transsiberian Railway, that is to say as one proceeds in countries where there does not exist any other means of transportation, the rails already laid, serving to bring forward the materials for the continuation of the line. This is especially true, since the highways are still in too poor a state to permit the bringing up of the heavy materials, even if there were automobile trucks powerful enough to transport the heavy steel girders, necessary for the bridges and viaducts at certain points.

The work of laying the track is not all. Everyone knows that a railroad cannot function without coal and water stations at different points along the line. There is also to be considered the replacing of the signal system. The yards at station at Valenciennes alone, had 272 signals of various kinds, all of which were destroyed and whose replacing is a long and delicate operation.

Supposing the track re-established and the yards re-equipped, can the traffic be easily re-opened? No. There remains to be reconstructed the buildings for sheltering merchandise and protecting it against pillage and for lodging the personnel.

Because of this destruction, certain localities have been and still are completely isolated. When traffic has not been entirely prevented it has been forced to detour. It is thus that all the traffic from France toward Alsace-Lorraine and the Rhine valley, cared for before the war by seven lines, has been reduced to a single indirect line by way of Nancy. The great trunk line from Paris to Metz was destroyed for a great distance in the Argonne and at Verdun, and it will not permit of a heavy traffic for a long time after its re-establishment.

The great viaduct at Dannemarie in Alsace, between Belfort and Mulhouse has not yet been re-established and has been replaced by a detour over an unstable soil which in wet weather can carry only light trains.

The New England District Director

James H. Hustis has resigned as district director, New England district, United States Railroad Administration, effective July 1, and has been succeeded by Percy R. Todd, who has been acting as assistant to the district director.

The New England district consists of all New England railroads under federal control, including such parts of those roads as extend into New York state and into Canada, and Mr. Hustis was appointed to the position when it was created June 10 of l[illegible] year.

Percy R. Todd

When asked as to the significance of the resignation Mr. Hustis said that the probable return of the railroads to private operation on December 31 placed on him a special obligation in connection with the Boston & Maine, of which he has continued to be the receiver. There are many details to be arranged for in connection with the return of the railroads to their owners, as well as in preparing for their organization after their return, and Mr. Hustis will give his entire time to this work as applied to the Boston & Maine.

Percy R. Todd was formerly president of the Bangor & Aroostook. He was born December 4, 1859, at Toronto, Ont., and attended the Collegiate Institute at Ottawa, Ont. He began railroad work as a clerk and telegraph operator on the St. Lawrence & Ottawa, now part of the Canadian Pacific. In 1875 he became the Canadian agent of the Ogdensburg & Lake Champlain. In 1882 he was made general traveling agent of the National Dispatch Line with office at Chicago, and three years later became commercial agent of the New York, West Shore & Buffalo. In December, 1885, he was appointed chief clerk in the general freight department at New York, and a year later was made general freight and passenger agent of the Canadian Atlantic. In 1889 he was made general freight agent of the West Shore and in 1892 was promoted to traffic manager. In 1901 he was elected second vice-president of the New York, New Haven & Hartford and two years later was elected first vice-president. He went to the Bangor & Aroostook as vice-president in 1907 and in 1913 was elected president.

American Society For Testing Materials

A Brief Report of the Proceedings of the Annual Meeting Held Last Week in Atlantic City, N. J.

THE TWENTY-SECOND ANNUAL MEETING of the American Society for Testing Materials was held at the Hotel Traymore, Atlantic City, N. J., June 24 to 27, 1919. The evening session of the opening day was devoted to the annual address by the president, Guilliam H. Clamer, and a memorial session in honor of the memory of Dr. Edgar Marburg, the secretary-treasurer of the society from 1902 until his death on June 27, 1918. The following is a brief abstract of some of the many reports and papers presented at the meeting which are of particular interest to railroad men.

Committee on Steel

The committee on steel made a number of recommendations in reference to changes in both standard and tentative standard specification and proposed a new tentative standard specification for plates for forge welding. Revisions were proposed in the existing standard specifications for open-hearth steel girder and high tie rails by which the present drop test requirements would be replaced by a ball impression test. Sections 7 to 10, inclusive, of the present specifications specifying drop tests requirements were recommended to be omitted and replaced by the following sections 7 to 9 renumbering the remaining sections of the specifications.

7. (a) Four representative sections of rail from each melt shall be selected by the inspector as test specimens.
(b) Excess scale on the head of the section shall be carefully removed.
8. (a) The head of each specimen shall be subjected to a pressure of 50 net tons (100,000 lb.) for a period of 15 sec., applied through a ball ¾ in. in diameter.
(b) The average depth of impression obtained on the four specimens shall not be more than 3.8 mm. for class A rails, nor more than 3.6 mm. for class B rails.
9. If the average of the impression tests from any melt fails to conform to the requirements specified in Section 8 (b), the manufacturer may, at his option test each rail from such melt by making an impression test on the web, as described in Section 8 (a). Rails so tested which conform to the requirements as to depth of impression specified in Section 8 (b) shall be accepted.

The tentative specifications for steel tie plates (A67-18T) and for low carbon steel track bolts (A76-18T) were continued as tentative for another year without change.

Specifications For Plates For Forge Welding

The chairman of the Tank Car Committee of the Master Car Builders' Association, A. W. Gibbs, requested Committee A-1 to issue a specification for forge-welding plates suitable especially for tank cars.

This matter was referred to a sub-committee and initial work taken up with particular reference to the M. C. B. Class V tank car.* The specifications for this car call for a bursting pressure, based on the lowest tensile strength of the plates, of not less than 960 lb. per sq. in., and require that all seams shall be welded. The material specified is steel, complying with the American Society for Testing Materials specifications for boiler plate steel, flange quality, with the lowest carbon content consistent with the strength prescribed for the purpose of welding.

The requirements of the American Society for Testing Materials specifications for boiler steel, flange quality (serial designation: A30-18) are:

Chemical Composition.

Carbon, per cent	0.30—0.60
Manganese, per cent	Not over 0.05
Phosphorus, per cent { Acid	Not over 0.04
Phosphorus, per cent { Basic	Not over 0.05
Sulphur, per cent	

No increase allowed for check analysis.

*See M. C. B. Proceedings, 1918, page 903, for the Class V tank car specifications. This car is intended for the transportation of liquid products, whose properties are such as to involve danger of loss of life in the event of any leakage or rupture of the tank.

Physical Properties

Tensile strength, lb. per sq in.	55,000-65,000
Yield point, lb. per sq. in.	0.5 tensile strength
Elongation in 8 in. per cent.	1,500,000
	Tensile strength

Reduction in elongation allowed for increased thickness. There apparently was some objection on the part of the fabricators to using steel of such high tensile strength for welding; hence it was proposed that a softer grade should be specified. The following specifications for plates for forge welding were recommended to be adopted as tentative.

Chemical Properties

The steel shall conform to the following requirements as to chemical composition:

Carbon	Not over 0.18 per cent
Manganese	0.30-0.60 per cent
Phosphorus	Not over 0.04 per cent
Sulphur	Not over 0.05 per cent

Physical Properties

The material shall conform to the following minimum requirements as to tensile properties:

Tensile strength { Plates ¾ in. or under in thickness	48,000
lb. per sq. in. { Plates over ¾ in. in thickness	45,000
Yield point, lb. per sq. in.	0.5 tensile strength
Elongation in 8 in. per cent.	1,500,000
	Tensile strength

The sub-committee was advised by Mr. Gibbs that "the question of tensile strength is subordinate to that of the welding qualities, for if the chemistry required involves low tensile strength, the specified bursting strength can be obtained by increasing the thickness of the plates." The opinion seems to be unanimous that a soft steel is necessary, the general aim being for a carbon content of from 0.08 to 0.12 per cent for satisfactory welding properties. Having fixed the maximum carbon at 0.18 per cent, and bearing in mind the lower values which are worked to, it was seen that the tensile strength of thick plates would surely drop below 48,000 lb. per sq. in., but that the lowest carbons in the thinner plates would probably not run the tensile strength below 48,000 lb. Therefore, in order to permit designers of welded tanks of this figure, the tensile strengths have been specified at 48,000 lb. for plates ¾-in. or under and 45,000 lb. for plates over ¾-in. in thickness.

Other Committees

The Committee on Non-Ferrous Metals and Alloys recommended that the present tentative specifications for bronze bearing metals for turntables and movable railroad bridges be continued as tentative. The question of revision of the tentative specifications for non-ferrous alloys for railway equipment was considered but since the question is being taken up by the government it was considered unwise to attempt any change at present and the committee recommended that these specifications be continued as tentative.

On Malleable Castings

During the past year criticisms were made of the tentative specification covering malleable castings for railroad, motor vehicle, agricultural implements and general machinery purposes. One was that the castings do not show as high tensile strength and elongations as the test bars. The other was that iron made to these specifications was hard to machine. A sub-committee was appointed to obtain data on the relation of tests from bars and from castings, and to report their findings. The same sub-committee was asked to look

into the necessity of separate specifications for malleable iron where good machining qualities are required.

Cements for Producing Quick-Hardening Concrete

By P. H. Bates

In the course of the investigations which the Pittsburgh branch of the Bureau of Standards has been conducting dealing with the various problems relating to Portland cement, there have been made a number of cements which are characterized by a very high early strength. This is developed when the cements are used either as mortars or concretes. These cements have been made in a manner differing in no wise from that used in the manufacture of Portland cement. However, the composition of the materials entering into their manufacture was decidedly different, limestone and calcined alumina having been used in some of the raw mixes, and in others the alumina was replaced in part by kaolin or bauxite in order to determine the effect of impurities on their general properties. While such materials have been the subject of research by others, their property of developing very high early strengths is not generally known. It is believed that the data presented in this paper, especially that dealing with the concrete, are the first of their kind ever presented.

The data dealing with the aluminates are augmented by some obtained in making concrete from "Sorel cement" which, as is generally known, is light calcined magnesite gaged with magnesium chloride. As it obtains the greater part of its strength within 24 hr. and as this strength equals that obtained by a Portland cement at the end of two or three weeks, the possibility of using it becomes very attractive.

The fact that magnesium oxide when mixed with a solution of magnesium chloride will harden was possibly first known by Sorel in 1853. From him it has at least taken its more common name. At the present time this cement is used in rather large quantities for making a resilient flooring which is usually referred to as "composition flooring." When so used the aggregate is composed of asbestos fiber, sawdust, inert finely ground filler as sand and coloring matter. This flooring is widely used in a monolithic form in office buildings, passenger and subway cars and interior ship decks.

Table Comparison of Compressive Strengths of Sorel and Portland-Cement Concretes

6 by 12-in. Cylinders. Strength in Pounds per Square Inch

Proportions by volume	Percentage of cement by weight: Portland	MgO.	24 hours: Portland	MgO.	48 hours: Portland	MgO.	7 days: Portland	MgO.
GRAVEL AGGREGATE								
1 : 0.5 : 1.5	33.3	20.3	....	1740	1570	3490	2965	2910
1 : 1.0 : 3.0	20.0	11.3	....	1705	1115	2260	2020	2850
1 : 1.5 : 4.5	14.3	7.8	....	1755	680	2145	1430	2240
*1 : 1.5 : 4.5	....	14.3	....	2880	...	3315	....	2720
LIMESTONE AGGREGATE								
1 : ⅔ : 1⅓	35.2	21.8	....	2985	2260	3990	3930	4320
1 : 1⅓ : 2⅔	21.4	12.2	....	1940	1340	2805	2990	2970
1 : 2 : 4	15.4	8.5	....	1935	655	2330	1755	2480
*1 : 2 : 4	....	15.4	....	3270	....	4020	....	4320
COARSE SAND AGGREGATE								
1 : 0.5 : 1.5	34.0	20.8	....	2060	1715	2570	3270	2735
1 : 1.0 : 3.0	20.6	11.6	....	1910	545	2225	1635	2430
1 : 1.5 : 4.5	14.7	8.0	....	935	325	1695	985	1870
*1 : 1.5 : 4.5	....	14.7	....	2555	....	3260	....	3190

Note—The percentage by weight of MgO in 1 : 0.5 : 1.5 and 1 : ⅔ : 1⅓ is but very little greater than the percentage by weight of Portland cement in 1 : 1.0 : 3.0 and 1 : 1⅓ : 2⅔, respectively.

*MgO proportioned by weight, making weight percentage of MgO equal weight percentage Portland cement in 1 : 1.5 : 4.5 and 1 : 2 : 4.

Recently a mortar very similar in nature to the above, excepting the omission of the fibrous material, has been rather successfully used as a stucco.

The Table shows the strength of the concrete made from this mixed oxide and also the compressive strength developed by a Portland-cement concrete using the same proportions of the same aggregates. Notwithstanding the fact that the specific gravity of the magnesia is very close to that of Portland cement (3.08 for the magnesia and 3.12 for the cement), the volume occupied by the same weight of the two differs very materially.

The results show that the Sorel-cement concretes, with but two exceptions, have a strength at 48 hr. greater than that obtained by the use of Portland cement in 7 days. However, there is in general but little increase in the strength of the former between the 48-hr. period and the 7-day period.

Attention should be called to the difference in the manner in which the hardening of the two concretes takes place. In a Portland-cement concrete, the cement hardens by the action of the added water. During the process of hardening it is immersed in an atmosphere containing in a greater or less degree one of the essential elements of the process, that is, water, either as a liquid or vapor. On the other hand, in the Sorel-cement concrete the hardening takes place as a result of the action of the chloride on the oxide.

While the results do show the lack of proper proportioning of both the magnesia and the chloride, yet these poorly proportioned concretes show in 24 hr. as high strengths as the more properly proportioned Portland-cement concretes show in seven days. Another point should be remembered in regard to these Sorel-cement concretes, that is, they cannot be frozen. Temperatures below freezing will retard the hardening to a degree, but the freezing point of the solution is so low that no care need be taken to prevent damage from low temperatures.

The conclusion with respect to the aluminates of lime, even when they contain such amounts of impurities as 10 per cent silica and 3 per cent iron oxide, is that they constitute a material which is a very valuable cementing medium when gaged with water. This particular value lies in the high early strengths which they develop. The greater the amount of the alumina present, as an aluminate of lime, the greater will be the early strength. Under certain conditions of curing there is a marked increase of strength with age, but this does not extend over a very long period of time. It also appears that if the concrete is subjected to an excess of water during curing there will be a decrease in strength. Such amounts of moisture as are usually present in the air do not materially affect the strength. It appears, therefore, that these cements might be of considerable value for certain special uses, where the principal requisite would be quick hardening.

Deep Etchings of Rails and Forgings

By F. M. Waring and K. E. Hofammann

This paper presents the results of some deep etchings with hot acid on both new and old rails and forgings. Under this process defects in the steel, having the appearance of cracks, have been developed to visibility. These defects could not be found with light etching and apparently are caused by actual cracks in the steel extending through solid crystals as well as following the crystallin boundaries.

A slab taken from a rail which had developed 12 transverse fissures when broken under the drop test was etched for two hours in a hot solution of 9 parts hydrochloric acid, 3 parts sulfuric acid and 1 part water. The action of the acid opened up both transverse and longitudinal fissures whose existence could not be detected under the light etching to which this slab had previously been subjected. This specimen was from an old rail which had been in the track for about five years, and the entire heat, consisting of 61 rails, had been removed on account of a number of failures from transverse fissures. Similar treatment of a slab from one of the rails in the same heat which did not contain any transverse fissures showed the section entirely free from any

of the cavities which were opened up in the specimen mentioned above.

This investigation by means of deep etching with hot acid has developed the existence of interior defects in rail heads, which defects appear to be more frequent in rails that have developed a number of transverse fissures than in others which had only a few or no such fissures. They have also been found to exist in new rails which have not been in the track. It appears that these concealed defects cannot be detected by the usual methods of investigation and tests, or even by the usual method of etching.

Microscopical and chemical examination of the sections containing these defects have not, so far, developed the existence of any inclusions between the faces of the cracks and there is no apparent difference in the microstructure of the steel in these locations which would account for the action of the acid. After one of these cracks has been lightly developed and the surface polished and examined under the microscope the defect has been found to extend through the crystals, as well as following the boundary lines.

Discussion

This paper brought on a lively discussion the consensus of opinion being that the cause of the cracks must be sought in the mill during some stage of the fabrication of the material. H. J. Force, chemist for the Delaware, Lackawanna & Western drew attention to the variation in rails of the same heat, some of which develop cracks or transverse fissures while others do not. He suggested that the first rails of a heat were likely to be defective, if any of the heat were, due to the fact that the steel had had less time in the ladle for reaction and purification.

Proportioning Pit Run Gravel for Concrete

By R. W. Crum

The material considered in this paper is pit-run gravel, to be used without change as it comes from the pit, the problem being to establish some relation between grading and the amount of cement such that, for mixtures of the same plastic consistency, concretes of equivalent strength could be designed. The principal conclusion is that the grading of pit-run gravel may be measured by the ratio of fine aggregate to total aggregate (that is, percentage of fine aggregate in total) and by the weight per cubic foot of the material, measured loose. For purposes of commercial convenience the dividing line between fine and coarse aggregates is taken on the common No. 4 sieve. The analysis results in the development of several diagrams for use in proportioning pit-run gravel for various classes of concrete on the basis of the weights of the aggregates in terms of percentages of sand in the aggregates.

Other Business

Among other things considered at the meeting were the topical discussion on magnetic analysis in which Dr. P. H. Dudley presented a paper on Magnetic Surveys on New and Failed Rails; a paper presenting Theoretical Studies of the Surface Method of Proportioning as Applied to Concrete by R. B. Young, which supplements the papers on the same subject presented by L. N. Edwards at the annual meetings of 1917 and 1918.

The following officers were elected for the ensuing year: President, J. A. Capp; vice-president, C. D. Young; for members of the executive committee, Ernest Ashton, H. F. Moore, C. F. W. Rys, and Admiral D. W. Taylor.

The laws to return the telegraph and telephone lines to their owners (July 31) and to abolish the daylight saving law next October, have both been sent to the President.

The Permanent Solution of the Railroad Problem.*

By Walker D. Hines

Director General of Railroads

There is a great deal of discussion amout the merits of private management as compared with interference by the government in the management, and there is a disposition to forget what sort of private management was left in this country before government control began, and to imagine that there was a form of private management free from government interference. The fact, however, is quite otherwise, and we have made great strides in this country toward a condition where the government was directing in a most effective way some of the most vital things with which railroad management had to deal.

We have got to a condition where private management was management only in a partial sense, and where already there was government management through the control which the government had for some years exercised over the railroads in determining the prices charged for the commodity which they had to sell, namely, railroad transportation. In some states, the rates were fixed absolutely by the state authorities. In other states they could only be fixed by the railroad companies with the consent of the state authorities. In practically all states the railroad companies' rates were subject to change by the state authorities. As to the interstate rates, which constitute the great bulk of the business of the railroads, all the rates were subject to the control of the Interstate Commerce Commission, and by a statute passed in 1917, no increase in rate could be made until January, 1920, without the prior consent of the commission. So that we had a situation in this country where prior management had little if anything to do with the rates to be charged. That already, was a matter of public management in a broad sense.

As to service, the states had begun a good many years ago to determine what should be done in the way of service. They prescribed the passenger trains which should be run, the sort of station accommodations which would be afforded. They had begun to make provisions about the operation of freight trains.

Part of these things were for the purpose of affording the public a satisfactory service, and part of them were for the purpose of protecting labor through giving it suitable working conditions. But in these matters affecting service, the state governments for years had taken an active part in the railroad management. So that even there the theory of private management was a theory only.

As to interstate matters the government had not gone so far as to determine service, although it had virtually determined what should be done in safety operation, which had been taken out of the hands virtually of the railroad companies. But we were just seeing the beginning of the government determinations of what should be done in the way of service. We were headed in the direction of a progressively increasing participation by the government in the settling of problems of service, so that we had not only in reference to the rates practically entirely taken it out of the hands of the railroad management, but we had seen the service in a general way taken out of the hands of the railroad management likewise.

As to wages the situation was exceedingly difficult. There were no satisfactory tribunals to deal with the matter. There had been, to be sure, an increasing appreciation of the fact that labor not only asserts but is entitled to a voice in determining these matters which are of fundamental importance

*From an address before the New England Bankers Association, at Swampscott, Mass., on June 21, 1919.

to labor. We had no machinery with which to deal with it, and yet the state governments were dealing with the matter of working conditions in all sorts of ways; the courts had been called on to deal with the matter of wages through the passage of the Adamson act on account of the failure of the machinery to settle that matter, and there again we were headed in the direction where the government must assert itself in the determining of these problems; and therefore must take over to a large extent these problems, out of the hands of private management.

When we remember those matters it will help us to remember that private management does not mean exactly what it says. At the beginning of federal control it was already seriously qualified and the qualifications were becoming more serious. They were simply an expression of the growing appreciation that the interests involved were not merely the interest of the owners of the railroads, but the interests of the public in service and the interests of labor in the pay which it received and the conditions under which work was performed.

When we remember these matters it will help us to realize that it can never be a full private management. That we must find some form of management of the railroads which would go to reflect what the public will insist on in the matter of public control, as to what it pays for the service, as to what service it gets, and will reflect what labor may rightfully insist on, that it is entitled to a voice in determining the wages it shall get and the conditions under which it shall work. So that is our problem, and when we look at it in that way we can see that it is largely a difference in form rather than in substance, between one form of government regulation and another form of government regulation, because in one way or another the government must regulate this matter to protect the interest of all the parties concerned; not merely the owners, but the general public and also of labor.

I have had occasion to give years of study to these problems from the standpoint of private management and I have had occasion to give nearly two years of study to it from the standpoint of the public, and I want to give some of my impressions about public regulation under private management; as to what would be the proper way to solve these problems for the future. We know the old form of private management and the old form of public regulation did not seem to work well together. For years there had been increasing embarrassment on the part of the railroad companies generally in raising money necessary to meet public service and needed for improvements that seemed to be a progressive matter and was getting more and more embarrassing to the railroads that were less able to induce anybody to put more money into the railroads; because the railroads were not able to issue new stock and sell it at par, that was because everybody was afraid of the stock and the railroads were having trouble borrowing the money to go into the property and were having to borrow new money for that purpose. That meant that the debt was increasing out of proportion to the total assets and that means that the margin of safety over and above what went into it was diminishing, so that the situation was that the railroads were constantly having to borrow more money in order to build new lines, new terminals and to make the needed improvements and that the margin of safety was diminishing and gradually being impaired, resulting in the railroads having to pay a higher rate of interest and that situation meant that the railroad enterprise of the country was headed toward failure. Then federal control came along and took charge of the situation.

How are we going to prevent a re-currence of that situation which existed when federal control began? I will try to give you in a few words the situation under the old form of public regulation of railroads. In the first place there was a general rule by which regulation was to be conducted on the general notion of a fair return on a fair value of the railroad property, but the fair value was not ascertained and the fair return was not definite. Every man was entitled to his own opinion on each of these and the result was that it was almost impossible for any tribunal to agree as to how the matter ought to be settled. And the old fight would start over again and all of the plausible arguments would be made. That led to the greatest uncertainty in the administration of railroad regulation.

We have in this country 181 railroads with a revenue of $1,000,000 a year each and several hundred railroads of less revenue than $1,000,000 a year each. All of these railroads, big and little, were necessary in some way to the public service, and anything that might be done in the solution of the rate or wage problems seemed to result in giving some of the railroads more than they needed, and thereby creating popular dissatisfaction and at the same time giving some railroads so much less than they needed that it was almost impossible for them to perform the public service which they were supposed to perform, and therefore, it was almost impossible to fix any rate that would reasonably meet the needs of the strong railroads and the weak railroads and failure to combine and satisfy that situation started a new agitation on both sides.

My idea is that there ought to be a definite statutory basis for the regulation, and it ought to be ascertained what the value of these properties is. There ought to be a prescribed rate return to which they are entitled, and that ought to be assured by some mandatory or statutory provision, and the rate must be so fixed as to produce that return, and beyond that, I think it ought to be provided that if an additional return shall be yielded from those rates, that a sum to be determined for that purpose is to be put back into the property for improving the property in order to keep pace with the increase in demands of business and that the money thus put into the property out of the earnings shall not be capitalized so as to further add to the value of the property. That would provide that the earnings made in excess of what was necessary to operate this property upon a standard return would be put back into the property without being capitalized. This would lead to the question of the public getting the improvements, and they would not have to pay for this exploitation without any limitation of the public having the benefit thereof.

Another thing that I would recommend would be a consolidation of the railroads of this country into a few large competitive systems, all of which shall present a fair average of railroad condition, so that regulation can be applied to them, and we will realize approximately uniform results as to all of them. I believe from 12 to 20 great railroad systems could be created in this country, each one of which would present a fair average of all the railroad conditions, and those railroad systems could be so arranged that every important city that now has competition would continue to have competition between the stronger railroads, and I believe if these things can be done, that will present a remedy.

Another feature that I want to present to you is this, as between regulation of the railroads and the management of the railroads under private ownership, that as a matter of fact, the government is in partnership with the owners of the railroad. The government furnishes the franchises, and the owners furnish the money, and those two things have to be done in partnership. My judgment is this situation ought to be met by having a government representative on the board of directors, and in this way he will come directly in contact with the interests of the private management, so that he will be familiar with the business, and the situation, and will be able to act better in connection with private management, and I think it would be well for the regulating bodies to

have some of its members on the board of directors, so that the regulating body will have in mind the business necessities of the situation, and so that the private management will come in contact with these government directors and the other members of the regulating body, and they will thereby have first hand information as to the legitimate needs of the public and the corporation. I believe these things will make public regulation of private management successful, and I believe when these things are done it will at least go far in correcting the evils, and I think if these are not done, that public regulation of private management is going to be a failure.

Railway Affairs in Congress

WASHINGTON, D. C.

HEARINGS BEFORE THE HOUSE COMMITTEE on the Cummins bill to give the Interstate Commerce Commission power to suspend the director general's rates were concluded on June 27. While Mr. Hines in his first day's testimony had discussed the bill on the assumption that Congress intended to pass it and did not oppose it, in his concluding testimony on June 26, he said he thought it would be a wrong policy to give the commission power to suspend for 10 months rates proposed by the Railroad Administration without any responsibility for substituting rates for those which it might consider unreasonable and that the time required by the commission might so delay a rate advance that the government would not get the benefit. For example, he said that if an advance should be announced in July and the commission should require two months to pass on it, the rates would not become effective until October 1; or only three months before the time set for the return of the roads.

Representative Sims asked a direct question as to whether the Railroad Administration is contemplating a further increase in rates.

"We are giving very careful consideration to that problem," replied Mr. Hines, "but have reached no conclusion."

Chairman Esch asked Mr. Hines to suggest the language of an amendment carrying out his idea that the purpose of the bill could be accomplished by a simple amendment giving the commission the right to suspend rates for a specified time less than that provided in the present law. In connection with the length of this period, Commissioner Hall of the Interstate Commerce Commission remarked that the commission had passed on the first 15 per cent case in 60 days and it was suggested that Mr. Hines and the commission confer on a proper period.

B. B. Cain and B. M. Robinson, of the American Short Line Railroad Association, suggested that the judgment clause of the bill be modified so that the director general could pay judgments out of any funds he might have, because some roads under federal control have no compensation, and that Section 1 of the control act be amended to permit the Railroad Administration to enter into contracts wih electric interurban railways. The latter was opposed by C. E. Elmquist, representing the state commissions, who declared that there was no war necessity for taking over electric lines and that the purpose was to give them the two days free per diem and the advanced rates.

Clifford Thorne, who is credited with sharing with Senator Cummins the authorship of the bill, defended it vigorously against criticism. He thought it would be a very wise policy to restore the state jurisdiction, saying that there is now pending before a district committee of the Railroad Administration a proposal to cancel the Kansas state rates. Because of the uncertainties facing business during the reconstruction period he thought there should be a delay in the return of the roads and that their guaranty should be paid out of the treasury rather than by an advance in rates which would affect shippers differently because many of them cannot pass an advance along to the consumer but must necessarily absorb it.

"The federal control law, as worded today," Mr. Thorne said, "provides that our railroads are subject to the statutory law, state and federal, and to the common law except where they may conflict with orders of the President. According to the decision of several courts, state and federal, this law has conferred upon the President legislative powers. It has made him superior to our state laws, to our federal laws, to our courts and to the United States Congress by its own act. And Mr. Hines has appeared before you requesting that the clause requiring the railroads to be subject to the law of the land except where such law conflicts with the orders of the President should be retained. I could cite to you instance after instance where this enormous power has been exercised. And the President has conferred this colossal power upon the quiet-spoken, courteous gentleman who addressed you yesterday, a gentleman who has no superior in keen, far-sighted, shrewd ability of the very highest type among all the railroad men of the United States with whom I have ever come in contact.

"No organized industry in the history of this nation ever had conferred upon it such colossal power as you have given to the organization of railroads headed by Mr. Hines, formerly of the board of directors of the Atchison, Topeka & Santa Fe, in what is known as the United States Railroad Administration. Now hasn't the war emergency ceased for the present at least, so far as the United States is concerned? And is it not time to put business back on the normal peace basis just as quickly as possible? That is what the American people want. They are begging for it.

"There is a sort of halo around the head of this man Hines. It isn't simply an ordinary crown. It is more exalted than that. Mr. Hines, sitting here in this room, a man who has spent his lifetime in railroad service and who undoubtedly expects to spend the rest of his life in the employ of railroads, has been authorized by the United States Congress and by the President to set aside acts of Congress, legislatures, and decisions of commissions and courts. I think we are pretty well agreed that it is time for crowns and halos and scepters to be put into the discard. We want that clause which says, in effect, that the laws of this country shall apply to our railroads except where such laws conflict with the orders of His Majesty, the Right Honorable Mr. Hines, formerly of the Santa Fe Railroad, stricken from the statute books.

"Not one word of this should be interpreted as a personal attack on Mr. Hines or any of his associates, to the slightest extent. It is simply a criticism of a system, which we believe is fundamentally wrong under peace conditions.

"It is of paramount importance that you immediately restore the full powers of the Interstate Commerce Commission, and of the courts, to the condition existing prior to the war. The railroads are conscious of the fact that they have only a short tenure of the supreme power you gentlemen have granted to them. During this interim of six months you may expect to see sweeping changes in rates and regulations governing transportation unless the power of review of such changes before they become effective is lodged in some disinterested tribunal."

The House committee has tentatively decided to begin hearings on general railroad legislation on July 15. Senator Cummins has not yet appointed a subcommittee to draft the railroad bill.

By a vote of 8 to 6 the Senate committee on June 26 decided to postpone action on the Poindexter long and short haul clause bill for consideration in connection with the proposed bill on general railroad legislation.

Doings of the United States Railroad Administration

New Instructions for Maintenance of Way Expenditures Issued to Regional Directors

WASHINGTON, D. C.

THE BILL APPROPRIATING AN ADDITIONAL $750,000,000 for the revolving fund of the Railroad Administration was signed by the President on June 30 in mid-ocean, having been delivered to him on board the steamship "George Washington" by a courier who had sailed from New York on another boat which met the President's ship. This means that the Railroad Administration will soon have funds to retire its certificates of indebtedness issued to railroad and equipment companies, on which they have borrowed from banks or the War Finance Corporation, and to pay the $441,000,000 balance due the railroad companies for 1918. Funds cannot be paid from the Treasury until the Treasury Department has received a certified copy of the law, but the Railroad Administration arranged to assist the railroad companies in meeting their July 1 requirements by paying out a considerable amount of cash on account of compensation from its working capital in view of the fact that its funds were soon to be available. The estimated requirements of the railroad companies for July 1 were $190,000,000. The War Finance Corporation has announced the following additional loans to railroads: Central Railroad of New Jersey, $768,800; Chicago, Burlington & Quincy, $2,216,000; Delaware & Hudson, $1,000,000; Northwestern Pacific, $540,000; Wheeling and Lake Erie, $24,480.

Railroad Administration Inquiring for Rail

The Railroad Administration is considering placing an additional order for rail. The 200,000 tons recently ordered will be delivered this month and it is expected the new order will be placed soon. Inquiries as to prices have been made of the steel companies.

Car Surplus Reduced

The net surplus of freight cars in the United States and Canada was reduced during May from 385,447 to 301,368, according to the monthly report compiled by the Car Service Section. Excluding the Canadian roads the net surplus was 284,828, as compared with 365,560 on May 1. The latest report represents the average for the month rather than the situation as of the first of the month. Of the total surplus, 145,737 were box cars, most of which are being held in the west in preparation for the grain traffic. There were also 99,974 surplus coal and gondola cars. The shortages are scattering and consist mostly of box cars. On June 1, 1918, there was a net surplus of 71,000 cars; on June 1, 1917, there was a shortage of 105,000 and on June 1, 1916, there was a surplus of about 50,000. The present net surplus represents a reduction of 36 per cent from that of March 1, the high point this year, when it was 473,000. The detail figures by regions are given in the table.

Arrangements to Put Permit System Into Effect

The organization of the necessary machinery for the permit system on grain has been perfected and the system will be put into effect as soon as it appears to be necessary to prevent the clogging of the railroads which has frequently occurred in the past with resulting loss to farmers and grain dealers. In no other way, Mr. Hines says, can the railroads be used to their maximum capacity in times of heavy business. Without such control consignors will load more grain than can be taken by consignees and thus loaded cars will accumulate to such a point as seriously to obstruct transportation, create car shortages and produce widespread inconvenience. Public announcement will be made before the system actually is put into effect.

The following plan has been adopted: Grain control committees will be appointed in each of the following primary markets: Duluth, including Superior, Minneapolis, including St. Paul, Milwaukee, Chicago, Peoria, St. Louis, including East St. Louis, Kansas City, St. Joseph, Omaha, including Council Bluffs, Detroit, Toledo, Cleveland, Cincinnati, Indianapolis, Wichita, and Fort Worth. Each committee will consist of three members, two representing the Railroad Administration and one the transportation division of the United States Grain Corporation.

In lieu of the individual permit system that obtained last year, and which will only be continued this year on a portion of the traffic, a so-called "blanket permit system" will be put into operation this year, at least at the outset, and until it may develop that this plan does not accomplish the desired purpose.

The "blanket permit system" will obtain in connection with the transportation of grain from country stations to the primary markets herein specified, while the "individual permit system" will be continued only in connection with the movement of grain between the primary markets referred to; in other words, grain that originates at one of these primary markets and is consigned for delivery at another of the primary markets. It will also be continued on grain originating at these primary markets and at country stations, when

SUMMARY OF CAR SURPLUSES AND SHORTAGES REPORTED ON JUNE 1, 1916

(FIGURES INDICATE AVERAGE FOR MAY)

Region	Surpluses									Shortages								
	Box	Flat	Coal and gond.	Refr.	Stock	Coke	Furn.	Misc.	Total	Box	Flat	Coal and gond.	Refr.	Stock	Coke	Furn.	Misc.	Total
Eastern	*5,039	588	20,106	199	175	2,163	513	413	29,096	121	154	0	19	21	0	0	0	315
Allegheny	235	28	33,569	251	47	720	0	706	35,556	89	15	0	0	0	0	0	0	104
Pocahontas	62	3	469	0	127	0	0	0	661	0	0	0	0	0	0	0	0	0
Southern	24,620	524	10,769	1,760	2,946	303	11	127	41,060	125	299	31	0	0	0	0	0	455
Northwestern	20,942	1,916	7,687	2,967	7,713	0	43	1,103	42,371	896	0	0	0	0	0	0	0	896
Central Western	48,162	1,601	18,957	3,687	8,960	369	419	83	81,538	227	0	132	17	0	0	0	0	376
Southwestern	34,627	2,230	6,667	2,865	5,151	0	270	4,892	56,702	10	0	0	0	0	0	0	0	10
Total	133,687	6,790	97,524	11,729	25,119	3,555	1,256	7,324	286,984	1,468	468	163	36	21	0	0	0	2,156
Canadian roads	12,050	775	2,450	615	850	0	0	0	16,740	0	0	0	0	0	0	0	200	200
Grand total	145,737	7,565	99,974	12,344	25,969	3,555	1,256	7,324	303,724	1,468	468	163	36	21	0	0	200	2,356

*Principally automobile box.

the grain shipped is consigned to Atlantic or Gulf sea ports.

The "individual permit system" contemplates that before a shipper of grain may load a car, he shall first have secured an individual transportation permit from the grain control committee at the market involved, which permit becomes the authority of the railroad agent at point of origin to allow the loading and forwarding of the shipment.

The "blanket permit system" contemplates that permits shall be issued by the grain control committees directly to the individual railroads and not to shippers. Each grain control committee will ascertain the number of carloads of grain its market can daily absorb, based on storage capacity, prospective out-shipments, track capacity, etc., and will then allocate this number among the different lines serving the market on a fair and equitable basis, due consideration also being given in the distribution, to connecting lines whose own rails do not reach the market directly. Under this plan, each railroad will only be permitted to *load* daily the number of carloads prescribed by the committee, and each railroad will be expected to distribute its loading as between its shippers in as fair a manner as possible.

This plan, according to the announcement by the Railroad Administration, will obviate the necessity for individual permits to shippers for the transportation of grain from country stations to these interior primary or terminal markets, and should tend to eliminate to a very large degree any grounds for complaints from shippers of delays that were received to some extent last season, when the individual permit plan was in effect. Under the blanket permit system, the producer will apply to the local agent on his railroad in the same manner as he would do were the permit system not in effect.

The circumstances surrounding transportation between primary markets and also to seaports, are so different from the circumstances attending the "gathering service" from country stations to primary markets that to extend the "blanket system" to include this transportation, it is stated, would not effect the proper results. This tonnage is usually offered in large lots by comparatively few shippers, and in the case of seaboard traffic, is subject to individual steamship contracts, which contracts are confirmed by proper railroad authorities before the permits are issued.

At a conference in New York on June 10, at which all grain interests were represented, the producer, the country elevator operator, the miller, the dealer, the terminal elevator operator and the exporter—it was unanimously agreed that some control of transportation of grain would be necessary this coming season if the maximum efficiency of transportation facilities were to be attained and the interests of the shipping public conserved, and the plan as above outlined, seemed to meet with the approval of at least the majority of the representation present.

Proposed Capital Expenditures for 1919

The following estimate of the capital expenditures proposed to be made on Class I railroads for 1919, amounting to $825,715,471, of which $245,585,643 is for standard equipment ordered by the Railroad Administration and $580,129,828 for additions and betterments, was filed with the House appropriation committee by Swagar Sherley, director of the Division of Finance. The estimate of the requirements of the Railroad Administration submitted by Mr. Hines provided for $253,000,000 of the amount, or only $8,000,000 more than the cost of the equipment, to be carried by the Railroad Administration and it was expected that whatever of the balance was actually carried out would be financed by the corporations.

ESTIMATE OF CAPITAL EXPENDITURES TO BE MADE DURING 1919, CLASS I RAILROADS

Roads	Contract rental (standard return if contract not signed)	Other corporate income	Total corporate income	Interest, rentals, taxes, corporate expenses, and sinking and reserve funds	Dividends declared (authorized) 1918	Surplus after fixed charges and dividends[1]	Estimate of capital expenditures for calendar year 1919: Road and equipment excluding United States Railroad Administration equipment	Estimate of capital expenditures for calendar year 1919: United States Railroad Administration equipment	Estimate of capital expenditures for calendar year 1919: Total
Alabama & Vicksburg	$322,854	$73,150	$396,004	$170,364	$147,000	$78,640	$299,320	.....	$299,320
Alabama Great Southern	1,703,180	163,928	1,867,108	668,605	784,725	413,778	1,503,188	.....	1,503,188
Ann Arbor	526,883	6,900	533,783	413,082	.....	120,701	80,594	$915,000	995,594
Atchison, Topeka & Santa Fe (including W. C. & S. F. and P. H. & S. F.)	42 885,311	6,961,000	49,846,311	15,662,000	19,498,280	14,686,031	26,596,664	7,659,300	34,255,964
Atlanta & West Point	352,995	66,214	319,209	41,803	147,816	129,590	407,375	44,087	451,462
Atlanta, Birmingham & Atl'c	358,058	43,000	401,058	401,058	.....	.....	1,272,739	1,014,550	2,287,289
Atlantic & St. Lawrence	(2)	.....	.....	575,109	.....	d 575,109	278,276	804,000	1,082,276
Atlantic City	222,066	9,000	231,066	301,972	.....	d 70,906	289,093	.....	289,093
Atlantic Coast Line	10,185,942	4,176,999	14,362,941	7,076,131	4,808,993	2,477,817	2,903,656	343,454	3,247,110
B. & O. Sys. (includ. St. ls.)	30,031,009	3,037,437	33,068,446	23,602,285	8,422,247	1,043,914	12,909,721	20,155,387	33,065,108
Bangor & Aroostook	1 575,172	20,000	1,595,172	1,110,165	359,400	125,607	258,903	.....	258,903
Bessemer & Lake Erie	4,6 4,714	30,250	4,704,964	2,390,423	750,000	1,564,541	1,843,259	337,880	2,181,139
Boston & Maine	9,478,075	700,000	10,178,075	9,533,380	.....	644,695	6,438,470	10,322,000	16,760,470
Buffalo & Susquehanna	592,628	198,935	791,563	340,224	370,000	81,339	51,063	.....	51,063
Buffalo, Rochester & Pitts.	3 276,410	300,000	3,576,410	2,614,220	780,000	182,190	1,060,984	264	1,061,248
Carolina, Clinchfield & Ohio	1,631,172	10,000	1,641,172	1,495,350	.....	145,822	1,806,493	1,056,081	2,862,574
Central of Georgia	3,444,159	720,238	4,164,397	2,680,321	1,150,000	334,076	2,677,665	.....	2,677,665
Central New England	1,468,124	62,000	1,530,124	905,100	.....	625,024	688,504	.....	688,504
Central R. R. of New Jersey	9 352,301	2,000,000	11,352,301	6,776,550	3,292,416	1,283,335	5,187,641	5,404,709	10,592,350
Central Vermont	779,098	13,039	792,137	859,008	.....	d 66,871	201,991	.....	201,991
Charleston & West. Carolina	466,921	103,841	570,762	342,953	72,000	155,809	143,668	875,700	1,019,368
Chesapeake & Ohio (including C. & O. of Ind.)	13,226,983	882,000	14,108,983	9,897,492	2,511,264	1,700,227	10,708,953	9,578,261	20,287,214
Chicago & Alton	3 178,315	129,343	3,307,658	3,943,376	.....	d 635,718	2,978,216	1,348,937	4,327,153
Chicago & Eastern Illinois	2,946 001	200,000	3,146,001	4,610,775	.....	d 1,464,774	1,890,586	3,146,156	5,036,742
Chicago & North Western	23 364,029	2,263,000	25,627,029	11,950,725	11,952,275	1,724,029	10,268,222	2,744,945	13,013,167
Chicago, Burlington & Quin. (including Q. O. & K. C.)	33 390,080	577,200	33,967,280	10,821,350	8,867,128	14,278,802	11,347,040	4,615,668	15,962,708
Chicago Great Western	2,953,450	100,000	3,053,450	1,746,920	878,532	427,998	895,185	232,437	1,127,622
Chicago, Indianapolis & Lou.	1 620,259	116,400	1,736,659	1,214,967	199,652	322,040	656,453	1,143,700	1,800,153
Chicago, Milwaukee & St. P.	27,946 771	2,000,000	29,946,771	24,128,000	.....	5,818,771	33,363,069	23,506	33,386,575
Chicago, Peoria & St. Louis	177,540	4,000	131,540	213,425	.....	d 81,885	21,379	.....	21,379
Chicago, Rock Island & Pac. (including C. R. I. & G.)	15,883,891	575,000	16,458,891	11,487,200	3,566,027	1,405,664	16,457,864	7,048,000	23,505,864
Chic., St. P., Minn. & Oma.	4 934,790	65,000	4,999,790	2,693,475	1,715,986	590,329	1,118.233	1,998,900	3,117,133
Chic., Terre Ha. & Southeast.	922,785	6.000	928,785	799,733	.....	129,052	161,781	.....	161,781
Cin., Indianapolis & Western	422,213	1,500	423,713	351,363	.....	72,350	186,408	.....	186,408
Cin., N. Orleans & Tex. Pac.	3.541,040	64,000	3,605,040	1,767,847	511,370	1,325,823	5,213,536	.....	5,213,536
Cincinnati Northern	317.628	9,200	326,828	111,505	90.000	125,323	251,008	.....	251.008
Cleve., Cin., Chic. & St. Lou.	9,945,738	836,000	10,781,738	6.700,600	499,925	3,581,213	7.762,188	3,360,424	11,122,612
Colorado & Southern (includ. Wichita Valley)	2,833 579	1,547,850	4,381,429	2,731,950	680.000	969,479	1,423,512	1,182.600	2,606,112
Delaware & Hudson	7,209,600	3,197,121	10,606,721	6,084,000	3.825,370	697,451	1,823,667	4,342,000	6,165.667
Delaware, Lackaw'a & West.	15,749,477	5,932,314	27,681,791	7,408,959	844,080	5,828,752	2,133,549	4,907,400	7,040.949

Estimate of Capital Expenditures to Be Made During 1919, Class I Railroads

Roads	Contract rental (standard return if contract not signed)	Other corporate income	Total corporate income	Interest, rentals, taxes, corporate expenses, and sinking and reserve funds	Dividends declared (authorized) 1918	Surplus after fixed charges and dividends[1]	Estimate of capital expenditures for calendar year 1919: Road and equipment excluding United States Railroad Administration equipment	Estimate of capital expenditures for calendar year 1919: United States Railroad Administration equipment	Estimate of capital expenditures for calendar year 1919: Total
Denver & Rio Grande	8,319,377	1,000,000	9,319,377	9,124,000	.....	195,377	2,431,842	.....	2,431,842
Denver & Salt Lake	[2]353,290	11,207	364,497	430,869	.....	d 66,372	8,480	.....	8,480
Detroit & Mackinac	310,664	1,000	311,664	130,534	97,500	83,630	840	.....	840
Detroit & Toledo Shore Line	[2]456,512	16,543	473,055	173,393	114,240	185,422	108,437	.....	108,437
Detroit, Toledo & Ironton	225,895	15,000	240,895	564,904	.....	d 324,009	1,173,480	809,100	1,982,580
Duluth & Iron Range	2,355,242	300,000	2,655,242	1,084,550	1,300,000	270,692	450,006	.....	450,006
Duluth, Missabe & Northern	5,122,051	135,000	5,257,051	1,975,500	911,250	2,870,301	1,098,883	623,000	1,721,883
Duluth, South Shore & Atlan.	594,637	30,000	624,637	455,577	.....	169,060	160,042	583,800	743,842
Elgin, Joliet & Eastern	2,862,177	35,000	2,897,177	2,461,000	400,000	36,177	677,339	1,929,100	2,606,439
El Paso & Southwestern	4,145,102	321,450	4,466,552	1,218,200	2,000,000	1,248,352	812,751	731,001	1,543,752
Erie (includ. Chicago & Erie)	15,729,068	4,225,700	19,954,768	15,104,900	.....	4,849,868	7,023,160	12,008,450	19,031,610
Florida East Coast	2,842,842	15,000	2,857,842	2,036,066	.....	821,776	449,495	1,525,000	1,974,599
Ga. R. R., lessee organization	[2]858,622	21,921	880,543	740,580	.....	139,963	1,132,849	1,009,800	2,142,649
Georgia Southern & Florida	511,457	9,900	521,357	360,099	68,400	72,858	121,052	.....	121,052
Grand Rapids & Indiana	929,385	27,500	956,885	502,900	.....	153,985	1,250,991	.....	1,250,991
Grank Trunk Western (including C. D & C., G. G. T. J. & D. G. H. & M.)	[2]1,012,994	386,657	1,399,651	2,399,282	.....	d 999,631	1,932,629	716,656	2,649,285
Great Northern	28,771,361	5,373,634	34,144,995	14,218,350	17,462,865	2,463,780	9,089,494	4,378,500	13,467,994
Gulf & Ship Island	[2]597,456	12,924	610,380	644,834	.....	d 34,454	158,805	.....	158,805
Gulf Coast Lines	1,101,216	100,000	1,201,216	1,120,851	.....	80,365	124,900	.....	124,900
Gulf, Mobile & Northern	586,810	5,000	591,810	131,950	.....	459,860	1,441,281	.....	1,441,281
Hocking Valley	2,637,167	91,560	2,728,727	1,688,950	439,980	599,797	3,395,611	1,348,500	4,744,111
Ill. Cent. (includ. Y. & M. V.)	20,144,691	7,758,200	27,902,891	16,847,100	7,650,720	3,405,071	13,965,566	5,514,000	19,479,566
International Great Northern	1,394,946	2,150	1,397,096	1,158,450	.....	238,646	1,440,107	.....	1,440,107
Kan. City, Mex. & O. (includ. K. C. M. & O. of Tex.)	150,000	5,360	155,360	494,662	.....	d 339,302	15,245	.....	15,245
Kan. City Southern (includ. Texarkana & Fort Scott)	3,216,698	50,993	3,267,691	2,230,092	840,000	197,599	1,783,821	152,700	1,936,521
Lake Erie & Western	1,548,542	65,000	1,613,542	955,050	.....	658,492	1,613,074	132,656	1,745,730
Lehigh & Hudson River	519,371	10,161	529,532	227,612	206,340	95,580	59,254	175	59,249
Lehigh & New England	1,135,761	10,000	1,145,761	491,031	504,000	150,730	200,409	.....	200,409
Lehigh Valley	11,321,233	2,032,000	13,353,233	8,273,592	6,066,800	d 981,159	5,884,928	6,597,500	12,482,428
Long Island	3,221,949	611,548	3,833,497	3,200,654	.....	632,843	881,376	1,560,500	2,441,876
Los Angeles & Salt Lake	3,420,417	63,713	3,484,130	2,951,186	.....	532,944	1,620,060	.....	1,620,060
Louisiana & Arkansas	407,987	6,000	413,987	388,394	.....	25,593	39,787	.....	39,787
Louisville & Nashville	17,310,495	2,512,800	19,823,295	10,729,660	5,040,000	4,053,635	11,211,510	5,403	11,216,913
Louis., Henderson & St. L.	343,916	12,806	356,716	241,500	.....	115,216	182,568	.....	182,568
Maine Central	2,955,697	340,000	3,295,697	2,337,900	870,888	86,909	2,246,134	1,525,000	3,771,134
Michigan Central	8,105,727	1,100,000	9,205,727	6,967,022	749,456	1,489,249	7,621,953	5,111,692	12,733,645
Midland Valley	444,346	60,000	504,346	669,200	.....	d 164,854	298,380	.....	298,380
Mineral Range	147,432	1,000	148,432	136,880	.....	11,552	30,587	.....	30,587
Minneapolis & St. Louis	2,639,857	200,000	2,839,857	2,464,042	.....	375,815	2,231,392	875,000	3,106,392
Minneap., St. P. & S. Ste. M.	10,547,429	825,000	11,372,429	7,931,140	3,697,338	343,951	1,588,287	.....	1,588,287
Minnesota & International	202,455	28,640	231,095	120,850	25,000	85,245	23,065	.....	23,065
Missouri North Arkansas	175,000	4,500	179,500	146,340	.....	33,160	74,023	.....	74,023
Missouri, Kansas & Texas	5,853,831	620,000	6,473,831	5,276,500	.....	1,197,331	6,614,426	.....	6,614,426
Mo., Kan. & Tex. R.R. of Tex.	621,773	21,000	642,773	2,682,940	.....	[2]2,040,167	603,065	.....	603,065
Missouri Pacific	14,206,814	640,000	14,846,814	11,760,326	.....	3,086,488	6,679,518	7,075,500	13,755,018
Mobile & Ohio	2,397,478	50,000	2,647,478	1,664,000	240,672	742,806	504,589	360,000	864,589
Monongahela	583,086	400	583,486	416,000	.....	167,486	353,900	.....	353,900
Nashv., Chattanooga & St. L.	3,182,089	151,300	3,333,389	1,615,613	1,120,000	597,776	2,145,448	539,837	2,685,285
New Orleans & Northeastern	1,204,992	38,000	1,242,992	523,964	360,000	359,028	1,986,417	.....	1,986,417
N. Y. C. (includ. Bos. & Al.)	58,122,085	14,509,180	72,631,265	47,760,391	12,929,610	11,941,264	38,280,410	12,878,522	51,158,932
N. Y., Chicago & St. Louis	2,718,857	450,000	2,668,857	2,217,594	.....	451,263	1,736,133	1,459,937	3,196,070
N. Y., New Haven & Hart.	17,095,884	5,679,000	22,774,884	22,012,000	.....	762,884	16,563,063	2,612,581	19,175,644
New York, Ontario & West.	2,103,589	310,945	2,414,534	1,538,639	581,281	294,614	250,327	.....	250,327
New Orleans Great Northern	575,952	11,000	586,952	455,700	.....	131,252	47,619	.....	47,619
N. Y., Susquehanna & West.	980,135	50,000	1,030,135	868,887	.....	161,248	325,443	.....	325,443
Norfolk & Western	20,740,879	1,177,000	21,917,879	6,947,000	9,357,103	5,613,776	18,145,350	2,440,000	20,585,350
Norfolk Southern	1,166,091	48,000	1,214,091	1,270,434	.....	d 55,443	531,770	610,000	1,141,770
Northern Pacific	30,130,069	8,627,000	38,757,069	17,200,300	17,360,000	4,196,769	7,986,943	.....	7,986,943
Northwestern Pacific	1,235,101	7,200	1,242,301	1,431,164	.....	d 188,863	449,145	291,900	741,045
Pennsyl. Railroad Lines west	14,997,785	1,200,000	16,192,785	14,134,400	.....	2,058,385	22,803,262	1,358,570	24,161,832
Pitts., Cin., Chic. & St. L.	11,334,094	196,500	11,530,594	8,297,700	3,386,646	d 147,372	22,344,836	990,000	3,334,836
Pennsyl. Railroad Lines east.	53,274,973	24,006,044	77,231,017	37,188,170	30,677,380	9,365,467	34,762,170	13,321,000	48,083,170
Pere Marquette Railroad	3,748,196	105,000	3,853,196	2,024,510	566,000	1,268,686	4,955,221	.....	4,955,221
Philadelphia & Reading	15,868,331	595,000	16,463,331	6,796,500	6,372,255	3,294,576	10,313,174	11,888,000	22,201,174
Pittsburgh & Lake Erie	8,980,219	710,000	9,690,219	3,412,500	3,598,560	2,679,159	4,010,670	3,702,701	7,713,371
Pittsburg & Shawmut	606,048	167,636	773,684	1,007,755	.....	[2]34,071	30,277	.....	30,277
Pittsburgh & West Virginia	937,010	1,102,000	1,339,010	52,635	946,000	740,375	261,919	72,131	334,050
Port Reading	235,698	35,000	270,698	84,000	120,000	66,698	435,250	.....	435,250
Richm'd, Fred'ksb'g & Poto.	1,137,374	136,070	1,273,444	495,935	452,731	324,778	789,915	1,525,000	2,314,915
Rutland Railroad	1,003,883	82,500	1,106,383	553,202	179,108	374,073	590,657	44,350	635,007
St. Joseph & Grand Island	273,811	11,732	385,543	244,768	.....	140,775	515,980	.....	515,980
St. Louis-San Francisco	13,364,479	258,000	13,622,479	14,118,100	.....	d 495,921	4,254,413	7,075,500	11,329,913
St. Louis Southwestern	4,613,337	175,000	4,188,337	3,207,292	.....	981,045	3,773,323	.....	3,773,323
San Antonio & Aransas Pass	373,052	.....	373,052	1,193,674	.....	d 820,622	146,427	.....	146,427
Seaboard Air Line	6,497,025	150,580	6,647,555	6,888,800	.....	d 241,245	2,742,775	2,819,927	5,562,712
Southern Pacific	48,167,343	12,697,954	60,865,297	30,814,510	16,404,509	13,646,278	20,601,193	6,100,000	26,701,193
Southern Railw'y in Miss'ppi	6,900	3,850	10,740	12,785	.....	d 2,045	5,906	.....	5,906
Southern Railway	18,653,903	2,007,798	20,661,691	15,251,508	3,000,000	2,410,183	24,327,723	9,538,924	33,866,647
Spokane, Portland & Seattle	2,096,952	189,700	2,286,652	4,127,734	.....	d 1,841,082	538,709	875,700	1,414,409
Tennessee Central	146,734	13,500	160,234	696,341	.....	d 536,107	348,156	.....	348,156
Texas & Pacific	4,167,432	285,000	4,392,432	2,351,680	.....	20,040,75	6,565,838	1,374,381	7,940,219
Toledo, Peoria & Western	150,740	11,295	171,035	252,810	.....	d 81,785	5,417	.....	5,417
Toledo, St. Louis & Western	3091,294	83,819	1,078,113	1,145,595	.....	d 67,482	325,685	3,572,250	3,897,935
Ulster & Delaware	198,000	[2]0,000	198,009	149,425	57,000	d 8,416	9,017	.....	9,017
Union Pacific	38,552,929	12,053,421	50,606,350	18,234,928	26,210,900	6,160,522	34,883,360	1,612,875	36,496,235
Vicks., Shreveport & Pacific	337,948	73,000	410,948	210,478	107,140	93,330	200,713	.....	200,713
Virginian Ry.	3,347,603	120,000	3,467,603	2,069,500	.....	1,398,103	3,881,789	1,884,000	5,725,789
Wabash Ry.	5,826,910	725,155	6,551,965	4,822,297	462,000	1,267,668	2,307,094	7,076,375	9,383,469
Washington Southern	368,433	25,472	493,905	234,120	80,000	179,785	62,574	.....	62,574
Western Maryland	3,650,593	175,000	3,754,593	2,038,245	.....	716,348	2,778,558	915,000	3,693,558
Western Pacific	1,000,350	507,132	2,407,482	1,278,953	.....	1,128,529	2,751,937	53,775	2,805,702
Western Ry. of Alabama	298,228	15,827	334,115	125,056	180,000	[2]26,656	427,397	.....	427,397
West Jersey & Seashore	952,682	170,336	1,123,018	565,648	585,553	d 28,183	778,450	.....	778,450
Wheeling & Lake Erie	1,586,037	155,200	1,741,237	1,412,700	.....	328,537	391,350	3,605,839	3,997,189
Wichita Falls & Northwest'n	145,245	42,402	187,647	363,991	.....	d 176,344	10,439	.....	10,439
Equip't ordered, not assigned	.....	.....	.....	.....	.....	.....	.....	31,641,179	31,641,179
Credit for scrap	.....	.....	.....	.....	.....	.....	.....	d 35,433,000	d 35,433,000
Total	[2]805,603,076	$156,633,158	$1,051,035,234	$625,370,308	$267,344,763	[2]$169,102,479	$580,129,828	$245,585,643	$825,715,471

[1]The total of this column represents the amount actually applicable to additions and betterments. [2]Estimate based on 1917 figures. d—Decrease.

Passenger Traffic in March

The number of passengers carried one mile in March was 3,446,000,000, an increase of 2 per cent as compared with March, 1918, according to the monthly report compiled by the the Operating Statistics Section. For the three months ended March 31 the increase was 7 per cent. In March there were decreases in the Ohio-Indiana district and the Southern and Southwestern regions. The figures follow:

Railroad	Average miles operated	Month of March 1919	Month of March 1918	Per cent increase or decrease	Three months ended March 31 1919	Three months ended March 31 1918	Per cent increase or decrease
Total, New England District	8,116	283,818,779	272,674,457	4.1	823,508,554	761,709,654	8.1
Total, Central District	22,336	464,304,768	444,895,140	4.4	1,395,991,786	1,244,777,969	12.1
Total, Ohio-Indiana District	6,890	68,020,636	76,049,697	d 10.6	203,000,674	199,184,404	1.9
Total, Eastern Region	37,342	816,144,183	793,619,294	2.8	2,422,501,014	2,205,672,027	9.8
Total, Allegheny Region	19,771	713,268,050	687,971,944	3.7	2,050,402,140	1,839,827,887	11.4
Total, Pocahontas Region	5,094	79,335,316	65,174,998	21.7	230,006,898	182,802,332	25.8
Total, Southern Region	37,780	517,370,391	519,735,183	d 0.5	1,504,839,027	1,459,435,572	3.1
Total, Northwestern Region	46,345	394,388,584	382,967,773	3.0	1,131,474,400	1,052,089,336	7.5
Total, Central Western Region	51,589	630,396,027	635,276,732	d 0.8	1,836,729,416	1,787,483,500	2.7
Total, Southwestern Region	31,635	296,019,446	293,484,721	0.9	874,268,765	865,254,309	1.0
Grand total, all regions	229,556	3,446,871,997	3,378,230,645	2.0	10,049 521,660	9,392,564,963	7.0

d—Decrease.

Through Export Bills of Lading

An understanding has been reached between the Railroad Administration and practically all the steamship companies operating on the Pacific coast under which those companies will assume any demurrage or storage charges for which they may be responsible in connection with through export bills of lading issued by the railroads under federal control through those ports, that understanding to be effective as soon as tariffs can be published. A similar understanding has been reached with Osaka Shosen Kaisha, which has recently inaugurated service between the port of New Orleans and the Far East. Negotiations to bring about a similar understanding with steamship companies operating from Gulf and South Atlantic ports are being conducted.

In January, 1918, on account of the crucial situation existing as to ocean tonnage, due to the war, through export bills of lading via North Atlantic ports were discontinued, but with the signing of the armistice and the consequent gradual release of shipping, with increased opportunity for export trade, the exporters of the United States have been anxious that through bills of lading through these ports should be reinstated. The through export bill of lading is of no direct value to the railroads; on the contrary, it is a source of expense and increased responsibility, but recognizing the great importance of this document to exporters, the Railroad Administration has been endeavoring for several months to arrange with the North Atlantic steamship lines for reestablishment of the export bill of lading under conditions that will be satisfactory to all interests.

Prior to January, 1917, at the time export bills of lading were being issued, the free time allowed at those ports was 10 days, the tariff providing that unless the cargo was lifted within that period, any demurrage or storage charges which might accrue would be guaranteed by the shipper. These regulations were approved by the Interstate Commerce Commission.

Efforts have been made by the Railroad Administration to bring about the same understanding as to North Atlantic ports as has been reached with regard to Pacific ports, namely, that the steamship companies assume any storage or demurrage charges that might accrue due to their failure to lift the cargo on the contract date, or within the contract period or free time period. To facilitate this understanding, the Railroad Administration offered to extend temporarily or until shipping had resumed normal conditions, the free time period to 15 days. Up to the present time it has been impossible to persuade the steamship companies serving North Atlantic ports to assume this storage or demurrage, as has been done with regard to Pacific ports. In order to go as far as possible in meeting the desires of the exporters, and pending further discussions with the steamship companies, the Railroad Administration has made arrangements to issue instructions to restore through export bills of lading via North Atlantic ports on the basis that prevailed prior to January, 1918, namely, that through bills of lading will be issued to shippers who will agree to assume any demurrage or storage charges which may accrue in accordance with published tariffs.

At the present time all export traffic through North Atlantic ports is handled on permits covering inland transportation, for which permit applications are made by the steamship companies in most instances, such applications indicating the contracted sailing date.

If the cargoes are not lifted by the steamship companies in accordance with their contracts or promises, there will be an effort to handle permits so that congestion of traffic will not result and so that the expense incident to storage or demurrage charges which may accrue due to failures on the part of steamship companies, will be reduced to a minimum.

Organized Draftsmen Ask Increased Pay

At a hearing before the Board of Railroad Wages and Working Conditions of the Railroad Administration recently at Washington, D. C., representatives of the International Federation of Draftsmen's Unions affiliated with the American Federation of Labor and claiming to represent about 2300 engineers and draftsmen employed on railroads, presented a minimum scale of pay which they asked the board to recommend to Director General Hines. The proposed scale is as follows:

	Minimum Salary per Month
Chief Draftsman	$300
Leading Draftsman or Squad Man	250
Draftsman, Class A	210
Draftsman, Class B	175
Draftsman, Class C	135
Tracer, Class A	125
Tracer, Class B	75
Assistant Engineer or Engineer Inspector	250
Assistant Inspector, Class A	200
Assistant Inspector, Class B	150
Instrument Man	210
Rodman, Class A	175
Rodman, Class B	150
Tape Man, Class A	125
Tape Man, Class B	*100

*Salary to increase $5 every six months as long as he continues to improve.

They also asked for the establishment of a 7½ hour day for five days a week and four hours on Saturday, making 41½ hours per week with no overtime except where absolutely necessary, or at the option of the employee, and time and one half for overtime ordered or made necessary; all traveling and other expenses incurred for railroad business and also expenses attached to moving headquaters; civil service rules to apply regarding vacation, holiday and sick leave; no salary now in existence to be reduced. The federation also presented a proposed classification defining the

qualifications for the various positions named in the wage scale.

It was also requested that the director general issue a general order that if any reduction in operating expenses in the engineering department must be made pro rata furloughs without pay be granted in place of discharging forces or reducing the rates of pay and that workers discharged or demoted be reinstated whenever they so desire. A request was also made that machinery be perfected and set in motion for the formation of permanent regulatory committees on each railroad composed of the various heads and sub-heads of the engineering departments to prepare budgets of the work and of the forces in each department necessary for carrying on the work during the fiscal year. It was suggested that representatives of these committees confer with similar representatives of other railroads or with a national committee to be formed to adjust the engineering forces to the work to be done on each railroad so that transfers could be made from roads which had a surplus of men to those which were in need of men.

New Locomotives May Be Shipped Dead

The Railroad Administration has revised the instructions issued early last year that new locomotives being delivered by the builders be sent under steam and hauling tonnage and the regional directors have been given discretion to decide whether new locomotives shall be sent dead in trains or under steam with a load, upon notifying the mechanical department. The question will depend on whether it will be practically useful to use the new locomotives for hauling tonnage that is going in the direction of the locomotives. The use of such locomotives when moving under steam will be accepted as full payment for transportation charges.

Number of Women Employees Reduced

The total number of women employed under the United States Railroad Administration reached the highwater mark on October 1, 1918. At that time there were on the rolls 101,785 female employees. The number of women employed on April 1, 1919, shows a decrease of 14.3 per cent as compared with January 1, 1919.

Statistics compiled by the Women's Service Section, giving the number of women employed and the character of their employment since the roads came under federal control have been made public by the director general.

On January 1 of the present year there were on the rolls of the railroads 99,694 women employees, while on April 1 the number had dropped to 85,393. This was due chiefly to the reduction of labor force which occurred in February and March. It was also partly due to the return of men from military service who were reinstated by the railroads. On the Eastern lines the drop was 17.7 per cent, while in the South it was 6.5 per cent, and in the West 11.4 per cent.

The clerical or semi-clerical occupations, including all the officeworkers, ticket sellers and telephone switchboard operators constituted the largest percentage of the total for the year 1918, being 72 per cent. The statistics show that more than 5,000 women were employed in railroad shops and more than 1,000 in round-house work. The latter included, among others, turntable operators and engine wipers. On October 1, 1918, there were 6 women employed as blacksmiths, helpers and apprentices, while a large number of others worked as boilermakers, coppersmiths, electricians and machinists. There were 377 women employed as station agents, assistants and agent operators on the same date, while 50 were at work as switch tenders. There were 931 pushing trucks and handling freight. Watchwomen to the number of 518 were employed on the railroads, doing duty both day and night.

The report shows that, considered from the point of view of occupation, the greatest reduction of women employees has taken place in round-houses and shops. Their work in these places was in many cases found unsatisfactory, there being too much heavy physical labor involved.

In the clerical occupations best fitted for women, the total number employed at the present time is 68,129. There has been a reduction in this group of 11.2 per cent.

W. T. Tyler, director of the Division of Operation, has addressed the following to the regional directors:

"In a recent case suits were filed against a chief despatcher and two trick despatchers of a certain railroad under federal control for violation of the hours of service law.

"The administration has done everything possible to get the Interstate Commerce Commission to agree to let it investigate complaints of the kind in question, handle them to a conclusion (including disciplinary action), and report the facts and the action taken to prevent similar occurrences to the commission, but without success. The following is the position taken by the commission, as set forth in letter signed by Hon. Clyde B. Aitchison, chairman, under date of June 13:

"'In this connection, however, the commission desires it understood that these suits were instituted solely for the purpose of securing proper observance of the hours of service law and incidentally Order Number 8 of the director general, not only by railroad companies, but also by officers and agents in charge of employees thereof. We are of the opinion that the best way to bring about this result is to allow the law to take its course.

"'In regard to request to permit the Railroad Administration to investigate and to take care of any future violations of the 16-hours of service law that might occur the commission is of the opinion that it cannot delegate this power but must carry out to the letter, the requirements of the law. The commission has no right to waive or evade the administering of this law. Therefore, if cases arise under it in the future, it will handle them in accordance with the facts and circumstances surrounding each case.'

"Please give this information the widest possible circulation among the employees of railroads under federal control in order that they may be forewarned as to the intention of the commission to prosecute the individual officers and employees responsible for violations of the hours of service law."

May Returns Show Addition to Deficit

The railroads in May earned only about half of the standard return guaranteed by the government, according to preliminary returns which have been received by the Interstate Commerce Commission. For 195 roads the net operating income was $38,530,000, a decrease of 46.4 per cent as compared with May, 1918. For the test period the average net operating income for May was $77,000,000, which also represents approximately one-twelfth of the standard return. The operating revenues were $407,943,000, an increase of 9.3 per cent as compared with May, 1918; operating expenses were $350,861,000, an increase of 24.1 per cent, and taxes were $15,612,000, an increase of 1 per cent.

Uniform Rules and Working Conditions

It is understood that the work on the proposed uniform rules and working conditions for maintenance of way employees is well advanced and that they will soon be announced by the director general for application on all roads under federal control, superseding all previous agreements on this subject. Proposed rules and working conditions were recommended to the Board of Wages and Working Conditions by

committees consisting of one representative of each regional director and an equal number of representatives of the employees and the director general's announcement will be based on the recommendations of the board.

Maintenance Instruction for Last Six Months of 1919

New instructions outlining a working basis for maintenance of way expenditures for the last six months of 1919 have been issued to the regional directors by W. T. Tyler, director of the Division of Operation. They supersede to some extent previous instructions, and particularly the order to limit maintenance of way expenditures for June to the average test period ratio of such expenses to operating revenues, which was merely a temporary order intended to hold the situation check until more explicit directions could be issued.

While the new instructions are tentative and temporary, in order to control maintenance of way expenditures month by month during the remainder of 1919 to the end that the contract obligations of the Railroad Administration to the railroad companies may be fully complied with but not exceeded, they provide a definite basis on which maintenance officers may proceed as well as prescribing the character of the information which is to be used as the final standard. In the normal case the program to be followed will be determined tentatively, as it has been in the past, by considering the amount of work necessary to make the average for 1918 and 1919 match up with the average for the test period, but in order to determine whether this is a fair basis the 10 years before federal control are to be considered. Mr. Tyler's letter to the regional directors emphasizes that, whereas there has been a general tendency to accept the test period standard as the yardstick by which to determine the contract obligations, this may not be the proper absolute standard in many instances, and the entire obligation of the government is to make such expenditures upon the properties, equated as to the prices and wages obtaining during the period of federal control, as will result in returning them to the companies at the end of federal control in substantially as good condition and in substantially as complete equipment as when they were taken over. The government has the option to treat the quantities of labor and material used during the test period, modified by the volume of business done, as the maximum of its obligations.

The officers of the Railroad Administration have devoted a great deal of time to the preparation of these instructions, which are based on recommendations made at a conference of the engineering assistants to the regional directors with A. M. Burt and W. J. Cunningham, assistant directors of the Division of Operation, on June 20 and 21.

Instructions are to be issued to the federal managers and through them to the local supervising officers providing for an analysis of the expenditures during the test period to determine tentatively whether they fairly represent the contract obligations and can be taken as a basis for the expenditures during federal control. In making such analysis the expenditures and quantities of the most important materials during the test period, during the seven years prior to the test period, and during the six months between the end of the test period on June 30, 1917, and the beginning of federal control, are to be taken into consideration. It is stated that the maintenance of way expenditures can best be controlled by regulating the number of man hours and also the amounts of the principal classes of materials, such as rails, ties and ballast. The performance of 1918 and 1919 combined should not exceed the contract obligations as tentatively determined by the use of equation factors representing the differences in wages and prices between the test period and the period of federal control. The engineering assistants of the regional directors have already made substantial progress in working out such equation factors for the different roads in their territory. After considering the contract obligations in connection with the expenditures and quantities prior to federal control, each federal manager is directed to furnish a recommendation to his regional director, showing the tentative allowances for 1918 and 1919 as equated, the expenditures made during the period of federal control up to June 30 and the balance remaining for the last half of this year, and to regulate the labor and materials to insure that the expenditures for the remaining period will not exceed the available balance. In special cases where conditions require the performance of a greater amount of work recommendations of the federal managers, if approved by the regional director, are to be submitted to the director of operation.

If the program for 1919 does not, according to this tentative basis, exceed the contract obligations, the regional directors may authorize the federal managers to proceed with the minimum expenditures necessary to insure the return of the property in substantially as good condition and equipment as on January 1, 1918. Distribution of the work by months is to be made by the regional directors, taking into consideration the conditions that may make necessary heavier expenditures for any month than the average.

As soon as figures are available, the regional directors are to submit statements to the director of operation for the roads on which the test period expenditures are considered to have been normal, showing the expenditures and equation factors, together with the program recommended for the last six months of 1919, and whether or not this represents an excess or shortage as compared with the tentative balance arrived at by subtracting the actual expenditures for 18 months from the equated expenditures for the two-year period. In cases where the test period expenditures are considered subnormal, or abnormal, or where the expenditures during the last six months of 1917 were considered subnormal, special statements are to be submitted reporting the facts with recommendations to cover the qualifying factors. These special statements will cover cases where it will be necessary to make expenditures in excess of the obligation in the interest of safety and also special cases where there have been substantial increases in track mileage or abnormal maintenance or traffic conditions.

Supplementary instructions are to be issued covering the subject of tie renewals.

While the Railroad Administration takes the position that an excess of expenditures for maintenance of equipment on any road may fairly be considered together with, and as an offset against, any deficiency that may result in maintenance of way expenditures on that road, it is stated that it is not the purpose deliberately to curtail maintenance of way in any respect with this in view and the new instructions treat maintenance of way expenditures on their own feeting, giving directions for making them comply with the contract requirements independently of the equipment situation. Director General Hines has stated that, taking roadway and structures and equipment together, the average condition of the property as a whole is as well off as it was on January 1, 1918. This is because on some roads the equipment had got into a very run down condition at the end of 1917, as the result of the great pressure that had been put upon railroad facilities, and it was therefore necessary to make very heavy expenditures in 1918 in order to put it in condition for handling the war traffic, at a time when no one then knew how long it would last. Since the armistice traffic has fallen off and there was a mild winter, with the result that a large amount of equipment put in readiness for the winter is now being stored. A reserve of over 4,000 locomotives has been put in storage and every effort has been made to put the cars in good condition to handle the grain crops. Instructions were recently issued that car repair forces be put on full time at all points where a reduction in hours has

been made and special attention is to be given to grain, coal and refrigerator cars in the sections where such cars are most needed.

In connection with figures showing the number of unserviceable locomotives and cars, Railroad Administration officials point to the fact that many locomotives are now reported as unserviceable, which merely require a few hours' work and could be used if necessary and would formerly not have been classified as unserviceable; also that cars which are in storage or are transferred from one region to another to be put in storage for the grain traffic may automatically be transferred to the bad order class because while good for most commodities they require some recoopering to fit them for grain.

The maintenance of way and maintenace of equipment programs are not being treated alike because they represent somewhat different situations. The equipment is being prepared for a possible car shortage this fall, but instructions have also been used to the regional directors to concentrate repairs on locomotives and cars which by reason of their size can render the most efficient and economical service, to discontinue expenditures on small locomotives and cars not necessary for current use, and for the prospective traffic for the balance of the year, and to confine expenditures on small capacity freight cars to those authorized by Circular No. 20.

Contracts Executed

The Railroad Administration has executed a contract with the Baltimore & Ohio, providing for an annual payment of $30,031,009, which includes $2,136,932 in addition to the standard return.

The Railroad Administration has executed compensation contracts with the Hudson & Manhattan, providing for an annual payment of $3,003,362, and the Minneapolis Eastern for $30,332.

Committee on Automatic Train Control

The Committee on Automatic Train Control will go on another inspection trip next week to examine automatic train control devices on the Pennsylvania, at the plant of the Union Switch & Signal Company at Swissville, Pa., and at Indianapolis.

An Unusual Service of Creosoted Piles

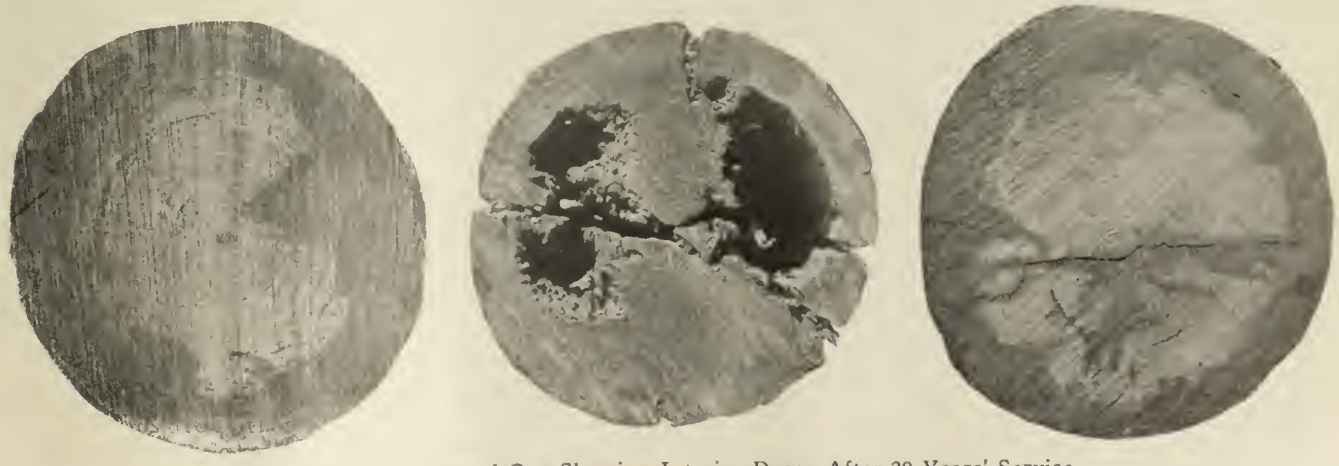
THE PRESERVATION of piling so that 67 per cent were suitable for redriving after 29 years' service in teredo infested waters, is the remarkable record established by the Southern Pacific in its Long Wharf at Oakland, Cal. This structure extends out from the Oakland shore into San Francisco Bay for approximately one mile, terminating in five docks which are used for the transfer of freight between cars and boats. It was originally built of untreated piling but was later rebuilt with creosoted piling, dock "A" being redriven with creosoted piles in February, 1890; dock "B" was redriven in 1898; dock "C" in 1897; dock "D" in 1899 and dock "E" in 1901. It is estimated that over 14,000 creosoted piles have been in service in this wharf for periods ranging from 22 to 29 years.

Because of the expiration of the charter for this structure which could not be renewed because it interfered with plans for municipal waterfront developments, this dock was ordered entirely removed. When wrecking this structure it was decided to examine a number of these piles to ascertain their resistance to decay and to the attacks of the marine borers which infest the waters on the Pacific coast. These piles were of a good quality of Douglas fir and were well seasoned before and after treatment. They were creosoted at the Southern Pacific plant at San Pedro, absorbing 14.17 lb. of creosote for each cubic foot of timber.

The photographs testify to the remarkable resistance of these piles for so long a period of service. The thin shell of treatment around the circumference except where season checks permitted deeper penetration is characteristic of the preservation of Douglas fir. It is noteworthy that this thin shell of timber treatment provided adequately where the timber had not been punctured by accidents or careless handling.

A committee of railway officers and others interested in timber treatment made an examination recently of 600 of these piles which had been withdrawn and found that 67 per cent were in first-class condition, 9 per cent had been slightly attacked by limnoria and teredo, 18 per cent severely attacked and 6 per cent destroyed. A further extensive examination and inspection was made of a number of piles then remaining in the structure. Out of 523 piles examined in dock "C", 333 were free from attack and 74 showed evidence of having been attacked by borers, while 116 were not fit for redriving. An inspection of 1,090 piles in dock "D" showed that 829 were free from attacks, 162 showed evidence of having been attacked, and 99 were unfit for redriving. Similarly out of 2,485 piles inspected in Dock "E", 1,900 were free from injury, 240 showed evidence of attack and 345 were considered unfit for redriving.

The condition of the piles in this structure was so good that the Parr Terminal Company of San Francisco which is now constructing warehouses, ship yards and coal depots on the western waterfront at Oakland not far distant from the Southern Pacific wharf, arranged to use a large number of these piles in its new construction. The United States Government is also using some of the piles from the same structure in wharves which it is building at Goat Island.



Two Sound Piles and One Showing Interior Decay After 29 Years' Service

Railway Developments in Foreign Countries

Several Countries Considering Electrification Projects—British Transport Bill Out of Committee.

The Rio de Janeiro state government has granted concessions for the construction of a steam railroad of meter gage from the port of Manzuinhos, in the district of Sao Joao de Barra, to Porte de Itabapoana, district of Campos. The length is approximately 52 kilometers. Construction must be begun in two years after the promulgation of the decrees, and completed in two more.

Railway Communication Between Lisbon and Paris

According to Lisbon papers, the American Legation has informed the Portuguese Government concerning the scheme for the development of the port of Vigo by an American corporation, together with the construction of the direct railway between Vigo and the French frontier.

Locomotives for Poland

It is reported in Berne that more than 50 German and American locomotives will shortly be sent from France through Switzerland to Rumania and Poland to supply the urgent need for engines in those countries. Rumanian engine drivers have already arrived in France (says a (London) Times correspondent) to take charge of some of these locomotives.

Electrification Considered for Jamaica

The government of Jamaica is reported as arranging to have a survey made of the water power of the large rivers to see if electrification of the railways is feasible. The heavy cost of coal and the necessity of a considerable railroad extension owing to an expected agricultural development explain the proposed change. The local agent of the Westinghouse Company, of New York, is collecting data on which the Westinghouse might tender for laying down the electric railroads.

To Electrify Belgian Lines

Electrification of Belgian railways has been decreed by the Minister of Railways, following a favorable report on such a project made by a committee appointed to investigate such a course, according to a press despatch from Brussels on June 20. The first line to be electrified will be that from Brussels to Luxemburg, and later the Brussels-Ostend railway. Action to this end probably will be taken in August, with the expectation of beginning the reconstruction work at the beginning of next year.

New Congo Railways

A Brussels despatch to the African World states that the railway from Cape Town to Katanga is to be extended northwards from Bukama to Kibombo along the Lualaba (Upper Congo), and that the construction of the Congo-Nile railway is expected to start shortly. The extension of the railway from Bukama is intended to facilitate traffic between Katanga and the more northern regions of the Belgian Congo. Navigation on the Lualaba or Upper Congo, from Bukama northward for 400 miles presents many difficulties, and steamers take a week on the journey. Bukama is 2,600 miles by rail from Cape Town, via Bulawayo, and this is the so-called Cape to Cairo route. The Congo-Nile railway starts from Stanleyville (at the head of the 1,000 miles navigable stretch of the river from Stanley Pool), and will go to Mahagi, on Albert Nyanza, or alternatively to Lado, on the Upper Nile.

Belt Line Around City of Mexico

Plans have just been approved by the Mexican government for the construction of a belt line of railway around the city of Mexico. It is stated that the survey for the proposed road has been made and that the route circles the Valley of Mexico, it being one purpose of the line to afford connection with all of the principal suburban towns and many outlying industrial plants. The government authorities also believe that the road will prove of great military service in the matter of affording means for the quick and easy movement of troops from point to point around the capital.

Mexico to Lease Fifty Locomotives

The commerce department has received from the American consul general in Mexico City, the following statement, which was published in the "Excelsior" of that city:

"The president of the republic has just authorized the director general of national railways to complete arrangements with an American railroad company for the lease of 50 locomotives for service within Mexico. It is stated that some time ago the government received an offer from the abovementioned American company for the rental of engines, instead of their sale. This plan was favorably considered on account of its economy, meaning, as it does, a saving of several millions of pesos.

"Orders have been sent to the purchasing agent of the Mexican railways in New York instructing him to sign the contracts in question. In view of the great need at present of engines it is hoped that, within a month after the completion of these arrangements, the locomotives will be on hand."

Electrification of Railway in Brazil

Recently a director of the Central of Brazil Railway, Government owned and operated, presented to the Minister of Communications plans for the electrification of the suburban lines of the road and the trunk line from Barra to Pirahy, as well as general plans for the suburban service and the closing of the roadbed from the main station to Deodoro, writes Commercial Attaché J. E. Philippi, Rio de Janeiro.

The Commission chose the type of high tension, continuous current for the suburban service, and recommended that the current be purchased from one of the existing power companies rather than have the company install a plant of its own.

The approximate cost of the rolling stock, substations, aerial lines, etc., is estimated at $4,307,377. This does not include the cost of car sheds at the main station and at Deodoro.

The first work to be undertaken will be fencing in and raising the level of the track in order to avoid accidents. It is believed that by closing in the lines the revenues of the suburban service will be greatly increased, as such a step will facilitate a better fiscalization of the passenger receipts. This work will probably cost about $1,398,238, the estimate being based on the prevailing prices of materials.

The director added that in case the total amount required

for this work was not available during the present fiscal year, it would at least be well to begin the work of closing the line, as a half million dollars was appropriated for this purpose in the budget law for this year.

Upon receipt of the plans, the Minister of Communications approved them and directed that the work of closing in the line from the central station to Deodoro be initiated.

Manual Versus Automatic Block Signals

(From the Railway Gazette, London.)

The visions which enthusiasts over American operating methods, after a visit to the United States, had of our lines being protected by automatic signals, and signal boxes and signalmen dispensed with, have never materialized. Conditions in the two countries differed and were not exactly comparable. The main reason for automatic signaling being adopted and making progress in the United States was the scarcity of labor for signalmen, while a factor which led to the growth of automatic signalling was that the concurrent interlocking of the points was ignored. Here, on the contrary, labor was plentiful and cheap; moreover, points and signals on passenger-carrying lines had to be concentrated and interlocked. The compelling argument against any change was, however, the fact that, different to the almost universal condition in the United States, our lines were already signalled—the signal-boxes, signals and signalmen were established. Added to these difficulties in the way of introducing automatic signalling into this country was another, less tangible but harder to overcome. This was the conservatism of the British operating officer. Put before him the suggestion that an intermediate signal-box be closed and replaced by automatic signals and he would at once express his surprise at the suggestion. How useful that box would be in the event of a breakdown! And, proceeding, he would point out that a signalman could see that the tail-lamp was on a passing train, that no passenger was giving signals of alarm, that no loads had shifted and that there was no fire in the train. The fact that an automatic signal would work all night and all day Sunday without extra pay, required no holidays or relief, was never asleep, did the work cheaper than a man and never made a mistake, was not allowed to favor the substitution of the frail human agent by a reliable machine.

The situation is now, however changed. The payment of higher wages to signalmen, the introduction of the eight-hour day and other costly improved conditions of service are making the situation as to the cost of labor more comparable with that to be found in the United States. Consequently some of the objections that led to the rejection of automatic signaling no longer have the weight they had. This is so obvious that there is no necessity for us to labor the point, nor equally, at this present day, is it necessary for us to indicate how the provision of automatic signals would allow for, we should say, one-third of the signal-boxes in this country to be closed either wholly or in part. All those at busy stations and at junctions must be retained, but those where the main duty of a signalman is to put trains "in block" and where not more than a dozen trains have traffic to attach or detach in the 24 hours could, we submit, be closed except when it is necessary to switch them in for traffic purposes. Where, in particular, we think such automatic signaling might be introduced first is on the many stretches of "direct" line opened within the last 15 or 20 years over which there is little local traffic and, consequently, no other work for the signalmen to do than to put the trains "in block."

Automatic signaling differs from that manually operated in that the distance between the signals, and, therefore, the length of the sections, is governed by the placing of the signal-boxes, which are, in the main, determined by other conditions—the locality of a station or a siding—which bear no relation to the volume of traffic, which latter should be the ruling factor. Given automatic signaling and the sections may be of the best length to suit the traffic. Again—and this is important—they can be varied to suit any changes of speed due to varying gradients or the approach to busy centers. Thus, there is obtained fairly uniform running, which is a valuable factor. More than this is gained. Traffic is got over the road quicker. This will be a more valuable asset in the future than in the past, because (*a*) consignments are more costly and all time they spend in travel is capital lying idle; (*b*) locomotive power and rolling-stock are dearer, and the shorter the time per journey the more got out of them; (*c*) the earning power per mile will be increased. In making these claims for automatic signaling we are, we admit, conscious of the fact that in order to win success there must be terminals to suit; it is no use speeding up trains if there be no accommodation at the end of the journey to receive them. This, however, is another story and one that cannot fairly be brought in to condemn automatic signaling.

An advantage we enjoy in urging the adoption of our proposals is that we are recommending something that is an acknowledged success. It may be true that, beyond their use on the rapid transit lines of London, there are but two installations of automatic signals of any length in this country, but these two examples alone are sufficient to secure wider use now that the greater necessity has arisen. We believe that we are safe in saying that the automatic signals between Alne and Thirsk on the North Eastern Railway have postponed the widening between these points, and that had the automatic signals between Woking and Basingstoke on the London and South Western been provided earlier, the conversion of the two lines there to four might have been delayed.

Electric Traction in Belgium

There is probably no country in Europe where railway electrification would be a more paying proposition than Belgium, says the Railway Gazette (London). In view of the large amount of reconstruction work that will have to be done on the railways in any case, the opportunity is a good one for considering whether it is wise to spend money on restoring the steam system. Electric traction has made considerable progress even during the war, and the results of working for several years on the larger schemes in America are now available, especially on that very interesting passenger and express line of the Chicago, Milwaukee & St. Paul. Whatever advantages the single-phase system might offer on a long line, such as the Paris-Marseilles, for a compact area like Belgium, the high tension d.c. system would seem just the thing. We see an announcement in a contemporary that it is proposed to adopt the single-phase system, experimentally, on the Brussels-Antwerp line. In the light of all the most recent experience in electric traction, Belgium would hardly appear to be the country where the system would show to the best advantage. Equally important is the fact that if this single-phase system, which the Germans made specially their own, is adopted in Belgium, it is found to prejudice the British manufacturer.

Four Electric Locomotives for the Swiss Federal Railways

Following a conservative experimental plan, the operating officials of the Swiss federal railways ordered four different types of electric locomotives, two of which have recently been put in service. Two were ordered from the Atelier de Construction Oerlikon of Oerlikon, Switzerland, and two from Brown Boveri & Co., Ltd., London, England. Each company was to supply one passenger and one freight locomotive. The mechanical parts of all of the four locomotives were supplied by the Swiss Locomotive & Machine Company,

Winterthur, Switzerland. The Oerlikon locomotives have been delivered and tested on the Loetschberg Railway.

All of the locomotives are designed to operate from overhead trolleys carrying 15,000-volt, single-phase power. A point of particular interest in connection with the design of these locomotives is that the same general method for transmitting power from the motors to the driving wheels is employed in all of the four designs. The motor pinions engage gears on jack shafts, which in turn are connected to the driving wheels by side rods. The side rod arrangement on the Oerlikon locomotives is quite different than that on the Brown Boveri locomotives. The two Oerlikon locomotives are of the 2-6-2 and 2-4-4-2 type, and weigh 91 and 113 tons, respectively. The two Brown Boveri locomotives are of the 2-4-4-2 and 2-6-6-2 type, and weigh 118.5 and 133.5 tons, respectively.

Chilian Railway Development

The lamentable condition of the Chilian State Railway system, writes George Mallett to the Weekly Bulletin of the Canadian Department of Trade and Commerce, Ottawa, is now universally recognized as being responsible for serious delay in the natural progress of the country. The industries and developing interests are not supported by the necessary railway service, which is practically doing (with difficulty) what it was expected to do some 10 or 15 years ago.

Without the advantages of the necessary modern innovations, there are serious deficiencies in the ordinary indispensable rolling stock, which the general management is absolutely unable to replenish from year to year, owing to the difficulty of making both ends meet. Now with a deficit on the annual budget amounting to $8,000,000 in the face of a national crisis, it is realized that a loan is necessary to place the system in a position to earn expenses and to assist in the development of the nation's trade and industry.

The amount of this loan has been fixed at or about $32,000,000 which it is proposed to distribute as follows: $3,700,000 on the electrification of the first section (Valparaiso to Santiago), $2,400,000 for electric locomotives, $1,820,000 for cost of double lines, $1,200,000 for reconstruction and reinforcement of bridges; $1,000,000 for new branch lines and sidings; $6,600,000 for buildings; $3,100,000 for workshops; $5,200,000 for the purchase of equipment; $1,500,000 for signalling system and points service; $1,120,000 for automatic brakes, $800,000 for mechanical coalers, bunkers, etc.

The British Ways and Communications Bill Out of Committee

[From the *Railway Gazette*, London.]

After being under discussion for 18 days, covering the period from April 1 to May 28, the Ways and Communications Bill has emerged from the committee stage practically unaltered. Despite the strong attacks made by dock, harbor and road authorities they are still included; notwithstanding the powerful arguments that a system of bureaucracy would be installed the powers of the Minister remain unaltered except to the extent that he is to have advisory councils—whose advice he is not, however, bound to follow—and though several speakers found much virtue in the privately-owned railway wagon its sponsors failed to get much support. Numerous concessions, naturally, were made as the proceedings progressed, but once only was the government defeated.

On May 6 the clauses relating to the Advisory Committee as to any revision of rates, fares, tolls, etc., were agreed to. Later in the proceedings other advisory committees were proposed and then—May 13—the Home Secretary, in opposing the addition of further bodies, said that there was a provision in the bill that if injury or loss were caused to undertakings compensation would be paid. There could be no compensations to the public in regard to revision in rates, and it was for that reason that a statutory advisory committee had been given in that case.

On May 6 the government escaped defeat by 18 votes to 17 only on a proposed amendment that, without the consent of any harbor, dock or pier authority, no part of an undertaking should be taken possession of unless the whole were taken. The following day an amendment that the Minister be responsible for the acts and defaults of his servants was accepted, also a provision that the expression "transport services by water" should not include any services that could not be established under existing statutory powers—this disposed of the inclusion of coastwise shipping.

On May 13 a debate as to further advisory councils occurred. Sir Eric Geddes was willing to have such committees "for giving him advice and assistance in connection with such matters affecting the exercise and performance of his powers and duties as may be referred to them by the Minister," but Joynson Hicks would make the reference to the committee compulsory. Sir Eric proposed a modification, but this was rejected by 21 votes to 19 only to be followed by Joynson Hicks' amendment being itself rejected by 22 to 20. All that day and the following Sir Eric Geddes' new clause was discussed, and eventually "a panel of experts" was accepted, also the provision that "Before exercising any of the powers under Section 3 (1) (b) or directing the establishment of new transport services by land or water the Minister shall, provided he considers the question involved to be one of sufficient importance to justify such a reference, refer the matter to a committee selected by him from the said panel." Even to this wording some amendmends were made on May 15.

On that date a new clause was brought up, and read a second time, authorizing the Minister to establish and work transport services by land or water, provided that (1) if the establishment of any such service will involve an original capital expenditure exceeding £1,000,000 an Order in Council, approved by both Houses, would be necessary, and (2) "where it appears to the Minister that the establishment of any such service could properly be undertaken by the owners of any existing undertaking the Minister shall not himself establish the service without first giving to such owners an opportunity of establishing the service. . . ." On May 20, a brief sitting was devoted entirely to a new clause as to the transfer of officers and servants. This covered three points. First, the pensionable rights of an officer or servant with a railway company were to be protected during the two-year period in the event of his transfer to the Ministry; i.e., if the railways reverted to the companies after the two years the man would be in the same position as though he had been continuously in the particular railway company's service. Second, no man should be permanently transferred to the Ministry without his consent. Third, for a temporary transfer the consent of both the railway company and the man was necessary. It is provided that the consent should not be unreasonably withheld, this being necessary in order to prevent a man refusing reasonable work and then claiming compensation for having lost his position. Little of interest happened the following day, but on the 22nd the compensation clause was settled. The question of the privately-owned wagon was discussed later and the following conclusions reached: (1) authority for purchase has to be obtained by an Order in Council, the draft of which has to be approved by both Houses; and (2) that England and Wales, Scotland and Ireland are separated in this matter but, if, in any one of these divisions, wagons used for the conveyance of any particular class of traffic be purchased all wagons so used in the division affected must be purchased.

June Meeting of the Signal Division, A. R. A.

Handling Trains by Signal Indication Without Orders; Contracts and Other Problems Considered

THE JUNE STATED MEETING of the Signal division of the Engineering section of the American Railroad Association was held at the Breakers hotel, Atlantic City, N. J., on June 26 and 27, with 125 active and junior members, 97 associate members and 48 guests in attendance. R. E. Trout (St. L.-S. F.) chairman of the division occupied the chair and H. S. Balliet (N. Y. C.) acted as secretary of the meeting.

R. H. Aishton, regional director of the Northwestern region, United States Railroad Administration and president of the American Railroad Association addressed the meeting on Tuesday morning. Mr. Aishton said in part: "I want to have a little get-together talk with you. I have been a member of your Association for a good many years and I am glad I have been, because I get your proceedings and all the literature you put up. It has been a liberal education for any railroad man and particularly for me because if there was phase of railroad work that I knew nothing about, even though I was a president, it was the signal business. I am familiar with the work you have done. In the matter of standardization alone your Association through deliberations such as are going on here, and often given but little encouragement by the railroads in the past has achieved marvelous results. You have a large number of standard prints and plans and in that direction you have done a great deal in bringing the railroads together.

"There is a tremendous field before you. As I understand it, fully 80 per cent of the railroads in the United States are today taking your dictum as law. If you recommend a thing they take it. I desire to say to you that the underlying thought of the American Railway Association is to make that 100 per cent. I notice that your presiding officer said at the last meeting 'the same old scrappers will be in evidence.' I want to tell you that the scrappers in an association are the ones that make it. One time in the old American Railroad Association we had a fight in the old train rules committee over inviting members of the Train Despatchers Association and the Signal Association to come in and talk to us on some technical points involved. The western idea prevailed and the men were finally called in. Ever since that time they have taken a prominent part in the various matters that come up before the Association."

Speaking of the railroad situation Mr. Aishton said: "We have a pretty hard job ahead of us. But as I look ahead it looks a little different than it did a year or two years ago, the roads are going to be a little bit different and there must be more coordination. There must be more standardization as between railroads and a closer working together on their part. At present the government exercises a big power, and it has been for good. The things accomplished on the railroads during the war could not have been accomplished under private management, simply because you could not coordinate the resources of the entire community, doing the things absolutely necessary in winning the war and so there can be no criticism of what the government has done. But when government control lets go, where are we going? Are we going back to the place we were before? In my opinion no, and I believe this Association and these various sections of the A. R. A. all working together and coordinating, will make a better and more economical transportation machine. A better transportation machine is going to be the one power in the United States that is going to stand between the railroads and government ownership because if railroad men do not control this situation and do not run our roads in the most economical manner to afford the best service to the public, there is only one alternative, and that, in my opinion, is government ownership."

The secretary made a short report on routine matters and explained that due to the labor situation and other causes it had been impossible to mail out the advance notices containing the committee reports prior to the time of the meeting.

The most interesting discussions of the meeting were brought out by the reports on the location of take-siding indicators and upon the standard form of contracts. A variety of opinions were expressed as to the proper location of a take-siding indicator and also as to whether it should be connected with the signal system or considered as an entirely separate adjunct. When the standard form of contract was presented for discussion the manufacturers entered a strong protest against the adoption of the clauses covering risks and indemnities. It was stated that no indemnity company would insure the contractor at any reasonable figure where he is made responsible for consequential damages.

COMMITTEE REPORTS

The first report discussed was that of Committee No. 9—Wires and Cables. W. H. Elliott (N. Y. C. Lines East) chairman of the committee submitted an oral report on the testing of tape in using various size mandrels and stated that it was the intention of the committee to use a ¼-in. mandrel on which to wind tape. It was found that a certain amount of flow in the compound affected the rate of winding and unwinding. This committee expects to present recommendations to the September meeting.

Committee No. 5—Maintenance and Operation, L. R. Mann (M. P.), chairman, submitted a short report on methods of handling trains by signal indication without train orders and the preparation of rules and regulations for signal maintainers. This committee has previously submitted a report on the first subject for single track operation while this report refers to double track operation. The committee said in part: "The operation of trains by signal indications, without the use of written train orders, although practiced on but a relatively small mileage in this country, possesses important advantages which appeal to students of railroad operating problems. It is well understood that under the old train despatching system a good deal of time is lost in slowing down or stopping trains for the issuance of orders. In these days of heavy traffic and other difficulties, in the efforts to secure the largest possible tonnage movement it would seem well worth while for managements to study the advantages of operation by signal indication without written train orders. Automatic block signals promote safety of operation and expedite traffic, but the highest efficiency with such signals is not realized where the train despatching system is retained in the old form. Not only is time lost in slowing up and stopping trains for orders but orders cannot usually be issued at passing tracks and cross overs that lie between train order stations, under the old form." The report on this subject was accepted as information. The committee decided to prepare examination papers with questions and answers based on the rules at present in the R. S. A. manual; any additional rules which may be deemed desirable by the sub-committee to which this subject has been assigned, will be called to the attention of the entire committee. This was accepted as a progress report.

Committee No. 8—Alternating Current Automatic Block Signaling, C. H. Morrison (N. Y. N. H. & H.) chairman, deviated somewhat from its assignments and revised the general provisions, standard sections and general electric requirements and brought up-to-date unit specifications previously submitted and printed in the manual for, as the advance in alternating current signaling has been rapid, it was deemed necessary to bring these specifications up-to-date. In addition the committee submitted a specification for position light signals and also one for color light signals. Considerable discussion arose over the wording of a number of the clauses as certain standard clauses differed from the wording in other specifications. Finally a motion was made and passed that the Committee of Direction appoint a committee to standardize clauses and phrases. It was further moved that the specifications, after revision, be submitted to letter ballot at the September meeting. It was recommended by the committee that the specifications for alternating current electric generators be withdrawn from the manual as a revised specification for alternators covers this subject. The committee also recommended that the specification for single-phase track transformers, 250 volts or less, be eliminated from the manual as this is also covered in other specifications. On a vote these recommendations were carried.

Signaling Practice

Committee No. 10—Signaling Practice, J. A. Peabody (C. & N. W.), chairman, submitted a report on only two of the subjects assigned to it. The report on automatic train control consisted of a list of references on this subject, prepared by the Library Bureau of Railway Economies. The other subject reported on was divided into two parts. (1), the application of aspect indicating that train must take siding at a non-interlocking switch, (2), the application of aspect indicating that 19 or 31 orders are to be delivered. A questionnaire was sent to all the signal engineers of the country and the following questions were asked with reference to the application of aspect indicating that trains must take sidings at an non-interlocked switch:

(1) Is the proper location of the take-siding indicator at a point not less than braking distance from the switch, in connection with whose approach it is used? Answer: Yes, 11; No. 4. Recommend locating take-siding indicators at switch, 17.

(2) If it is convenient to apply the take-siding indicator to an existing signal, shall the signal under which it is applied be caused to display a stop, approach or clear indication when the indicator is displayed instructing train to take siding, or shall this be left to the discretion of the signal engineer to arrange the control according to the local necessities? Answer: Recommend signal above indicator stop, 17. Left to discretion of signal engineer, 6. Recommend signal above indicator indicate proceed, 4.

(3) Shall the signal in the rear of the take-siding indicator be caused to display an approach indication when the indicator is displayed instructing trains to take siding? Answer: Signal in the rear to display caution, 25; non-commital, 8; roads not using take-siding indicator, 35.

Three questions were asked with regard to the application of aspect-indicating what 19 or 31 orders are to be delivered.

Question (1) What aspect is used for the transmission of information that 19 or 31 orders are to be delivered?

Question (2) Is the same aspect used for both?

Answers to questions 1 and 2: (a) Home interlocking or station signal at stop for issuance either of 19 or 31 orders, 37. (b) With lamp or flag displayed in addition thereto, 14. (c) Answers non-commital, 6. (d) Signal displayed at 45 deg. for issue of 19 orders, 10. (e) Signal wigwagged until acknowledged by engineman for issue of 19 orders, 2. (f) Signal at 45 deg. for issuance of caution cards, 1.

Question (3) Do you consider it essential that different aspects be used to indicate issuance of 19 or 31 orders?

Answers: Yes, 21; No, 20; non-commital, 16.

It is the practice on the Baltimore & Ohio to locate a take-siding indicator on the signal governing the switch. If the signal is located at the switch the take-siding indicator is located on it. The signal displays stop while the signal in the rear dsplays caution. If the indicator is located on the signal 1,000, 2,000 or 3,000 ft. away from the switch, the signal above then indicates caution and the signal in the rear also indicates caution. At night a reflected light is used on the take-siding indicator.

On the Erie such an indication is placed approximately 200 ft. in advance of the switch governed and is fixed on the mast above which is an automatic signal. The lower arm is caused to indicate a 45 deg. position by the operator and the top arm then indicates stop.

In the discussion F. W. Pfleging (U. P.) expressed his belief that the take-siding indicator should be placed at the switch with a distant indication. If no distant indication is used it should then be placed at not less than breaking distance from the switch. A. H. Rudd (P. R. R.) considered it a very great problem to determine whether a take-siding indicator should be linked up with the signal system or not and its solution was a very important matter. After the discussion the subject was referred back to the committee for further consideration.

With reference to the aspect indicating that 19 or 31 orders are to be delivered, C. A. Christofferson (N. P.) stated the practice on his road is to give an engineman advance information in automatic signal territory while in other territory a 19 order is indicated by the 45 deg. position of the board.

F. W. Pfleging (U. P.) said that in over 2,200 miles of automatic signal territory the Union Pacific has been using 19 orders for making meeting points for seven years. The 31 orders are used for signing for timetables. Trains to be run against current of traffic are stopped and run on 31 orders. The trains order boards are operated on the normal danger plan and the engineman has to whistle for the signal. A. H. Rudd (P. R. R.) stated that the practice on his road is to hold the block signal at stop and display the order flag or light until the train acknowledges the order board and stops, then the signal is cleared.

A. R. Fugina (L. & N.) said that on his road a normal danger train order signal used independent of the automatic signal system and the train orders boards. The enginemen are required to whistle for the board. About ten years ago they began to make a practice of using the home signal at interlocking plants as the train order signal but a majority of the operating officers were in favor of a separate signal indication for this purpose. In manual block territory a four-arm signal is used, the two top arms governing the block while the two lower arms are used for train orders. A 45 deg. position of the train order arm indicates a 19 order. The report was accepted as information.

Committee No. 6—Standard Designs, F. P. Patenall (B. & O.), chairman, presented three new drawings covering a standard switch lamp, train marker lamp and highway crossing gate lamp. The meeting adopted for submission to letter ballot a design for a switch lamp (cylindrical type). A design of train marker lamp was referred back to the committee after additional information had been received from the meeting. The drawing of the highway crossing gate lamp was also referred back to the committee for further consideration and it was suggested that the committee consider the use or design of a spring on the lamp or handle to prevent the light from being jarred out. It was also suggested that a 5⅜ in. lamp be adopted instead of the 4 in. one and that a hanger should be designed for use on the gate to which the lamp is attached.

The Second Day's Session

Committee No. 7—Direct Current Relays, E. G. Stradling (C. I. & L.) chairman, submitted specification for lifting

armature, neutral type, direct current relays. There was a long discussion over paragraph 2-o, page 189 of the June Journal reading "All moving parts shall be inclosed in a weather-proof dust-proof case, the sides of which shall be of glass of such transparency that the parts within the case may be visible for inspection. A screened breather opening, in the base of the case, adaptable for closing shall be provided." The discussion hinged over whether a relay should be allowed to breathe.

F. W. Pfleging (U. P.) said that in certain mountainous districts on his line extreme changes of temperature occurring in a period of a few hours made relays sweat, causing quite a little water to collect in them. This matter was taken care of by proper ventilation of relays. In other sections where considerable rain existed this trouble was not experienced.

E. W. Kolb (B. R. & P.) said that the breather opening was not for ventilation but was provided to equalize the pressure of air inside the glass case to that existing outside and that it was due to an unequal pressure between the two sides that caused the gasket to allow water to work into the relay. F. L. Dodson (G. R. S. Co.) said that some of his customers preferred to have relays incased air tight.

The wall type is not adopted to the construction of the breathing apparatus, as proposed.

W. H. Elliott (N. Y. C.) has 40,000 wall type relays in wooden cases with no special provisions for ventilation and has had no trouble from water. After many expressions of views F. P. Patenall (B. & O.) moved to eliminate the paragraph requiring a "breather" but the motion was lost by a large majority.

Paragraph 6-b, on page 190, of the June Journal reading "a non-adjustable stop-pin of phosphor bronze shall be placed under each core near the edge furthest from the bearing, protruding .010 in. from the underside of the core or the upper side of the armature for safety purposes" produced considerable discussion. Mr. Dodgson felt it would be a mistake to put this back in the specification as moisture condensing on these pins and cores would allow the armature to freeze fast during cold weather, causing a false clear signal indication. E. G. Hawkins (N. Y. C.) felt there was a necessity for two stop pins to maintain a proper air gap because the trunnions of the relays cannot be relied on to remain as they were when first installed. After relays are old the trunnions become worn so that an unequal bearing or pull may take place.

The chairman moved that the report be accepted as a progress report and the motion was carried.

Standard Form of Contract

Committee No. 12—Contracts, R. C. Johnson (B. R. T.) chairman, submitted a standard form of contract for execution with the contracting signal company for the installation of interlocking plants and block signals. G. A. Blackmore (U. S. & S. Co.) presented a strong protest against the adoption of a clause making the contractor responsible for consequential damages, stating that no indemnity company will insure the contractor at any reasonable figure, for such vague liabilities. No contractor can take such a risk; but a railroad, being a large concern, can establish contingent funds which will cover all risks. As the clause is drawn, a single accident could bankrupt the largest signal company. W. J. Gillingham (Hall Switch & Signal Company), S. G. Johnson (General Railway Signal Company) and Paul Renshaw (the Federal Signal Company) concurred in Mr. Blackmore's statement and argument. The representatives of the manufacturers seemed to think they had not been accorded proper recognition, but Mr. Elliott, speaking for the committee, said that a full conference had been had with them. The members of the committee had been guided largely by the law officers of the railroads; and their proposals were similar to those in the forms approved by the American Railway Engineering Association. It was stated that the New York Central has experienced no difficulty in getting work done under its form of contract, which is fully as rigid as that proposed by the committee.

To the argument that this form was similar to the forms used by contractors for the kinds of work done for railroads, Mr. Johnson replied that the conditions are not parallel; a signal company comes in at the end of the work and has to incur varied dangers because trains are already in operation. Mr. Rudd (P. R. R.) thought Mr. Johnson was rather one-sided, but, he said, the committee has learned the other way and the clause ought to be rewritten.

There was objection to the clause providing for the imposition of a penalty for delay; the general view being that no railroad uses this. The committee had put this in so as to provide a suitable form of words in case the condition should be desired but, Mr. Johnson said, this will encourage some obscure road to insist on the penalty when otherwise it would not have been thought of.

Objection was made to the sweeping character of the paragraph providing that omissions on plans or on specifications should not prevent the purchaser from getting all that was reasonably required; and the meeting finally voted, by a large majority, to cut out the words "or anything not expressly set forth in either plans or specifications, but which nevertheless is obviously necessary or implied."

The report was accepted as one of progress, including also a clause, not printed, requiring the contractor to guarantee not only his own apparatus but any provided by another contractor, or by the railroad company. In this connection Mr. Blackmore felt it unfair for one contractor to guarantee the reliable operation of apparatus manufactured by other contractors when this apparatus was furnished on the express instruction of the purchaser.

It was moved and carried that the report be accepted as a progress report.

D. C. Automatic Block Signaling

Committee No. 4—Direct Current Automatic Block Signaling, C. F. Stoltz (C. C. C. & St. L.) chairman, presented, as information, a proposed specification for direct current motor-operated signal mechanism. After brief discussion this was accepted; also a sketch, on a loose sheet distributed to the members, showing a proposed connection from rail to bootleg which has been developed on the Louisville & Nashville. Mr. Rudd (Penn.), is using in alternating current signaling, a $\frac{1}{4}$ in. sash cord connection. This has proved quite satisfactory. This connection can be hit with a pick several times and yet not be damaged. G. H. Dryden, a member of the committee, thought the proposed design lacked flexibility, for trackmen cannot be made to renew joints without changing the location, sometimes three or four feet, one way or the other. The connection to the rail ought to be made three or four ties away from the joint, and then follow along the rail as shown in the drawing. Mr. Eck (Southern Railway), thought it very desirable to have connection on both sides of the rail. He uses capping of design similar to that shown by the committee. Mr. Fugina (L. & N.) asked members to consider this arrangement with a view to trying it; he desires to learn the results of more extended experience. The sketch was received as information.

Committee 16—Standard Clauses and Sections is a new committee appointed by the Committee of Direction. It will be the duty of this committee to standardize the various clauses and sections in the different specifications as adopted by the association. F. B. Wiegand, signal engineer, New York Central, Lines West, was appointed chairman. W. J. Eck, signal and electrical engineer, Southern Railway and F. P. Patenall, signal engineer, Baltimore & Ohio, were the other two members appointed.

Committee No. 11—Batteries and Switchboards, R. B. Elsworth (N. Y. C.), chairman, presented a specification for primary battery jars, consisting of eight paragraphs. Some of these paragraphs were discussed briefly and were left in the hands of the committee for further conference with the manufacturers. This specification provides that the jars shall be furnished in multiples of the contents of a standard package. Small packages, although costing more than large packages for the same number of jars, are economical in the end by saving repacking in making shipments from the storehouse to the field. The committee proposes that, for testing, the rule shall be one jar in 10 or two in 20.

Instructions for the installation and handling of caustic soda batteries, presented by this committee were discussed at some length. Clause 2-c provides that cells or parts should not be unpacked except as required for use. This was criticised as interfering sometimes with economical handling. Some railroads check material before paying for it; others must unpack because of fire risk.

The rule for setting up new cells refers to the standard jar; but thousands of old jars are in use and there is need of detailed instructions as to right quantity and proportion of solutions for different classes of jars. Mr. Elsworth suggested that committee No. 5 should draft suitable instructions to maintainers.

On motion of Mr. Fugina the meeting voted to eliminate paragraph 7 providing for the use of lamps to keep batteries from freezing in cold weather, the general sentiment being that a rule of this kind needs to be much more detailed. Maintainers are liable to use lamps unnecessarily. After further discussion it was voted to accept this data as information and refer it to Committee No. 5.

Other Reports

Committee No. 2—Mechanical Interlocking, C. J. Kelloway (A. C. L.) chairman, presented a specification for mechanical interlocking machine having improved Saxby & Farmer locking and a specification for locking, establishing uniformity and sequence. After some discussion the report of the committee was accepted to be submitted to the annual meeting for letter ballot and inclusion in the manual.

Committee 3—Power Interlocking, F. B. Wiegand (N. Y. C.) chairman, submitted a report on specification for universal electric motor, switch operating and locking mechanism, first and second range voltage. This had been submitted at previous meetings and consideration has been given to the various criticisms and recommendations made before it has been revised to meet such criticisms and recommendations as, in the opinion of the committee, it thought advisable. The specifications for power interlocking machines were again submitted, after various criticisms and recommendations as made at previous meetings had received consideration. After brief discussion it was moved and carried that the specifications be accepted for presentation to the annual meeting for approval and submission to letter ballot for inclusion in the manual.

How Operating Capacity Can Be Increased*

Terminals Are Limiting Factor. Suggestions for Improving Intermediate Transfer Roads

By E. H. Lee
President, Chicago & Western Indiana, Chicago

IT IS THE OPINION of many well-informed railroad men that the transportation work to be performed by the railroads of the country during the coming winter will be from 20 to 40 per cent greater than that performed last winter, if traffic conditions reasonably to be expected are to be met. This increase is caused largely by reason of the various governmental activities necessary in the work of winning the present war, although the ordinary business of the country is keeping up in surprising volume. The need for fuel is greater than ever, although that portion handled along our eastern seaboard by vessel must now be handled by rail. Prompt deliveries of other war materials in heavy volume are imperative if the work of properly maintaining and supplying our fighting force abroad is to continue. Food materials and products must be moved to the seaboard promptly and troop movements are increasing the demands upon the passenger facilities of the country. It is the purpose of this article to discuss the existing situation on the railroads of the country with a view to determining what can be done within the next four or five months toward improving existing conditions, in order that the railroads may be more nearly able to meet the demands that will then be made upon them.

The transportation work of the country is being handled by the railroads at the present time in greater volume than ever before and with reasonable despatch. It will be remembered, however, that conditions in the summer season lend themselves to maximum transportation effort, whereas during the winter season this maximum effort is necessarily reduced. Congestion on the railways propagates itself rapidly and causes further congestion. In the last analysis congestion is the chief enemy of railroad transportation because it interferes with the one purpose of the railroads—the movement of traffic.

Terminals the Limiting Factor

It will doubtless be conceded that the facilities of the railroads are relatively much greater for handling traffic outside of the more important terminals than within them, and therefore the inference seems plain that in order to secure the maximum improvement, any measures looking toward an increase in their capacity for handling traffic next winter should be directed toward the terminals rather than toward the open country lines.

If prompt authority is secured, yards for the storage of cars may be provided either adjacent to, or at points outside of and beyond important terminals, where land is cheap and construction is easy, and this car storage, if provided, will doubtless be of great value in keeping tracks in working yards sufficiently clear, so that they may be reasonably open for the receipt and necessary classification of business. It seems certain, however, that the only improvements in track facilities which can reasonably be expected to be available next winter within the larger terminals themselves will be

*From an appendix to a preliminary report of the Yards and Terminals committee of the American Railway Engineering Association published in Bulletin 208.

those secured by so-called co-ordination, with the better balanced and therefore more complete use thereby secured. Experience has shown, however, that any rearranged use of existing track facilities should be carefully investigated, and adopted with caution, because many cases have and will occur in which suggested changes are only of superficial advantage and would probably be an actual disadvantage, considering the situation as a whole.

Principal Causes of Congestion

Two of the principal causes of congestion in terminals, which in turn act in a vicious circle with congestion itself, each to cause the growth of the other, are dead time and the rehandling of cars. It is safe to say that any method or practice which secures the maximum reduction in dead time, and in the rehandling of cars, will also secure maximum reduction in the congestion of terminals, and therefore maximum increase in the efficiency of the railroads of the country as a whole.

For the purpose of this discussion, dead time is limited to and may be defined as time spent by the train crew after an engine has been manned, in getting out of the roundhouse, pulling up to and coupling onto the train, testing the air, etc., at the outgoing end of the trip: time lost in setting out and picking up; and time spent in putting away the train, with the various similar attendant operations at the incoming end. This so-called dead time thus defined is to be distinguishable from time spent in actually passing over the road. Its serious effect in terminal operation is not generally appreciated, being of much less relative importance in open country operation than in terminal operation. This is true because dead time remains more or less constant, while running time tends to vary directly with the length of the run. As an illustration, assume an open country division 100 miles long, with the average freight running time over the division eight hours, as compared with a transfer run in a terminal 12 miles long, and an average running time of one hour. If the dead time is in each case two hours, the dead time loss on the country division is only 20 per cent, whereas on the transfer run it is 66⅔ per cent. This comparison may seem exaggerated, but an investigation made by the writer some years ago, which is believed to have been reasonably accurate, disclosed that in an actual case under ordinary conditions and where no undue congestion existed dead time as above defined consumed 65 per cent of the total service time of all trains in transfer service.

Rehandling cars is brought about by a number of different causes. Lack of proper method, as well as lack of careful and intelligent planning on the part of trainmasters, yardmasters, and conductors responsible for transfer movements, is partly responsible, but these causes operate during times of normal movement as well as during times of congestion. The great cause for rehandling is undoubtedly congestion, which is in turn further aggravated by the rehandling itself.

The two chief requisites for the rapid and efficient classification of cars, in so far as facilities are concerned, are sufficient motive power and sufficient open track room. The best results are obtained when these two kinds of facilities exist in a proper ratio. It is well understood that a deficiency in track room may up to a certain point be equalized by a surplus of motive power, but that lack of open track room will not make good a deficiency in necessary active power.

If the foregoing discussion is reasonably accurate as to the facts it may be continued with a view to determining their application and as to what changes may be advantageously made in prevailing methods and practices in order to secure an improvement.

At most minor terminals and junction points, direct deliveries are made between the railroads, and at some points the chief improvement possible is doubtless to be secured by a co-ordination of facilities when practicable, and an improvement in methods, as, for instance, by the reciprocal delivery of cars, thereby eliminating light running. In the case of industries served by more than one line, it has been the general practice in the past for each road to handle its own business into and out of the same, although in one case familiar to the writer all such industrial deliveries have been handled by a terminal railroad for the tenant companies using its line for a period of over 30 years, and with results entirely satisfactory in the way of a reduction of both engine time and cost. Under the new federal operation an arrangement has been inaugurated at various points by which the business of all the railroads to and from a certain industry or group of industries is handled by one company, and this practice may be expected to become general.

On the other hand, in the terminals of many of the larger cities considered as a whole one or more transfer railroads have performed an important part in the process of receiving and delivering cars between the various lines, and these transfer railroads become especially important during times of congestion. The transfer of cars in small terminals and at junction points is relatively a simple matter, and with proper care and attention, on the part of the railroad officers familiar with the conditions, it ought to be put on a more uniformly satisfactory basis. The transfer of cars over a transfer railroad in a large terminal is more complicated, and in view of the difference in the service performed, as between railroads of this kind, an analysis in each case would seem desirable, to determine what changes are needed. One of the broader differences is that some transfer railroads are used entirely for the operation of trains handled by the motive power and train crews of their tenants, while others operate either in whole or in part with their own power and crews. As the more important transfer roads in large terminals are operated in the latter way, what follows in this discussion is considered as especially applicable to them.

Certain principles follow with the reasons therefor which are believed to be particularly applicable to terminal transfer railroads which operate trains with their own power and crews, although some of these principles are of more general application:

Terminal Transfer Railroads

1. The operation of transfer railroads should usually be restricted as much as possible to the transfer of cars as distinguished from the classification of cars. It follows that the through line should so far as practicable deliver its cars to the transfer line, classified and straightened out into cuts for the various through lines to which deliveries are to be made by the transfer line for through line account. Such a transfer railroad as is being considered may be compared to a thoroughfare connecting two camps or cantonments. It may be of ample width to handle all the travel between them, if team and foot travel is kept moving in column formation, at fair speed, and without unnecessary stops, columns having been formed in the streets and areas of the cantonments themselves. But if the thoroughfare is used as a drill ground, for the formation of columns, or as a recreation area, its capacity may be reduced to the vanishing point. The main tracks of most transfer railroads are ample for a larger volume of traffic than is handled over them, but in times of congestion they are frequently blocked at junction points, yard entrances and connections by trains which are unable to get into yards by reason of their crowded condition. These yards, in turn, are congested by an oversupply of cars awaiting classification, which occupy room that should either be reserved for the receipt of main line

transfer trains or be kept for the classifications which are necessary and which cannot be made to advantage elsewhere.

It should be observed that where through lines make direct deliveries to each other, they classify cars straight for the various railroads as a matter of course. There seems no good reason why when delivery is made through the agency of a transfer line the through line should not continue to make the required classifications, at least to a reasonable extent. In so far as the through business is concerned, it is believed that the practice of considering and using the transfer line as an agency for both classification and transfer, instead of restricting its use so far as practicable to the transfer of cars, is responsible for much of the congestion of terminals. The present practice has been the growth of years. Until recently the transfer road depended upon the through lines for much of its business, and felt in no position to object to the dumping of business upon it regardless of congestion or of how badly the deliveries might be mixed. Under the old conditions the responsibility of the through line ceased, once it had delivered its cars to the transfer or belt line, and every effort was accordingly made (the more congestion increased, the more strenuous the effort) to unload on the transfer line, regardless of ultimate consequences, thus "shifting responsibility."

With flat switching ordinarily eight or ten classifications are made without rehandling, a greater number being bunched and reclassified. An analysis will show that in very many cases only few classifications are required to straighten out a large proportion of the business. In one case in Chicago about 50 per cent of the through transfer business in one direction goes to only two railroads. If all cars for these lines were delivered to the belt line in straight cuts, approximately 50 per cent of the classification in that direction would disappear and much of this 50 per cent could be run in straight trains from terminal to terminal, thus eliminating dead time and helping to keep yards clear. Moreover, this preliminary classification could be made with little or no additional expense by the through line, because it must in any event switch out many cars, such as bad orders, holds, and those for other deliveries. Also a considerable amount of this preliminary classification could be done to advantage at the division yards of the through line beyond the large terminals.

The place to control congestion is at or near the various points where business originates. By proper measures the through line may in a degree control congestion in its own important terminal yards, by holding back business, something impossible to the belt line, without the help of the through lines.

Business moving even in heavy volume is not congestion, and where they exist, belt lines if kept reasonably open and uncongested are the best means of keeping cars moving in terminals, thus avoiding congestion and blockades.

Preliminary or advance classification as above described is not a theoretical measure, but has been used many times with success to prevent and to lift blockades in terminals.

2. Where transfer or belt roads are of considerable length and where equipped with motive power to handle transfer trains, it is the better practice to keep foreign engines off the belt line, performing the transfer service with belt crews. Better supervision can be secured where train crews are kept at home. It is difficult, if not impossible, to enforce discipline over crews while operating on a foreign road (particularly against loafing on the job), even though in theory they become the employees of that road while so engaged. Moreover, discipline and standards of performance vary on different railroads, being better on some and worse on others. Where foreign trains and engines operate over a transfer road it ordinarily happens that the general movement is regulated by the slowest and most indifferently operated train. There is also a difference in the standard of power maintenance as between railroads. A stalled train caused by the engine breaking down, not steaming or being overloaded, delays all following trains, and if a foreign crew, the railroad officers who should apply discipline have no direct stake in the failure, and find excuses ready to hand. The practice of using foreign crews on the transfer road is not sufficiently elastic. The crew may have a full train in one direction and a light train in the other, because it runs between two points only. The belt crew may be ordered to any of several points, as the business may indicate.

3. Trains should be so made up that one engine will handle as many cars as far as possible. This principle is used in the operation of through lines very generally. Under the new federal operation trains of war material have been consolidated and run solid over several different railroads without breaking up, with a saving of time and expense. The application of the principle on transfer railroads is even more important than on the through lines, because it is one of the best ways of reducing dead time, which, as we have seen, cuts so much more figure on the belt line than on the through line.

4. Where track facilities permit, the through line engine should make deliveries to the belt line yard and should haul back its own deliveries from the belt line yard. This eliminates light running. It also fixes responsibility, something of great importance during times of congestion because it permits the prompt application of the remedy. This presupposes that the belt line has sufficient tracks for both its receipts and deliveries, which will doubtless be true in most cases, where its yards are kept properly clear. As the receiving road controls its own receipts, this arrangement would give control of both receipts and deliveries to the belt line, because unless the through line keeps its receiving tracks clear by taking its business, the belt line can shut it off, and this is as it should be.

5. Transfer trains should be loaded to capacity so far as practicable, because a light train costs about as much and occupies the track facilities to about the same extent as a full train, while handling less cars. No discussion seems necessary of this rather obvious principle, although it is not always carried out in practice.

As will be observed, the foregoing discussion is largely directed toward an improvement in the operating methods of an intermediate transfer railroad. How important transfer railroads of this type are to the business of the country is shown by figures prepared by the writer in 1915 regarding one of the Chicago belt lines. With a roadbed mileage of only 0.012 per cent of the mileage of the whole country, it handled a tonnage equivalent to 1.03 per cent of the total tonnage of the country. Bearing in mind that terminal congestion retards the flow of traffic for long distances outside the terminals as a dam cuts off the flow of water for miles above it, the vast importance of removing congestion and promoting the flow of traffic through terminals becomes apparent.

Conclusion

It may also be observed in conclusion that some of the improvements suggested as applicable to belt or transfer railroads, will be found of equal advantage in connection with the work of terminal divisions of some of the larger systems.

The three things among those suggested in this discussion which it is believed would have especial effect in controlling congestion are the construction of storage yards, outside the terminals; the advance classification of transfer cars, to the greatest practicable extent; and an extension of the authority of the men in charge of terminal operations, whatever their rank or title, in order that they may better control the flow of traffic to and through the terminals.

One Way to Improve Operating Methods

By Max E. Burk

WHETHER OR NOT the railroads are to be operated by our government; whether or not government ownership of railroads is to be our policy; whether or not the railroads are to be returned to their original owners for operation and some revised form of regulation adopted, this much will still hold true—our present experience in government operation cost us over two hundred million dollars for the first twelve months, and the deficit is still rising. Remembering that government operation was undertaken entirely as a war measure, the cost involved is negligible compared with other war expenditures, but if we can gain something from the present experience that will prove helpful to us in the future, it is up to us to do so.

The present grouping of roads into regions affords the regional directors the necessary means of making extensive studies pertaining to train operation and other problems which we have not so far succeeded in determining to our satisfaction. Now is the time when such studies can be carried on at a reduced expense, for the results may be applied to several roads instead of one. Under present conditions, when the regional director's office acts as a clearing house for several roads, there is more data available for such studies and competition is not keen enough to make unfavorable results too costly.

To carry on such studies it would be necessary to establish in each region an analytical organization whose duties should be confined to the weighing and scaling of operating performances on each road, suggesting improvements, determining results of accepted and rejected suggestions, keeping in touch with improvements on other regions and determining the effects of their application to the region in question or its individual roads, and to establishing such daily tabs of operation as will enable them to detect irregularities, changes or bad practises within a day or two instead of several weeks after they take place.

While few railroad men will fail to realize the necessity for such studies, some may ask the question, Why not make the present operating organizations do this work? Some may even go further and ask whether it does not mean that the operating officers are not credited with enough ability to entrust such work to them. This is not the case. Only ignorance of the conditions with which our railroad managements have had to deal of late would cause any one to criticize or doubt their ability. Our operating officers, however, are overloaded with work and responsibilities and have not the necessary time to devote to this complicated study. We have left the point where our inefficiencies were so apparent that a practical man could detect them with the naked eye. It now requires scientific tools merely to locate those leaks, much less to attempt to devise remedies and to see that they are carried out. Besides it would prove quite advantageous to have an organization that is not responsible for actual operation, for such an organization would be inclined to be somewhat theoretical and would pull upward where the practical operating officer would tend to pull downward somewhat, allowing himself enough safety. The resultant of the two forces would be the happy medium. When we realize that railroad operating expenses alone reach the $400,000,000 mark per month, if we make merely a one per cent improvement, think what this would mean as an investment.

Do our present methods of operation indicate the lack of analytical study? If they do, in what departments? To answer these two questions it will be necessary to make a survey of the workings of our roads in a general way and without hesitation to attempt to interpret the hows and whys, bearing in mind that in almost all cases our railway officers have done the best they could under the circumstances.

How many roads have purchased large locomotives before they were ready for them? These locomotives in many cases could not be used advantageously because of such minor obstacles as inadequate water and coaling stations. The principal obstacle encountered, however, in making full use of the new locomotives was inadequate sidetracks, tracks too short to take care of the new trains. Was there any economy there? Not much. How, then, did it come about? One way of accounting for it is through the fact that the officers who were directly responsible for the buying of those locomotives could not give the question as much study as the men who did the selling.

The fact that about 80 per cent of our yards and terminals have not kept pace with our facilities between terminals pleads very strongly for an analytical organization. Such an organization would have emphasized the fact that our freight is traveling only about 2 to 2½ hours out of every 24 hours, therefore more attention should be given to supervising and improving that part of our system which has most to do with the handling of our business. In making up the plans and estimates for construction work, our engineers have been handicapped by an insufficient knowledge of yard operation. There seems to have been a tendency not to recognize a train until there was a locomotive on one end and a caboose on the other. The real truth of the matter is that when a train reaches that stage most of the difficult work has already been accomplished and there is comparatively easy sailing until the caboose is again taken off or placed ahead of the locomotive. The wind has now started blowing the other way—everywhere one hears about increasing terminal facilities.

Of course, some improvement will be made thereby, but the time is not very far off when it will be recognized that added tracks and buildings alone will not solve the question of congested terminals. It is more of a psychological problem than a physical one, and it cannot be solved until this fact is recognized fully by our officers.

We have reached the time when a new unit has to be added to the consideration of economic railroad operation, i. e., the Unit of Labor. The introduction of a new unit is quite a complicated undertaking, especially in this case, where there are so many artificial barriers. It, therefore, requires constant and careful study by an organization especially fitted for such purposes.

The most successful road will be the one, which—other conditions being equal—will be able to haul more tonnage per unit of labor. In our future estimates of the benefits to be derived from grade reduction and the elimination of curvature more consideration should be given to the importance of being able to operate the road with less specialized labor per ton mile.

While an analytical organization is helpful for special problems, such as those indicated above, it is absolutely necessary for economic, efficient and satisfactory everyday operation. The railroads in the United States have been operating for the last couple of years with limited equipment. At the same time our records show that from 20 to repairs; that the remaining 75 to 80 per cent were actually on the road between terminals only from 30 to 40 per cent fact that our officers had all they could do to handle the current business, and there was no chance of retracing yesterday's work and looking for flaws. Something had to be very much out of line before it was changed. Our supervising facilities have not kept pace with our general progress. The result is that, whenever for some reason it becomes necessary to determine actual conditions in some shop or roundhouse, the management invariably sends special check-

ers for that purpose. Why not refer to the daily report?

To get the best out of our present facilities and to help make improvements in the most economic order we must watch closely our daily performance. Our record-breaking progress necessitated the breaking up of each railroad organization into several departments, each under the supervision of specialists in their respective lines. While the specialization was necessary to increase production, it has resulted in the sad experience that a man expert in his department knows little of the workings of the other departments. The latter means many cross-purpose practices. To offset this condition we are compelled to create an organization whose business should be the constant analysis of the workings of all departments, the determination of the relationship between different orders of the different departments. Such an organization should prove to be the most effective tool for efficient operation to our operating officers. Such an organization under proper co-operation will prevent unpreparedness and will do away with our present apparent necessary evil—that of quantity and lessening quality.

Reasons for the Increase in Employees*

By Walker D. Hines
Director General of Railroads

VARIOUS PUBLIC COMMENTS have been made upon the fact that there were about 140,000 more railroad employees in January, 1919, than in December, 1917. There has been at times a disposition to assume that this fact indicates that under federal control there has been a laxity of supervision on the part of the railroad officials throughout the country as compared with the sort of supervision which would characterize those same officials under private control. It is wholly unjust to attribute to these railroad officials any such failure in their duty to the government because the facts show that this increase in employees was due to entirely different and perfectly justifiable causes. These causes were, first, the establishment of the eight-hour day and, second, the exceptional amount of maintenance work which was performed on roadway and structures in January, 1919.

In December, 1917, many employees worked on the basis of 10 hours per day or longer, but during federal control and before January, 1919, the eight-hour day was put into effect for railroad employees. The adoption of the eight-hour day therefore made it necessary either to work many classes of employees overtime (and frequently at punitive rates of overtime) or to obtain more employees to perform the same number of hours of labor. Overtime is undesirable and costly and hence the proper policy is to obtain enough employees to avoid working overtime except in emergencies. The principal cause, therefore, for the increase in the number of employees, has been the adoption of the eight-hour day. This radical change for the protection of railroad labor makes it necessary to consider the number of hours worked instead of the number of employees worked. While in January, 1919, the number of employees increased 8½ per cent over the number of employees in December, 1917, the hours worked by employees in January, 1919, increased only 1½ per cent over the hours worked by employees in December, 1917. Thus the increase in the number of employees simply illustrates the carrying out of the policy, which I believe is generally endorsed as proper, that employees ought not to be required normally to work more than eight hours per day. The small increase in the number of hours worked reduced the disparity between December, 1917, and January, 1919, to very small proportions. The result therefore is that the principal cause of the increase in the number of employees is not any greater laxity on the part of railroad officials under federal control than was exhibited by those same officials under private control, but the adoption of the eight-hour day.

This entire increase in the hours of work in January, 1919, as compared with December, 1917, can be accounted for by the increase in maintenance work on roadway and structures. January, 1919, was an unusually favorable month for such maintenance work because of the exceptionally good weather and the availability of adequate forces. In December, 1917, severe winter weather began at an unusually early date and labor for maintenance work was exceedingly scarce because of war conditions and especially because the railroad companies were not paying wages adequate to attract maintenance labor. The result was that in January, 1919, an exceptional amount of maintenance of roadway and structures was performed, the expenditure therefor being 245 per cent of the expenditure for the same purpose in December, 1917. That the entire increase in hours worked on the railroads in January, 1919, can be accounted for in the principal classes of employees in maintenance of way and structures (foremen, section foremen, masons and bricklayers, structural ironworkers and section men), is shown by the fact that the increase in hours worked by these classes of railroad employees in January, 1919, as compared with December, 1917, was in excess of the total increase in hours worked by all railroad employees, so there was actually a slight decrease in the hours worked by all other railroad employees. The increased hours worked in January, 1919, by these maintenance forces does not imply any laxity on the part of the railroad officials throughout the country as compared with the attitude of the same officials under private management, but merely shows that these officials were taking advantage of good weather and a good labor supply to do an unusual amount of maintenance work.

Both of these propositions are further illustrated by the month of February, 1919. In that month as compared with December, 1917, the number of hours of work paid for on the railroads diminished 4.3 per cent while the total number of employees had increased 8 per cent, this condition being due, as already explained, to the recognition of the important principle of the eight-hour day. On account of the extraordinarily favorable weather in February, 1919, the expenditures in that month for maintenance of way and structures were 251.6 per cent of such expenditures in December, 1917, and the hours paid for to the principal classes of maintenance employees increased ½ per cent while the hours worked by all other employees decreased 5½ per cent. This situation again shows that the railroad officials in February, 1919, were simply taking advantage of good weather and good labor supply to do a greatly increased amount of maintenance work.

*Extract from address before Philadelphia Chamber of Commerce, June 20, 1919.

Director General Hines gives convincing reasons why the President should have control of railway rates as well as costs, but they are superfluous. One Interstate Commerce Commissioner has argued recently that the rates are high enough, and that the railways are fortunate in being under the protective control that has brought them into a precarious financial condition. Another Interstate Commerce Commissioner has recently argued that rates should not be increased because it would inflate the general price level—as though the Interstate Commerce Commission were charged with the regulation of the price level. It is true that the Commissioners long had company in the idea that the solvency of the railways was not important, and that it was not particularly in the care of the Commission. But that idea is now dead and buried, outside of the Commission. That it should survive there is a good reason for intrusting the regulation of rates elsewhere.—*New York Times.*

General News Department

Representatives of the regional directors will meet at Washington on July 7 with a committee representing the train service brotherhoods to discuss interpretations of the recent wage orders issued by the director general of railroads.

A railroad men's federation is proposed by E. H. Morton, president of the Order of Railway Station Agents and representative of a number of railroad employees' organizations, not including the "big four" brotherhoods of train service employees, met in Washington this week to start an organization.

The Black Tom disaster of 1916 has again been the subject of suits in the court at Jersey City, N. J., and on Saturday last verdicts against the Lehigh Valley Railroad were handed down amounting to $330,881. Most of these suits were those entered by insurance companies. One was for the loss of a schooner and cargo, $100,874

Governor Bamberger, of Utah, with a party of Utah business men recently made a ten-day trip into the Uinta Basin to examine feasible routes for a railroad into that locality. If the territory promises enough present and future business to maintain a new line, the organization of a company to finance the project with Utah capital will be started at once. Three proposed routes were examined, one by the way of Heber, another by the way of Stockmore, and the third over the Soldier Summit pass.

For the Alaskan Railroad the appropriation for the next fiscal year, as fixed by the Senate in the Sundry Civil bill is $12,000,000. The Alaskan Engineering Commission estimates that the railroad will be completed in 1921 at a total cost of $50,436,971, or about $73,200 a mile. It is planned to employ between 5,000 and 6,000 men on the project this summer. In the same bill, the Senate, over-ruling its committee on appropriations, increased the appropriation for the valuation of railroads from $2,000,000 to $2,500,000, which is the sum approved by the House.

New York to Chicago in eight hours, 43 minutes is the latest record of the airplanes carrying mail. This is the time made on July 1, and regular service is promised. The distance is estimated at 750 miles. The airplane started at 5:15 a. m., and flew to Belfont, Pa., at 123 miles an hour; another airplane took the mail from there to Cleveland, at 100 miles an hour, and thence the bags were carried by the regular airplane to Chicago, arriving at 12:58 p. m. The second assistant postmaster general says that on letters to the Pacific Coast about 24 hours will be saved; and he expects to take 12,000 such letters each trip.

A freight train three miles long, is to be run from Washington to San Francisco—a train of motor wagons to be run by the War Department as an experiment in military transportation. According to announcement, these automobile trucks will start on July 7 and will be expected to make 15 miles an hour. The "train" will traverse the Lincoln Highway, and it is calculated that the journey can be made in two months. A full complement of officers and men will travel with the train, which will carry supply and repair units. The War Camp Community Service has been requested to look out for the men along the line. Elaborate ceremonies are being planned to mark the arrival in San Francisco.

Honorably discharged officers in considerable number, many of them experts or technicians, and many with years of experience, are registered at the main office of the War Department at Washington, D. C., for assistance in securing employment fitted to their capacities. All of the men registered have superintended men in the field under trying conditions, and practically all professions and trades are included among them. Arthur Woods, assistant to the secretary of war, says that only about 7 per cent of American army officers need this assistance, and of these, two-thirds of the number have usually found positions before the assistance of the War Department is available.

Samuel H. Barker, of Philadelphia, in a letter to the New York Evening Post, nominates Brigadier General W. W. Atterbury for president of the United States. Republicans in Congress, says Mr. Barker, have demonstrated themselves little men; the nation wants a man who can plan and accomplish big things in a direct, business way. General Atterbury, 53 years old, has never been in politics; has made his own way; has demonstrated that he is a man with broad vision, workable ideas and a mind given to attacking hard problems and getting practical solutions. He comes back from Europe with an open mind on the railroad and other economic problems which are now coming up for attention in new forms.

The Senate committee on banking and currency, which is considering the confirmation by the Senate of the re-nomination of John Skelton Williams to be comptroller of the currency, has listened to charges, presented by Wade H. Cooper, a Washington banker, that Mr. Williams, while Director of the Division of Finance of the Railroad Administration, had sanctioned or acquiesced in the payment of an excessive rental to the Georgia & Florida Railroad, of which Mr. William's brother was one of the receivers. Mr. Cooper said that the road was guaranteed an annual rental of $88,000, although it had had a deficit during the period before federal control. Mr. Williams testified that he had never given his approval to the contract involved, had never even read it, was not present at the conference at which it was passed upon, and had never made any recommendations or suggestions in regard to it.

Heavy loading of freight cars, carried out with a good degree of efficiency during the war, is the subject of a bulletin, which has been issued by the Canadian Railway War Board, calling for the continuance of the efforts which produced such improvement last year and the year before. This bulletin, addressed mainly to shippers, says that the average loaded car in 1919 was 27 tons, as compared with only 20 tons in 1914. Taking the average train of loaded cars this increases the net hauling capacity of the locomotive by 15 per cent. The prompt unloading of freight also worked important savings and consignees are exhorted to continue that economy also. Those who have abandoned their efforts because the war is over are compared to the captain who, after passing through a storm at sea, orders the lifeboats pitched overboard, so as to increase his speed by lightening of the ship.

Safety Record in Northwestern Region

A safety record compiled for roads in the Northwestern region for the four months ending April 30, shows a decrease in casualties of 1,815 or 22.28 per cent, as compared with the records for the same period in 1918. There was a decrease in the number of employees killed of 53 or 36.81 per cent and in employees injured of 1,733 or 34.7 per cent. The record for all persons, including employees, shows that 113 or 33.4 per cent less persons were killed and 1,702 or 21.81 per cent less persons were injured during this period on lines in this region than were injured or killed during the same period last year. On the Fort Dodge, Des Moines & Southern the number of casualties decreased 92.5 per cent.

Deadheads' Names Called For

Senator Newberry has introduced in Congress a resolution calling on the director general for a statement as to the number of annual passes issued for the year 1919, good over all lines, under the Railroad Administration, including passes good for sleeping-car and parlor car accommodations or free dining-car service, the report to include the name and residence of the recipient and the date of mailing, by whose order and for what reason each pass was issued.

Saving Cement Sacks

The Northwestern Regional Purchasing Committee, in advocating the proper care of empty cement sacks and their prompt return to the manufacturers for credit, says that one road has installed a machine, at the cost of $125, for cleaning sacks; and reports that during the year 1918 an average of 8,500 sacks were cleaned weekly. Cement to the amount of 367 barrels was reclaimed, valued at $940. The same road also makes a practice of repairing cement sacks, and reports that during 1918, 19,475 sacks were repaired at a cost of $230, or a little over one cent each, and by making these repairs $375 was saved.

Winnipeg Strike

The general sympathetic strike which has been in progress at Winnipeg since May 15, ended on June 24, according to an announcement issued by the Central Strike Committee, which has been conducting the strike, ordering all men back to work on June 26, exactly six weeks from the time the strike was called. The terms of the ending of the strike are not clearly outlined in despatches from Winnipeg; however, the strike leaders have been unable to obtain any concessions, and the surrender appears to be unconditional. A government commission of investigation will be appointed to conduct an investigation into the strike and to settle all disputes between the employers and strikers.

Administration Equipment Trust Certificates

The committee of the Association of Railway Executives, the Bankers' committee and the Railroad Administration have agreed upon a plan providing for the issue of $280,000,000 six per cent, 15-year equipment trust certificates, the proceeds of which are to be used to pay in part for the $400,000,000 equipment which has been ordered during the period of government control.

An equipment corporation is to be formed with power to buy, sell and lease railroad equipment. This corporation will have $148,000,000 capital stock to which it is proposed that the Railroad Administration subscribe. Of this amount $120,000,000 is to be used to repay the Railroad Administration 30 per cent of the cost of the equipment, and $28,000,000 is to be used as a reserve fund. This company will issue the $280,000,000 equipment trust certificates to the general public and will sell the equipment, costing $400,000,000, to the railroad companies on the installment plan. The installments paid by the railroad companies will be sufficient to provide for the retirement serially of the equipment trust certificates and provide interest thereon and to liquidate the stock.

Progress of Valuation Work

In a statement made recently before the appropriations committee of the House of Representatives, Director C. A. Prouty said that the road and track parties in all districts will substantially complete their work this year, and that four parties have already been disbanded in the Pacific district and five in the Southern district. The land and the field accounting work will be completed in about two years, while the office work will be completed in about three years.

The complete engineering, accounting and land reports for the Boston & Maine system have been received, while the director stated that similar reports had been completed for the Rock Island. It is estimated that the division will receive completed reports from the engineering section on 50,000 miles of road during 1919, similar reports having been received on 25,000 miles of road up to January 1 of this year. The inventory of the Western Union properties has been practically completed, while the most important part of the inventory of the Postal Telegraph properties will be completed in about six months. Work is just about to begin on the properties of the American Telephone & Telegraph Company. Up to December 31, 1918, $13,706,197 had been expended by the federal valuation department, of which $13,206,831 had been expended on the valuation of the railroads. The commission has authorized the appointment of about 1,525 men, and the average force of the division of valuation during 1918 was about 1,325 men.

Rear Collision at Dunkirk, N. Y.

In a rear collision of passenger trains on the New York Central at Dunkirk, N. Y., on the morning of July 1 at 2:20, eight passengers, the baggageman, the engineman and the fireman of train No. 7, and one trespasser were killed, and 17 passengers were injured. A number of others sustained minor injuries. Westbound passenger train No. 41, standing at the station, was run into at the rear by westbound passenger No. 7, wrecking the rear sleeping car. No. 7 struck at 40 or 50 miles an hour. The baggage car of No. 7, a wooden car, was crushed, and the coach next behind it, a steel car, was turned crosswise of the track and its side torn open; and in this car and the rear sleeper of No. 41 the passenger fatalities occurred. The trespasser was riding between the tender and the leading baggage car.

Train 41 had been standing at the station about 47 minutes because of a hot journal. It was properly protected by a home block signal 2,000 ft. back and a distant signal 4,125 ft. farther back; and the flagman was back 1,700 ft. with a red light. There is, however, no question about protection, as the engineman of No. 7, F. L. Clifford, had sounded the whistle for hand brakes, indicating that the air brakes did not properly act. Clifford was alive when taken from his engine and said that the brakes did not hold. This seems to be confirmed by the examination of the wreck, which disclosed that the air-brake angle cock at the rear of the tender was shut; and it is believed that the man riding there had closed it, intentionally or otherwise. This trespasser was identified as Charles Schiller. He was a resident of Dunkirk, which tends to confirm the supposition that, finding that the train was likely to pass through the town without stopping, he decided to himself apply the brakes and mistakenly assumed that he could do this by turning the angle cock.

Western Society of Engineers' 50th Anniversary

The Western Society of Engineers, Chicago, celebrated the fiftieth anniversary of its organization on June 27 and 28. This society was founded in May, 1869, as the Civil Engineers' Club of the Northwest, the name being changed to the Western Society of Engineers in 1880.

The program was opened at 3 o'clock on Friday afternoon with an outline of the history of the society and of the most important achievements, presented by E. S. Nethercut, secretary. This was followed by brief reviews of the developments in engineering progress during the last 50 years in (1) transportation, by Samuel O. Dunn, editor of the *Railway Age;* (2) steam power, by J. R. Bibbins, of the Arnold Company, Chicago; (3) electric light and power, by J. R. Cravath, consulting electrical engineer, Chicago; (4) electrical communication, by F. F. Fowle, consulting telephone engineer, Chicago, and (5) sanitary engineering, by J. W. Alvord, consulting engineer, Chicago.

The evening was devoted to reminiscences of the early days of the society by past presidents, twelve of the 23 living past presidents being present. In all, 39 presidents have served the society. The speakers included Samuel G. Artingstall, Isham Randolph, consulting engineer, John F. Wallace, president, Westinghouse, Church, Kerr & Company, New York; Ralph Modjeski, consulting bridge engineer; W. L. Abbott, chief operating engineer, Commonwealth Edison Company; Charles F. Loweth, chief engineer, C., M. & St. P.; Andrews Allen, consulting engineer; John W. Alvord, consulting en-

gineer; Albert Reichmann, division engineer, American Bridge Company; H. J. Burt, manager, Holabird & Roche, architects, and Charles E. Burdick, consulting sanitary engineer.

Traveling Engineers' Association

The annual meeting of the Traveling Engineers' Association, to be held at Hotel Sherman in Chicago in September, will begin on the 16th instead of the 9th; and will hold through Tuesday, Wednesday, Thursday and Friday, ending on the 19th.

Meetings and Conventions

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

AIR BRAKE ASSOCIATION.—F. M. Nellis, 165 Broadway, New York City. Next convention, May 5-7, 1920, Chicago.

AMERICAN ASSOCIATION OF DEMURRAGE OFFICERS.—F. A. Pontious, Supervisor of Demurrage and Storage, C. & N. W. Ry., Chicago.

AMERICAN ASSOCIATION OF DINING CAR SUPERINTENDENTS.—E. H. Thayer, St. Louis-San Francisco R. R., St. Louis, Mo.

AMERICAN ASSOCIATION OF FREIGHT AGENTS.—R. O. Wells, Illinois Central, Chicago.

AMERICAN ASSOCIATION OF GENERAL BAGGAGE AGENTS.—J. E. Quick, Port Huron, Mich.

AMERICAN ASSOCIATION OF PASSENGER TRAFFIC OFFICERS.—W. C. Hope, C. R. R. of N. J., 143 Liberty St., New York.

AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—J. Rothschild, Union Station, St. Louis, Mo.

AMERICAN ELECTRIC RAILWAY ASSOCIATION.—F. B. Burritt, 8 W. 40th St., New York. Next convention, October 6-10, Atlantic City, N. J.

AMERICAN ELECTRIC RAILWAY MANUFACTURERS' ASSOCIATION.—C. F. J. Dell, 50 E. 42nd St., New York.

AMERICAN RAILROAD MASTER TINNERS', COPPERSMITHS' AND PIPE FITTERS' ASSOCIATION.—Otto E. Schlinck, 435 W. 5th St., Peru, Ind.

AMERICAN RAILROAD ASSOCIATION.—J. E. Fairbanks, 75 Church St., New York:

Section I, Operating (including former activities of Association of Railway Telegraph Superintendents and Railway Storekeepers' Association).

Section II, Engineering (including former activities of American Railway Engineering Association and Railway Signal Association).—E. H. Fritch, 431 South Dearborn St., Chicago.

Signal Division.—H. S. Balliet, 75 Church St., New York.

Section III, Mechanical (including former activities of Master Car Builders and Master Mechanics Associations).—V. R. Hawthorne, 431 South Dearborn St., Chicago.

Section IV, Traffic (including former activities of Freight Claim Association).

Section V, Transportation (including former activities of Association of Transportation and Car Accounting Officers).

AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, C. & N. W. Ry., 319 N. Waller Ave., Austin Station, Chicago. Next convention, October 21-23, 1919, Cleveland, O.

AMERICAN RAILWAY ENGINEERING ASSOCIATION.—(See American Railroad Association, Section II, Engineering).

AMERICAN RAILWAY MASTER MECHANICS' ASSOCIATION.—(See American Railroad Association, Section III, Mechanical).

AMERICAN RAILWAY PERISHABLE FREIGHT ASSOCIATION.—F. F. McPike, 135 E. 11th Place, Chicago. Regular meetings, 2d Wednesday in March and September.

AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—R. D. Fletcher, 6402 Greenwood Ave., Chicago. Next convention, August 27-29, Hotel Sherman, Chicago.

AMERICAN SOCIETY FOR TESTING MATERIALS.—C. L. Warwick, University of Pennsylvania, Philadelphia, Pa.

AMERICAN SOCIETY OF CIVIL ENGINEERS.—Charles W. Hunt, Engineering Societies Building, 33 W. 39th St., New York. Regular meetings, 1st and 3d Wednesday in month, except July and August, 57 W. 39th St., New York.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 39th St., New York.

AMERICAN SHORT LINE RAILROAD ASSOCIATION.—T. F. Whittelsey, 708 Union Trust Bldg., Washington, D. C.

AMERICAN TRAIN DESPATCHERS' ASSOCIATION.—D. L. Darling, Northern Pacific Ry., Spokane, Wash.

AMERICAN WOOD PRESERVERS' ASSOCIATION.—F. J. Angier, B. & O., Mt. Royal Sta., Baltimore, Md.

ASSOCIATION OF RAILWAY CLAIM AGENTS.—Willis H. Failing, C. R. R. of N. J., Jersey City, N. J.

ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—Jos. A. Andreucetti, C. & N. W., Room 411, C. & N. W. Sta., Chicago. Next meeting, October, 1919, Chicago.

ASSOCIATION OF RAILWAY TELEGRAPH SUPERINTENDENTS.—(See American Railway Association, Section I, Operating).

ASSOCIATION OF TRANSPORTATION AND CAR ACCOUNTING OFFICERS.—(See American Railroad Association, Section V, Transportation).

BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.—M. F. Trees, Chicago. Next annual convention, October 21-23, 1919, Cleveland, O.

CANADIAN RAILWAY CLUBS.—James Powell, 46 Aberdeen Ave., St. Lambert (near Montreal), Que.

CAR FOREMEN'S ASSOCIATION OF CHICAGO.—Aaron Kline, 841 Lawler Ave., Chicago. Regular meetings, 2d Monday in month, except June, July and August, New Morrison Hotel, Chicago.

CENTRAL RAILWAY CLUB.—Harry D. Vought, 95 Liberty St., New York. Regular meetings, 2d Thursday in November, and 2d Friday in January, March, May and September, Hotel Statler, Buffalo, N. Y.

CHIEF INTERCHANGE CAR INSPECTORS' AND CAR FOREMEN'S ASSOCIATION.—W. R. McMunn, New York Central, New York.

CHIEF INTERCHANGE CAR INSPECTORS' AND CAR FOREMEN'S SUPPLY MEN'S ASSOCIATION.—D. B. Wright, Lehon Company, 45th and Oakley Sts., Chicago.

EASTERN RAILROAD ASSOCIATION.—D. G. Stuart, Washington, D. C.

FREIGHT CLAIM ASSOCIATION.—(See American Railroad Association, Section IV, Traffic).

GENERAL SUPERINTENDENTS' ASSOCIATION OF CHICAGO.—A. M. Hunter, 321 Grand Central Sta., Chicago. Regular meetings, Wednesday preceding 5d Friday in month, Room 856, Insurance Exchange Bldg., Chicago.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.—A. L. Woodworth, B. & O., Lima, Ohio. Next convention, August 19-21, Hotel Sherman, Chicago.

INTERNATIONAL RAILWAY FUEL ASSOCIATION.—J. G. Crawford, 702 E. 51st St., Chicago.

INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—Wm. Hall, 1061 W. Wabash Ave., Winona, Minn. Next convention, October 21-23, 1919, American Annex Hotel, St. Louis, Mo.

MAINTENANCE OF WAY AND MASTER PAINTERS' ASSOCIATION.—F. W. Hager, 1323 Hurley Ave., Ft. Worth, Tex. Next annual convention, October 21-23, 1919, American Annex Hotel, St. Louis, Mo.

MASTER BOILER MAKERS' ASSOCIATION.—Harry D. Vought, 95 Liberty St., New York.

MASTER CAR AND LOCOMOTIVE PAINTERS' ASSOCIATION OF THE UNITED STATES AND CANADA.—A. P. Dane, B. & M., Reading, Mass. Next meeting, September, 1919, Chicago.

MASTER CAR BUILDERS' ASSOCIATION.—(See American Railroad Association, Section III, Mechanical).

NATIONAL ASSOCIATION OF RAILWAY AND UTILITIES' COMMISSIONERS.—James B. Walker, 49 Lafayette St., New York. Next annual convention, October 14, 1919, Indianapolis, Ind.

NATIONAL FOREIGN TRADE COUNCIL.—O. K. Davis, 1 Hanover Square, New York.

NATIONAL RAILWAY APPLIANCES ASSOCIATION.—C. W. Kelly, Kelly-Derby Co., Peoples Gas Bldg., Chicago.

NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meetings, 2d Tuesday in month, excepting months of June, July, August and September.

NEW YORK RAILROAD CLUB.—Harry D. Vought, 95 Liberty St., New York. Regular meeting, 3d Friday in month, except June, July and August, 29 W. 39th St., New York.

NIAGARA FRONTIER CAR MEN'S ASSOCIATION.—George A. J. Hochgrebe, 623 Brisbane Bldg., Buffalo, N. Y. Regular meetings, 3d Tuesday in each month, Tenjost Hall, Buffalo, N. Y.

PACIFIC RAILWAY CLUB.—W. S. Wollner, 64 Pine St., San Francisco, Cal.

RAILWAY ACCOUNTING OFFICERS' ASSOCIATION.—E. R. Woodson, 1116 Woodward Bldg., Washington, D. C. Next annual meeting, June 11, 1919, Hotel Commodore, New York.

RAILWAY BUSINESS ASSOCIATION.—Frank W. Nixon, 30 Church St., New York. Next annual meeting, December, 1919, Buffalo, N. Y.

RAILWAY CLUB OF PITTSBURGH.—J. D. Conway, 515 Grandview Ave., Pittsburgh, Pa. Regular meetings, 4th Thursday in month except June, July and August, Colonial Annex Hotel, Pittsburgh, Pa.

RAILWAY DEVELOPMENT ASSOCIATION.—D. C. Welty, Missouri Pacific R. R., St. Louis, Mo.

RAILWAY ELECTRIC SUPPLY MANUFACTURERS' ASSOCIATION.—J. Scribner, General Electric Co., Chicago. Annual meeting with Association of Railway Electrical Engineers.

RAILWAY EQUIPMENT MANUFACTURERS' ASSOCIATION.—D. L. Eubank, Galena Signal Oil Company, Richmond, Va. Next annual meeting, September, 1919, Hotel Sherman, Chicago.

RAILWAY FIRE PROTECTION ASSOCIATION.—G. L. Ball, St. Louis-San Francisco Ry., St. Louis, Mo. Next annual meeting, October 21-23, 1919, La Salle Hotel, Chicago.

RAILWAY REAL ESTATE ASSOCIATION.—James P. Nelson, President, C. & O., Richmond, Va.

RAILWAY SIGNAL ASSOCIATION.—(See American Railroad Association, Engineering Section, Signal Division).

RAILWAY STOREKEEPERS' ASSOCIATION.—(See American Railroad Association, Section I, Operating).

RAILWAY SUPPLY MANUFACTURERS' ASSOCIATION.—J. D. Conway, 1841 Oliver Bldg., Pittsburgh, Pa.

RAILWAY TELEGRAPH AND TELEPHONE APPLIANCE ASSOCIATION.—G. A. Nelson, Waterbury Battery Co., 30 Church St., New York.

ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—P. J. McAndrews, C. & N. W. Ry., Sterling, Ill. Next annual convention, September 16-18, 1919, Chicago.

ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo. Regular meetings, 2d Friday in month, except June, July and August.

SIGNAL APPLIANCE ASSOCIATION.—F. W. Edmunds, West Nyack, Rockland County, New York.

SOCIETY OF RAILWAY FINANCIAL OFFICERS.—L. W. Cox, 1217 Commercial Trust Bldg., Philadelphia, Pa.

SOUTHERN AND SOUTHWESTERN RAILWAY CLUB.—A. J. Merrill, P. O. Box 1205, Atlanta, Ga. Regular meetings, 3d Thursday in January, March, May, July, September and November, Piedmont Hotel, Atlanta.

SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—E. W. Sandwich, Western Ry. of Ala., Atlanta, Ga.

SUPPLY ASSOCIATION OF AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—C. N. Thulin, Duff Manufacturing Company, 935 Peoples Gas Bldg., Chicago. Next convention, August 27-29, Hotel Sherman, Chicago.

TRACK SUPPLY ASSOCIATION.—W. C. Kidd, Ramapo Iron Works, Hillburn, N. Y. Next annual convention, September 16-18, 1919, Auditorium Hotel, Chicago.

TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, N. Y. C. R. R., Cleveland, O. Next annual meeting, September 16-19, 1919, Hotel Sherman, Chicago.

WESTERN ASSOCIATION OF SHORT LINE RAILROADS.—Clarence M. Odell, Mills Bldg., San Francisco.

WESTERN RAILWAY CLUB.—J. M. Byrne, Chief Clerk to Mechanical Assistant, Central Western Region, 547 Jackson Blvd., Chicago. Regular meetings, 3d Monday in month, except June, July and August.

WESTERN SOCIETY OF ENGINEERS.—Edgar S. Nethercut, 1735 Monadnock Block, Chicago. Regular meetings, 1st Monday in month, except July and August.

Traffic News

All embargoes in connection with freight shipments on the Canadian Pacific Western lines has been removed as a result of the collapse of the Winnipeg general strike.

O. E. Duggan, assistant traffic manager of the Lutcher and Moore Lumber Company, Orange, Tex., has been appointed traffic manager for the Judson Freight Forwarding Company, at New Orleans, La.

The Missouri Pacific has resumed through freight train service to and from New Orleans and all other points on the Trans-Mississippi Terminal Railroad, and will re-establish a division freight office at New Orleans.

The strike of freight handlers at New York City, was settled on June 26 and perishable freight was moving in normal volume within one or two days thereafter. It is said that the damages by the strike were mitigated by diversion of many shipments of fruit and vegetables to other cities.

The first of the new steel barges under construction for the United States Railroad Administration, for service on the Mississippi river between St. Louis and New Orleans was launched by the American Bridge Company at Pittsburgh on June 26. This is one of 40 similar barges under contract for lower Mississippi river service. One barge is to be launched every two weeks.

The revenue freight loading on roads in the Northwestern region for the week ending June 24 show a decided decrease, when compared with the corresponding period last year. The total number of cars loaded in 1918 was 182,047, whereas in 1919 the total was 156,408. The number of grain and grain products cars loaded show an increase from 7,747 to 10,161, whereas the reports compiled for other classes of freight loading show substantial decreases.

A movement to secure a reduction of 20 per cent in railroad fares by commercial travelers and other large users of mileage tickets was started recently at the thirty-second annual convention of the supreme council of the Order of United Commercial Travelers of America at Columbus, Ohio. Supporters of the movement cited the difference between the special rates for railroad travel in Canada and rates for commercial traveling men in the United States.

Delegates to the thirtieth annual convention of the Travelers' Protective Association, have begun a campaign to have train schedules printed as advertising in newspapers in a similar form to that generally in effect before the outbreak of the war. The Railroad Administration has said that it was problematic as to whether such advertisements did the public any good and that the expense was too great. The Dameron-Pierson Company, a stationery and office appliance firm at New Orleans, has advertised train schedules in the New Orleans papers as a matter of convenience to the public.

The Wescott Express (baggage transfer) Company, New York City, has been doing little or no business for the past week because of a walkout of one hundred wagonmen, although it was said that the assistance of other express companies and taxicabs had prevented congestion of baggage. The general manager of the company said the demands of the men for shorter hours, more wages, and no Sunday work amounted practically to more than 100 per cent increase, and that the company had no intention of granting the demands. Passengers and railroad station baggage men have suffered much inconvenience.

The American Railway Express Company is planning to extend throughout the country the plan for waybilling freight that it has had in operation in the east since 1914. The new plan will be inaugurated about September 1. It is a combination of the coupon waybill and single entry delivery methods and will save labor. It will also have the effect of standardizing practice, as against four or five different waybilling methods of the old express companies which are still being used. Preparations are being made to instruct employees in the operation of the new plan and about 400 men will be detached from their regular work for two months for this purpose.

The Traffic Club of Chicago at a special meeting held on June 24, adopted resolutions endorsing the principles of the Esch-Pomerene bill. It recommends that the words "and the cost of capital" be added after the words "operating costs" in line 15, page 23, of that bill; that legislation be enacted placing under the Interstate Commerce Commission the arbitration and settlement of disputes between railroad managements and their employees over wages and conditions of service, and that the Poindexter long-and-short haul bill be killed. The resolutions are to be sent to Congress and also to other traffic clubs throughout the country with the suggestion that similar action be taken by the latter.

According to a report on overseas traffic for the week ending June 25, on June 25 there were 9,867,640 bushels of grain in the elevators at North Atlantic ports. While there had been received in the elevators 5,701,194 bushels, there had been cleared during the week 5,582,421 bushels, an excess of receipts over deliveries of 118,773 bushels. As to South Atlantic and Gulf ports as of June 21, there were 4,558,603 bushels of grain in elevators divided between New Orleans and Galveston, Port Arthur and Texas City being empty. The total number of carloads of export freight on hand at North Atlantic ports, on June 25, exclusive of bulk grain and coal, was 23,526 cars, as compared with 24,604 cars for the same day of the preceding week. At these same ports there were 6,488 carloads of export food on hand on June 25, as against 6,948 carloads on June 18. Tonnage for the French and British governments, the Food Administration and the Wheat Export Company at the port of New York is ample to supply all demands. At South Atlantic and Gulf ports as of June 21, there were 10,226 car loads of export freight on hand as against 10,894 cars on June 14.

Boatmen on the New York State barge canal, and their friends, declare that the Railroad Administration must take its hands off the canals of the state and "give to those who have their money invested in the floating property that traverses thereon an opportunity to get some business." There is a fixed annual charge imposed upon the citizens of New York State of something like $7,000,000, the annual interest payable on the $155,000,000 canal and terminal bond issue, plus the cost of maintenance. When the Railroad Administration accepted the use of the canals from the State authorities, no provision was made to see that the investors in these state waterways were assured of any returns upon their investment. "These canals," say the boatmen, "should be utilized to their maximum, and to date it is necessary to encourage capital to invest in the flotilla necessary to carry the freight. It is hard enough to get investors in floating property of this kind under ordinary conditions; but it is an absolute impossibility to do so if we are going to continue to compete against Government operators. They can carry freight at a loss. Who cares? Uncle Sam is rich, and he foots the bill."

Charles F. Guggenbuehler, of Newark, N. J., inventor of a lining for bearing boxes on locomotives, which he alleges will save the railroads $25,000,000 a year, has petitioned the Supreme Court in New York City for an injunction restraining the disposition of stock in a corporation formed to exploit the patent. He claims that after the invention had been tried out by Government inspectors in the yards in Jersey City, and they had expressed their satisfaction, C. V. Lutz induced him to assign his patent to Lutz to enable the latter to present it to the Government because it would not be accepted from Guggenbuehler, he being an enemy alien. The plaintiff says Lutz has given him only 25 per cent of the stock.

Equipment and Supplies

Locomotive Deliveries

The following locomotives were shipped to railroads under federal control during the week ended June 21:

Works	Road	Number	Type
American	B. & O.	7	USRA 6W.SW.
	A. T. & S. F.	3	Pacific
	*A. T. & S. F.	1	Mount.
	B. & O.	4	USRA Pac.
	C. B. & Q.	1	Santa Fe
	Erie	2	USRA Pac.
	**N. & W.	1	Mallet
	M. K. & T.	8	USRA 8W.SW.
	Penn.	1	Mallet
	S. P.	2	Santa Fe
	U. P.	1	Santa Fe
		24	
Total		31	

*This locomotive shipped 6/11 19. Information not received in time to include in report of week ended June 14, 1919.

**This locomotive reported shipped by the builder for week ended June 14, in error.

Locomotives

The Boston & Maine is asking for prices on 20 locomotives.

The Texas & Pacific is inquiring for 25 locomotives of the Santa Fe type.

The Havana Central is inquiring for 6 six-wheel sinteling locomotives and one narrow gage Consolidation.

Freight Cars

The Semet-Solvay Company, Harriett, N. Y., is inquiring for three coal cars.

The French State Railways are asking prices in this country for 1,000 freight cars.

The International Shipbuilding Company, Pascagoula, Miss., is inquiring for storage battery cars.

The American Oceanic Corporation, New York, is in the market for 5,000 flat cars for export to France.

The Havana Central is inquiring for 500 30-ton boxcars, 500 25-ton flat cars and 50 15-ton narrow gage cane cars.

The Business Research & Development Company, Chicago, is inquiring for several 5,000 to 8,000-gal. tank cars.

M. A. Hanna & Company, Wilkesbarre, Pa., have ordered 25 mine cars from the American Car & Foundry Company, Chicago.

The Shell Company, San Francisco, Cal., has ordered two 50-ton 10,000 gal. three compartment tank cars from the American Car & Foundry Company, Chicago.

The Cuban Railroad Company, New York, has ordered from the American Car & Foundry Company, Chicago, 150 40-ton box cars and 25 first and second class passenger, baggage and mail and express cars.

Signaling

An interlocking machine, 40 levers, all-electric, was furnished by the General Railway Signal Company, Rochester, N. Y., for the Lehigh Valley, last month, in two weeks from the time the order was received. This machine was for the junction at South Plainfield, N. J., where the tower was destroyed by fire. The order for the new machine was immediately given by telephone, and the first shipment of material was made within one week.

Supply Trade News

George W. Jones, assistant manager of the New York office of the **Pittsburgh Steel Company**, of Pittsburgh, Pa., has been appointed manager of the Chicago office, with headquarters in the McCormick building.

John McConnell, who has charge of alloy steel production for the **Interstate Iron & Steel Company**, Chicago, as assistant to the vice-president with headquarters at Canton, Ohio, has been promoted to vice-president with headquarters at Chicago.

The Sims Improved Rail Anchor Company, Ltd., Toronto, Ont., has been incorporated to manufacture railroad machinery and other devices. The company is capitalized at $100,000 by Mervil MacDonald and Edwin Smily, of Toronto, and others.

Lieut.-Col. Elmer K. Hiles, Engineers, A. E. F., who went over as captain in the Fifteenth Engineers, and who has just returned after nearly two years' service in France, will join the **Pittsburgh Testing Laboratory** on July 15, as manager of laboratories, with headquarters at Pittsburgh.

W. M. Carty, assistant superintendent of the American Brake Shoe & Foundry Company, Chicago, has been appointed superintendent of the Pine Bluff, Ark., plant of the **Standard Brake Shoe & Foundry Company**. The latter company recently purchased equipment to increase its capacity from 350 to 800 tons a month.

J. H. Redhead has been appointed assistant to the vice-president in charge of miscellaneous sales of the **National Malleable Castings Company**, Cleveland, Ohio. **C. C. Gibbs**, until recently associated with the sales department of the Indianapolis plant, has been appointed sales agent of the Cleveland plant, succeeding Mr. Redhead.

E. E. Maher has organized the **Maher Engineering Company**, with office in the Michigan Boulevard building, Chicago, to handle the sales and installation of Erie Engine Works high speed engines, Sims feed water heaters, Dayton-Dowd centrifugal pumps, Wagener steam pumps and Pratt Engineering & Machine Company fertilizer and sulphuric acid machinery.

W. H. Woody, until April 17, 1919, supervisor of the shipfitters and allied trades at the government navy yard, Portsmouth, Va., and before enlistment in government work affiliated with the Chicago Pneumatic Tool Company, Chicago, as special representative, has been placed in charge of the Washington, D. C., office of the **Keller Pneumatic Tool Company**, Chicago.

Major Morrill Dunn, vice-president of **McCord & Co.**, Chicago, has received the decoration of Chevalier of the Legion of Honor from the French government in recognition of his services during the war. Major Dunn was commissioned a captain in the Signal Corps of the United States Army and assigned to overseas duty in October, 1917, where he continued in service until his recent discharge.

J. G. Carruthers, manager of sales of the **Carnegie Steel Company**, the **Illinois Steel Company**, and the **Tennessee Coal, Iron & Railroad Company**, with headquarters at Cincinnati, Ohio, has been appointed manager of sales for the Chicago district of the Illinois Steel Company at Chicago. He has been succeeded at Cincinnati by **George H. Vant**, who has been transferred from the Pittsburgh office of the Carnegie Steel Company.

Wonham, Bates & Goode, Inc., engineers, manufacturers' representatives and exporters, New York, have opened a branch office in the Dominion Express building, Montreal, Que., in charge of **A. G. Nutter**, who was formerly with

Mussens, Ltd. This extension is for the purpose of facilitating business between the United States and Canada, particularly in railway supplies, industrial equipment and iron and steel products.

The Ohio Electric & Controller Company, Cleveland, Ohio, announces that it has appointed as its representatives the following firms: The Iron & Steel Equipment Company, Pittsburgh, Pa.; Williams, Beasley Company, Chicago; Linn O. Morrow, Philadelphia, Pa.; J. W. Dopp Company, Detroit, Mich.; Kelly, Powell, Ltd., Winnipeg, Canada; Wonham, Bates & Goode, Inc., Montreal, Canada; Shook & Fletcher Supply Company, Birmingham, Ala.; Wonham, Bates & Goode, Inc., New York City—London, Paris, Havana and Rio De Janeiro; Mitsui & Company, New York—Japan, China, Philippine Islands and Honolulu; Gustav Neilson A/S Christiania, Norway, Sweden and Denmark.

The Metallo Gasket Company has recently been incorporated to manufacture gaskets and other packings, at New Brunswick, N. J., with the following officers: **Zeno Schultes**, president and treasurer; **George Geipel**, vice-president, and **Stanley S. Geipel**, secretary. Mr. Schultes was manager of the Goetze Gasket & Packing Company for about 14 years. George Geipel has been an erecting engineer for 35 years, specializing in refrigerating and steam power plants, and Stanley S. Geipel has had ten years' experience in mechanical engineering. The company will concentrate for a time on its metallo corrugated copper gasket with asbestos cord inlaid in the copper grooves or corrugations.

Railway Construction

Chicago & North Western.—This company contemplates the construction of an addition of 78 storage bins to its grain elevator at South Chicago, which will cost approximately $1,000,000, and will increase the capacity of the elevator by 3,000,000 bu. Contracts for the work have not been let.

Philadelphia & Reading.—A contract has been given to Charles C. Pace for building a new power house for the engine house, which was recently built in the yard at Reading, Pa. The new building will be a brick structure on concrete foundation, 38 ft. wide and 50 ft. long.

Walker D. Hines, Director General of Railroads, has fought a good fight not merely for the roads operating at desperate losses, but also for the shippers and for the American people, who in the last analysis must foot all the bills. He has never sought to disguise the truth that heavier costs put the brakes on business in general. With the sound sense of the practical railroad man he has wanted reasonably high rates that would permit the carriers to pay their own way with full train loads. He has been wise enough to see that it was economic lunacy to try to force the railroads, bleeding to death, to pay steel and coal prices fixed at inordinately high levels so as to keep the steel industry and the coal industry thriving on an artifical basis. He has been catholic enough to conceive and daring enough to contend that in such a predicament as they are caught—the "vicious circle"—the American people would be better off to stand more taxes to meet the railway deficits than more and heavier rate increases to avoid the deficits. Nevertheless, he feels that the stupendous operating deficit, threatening the very Treasury, may compel the Railroad Administration to fall back on the old, old transportation principle, so notorious in the wicked private management days, of "taxing the traffic what it will bear." In spite of inflated prices there is traffic which flows as abundantly at present high rates as it flowed before at low freight rates. Because of inflated prices there is traffic which will not flow freely at the present freight rates. There is traffic which will scarcely flow at all. So let the traffic that will pay anyhow pay still more. * * * This, then, would be a return to scientific rate making; something we have had too little of, ever since the Interstate Commerce Commission began to work the ruin of the American railway system. * * *—*New York Sun.*

Railway Officers

Railroad Administration

Central Administration

James W. Carmalt has resigned as assistant to the general counsel of the Railroad Administration to engage in the practice of law at Washington, D. C. He was formerly chief examiner of the Interstate Commerce Commission.

L. Yager, engineer maintenance of way of the Northern Pacific, has been appointed chief maintenance of way engineer in the Division of Operation, with office at Washington. Mr. Yager entered railway service in 1899 as chainman on the Minneapolis & St. Louis. In 1900 he entered the service of the Northern Pacific as rodman, and has been with the same road since that time. He later served as inspector, assistant engineer, superintendent of bridges and buildings, division engineer and acting engineer maintenance of way On April 1, 1917, he was appointed engineer maintenance of way.

Regional

L. M. Betts, supervisor of car service, Northwestern region, has been appointed supervisor of transportation, Northwestern region, succeeding **D. B. McIntyre**, who has resigned to become assistant traffic manager of the Simmons Company, Kenosha, Wis.

Federal and General Managers

A. E. Sweet, formerly vice-president of the Denver & Rio Grande, with headquarters at Denver, Colo., has been appointed federal manager of the El Paso & Southwestern and the El Paso Union Passenger Depot, with headquarters at El Paso, Texas, to succeed **G. F. Hawks**, who has resigned.

Engineering and Rolling Stock

J. H. Minton, senior assistant engineer on the Pennsylvania Western Lines, with headquarters at Pittsburgh, Pa., has resigned to accept a position with the United States Steel Corporation at Pittsburgh. The field work formerly handled by Mr. Minton has been placed in charge of **T. M. Bole**, assistant engineer with headquarters at Pittsburgh and the office details and preparation of plans and specifications in connection with new construction work, formerly handled by Mr. Minton has been taken over by L. P. Struble, assistant engineer with headquarters at Pittsburgh.

Purchasing

T. S. Edgell, traveling storekeeper of the Mobile & Ohio, with office at Mobile, Ala., has been appointed division storekeeper, with headquarters at Murphysboro, Ill., vice **E. H. Landers**, resigned to accept service with another company.

The jurisdiction of **W. C. Bower**, purchasing agent of the New York Central, with headquarters at New York, has been extended over the Line West of Buffalo, vice **G. R. Ingersoll**, who has resigned to engage in other business; **C. C. Warne**, assistant purchasing agent, has been appointed first assistant purchasing agent, with office at New York, and **W. P. Winter** has been appointed assistant purchasing agent, with office at Cleveland.

Obituary

Henry E. Graves, who retired from active railway service as commercial agent of the Grand Trunk several years ago, after 26 years of service with that road, died at his home in River Forest, Ill., on June 25.

EDITORIAL

Railway Age

EDITORIAL

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One argument which has been made against another advance in railway rates is that it would open a new cycle of increases in the cost of living. The advances in the wages of railway employees which have been made under government operation are officially estimated to average 52 per cent, and the average increase in the prices of railway materials and supplies since 1917 is estimated at 35 to 40 per cent. The increase in the cost of living between the end of 1915 and the end of 1917 was about 45 per cent, and there has been a still further increase since then. Prior to 1917 there was practically no advance in railway rates, the average receipts per ton per mile in 1916 being the lowest ever recorded. In 1917 and 1918 there was an increase of approximately 40 per cent in freight rates in eastern territory and of about 25 per cent in the rest of the country and an increase in passenger rates of about 50 per cent throughout the country. Passenger earnings are only one-fifth of the total earnings of the railways, while freight earnings are three-fourths. Therefore, while the railroads have had an increase of 50 per cent in the rates from which they derive one-fifth of their revenues, they have had an increase averaging only about 30 per cent in the rates from which they derive three-fourths of their revenues. In other words, during the cycle of greatly increasing wages, prices and cost of living since 1915, railway rates have been advanced relatively only about one-half as much as wages and prices generally and the cost of living. To say that an advance in rates sufficient to make the total increase in rates as great in proportion as has been the increase in prices and in the cost of labor generally since 1915 would open a new cycle is to ignore the facts. Such an advance in rates would merely close an old cycle, not begin a new one. The railways are really suffering in two ways, first, because they were not given the advances in rates which they needed before the end of 1915, and, second, because the advances in rates made since then have not beeen relatively as large as the increases in the wages and prices they have to pay and in wages and prices in general. Let us close the old cycle by establishing a reasonable relationship between railway rates, and wages and prices, before we begin to talk of the danger that an advance in railway rates will open a new cycle of increases in wages and prices and the cost of living

Closing—Not Opening—a Cycle

If one were to speculate on the ultimate limit of power which may be developed in a single unit locomotive, probably the first factors to be considered would be clearance limitations, wheel loads and the possible length of rigid wheel base, all of which are no doubt capable of some increase beyond the limits so far actually reached in most of the locomotives of the Santa Fe type now in service. There is one detail of running gear, however, which seems likely to become a more serious limitation than any of these: that is, the main driving box. Increases in the size and power of locomotives have been accompanied by constantly growing difficulties in the proper maintenance of the main boxes and side rods, due largely to the inability of the box to properly withstand the longitudinal thrusts produced by the increased total piston loads. The demands for greater power have been met only partially by increased wheel loads; the changes in the axle load limits have been kept within a comparatively narrow range, while the number of axles has been increased. The longitudinal loads produced by the piston thrust have therefore increased in much greater proportion than the journal loads due to weight. As the piston thrust must be withstood initially by the main driving boxes, a situation has already been created where the present types of boxes are inadequate satisfactorily to meet the conditions imposed. If further increases are to be made in cylinder loads it seems evident that provision must be made to withstand the increased longitudinal forces by a driving box design considerably different from any of those now in common use. Otherwise we must look to the Mallet type for future developments.

Improved Main Driving Boxes Needed

Colonel James A. McCrea, until the outbreak of the war general manager of the Long Island, has resigned from railroad service to become vice-president of the bankers' Trust Company of New York. It is not that a vice-presidency of the Bankers' Trust Company would not be a worthy goal for an ambitious man of 44, but that a railroad career, such as Mr. McCrea had open to him, should be abandoned for any other work, which makes this announcement peculiarly significant. James A. McCrea is the son of the late James McCrea, who was president of the Pennsylvania from 1907 to 1913. The son had been brought up in the traditions of the Pennsylvania which, in some ways, is the most attractive railroad service in the world, and he had made good. He had risen, step by step, from the position of rodman on the Pennsylvania Lines West to superintendent of the Cincinnati division of the lines west, and was then made general superintendent of the Long Island. In 1911 he was made general manager of that line. He grasped the opportunity to go abroad and his experience with the American Expeditionary Forces in France no doubt greatly broadened his knowledge of railroad operation and construction. There has been for many men a fascination about railroad work, second only to that of the army in war time. A railroad man from the time he becomes a division superintendent, deals in an executive capacity with men and situations. On his sound judgment and quickness of decision depend not only important commercial questions but questions of life and death of employees and travelers. Advancement means greater responsibilities and more extended authority. So great is the responsibility of a railroad executive of a large system that it is essential, if American railroads are to maintain the high standard which has been achieved, that not only large money reward but the opportunity to exercise great responsibility and power should attract into the service men of extraordinary ability. Whatever the personal reasons for Mr. McCrea's retirement from railroad service may have been, it is a fitting occasion to consider seriously whether conditions as they have been

Is Railroad Work Losing Its Attraction

during the last decade may not tend to repel men of extraordinary ability from railroad work, rather than attract them.

Financing the Administration Equipment

Ordinarily, one of the attractive features about equipment trust certificates is the possibility, in the event of default of interest, of foreclosing on a vitally necessary part of the transportation machine. Because of this possibility, interest on equipment trust certificates is generally paid promptly even by a receiver. While the roads are under government control, however, foreclosure cannot be had on locomotives and rolling stock. Had the equipment, therefore, which the government ordered, been assigned to the individual railroad companies, and these companies been called on to finance the purchase, only such companies as had high credit could have reimbursed the government by the issue and sale of equipment trust certificates, since such certificates, during the period of government control, would have been in fact secured only by the general credit of the railroad company issuing them. Moreover, the question of assignment of equipment to individual companies, of itself, presents difficulties. The total cost of the equipment is estimated at a maximum figure of $400,000,000; the actual cost may be somewhat less. Government credit, notwithstanding socialist writings to the contrary, is not inexhaustible, and it was deemed more expedient to finance the purchase of equipment by the United States Railroad Administration in some way other than a government guarantee. The plan worked out is both ingenious and essentially sound. It provides so great a margin of safety for the equipment trust notes that the possibility of any necessity for foreclosure proceedings is nearly inconceivable. Thus one of the inherent difficulties of the situation is overcome. While the plan does not provide for the guaranteeing by one company of any other company's obligations, it sets up a reserve fund of $28,000,000 in addition to the $120,000,000 margin of safety represented by the stock of the equipment corporation subscribed to by the administration, making it impossible for the equipment corporation to be affected by the insolvency of a few roads and making it likely that nothing short of a national calamity would endanger prompt interest payments. As a matter of fact, the investor in these equipment notes, if they are issued as now proposed, will have a security that will be in some ways unique, the chances not only of any impairment of capital value being remote in the extreme, but the chances of any "trouble" such as the delay in the receipt of interest and instalments due on principal and consequent impairment of market value are reduced to a minimum.

Fairness in Preparation of Contracts

A tendency seems to exist at times in more than one department of railroad service to draw up forms of contracts for execution with contractors which are so largely or entirely in favor of the road as to be unfair. In order to protect himself, a contractor making a bid must either make it sufficiently high to protect himself against contingencies or depend upon the fairmindedness of the officer in charge of the work to administer the terms of the agreement fairly. A recent example of the above tendency appeared at the June meeting of the Signal division of the A. R. A. at Atlantic City. A committee to which was assigned the preparation of a standard form of contract for execution with contracting signal companies, covering the installation of interlocking plants and block signals, submitted a proposed form as a progress report. Strong protests were made by the manufacturers against the adoption of clauses covering indemnities and risks, which would make the contractor responsible for consequential damages. As the clauses were drawn the objection was raised that a single accident might bankrupt even the largest signal company. The contractors felt that no equity existed in the contract—that it was all in favor of the purchaser. This view was concurred in by a number of signal engineers. The clause, as drawn, covering the time limit for the completion of the work was also thought to be one-sided and very likely would not hold in court, as a penalty was provided if the work was not completed in the time specified, but no provision was made for the payment of a premium as compensation for completing the work in a shorter time than specified in the contract. If the proposed form of contract were to be adopted by the Signal division the contract price for an installation would necessarily be made high enough to compensate the contractors, insofar as possible, for the increased liabilities assumed under the contract. The committee has done some very good work in the preparation of this standard form, but these sections should be revised and placed on a more equitable basis before the form is again presented to the Division for consideration, as the Association cannot afford to place itself in the position of adopting a form of contract which is unfair to the contractor.

Fusees and the Space Interval

The correspondent whose letter, printed in another column, advocates the more extensive use of fusees, uses in support of his argument, one strong leg; the fact that all of our inventions, measures and proposals for perfecting the block system make progress very slowly—while collisions continue to occur. An order to use ten times more fusees than are used at present, could be carried out with very little delay. Another strong leg is the fact that the locomotive engineer may fairly be presumed to be a much more responsible man than the flagman. Trains are running today—and perhaps in larger number, proportionately, than in former years—on which the engineman is more intelligent, and better trained than the rest of the crew combined, including the conductor. The significant statement of the letter, however, is that concerning the large number of fusees used on the Plant system, a hundred in 24 hours, on one single-track division. It cannot be doubted that fusees would by this time have come into much more general use on our railroads if they did not cost any more than torpedoes. It is true that a fusee is but one of several needed elements in protecting trains against collisions due to "failures in block working." Neither can the most faithful use of visual signals excuse any neglect of the audible-signal principle or of any other promising safeguard. The fusee thrown off by the engineman of a hundred-car train may in some cases be useless because it may burn out before the caboose (delayed) passes it. But these considerations do not lessen the duty to make all possible use of the best-educated brains on every train, and to carefully consider the true economy of preventing collisions. To spend a thousand dollars for fusees rather than $10,000 for a collision is not merely a saving of $9,000; it is an important element in sustaining the railroad's reputation.

Claim Agents and Fair Play

The proceedings of the meeting of the Association of Railway Claim Agents in Chicago on June 25 and 26, which are abstracted on another page of this issue have something of the unusual in that the speakers place so much stress on fair play and co-operation in the work of the members of this organization. Some of the papers, in fact, read almost like sermons, so strongly do they emphasize these elements. The railway

claim agent is in rather an unusual position. He must, for one thing, do his part towards safety first by presenting his observations which will help lead to the avoidance of accidents. He must arrive at that balance between a square payment of a claim and paying out too much of his railway's funds. He must detect and prevent fraud in claims. He must also meet, usually under adverse conditions, human nature at its best and worst, besides which, he must be able if the claim is carried that far, to present an able case before a jury, sometimes only coldly neutral and more often antagonistic to him as the representative of a corporation. The conclusion to be drawn from the stress placed on fair dealing in the papers at the convention, is naturally that the claim agents have come to a clear realization of their duties towards their fellow men and fellow employees and are following out the plan which has been proved to secure the best results. The claim agent who is going to make a success of his work and friends for his railway is going to do so only through co-operation with the other departments of his road, through fair play and through inspiring confidence in his desire to do the right thing. Carrying the matter further, it is pleasing to read of the tendency the claim agents are showing to continue their work beyond the mere payment of a claim—through efforts at securing restoration and re-employment of crippled employees and through efforts to help the claimant secure the best results from his money, safe from "mongrel" investments, loan sharks and the incurring of bad debts.

Mr. McAdoo's Enormous Underestimate of Expenses

When Director General of Railroads McAdoo announced the advances of 25 per cent in freight rates and 50 per cent in passenger rates in May, 1918, he said: "It seems clear that the railroads should be made self-sustaining and that sufficient revenue should be provided to prevent them from becoming a burden on the public treasury. The immediate practical necessity is without delay that increases in rates should be made to provide for these increased costs of operation." In other words, the policy he announced was that of making the rates and earnings high enough to cover all increases of expenses. Many persons, therefore, find it hard to understand why, in view of the advances in rates made at that time, the railways have fallen and are still falling so far short of earning enough to pay their operating expenses and the guaranteed returns to the railway companies.

A review of the estimates of prospective expenses and of expenses actually incurred under government operation throws much light upon this matter, and is highly interesting. As the *Railway Age* has recalled before, when Mr. McAdoo testified before the Senate Committee on Interstate Commerce in January, 1918, he expressed a hope that "very large economies may be practiced." "How far," he said, "they will be offset by increased cost of material and increased cost of labor, I do not know, but perhaps one hand will wash the other."

How little Mr. McAdoo really understood the railroad situation at that time was indicated by statements which he made about four months later when he issued the statement to the public, already referred to, announcing the big advance in freight and passenger rates. In this statement, which was issued on May 25, 1918, he said, referring to the increases in expenses which were occurring: "On account of these extraordinary increases in operating expenses which have come about as a consequence of the war it is estimated that for the same aggregate business as last year and under the same conditions as to prices and wages, the operating expenses of the calendar year 1918 will be from $830,000,000 to $860,000,000 more than for the calendar year 1917." His statement that the railroads should be made self-sustaining indicated that he believed the advances in rates he was about to make, and which were estimated at about a billion dollars a year, would be sufficient to cover all these increased expenses. But even at this time Mr. McAdoo had a very inadequate idea of the magnitude of the increases in expenses which were occurring and were going to occur, because the actual total increase in 1918 was $1,150,000,000, or about $300,000,000 more than his maximum estimate.

As great, however, as was the increase in expenses in 1918, it is being far exceeded by the increase in 1919 over 1917, for many increases in wages and other operating costs which were made in 1918 did not begin to produce their full effects until 1919. The traffic which was handled in the first four months of 1919 was smaller than that handled in the first four months of 1917. The passenger business was larger, but the freight business was 12½ per cent less. On the other hand, while operating expenses in the first four months of 1917 were $880,000,000, in the first four months of 1919 they were $1,378,000,000, an increase of about 57 per cent. If the increase in expenses throughout the year 1919 should be relatively as large as it was in the first four months—and it is safe to assume that it will be—the operating expenses of 1919 will exceed those of 1917 by $1,600,000,000. In other words, although the traffic being handled in 1919 is less than it was in either 1918 or 1917, operating expenses are running about $740,000,000 more than the annual rate at which Mr. McAdoo estimated they would run when he made the big advances in freight and passenger rates a little over a year ago.

When Director General Hines was testifying before the House Committee on Appropriations on June 4, he explained the great increase in expenses which had occurred by referring to the advances in wages and in the prices of materials and supplies which have taken place. He estimated the wages being paid in 1919 are 52 per cent higher than the rates of pay in effect at the end of the calendar year 1917, and the prices of materials and supplies at 35 to 40 per cent more than they were in 1917. He added, "How about the revenues? Should they not be higher? It is perfectly clear to me that a 25 per cent increase in rates is not going to offset an increase of something over 50 per cent in wages and anywhere from 35 to 40 per cent in the cost of materials. * * * Certainly, there is a very strong argument that could be made for the view that an increase in business cannot possibly produce enough additional net profit to make up for this loss of the purchasing power of the dollar. The railroads of the country get $1.25 in revenue where they used to get a dollar, and they have to pay out from $1.50 to $1.70 where they used to pay out one dollar. Therefore, it can be very strongly argued that that condition cannot be fully offset by an increased profit from an increased business."

To state the matter in another way, you cannot offset an increase of at least $1,600,000,000 a year in expenses with an advance in rates which, even though the railways were handling a maximum business, would yield only $1,000,000,000 to $1,200,000,000 additional revenue; and, unfortunately, they are not handling a maximum business. Mr. McAdoo simply underestimated the increase of expenses that was going to occur as a result of the policies he initiated, and the difference has now got to be made up. Many of the things done under government operation which caused this prodigious increase of expenses can never be undone, regardless of whether it would be theoretically right and desirable to undo them or not. The bulk of the increase in expenses is due to the advances in wages; and these will never be undone. Furthermore, there is no present prospect of substantial reductions of the prices of materials and supplies. A return to private operation of railways is desirable mainly, not because of things done under government operation which will be undone—although many things will be undone—but

because of the things which would be done in future under government operation and which it behooves the country to avoid.

Atchison, Topeka & Santa Fe

THE ATCHISON, TOPEKA & SANTA FE earned a profit for United States government after payment of rental to the company. This is a source of satisfaction to the government and President E. P. Ripley also mentions it with satisfaction in his report to stockholders. Railway operating income, as defined in the Federal Control Act in 1918, amounted to $44,206,000 for the 11,456 miles of the Santa Fe system, comparing with $42,885,000, the rental guaranteed to the company by the government. Such a condition, however, might be brought about during government operation through the diversion to the Santa Fe of particularly profitable classes of traffic, which condition would continue only temporarily and would cease to exist when competition was resumed.

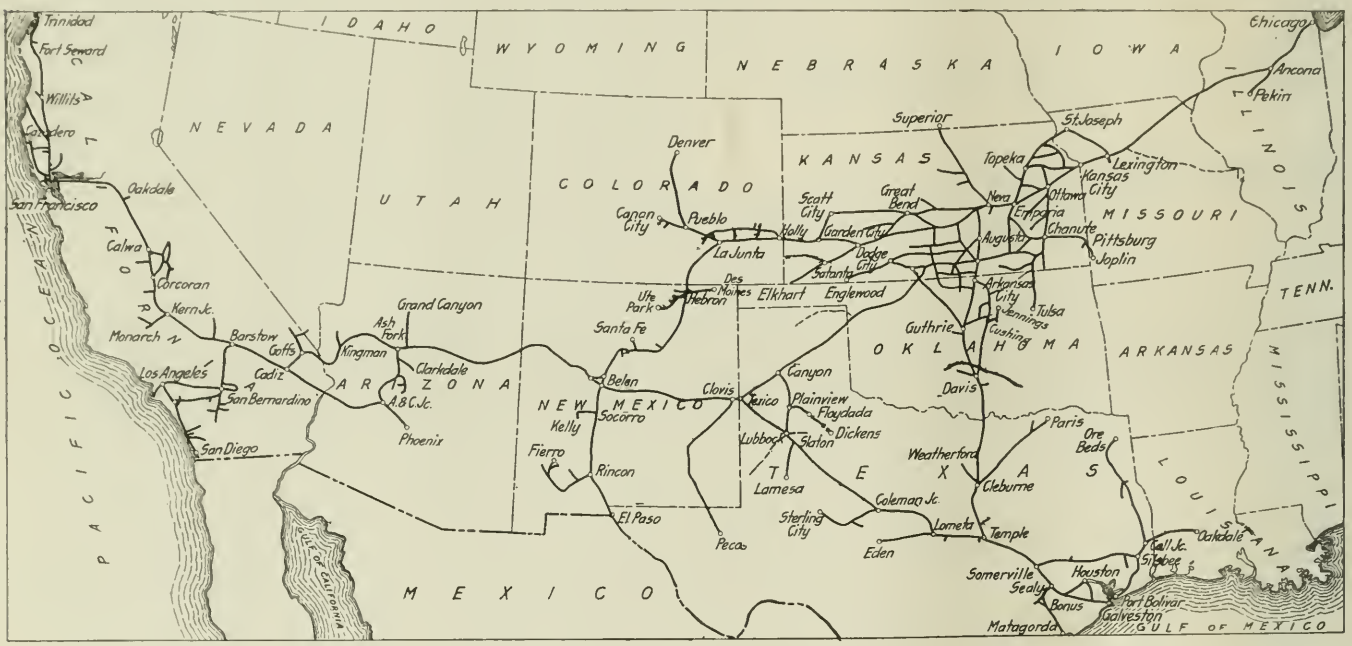
Economy in handling business, as measured by physical units, and adequacy of maintenance of the property, also as measured by physical units, should be scrutinized by railroad security holders with particular attention during the period of government operation. President Ripley strikes a note of warning: "The contract provides that the property shall be returned in substantially as good condition as when taken over, and it is not impossible that this stipulation may be fulfilled, but during the first year of federal control it was not possible for the government to furnish the amount of either labor or material used in previous years. Thanks to the excellent condition of your property when taken over such deterioration as has occurred is not yet serious, but will become increasingly so as time goes on unless checked by large expenditure."

The annual report to stockholders covers the aforementioned 11,456 miles of the system but gives only gross operating revenues and net in regard to the results obtained under the federal manager. The Atchison, Topeka & Santa Fe, itself, comprises 8,624 miles and it is on the basis of this mileage that the federal auditor makes his report to the Interstate Commerce Commission. The total operating revenues for 1918, for the 11,456 miles, was $187,658,000; for the 8,624 miles of the Atchison proper total operating revenues amounted to $160,754,000. The following remarks deal with the 8,624 miles of road of which the report to the Interstate Commerce Commission is available only, except where the contrary is specifically stated.

The ton mileage of revenue freight carried in 1918 was 10,764,000,000 and in 1917 10,790,000,000. The passenger mileage in 1918 was 1,436,000,000 and 1,354,000,000 in 1917. Total freight train mileage in 1918 was 18,612,000, which included 248,000 light train miles. In 1917 the freight train mileage was 20,711,000, which included 227,000 light train miles. Passenger train mileage in 1918 was 17,824,000 and in 1917 20,172,000. Handling nearly the same freight business in 1918 as in 1917 with 2,000,000 less freight train miles is an evidence of economy in operation independent of possibly misleading or confusing dollars and cents figures for revenues and expenses.

It might be that radical changes in the character of traffic carried would help in holding down freight train mileage, but the classification of freight traffic hardly justifies such an assumption. The total tonnage of revenue freight carried in 1918 was 32,943,000, of which 25,306,000 tons originated on the Santa Fe and 7,637,000 tons was received from connections. In 1917 of the total of 31,321,000 tons of revenue freight carried, 23,761,000 tons originated on the Santa Fe and 7,560,000 tons was received from connections. Of the total tonnage 17.46 per cent was of the products of agriculture in 1918 and 16.32 per cent in 1917; 5.63 per cent was products of animals in 1918 and 5.62 per cent in 1917. 47.75 per cent was products of mines in 1918 and 46.86 per cent in 1917; 19.57 per cent was manufactured articles in 1918 and 20.32 per cent in 1917. Bituminous coal and oils were two-thirds of the total tonnage of products of mines.

The average train load of revenue freight in 1918 was 511 tons, comparing with 463 tons in 1917. Better balanced traffic did not contribute to this result. The average number of empty cars per train was 11 in 1918 and 10 in 1917, while the average number of loaded cars per train was 26 in 1918 and 27 in 1917. Car loading was greatly improved, the average load per loaded car being 22 tons in



The Atchison, Topeka & Santa Fe

1918, as against 19 tons in 1917. The percentage of tare weight to revenue train load in 1918 was apparently not greatly different than in 1917. The substitution of the empty car for the loaded car in the average train of 37 cars about offset the increased proportion of revenue freight in each loaded car. The increase in train load, therefore, represents increased work done by the locomotives.

As to maintenance of which President Ripley speaks, only rough judgments can be formed. Maintenance of way and structures in 1918 cost $19,038,000, an increase of $3,040,000 or 19 per cent over 1917. Maintenance of equipment cost $35,100,000, an increase of $11,556,000 or 49 per cent over 1917.

In 1918 there were 112,000 treated oak ties, 1,457,000 treated pine ties, 302,000 untreated soft wood ties laid in replacement and betterment. These figures are included in a total of 2,203,000 laid in replacement and betterment in 1918. This compares with 166,000 treated oak ties, 1,350,000 treated pine ties and 465,000 untreated soft wood ties, included in the total of 2,237,000 ties laid in replacement and betterment in 1917.

The average cost at point of distribution of the treated oak ties was 92 cents in 1918 and 76 cents in 1917, and of the treated pine ties, 86 cents in 1918 and 78 cents in 1916; of the untreated soft wood ties, 81 cents in 1918 and 70 cents in 1917.

The total tonnage of rail laid in replacement and betterment in 1918 was 59,524; in 1917 the total was 72,756. Curiously enough, the average cost per ton at distributing point was apparently the same in 1917 as in 1918. The greater part of the rail put in in both years was 85 lb., costing $20 per ton.

It is rather interesting to compare the number and average pay of employees in service during the two years. The average number of employees in the service in 1918 was 53,124 who were on duty a total of 143,235,000 hours and the total compensation during the years was $73,502,000. This compares with 50,654 employees, 140,086,000 hours with $52,265,000 compensation in 1917.

The largest number of any one class of men employed is section men with 10,445 as an average number for the year 1918, with wages of $8,138,000 as compared with 10,676 in 1917 with $5,492,000 total pay.

Returning for a moment to the 11,456 miles of the system and to the annual report to stockholders, the rental due from the government provided funds for interest payments, 5 per cent on the preferred and 6 per cent on the common stock of the company, sinking funds, etc., and left a surplus to be carried to profit and loss of $8,761,000. A total of $2,526,000 was spent for the acquisition of new mileage and $9,384,000 for additions and betterments to roadway and buildings and $11,753,000 net for additions and betterments to equipment. The additions to equipment, of which the total cost was $12,305,000, and from which $551,000 was subtracted for equipment retired, including 62 locomotives, 2,844 freight cars, 17 passenger cars, 128 work cars and a five-ton automobile truck.

At the end of 1918 the government had paid nothing toward the annual compensation due and the total owed by the government, subject to quarterly settlements, amounted to $65,868,000. This, of course, included cash, agents' balances and assets collected. The company owed the government for additions and betterments, liabilities paid and expenses prior to January 1, 1918, $52,132,000, leaving a net debit against the government of $13,736,000. In addition, the government owed the company $6,000,000 for accrued depreciation on equipment and equipment and property retired.

The following table shows the principal figures for operation for the 8,624 miles of line operated by the government, for which a report to the Interstate Commerce Commission is available:

	1918	1917
Mileage operated	8,624	8,630
Freight revenue	$113,799,881	$96,401,488
Passenger revenue	37,045,791	30,907,445
Total operating revenue	160,754,273	139,303,872
Maintenance of way and structures	19,037,933	15,997,976
Maintenance of equipment	35,100,235	23,544,428
Traffic expenses	1,675,744	2,317,637
Transportation expenses	56,588,997	44,172,068
General expenses	2,830,069	2,711,499
Total operating expenses	114,912,376	88,504,010
Taxes	6,726,927	10,385,159
Operating income	40,708,335	41,869,349
Gross income	45,823,042	53,131,383
Net income	44,171,775	38,504,529

The corporation's income account for 11,456 miles is as follows:

	1918		1918
Rental	$42,885,311	Other charges	$4,056,239*
Other income	4,310,952*	Net income	28,348,433
Gross corporate income	47,196,263	Dividends	19,498,280
Taxes	3,095,398	Surplus	8,760 583

*Other income and other charges include lap-over revenues and expenses of the period prior to January 1, 1918.

New Books

Pacific Ports. Fifth Edition. Bound in flexible leather, 8 in. by 11 in., 552 pages. Published by Pacific Ports, Inc., Seattle Wash.

Pacific Ports in its fifth annual edition has been changed from a book of 500 pages, 5 in. by 8 in. in size to a larger and considerably improved form, with a much larger amount of data and profusely illustrated. The book in addition to giving complete details concerning the dock accommodations, pilotage regulations, port charges, etc., of the ports on both sides of the Pacific, this year gives data concerning their imports and exports and much interesting and valuable information concerning their economic life and business developments. The book also has added various new sections, of value to the exporter or importer. Such are sections on How to Get Into and Succeed in Foreign Trade; South and Central American Trade; Facts that Exporters Should Know About New Zealand Trade; Customs Procedure and Suggestions; Marine Insurance; Weather Predictions at Sea; Countries and States on the Pacific, and many others of like character. As in the past such information is given as comparative tables of coinage details concerning the steamship lines on the Pacific, etc. The book, particularly in its new and improved form, is a valuable addition to the rapidly increasing fund of information available on the subject of export trade.

Passenger Train Resistance. By Edward C. Schmidt and Harold H. Dunn. Bulletin of the University of Illinois Experiment Station; 11 pages; published by the University of Illinois, Urbana, Ill.

This constitutes a report on tests made of passenger equipment on the Illinois Central at all speeds up to 70 miles per hour and covering all ordinary weights of equipment in common use. The tests were all made on well maintained main track laid with 85 and 90 lb. rail and in fair and moderate or warm weather. The results, presented in the form of a series of charts and tables, are considered as applicable without modification to trains running under like conditions of track and weather.

Letters to the Editor

Prevention of Collisions

WASHINGTON, D. C.

TO THE EDITOR:

Your issue of June 20 affords some very interesting reading. Some of the most useful proposals, however, are left in a very unsettled condition and the reader naturally inquires where he ought to look for the next stage of development. Mr. Rhea, in his proposal for the development of automatic train stops, set forth on page 1,553, says that the government—federal or state—ought to take up this question, because of its complicated nature and the inability of the railroads to deal with it. I think he speaks truly when he says that to get the right talent for this experimental work it will be desirable to commandeer the services of railroad men and other engineers.

On another page of the same issue—the article on pages 1528-30—you tell of the impossibility of getting any satisfactory improvement in safeguarding the lives of passengers by trying to improve the work of the flagman. This article sets forth some very old facts in very new language, but the real problem remains just where it was.

In your issue of the following week, page 1,805, you refer to the slowness of governmental functionaries (which suggests one weakness of Mr. Rhea's proposal) and you seem to intimate that railroad directors, just like ordinary people, are governed by temporary impulses. The railroad director, human, like the rest of us, hearing of the slaughter of a carload of passengers on his railroad, is sick at heart but this kind of sickness seems to work just the same now as it did in the sixteenth century, when Rabelais wrote—

> "The Devil was sick,—the Devil a monk would be;
> The Devil was well,—the devil a monk was he."

Reading these somewhat unencouraging items of the most modern thought, I was led to take a short look backward, suggested by another important article in your issue of the 20th, the notice of Colonel Haines' book, "Efficient Railway Operation," page 1526. This book, made up from the rich experience of one of our best railroad officers, contains, on pages 306-309 a brief note on the virtues and vices of the flagman which in some respects is better even than the article on page 1528, referred to above. Colonel Haines recommends the more general use of fusees. I commend to your attention the pages referred to. I am quoting, in substance, the statement of a former division superintendent on one of the roads in the Plant system, operated for years under the direction of Colonel Haines, when I say that, on that road, single track, they moved a heavy traffic in perishable freight, together with some fast passenger trains, with great success in spite of much foggy weather. This was before the days of block signals, and the train-order signal, at each station, was the only fixed-signal protection. The rule proposed by Colonel Haines, in his book,—for the engineman to throw off fusees—was then in force there. An engineman who found that his engine was slipping, on a grade, and that time was being lost, dropped a fusee, which held the next following train until either he got over the summit or had time to send a flagman back. The next train, seeing the lighted fusee, dropped another one and so on, if there were more than two trains. The flagmen were, of course, required to follow the rules about going back. As every one knows, fusees are as easily recognized in the daytime as in the night. On that division they sometimes used as many as 100 fusees in a single night. But would not a hundred fusees daily, or even several times that number, cost less than an automatic train stop system?

Following is the passage from "Efficient Railway Operation" to which I refer:

"One means may be suggested that does not call for more intelligence or for greater devotion to duty on the flagman's part, but which seeks to obtain both from another source—from the locomotive engineer. He is generally the most experienced man in the train-crew, . . . and the best informed; and, when a stop is made or the train is slowed down at an unusual place, he knows the cause and what the probable detention will be, not only after it has occurred but often before, and can usually select a suitable place to stop. It is he then, and not the flagman who should determine when and how the rear of his train should be protected. If the burden were plainly put upon the engineer to determine, and upon the flagman to act, his action would be controlled by the best-informed man in the crew. . . . . Thus the space-interval between trains moving in the same direction might be more securely preserved in an emergency, by a more extended recognition of the usefulness of the fusee, which at present is only permissive as a part of the flagman's equipment. How much more valuable in the hands of the engineer! Whenever he is about to stop or to slow down his train at an unusual place, let him be required to drop a lighted five- or ten-minute fusee by the side of the track one mile before the stop is made; and the interval between that train and a following one will have been positively secured by a sentinel that will not desert its post, by a signal whose unmistakable light will illumine its surroundings, let the wind blow and the rain fall as they may. It will indeed then prove to be a cloud of smoke by day and a pillar of fire by night!

"This statement is not hypothetical, but is founded on ample experience. Such a requirement does not do away with the protection afforded by the flagman, but rather increases it. As the rear of the train passes the blazing fusee, the conductor will have warning to see for himself that the flagman goes back. As the flagman crosses a [slippery] bridge on his way to the rear, he will feel secure against an approaching train when he sees that purple light blazing in the distance. The lighted fusee is as valuable by day as by night, for the smoke from it is so distinctive, and even its light, as to be readily recognizable by a following engineer, and its presence is made evident, even around curves. On double-track, the fusee should be dropped outside of the track upon which the train is running, and on divisions of four or more tracks, it can be dropped in the middle of that track by hand, or perhaps more conveniently through a tube."

E. J. M.

A Trans-Siberian Refugee Train Meets with Difficulties

Illinois Central Will Build New Chicago Terminal

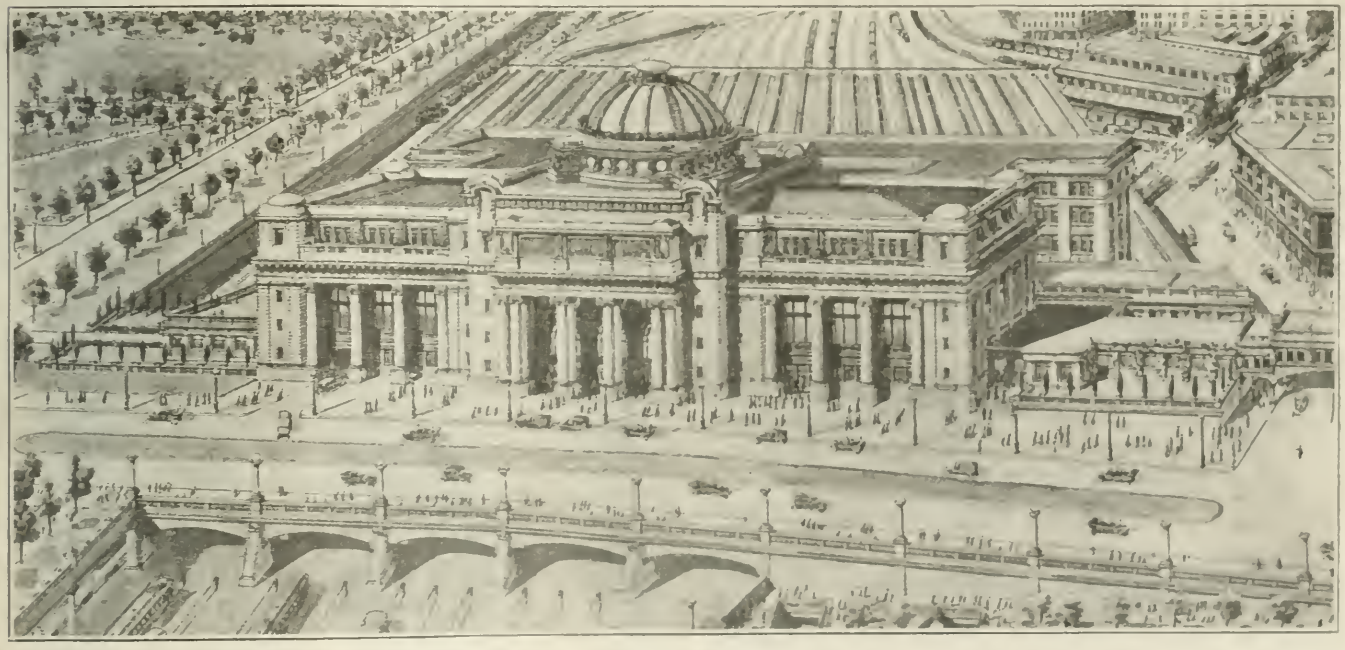
Ordinance Just Passed Provides for Modern Passenger Station and Electrification of All Service

A NEW RAILWAY ELECTRIFICATION PROJECT of first magnitude has been definitely assured as the result of an agreement reached between the Committee on Terminals of the City Council of Chicago and the Illinois Central on July 2 relative to a contract ordinance for a large new passenger station and appurtenant facilities. The project embraces a terminal capable of development to accommodate all railroads at present entering passenger stations east of the Chicago river, and the ordinance makes ample provision for connections with such roads and arrangements under which proper rental charges shall be determined. Under the agreement the Illinois Central is required to start the construction of facilities necessary for electrification within two years, and to institute the electric operation of all of its suburban trains within seven years, of its freight operations north of Twelfth street within 10 years, of all freight service within the city within 15 years, and of all passenger service within 20 years. These provisions apply also to the Michigan Central insofar as it is a tenant of the Illinois Central. Exception, however, is made to the trains of other roads which may be prevailed upon to use the Illinois Central station when completed, neither does it apply to the Illinois Central line extending to the west from the lake front property, connection with which is made by means of the St. Charles Air Line.

Negotiations covering this ordinance will not be entirely complete until it has been formally approved by the officers of the Illinois Central and those of the South Park Board of Chicago, which is also a party to the negotiations, in addition to the Secretary of War, whose permission is necessary for filling the submerged lands. The satisfactory conclusion of these formalities will mark the termination of negotiations which have been under way for nearly 10 years. This long delay has been caused largely by the fact that four parties are involved, namely, the railroad, the city, the South Park board (which is entirely independent of the city authorities, and the United States War Department. In addition to the construction of the new passenger terminal and the electrification of the road within the city, the project embraces the construction of an outer park system along the lake by the park board and provision for a new harbor district extending in Lake Michigan between Sixteenth street and Thirty-first street. The interests of these seemingly independent projects have been so interwoven that it has been impossible to proceed with any one without the satisfactory completion of arrangements for all the others concerned.

Railroad Sought to Co-Operate With City

As owner of riparian rights along the lake from Twelfth street to Fifty-first street since 1852, the Illinois Central became involved with the South Park Board in the determination of the latter to develop a lake shore park system, and in 1912 the road reached an agreement with the park board under which the railroad released its riparian rights to the park board for the right to fill in certain small submerged areas adjacent to its right-of-way, while the park board was to obtain the outer and larger portion of a considerable submerged area to be filled for park purposes. Under this arrangement the park system was to obtain possession of 1,280 acres as compared with 85 acres to be secured by the railroad. However, neither party was able to obtain any immediate advantage from this agreement because the United States War Department refused to grant permission for the extension of the harbor line necessary to fill in the submerged areas, on the ground that the plans accompanying the agreement included no provisions for a harbor throughout the length of shore line affected, or for provision for access to it by means of street or rail connections that would permit of dock development. As a consequence it became necessary to call the city authorities into the negotiations which eventually embraced plans for a complete reconstruc-



Front Elevation of the New Station Building

tion of the Illinois Central terminal facilities north of Fifty-first street.

In 1916 the road presented plans for a general rearrangement and reconstruction of its terminals which conform very closely to the plan as now approved, which was described in the *Railway Age Gazette* for September 22, 1916, page 517. But the city, taking advantage of its strategic position, demanded a great many concessions and arbitrary provisions in the contract which the railroad was in no position to grant. This fact, together with the entrance of our country in the war, caused the negotiations to drag along until the early part of this year, when they were again undertaken with renewed vigor and eventually terminated by the adoption of the present plan. The principal difference between the ordinance as now adopted and as originally proposed by the Illinois Central is that the present agreement definitely specifies the arrangement under which the road shall electrify all of its operations within the jurisdiction of the city.

Project Is Of Wide Scope

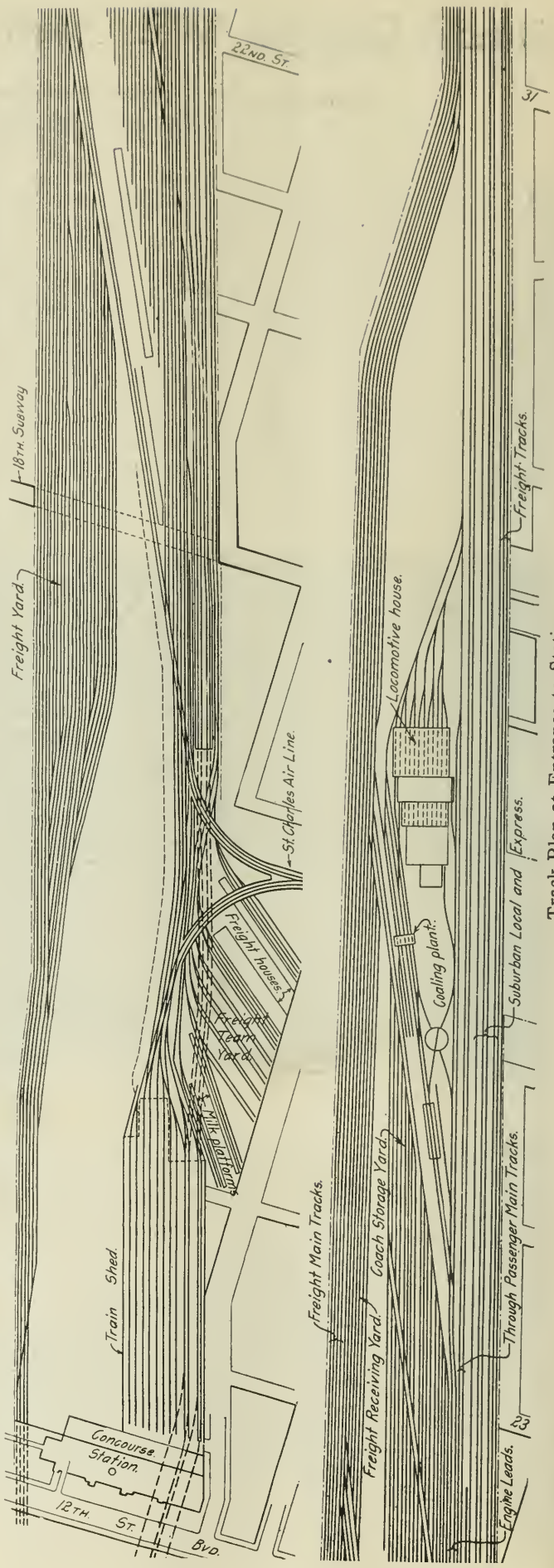
The project now approved may be divided roughly into several parts as determined by the independent ends to be obtained. The terminal project proper provides for the construction of a complete new passenger terminal to take the place of the present Park Row station together with complete coach yard and engine terminals and a small freight house and team yard on Indiana avenue south of Sixteenth street. Provision for access to the new harbor entails the construction of one subway and three viaducts across the tracks. Access to the park property will be afforded by eight viaducts over the railroad. The ordinance also provides for the ultimate development of six double-track rail lines into the harbor district, four of which will make direct connection with the Illinois Central tracks while two are to cross the Illinois Central property with a view to connection with other roads lying west of the Illinois Central. Adequate provision is also made for access to the new passenger station by other roads in the city, either through the use of the existing St. Charles Air Line or a proposed new westerly connection in the vicinity of Eighteenth street. The plan also contemplates the reconstruction of the Illinois Central and Michigan Central freight terminals north of Randolph street viaduct.

A Monumental Station

In replacing the present station on Park Row a change in the site is provided that will accomplish a marked improvement in the relation of the terminal to its surroundings. The obstruction to Twelfth street offered by the existing layout will be eliminated by placing the new station south of the south line of Twelfth street, produced east, so that the extension of this street eastward into the park area will not only give the station a frontage on that important thoroughfare, but will also place it in distinct architectural relation to the new Field Museum now nearing completion in the park to the east of the station site. It is intended to take full advantage of this circumstance by a classic treatment of the station exterior in entire keeping with the design of the museum. Like the old station, the new structure will command the lake, the Field Museum, Grant Park and Michigan avenue.

Unlike the present station all of the tracks for the use of through passenger trains will terminate in the train shed, while the tracks for suburban service, which is treated as an entirely separate feature, and the several running tracks for freight service north of Twelfth street will pass northward under the station.

In the immediate vicinity of the station the tracks will be on three distinct levels. The freight tracks and freight yards will be located along the east side of the layout with the passenger tracks occupying the center on an upper level and the suburban tracks on a lower level on the west side immediately



Track Plan at Entrance to Station

adjacent to Indiana avenue which will be produced northward to an intersection with Twelfth street.

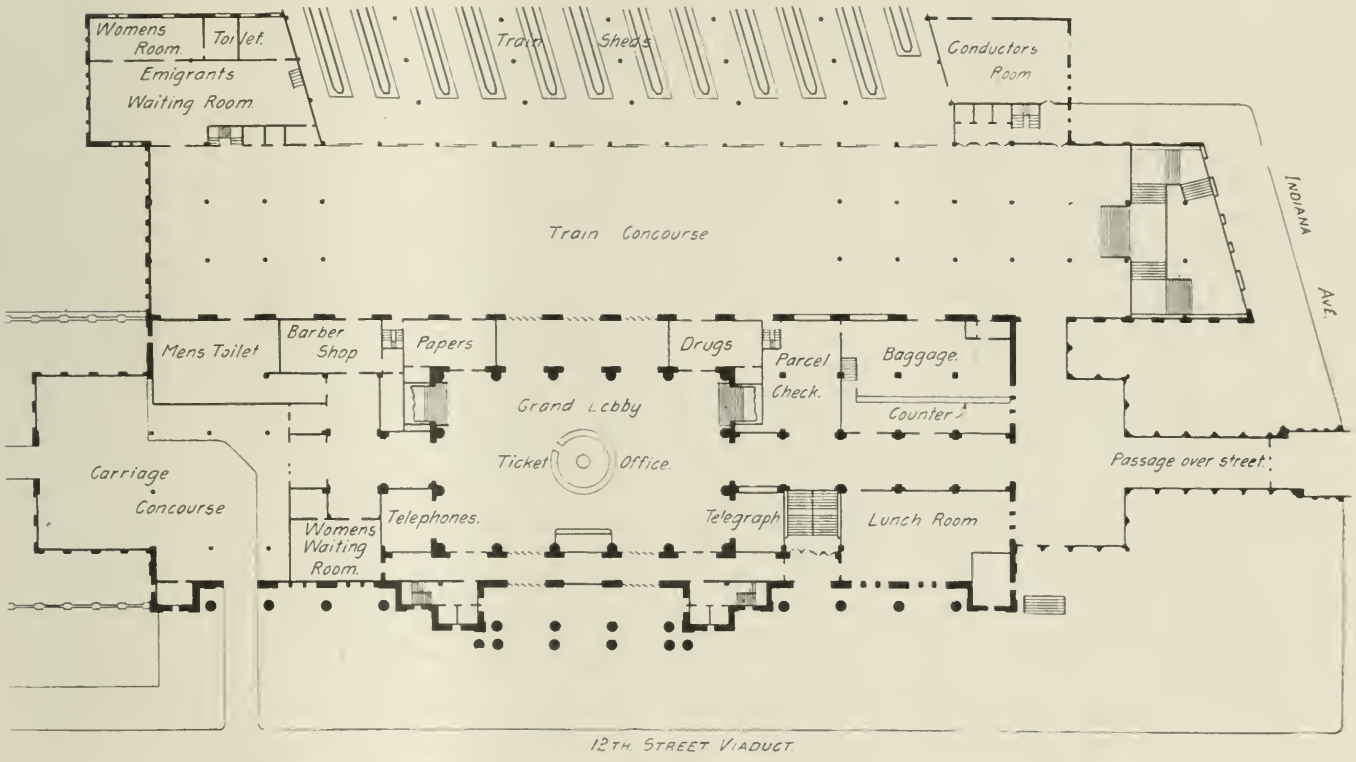
To provide adequate headroom for the tracks which must pass underneath the street, Twelfth street will rise in approaching the station from Michigan avenue to a sufficient elevation to bring it to the same grade as the upper level station tracks. As a result an exceedingly simple station layout is possible insofar as it concerns the through passenger trains. The plan resolves itself into a spacious central waiting room, located between Twelfth street and a concourse serving the ends of the station tracks and platforms. Auxiliary facilities will surround the waiting room and all functions of the terminal with which the passenger must deal in passing from the street to the trains or vice versa are located on a single level.

The design of the track layout is flexible. The ultimate layout provides for 25 tracks on one level, although this may be practically doubled by the use of two levels. The number of tracks installed at first will depend upon the extent to

One of the important features of the project is the large auxiliary terminal contemplated. Like the station this also will develop in accordance with the needs of the traffic using the station. These facilities include coach storage and cleaning yards and a complete engine terminal.

Plan Provides For Grade Separation

The ordinance contemplates the construction of public highways into the area east of the Illinois Central property at Twelfth street, Eighteenth street, South Park Blvd., Thirty-first street, Thirty-fifth street, Oakwood Blvd., Forty-third street and Forty-seventh street. All of these, with the exception of the one at Eighteenth street, are to be carried over the tracks on viaducts entailing the depression of the tracks between Twenty-eighth street and Fifty-first street. These structures, insofar as they constitute entrances into the park area, are to be constructed and maintained at the expense of the park system, but the viaducts at South Park Blvd., East Twenty-sixth street and East Thirty-fourth street will con-



Plan of Main Floor Level

which roads other than the Illinois Central and Michigan Central avail themselves of the opportunity to use this station, the plan showing 12 tracks which will be provided for the traffic now entering the station.

The baggage, express and mail facilities will be provided below the waiting room and track level at about the present grade of Indiana avenue. Direct communication with this level will be obtained by entrances on Indiana avenue. Should it be found necessary to provide passenger tracks on both a lower and an upper level, this baggage and express space will serve both levels and communication will be provided by baggage elevators at suitable intervals.

The Illinois Central owns the property facing on Twelfth street between Michigan avenue and the proposed extension of Indiana avenue. This will be utilized to add a distinct feature to the plan in the form of a large hotel which will be built with an exterior design in harmony with that of the station building. The ordinance permits a connection with this structure at the level of the main waiting room floor by means of a bridge over Indiana avenue.

sist in part of approaches to the harbor district, and such portions of these viaducts as are used for this purpose, together with the Eighteenth street subway are to be constructed and maintained by the railroad, but the city is obligated to pay all damages to property resulting from the construction of the street approaches.

Station May Be Used By Other Roads

The ordinance provides that upon the completion of the station any railroad desiring to use it shall be permitted to do so upon reasonable terms to be agreed upon with it, any disagreements to be submitted to the Interstate Commerce Commission, the State Utilities Commission or other bodies in authority at the time of the controversy. If this option is exercised by only a limited number of roads, the St. Charles Air Line extending west from the Illinois Central property in the vicinity of Sixteenth street will, no doubt, prove adequate for routing the railways to and from the new station and plans for the track layout have been prepared with a view to a ready connection between the Air Line and the sta-

tion tracks. However, should any considerable number of the railroads elect to use the station, the Air Line would be obviously inadequate and this contingency is provided for in the ordinance by authorization for a six-track line extending west from the Illinois Central in the vicinity of Eighteenth street. The Illinois Central is granted authority to construct this connection at any time within the next 20 years, although the initial construction need not be for more than two tracks, the remaining four to be added from time to time as traffic may require. One of the principal advantages of this new connection is that the junction, being somewhat further away from the station layout, permits of a more advantageous track arrangement.

The plans for the harbor cover the right for the city to build four double-track lines across the park area for connection with the Illinois Central and two double track lines across the Illinois Central for communication with the railways to the west. The Illinois Central is given permission to locate, construct, operate and maintain one of the four lines connecting it with the harbor district and one of the lines crossing its right-of-way for communication between the harbor district and the railways to the west, while the city has the option to construct, operate and maintain all of the other proposed lines.

In the case of the harbor tracks the Illinois Central agrees to make connections with its own line and perform switching service for any railroad operating in the city between interchange points and the harbor tracks. In the case of the Eighteenth street railroad connection, on the other hand, the ordinance grants all railroads operating in the city the privilege of using the tracks and making a physical connection with them on terms to be agreed upon, or in accordance with orders by some regulatory body.

Electrification

In requiring the Illinois Central and the Michigan Central to electrify, in accordance with the terms of the ordinance, the words electrification, electrify, electricity, electrical and electric are used with reference to the operation of motive power of train or locomotive engine, and they and each of them shall be taken and understood to include, not only operation by electricity or electrical power, but also by any other motive power, the operation of which is not accompanied by the emission of smoke, cinders, steam, noxious gases or by noises more objectionable than those produced by electrical operation. The terms also provide that nothing in the ordinance shall prevent other railroads not operating by electricity from entering the tracks of the Illinois Central south of East Twelfth street with steam locomotives for purpose of interchange, or prevent the Illionis Central from handling with locomotives similar interchange business to and from other lines not electrified. It also gives the Illinois Central the right to operate with steam locomotives, trains arriving over its tracks at the city limits and destined to points within the city on or over railroad lines not electrified. Any tenant lines using the proposed station for through passenger service which are not operated by electricity under the provisions of the ordinance, may use the terminal with steam locomotives until such time as they are required to electrify.

An interesting feature of the ordinance is a restriction placed on the railroad against the erection of any buildings other than switch shanties, interlocking towers, signals, suburban shelters and the like, in the territory between a point 500-ft. north of Twenty-ninth street and the north line of Fifty-first street, as a means to keep out any obstruction to the view of the park property west of the tracks within these limits.

The road is required to commence work on the construction of the station and office building within six months after the ordinance becomes effective and is required to complete these structures by the end of seven years, which is the time fixed for the electrification of the suburban service.

The Americanization of Railway Shop Men

"A UNIVERSITY for the railway shop man" has been instituted under the auspices of the Young Men's Christian Association for the employees of the Burnside (Chicago) shops, of the Illinois Central. The so-called university training, designed for the making of better citizens and for the creation of a fuller appreciation of American ideals, comprises a series of lectures arranged to cover a wide range of subjects. These talks have been prepared by Y. M. C. A. officers in close co-operation with experts of various Chicago institutions such as the Illinois State Local Hygiene Society, the City Health department and the State Council of Defense, Chicago ministers, the assistant chief naturalization examiner, soldiers who have seen service at the front and Liberty Loan speakers of known reputation.

The popularity of the work is shown by the zest and spirit of enthusiasm with which the men, especially the foreigners, devote 20 minutes of the 30-minute lunch period one day a week to acquiring a greater appreciation for the American language, customs and ideals. Wednesday noon is devoted to this cause by the men of the locomotive department and Thursday noon by the men of the car department. The meetings are held in one of the various shops at the Burnside plant and the men are assembled by means of a bugle call. Interesting educational "movies" are always on hand to be shown in case the speaker scheduled for the day fails to appear, so that the men are never disappointed.

After having interested the alien employee in the advancement of his education and in his self-improvement, the next step in the work at the Burnside shops, was the planning and execution of an Americanization program. This has as its object the idea of implanting in the alien's mind a desire to take out citizenship papers. By close co-operation between the foremen of the shops and the "Y" officers the citizenship status of each employee was determined. This careful checking of each man brought out the information that out of the total number of employees, 52 per cent were aliens, and of this percentage a large majority were totally ignorant of the English language. Ways and means of interesting these men in their first citizenship papers and in teaching them the English language were devised by encouraging the men to enroll in city night schools and offering noon day classes in the study of the fundamentals of civil government. Lectures on the advantages of American citizenship were delivered by the assistant chief naturalization examiner of Chicago. Many pamphlets containing facts and data pertaining to naturalization were especially prepared and distributed among the men who expressed their willingness to take out first papers. As the men progress in their knowledge of the duties, responsibilities and loyalty to the United States government and show by examination sufficient preparation, they are taken to the county building in groups to apply for their citizenship papers. As a result of this careful preparation before they are allowed to appear at court to file their petitions, there has been scarcely a man who has failed to pass the examination by the judge. For those already prepared for full citizenship petitions for second papers and certificates of landing are obtained.

A survey of the 3,048 employees of the locomotive and car departments, the power plants, the store department and the roundhouse, made on June 1, 1919, shows that 1,526 are citizens, 1,196 hold first papers, 294 do not want papers and 32 are off duty with no report. In short only 9.6 per cent of the entire shops are now aliens. Nearly all of the 1,196 employees holding first papers have received personal aid from the "Y," while the completion of the preparation of 348 employees for their second papers has also been accomplished.

When one stops to consider that 20 different nationalities are represented in the employees at the Burnside shops, he can readily understand that the installation of ideals of patriotism and loyalty to the government, especially during the period of the war would prove in itself a difficult task. Yet this has been one of the accomplishments of the "Shop Man's University." The patriotic sentiment and feeling of the men has been aroused to a great degree by carefully planned illustrated war lectures, Liberty Loan speakers, returned soldiers and brass bands. The prompt response of the men to the plea of Liberty Loan workers is shown by their response, as the locomotive and car departments each subscribed $35,000 to the Fourth Liberty Loan in addition to purchasing thousands of dollars worth of thrift stamps. This record not only shows the general attitude created among the employees toward the government, but proves that the men are taught a real lesson in thrift which is a means of constant betterment in living conditions. Since inauguration of the training, many men have applied to the secretary of the "Y" for information concerning the banking of their savings and questions pertaining to other ways and means of taking care of their surplus earnings.

Incorporated in the program that is being carried out at the Burnside shops, is the working up of interest along other lines of endeavor entirely different from their daily tasks. To show the opportunities that existed right at the back door of each and every working man, the "Y" officers scientifically prepared for use as war gardens a tract of several acres within the shop fence. This ground was divided into 100 plots and assigned to men whose home conditions were such that a home garden was impossible. The war garden service did not stop with the preparation of the soil, but the men were given the necessary tools, seeds, garden plants, literature and personal aid free of charge. Aside from the 100 garden plots in the yards of the shops there are between 1,200 to 1,500 home gardens being cultivated. On a personal visit through these gardens one is surprised not only at the pride and interest that the men take in their little plots, but in the practical success made in gardening.

The ideals expressed in the Greek proverb, "Health and understanding are the two great blessings of life," might be considered the basic principles of this educational program. In addition to the blessing of a better "understanding" of the ideals of citizenship, of work, and of opportunities for the enjoyment of a fuller life, the second great blessing, "health" has not been neglected. A series of lectures on health and hygiene has been delivered by the Illinois State Local Hygiene Society and experts from the City Health Department. Dovetailed with these entertaining talks which have done much in the advancement of the living conditions in the home, are lectures by Y. M. C. A. officers dealing with proper housing and sanitation. "Morals and ethics" has been another subject on the program presented to the men under the supervision of Chicago ministers. A moving picture machine has not failed to take its important place in the service rendered these men. Pictures of high rating are offered for entertainment as well as their educational advantages. For the benefit of those who have not had the advantages of traveling, the travelogues are especially appealing. Current events, and pictures showing large industrial plants in detail, are also very popular among the men.

Athletic teams have been organized among the men, not only to stimulate their interest in healthy recreation but to give them an entertaining sport. In the near future two shop teams will be fully equipped with uniforms and sent out to contest for honors with other shop teams of the Illinois Central System and other systems. For those who have not progressed sufficiently to indulge in such athletics as baseball and football, community entertainments are arranged. After faithful, diligent work on the part of both the working man and his wife a pageant was given in one of Chicago's local parks. This community entertainment created such a stir of enthusiasm in the neighborhood that it was necessary to present the "show" the following day to satisfy the overflow of the previous evening. The success that attended the production of this pageant was so great that the men of the Burnside shops have been invited to reproduce the same on the Municipal Pier, Chicago, some time in the fall.

The excellent co-operation between the Illinois Central and the "Y" is what has made this undertaking successful. The Illinois Central has not only encouraged the men to partake to the fullest of the advantages offered by the service, but has gone even farther and financed the entire "university." There have been some who have said that to successfully carry out the work which has been in progress at the Burnside shops for one year, the construction of a "Y" building with expensive equipment near the shop would be necessary. However, this has not proven necessary. What has been accomplished at the Burnside shops has been done with practically no expense excepting the salary of a "Y" secretary and a miscellaneous expense of $75 per month, which has been taken care of by an appropriation made by the road.

Tests of Oroville Automatic Train Stops

The Interstate Commerce Commission has issued a report, dated June 30 and signed by W. P. Borland, chief of the Bureau of Safety, on tests made in California during the last five months of the automatic train-stop apparatus of the National Safety Appliances Company, of San Francisco; and the report has been transmitted to Congress and printed by the House of Representatives as document No. 139. The National Safety Appliance Company, F. F. Bostwick, president, made an elaborate installation at Oroville, Cal., on the Western Pacific about four years ago, and a description of the apparatus was given, with illustrations, in the *Railway Age Gazette* of October 8, 1915, pages 632 and 645. Criticisms and discussions of the system appeared in the issues of October 9 and November 26, of that year. Within the past six months changes and improvements have been made in the apparatus and an installation has been made also on the Southern Pacific between Roseville, Cal., and Sacramento.

This train stop is of the magnetic induction type, employing permanent magnets in both track and locomotive equipment, and an electromagnet for nullifying or neutralizing, when desired, the effect of the permanent magnet forming a part of the track apparatus. The description in the report is quite full and detailed, but the drawings needed to make the text clear are not given. The tests were made for the purpose of demonstrating whether or not it was feasible to transmit by magnetic induction an impulse of adequate magnitude and force from the permanent track magnet to the locomotive, and whether such means was sufficiently reliable.

At Oroville, 1,636 tests were made, which are classified as follows: correct operations, 1,534; unsatisfactory operations, 38; safe failures, 28; false clear failures, 36. The additional tests on the Southern Pacific were made mainly for the purpose of operating the apparatus on trains moving at higher speeds. The report concludes:

"While as a whole the tests made are not considered conclusive, it has been demonstrated that, with the exception of one of the locomotive-control valves used in the tests, the locomotive apparatus, so far as could be determined, operated as intended, and whenever actuated by the track-magnet impulse it accomplished the functions for which it was de-

signed; further, that the transmission of a magnetic impulse from a permanent magnet installed on the track to locomotive apparatus designed to be controlled and actuated thereby is both practical and feasible. The fundamental principles upon which this system are based have therefore been demonstrated to be sound and practicable; but the available working limits, as well as the reliability of the transmission and control of the actuating impulse, remain to be fully established. For these purposes further development work, as well as more extended trials under practical service conditions, are necessary.

"Among the features requiring further attention are the selection and use of track magnets of proper characteristics and composition for the service required; the proper proportion and operative relation of electromagnet, track magnet, and locomotive-control valve magnet must be definitely determined; the available working limits with respect particularly to rates of speed must be definitely ascertained, and a liberal margin of safety must be assured. Data should also be acquired as to the retentivity of the magnets to be used and their dependable working life under service conditions.

"The tests thus far made, records of which are available, should be of material assistance and value to the proprietors of this system in its further development and in adapting its principles to the conditions and requirements of practical railroad service.

"In view of the results obtained under the conditions surrounding these tests, it would appear that this device has such inherent merit that a more extensive installation should be made where the real value of this system can be more fully demonstrated."

Annual Government Signal Bulletin

THE INTERSTATE COMMERCE COMMISSION has issued its annual bulletin showing the mileage of railroad in the United States on which the block system was in use on January 1, 1919, and the total is now 100,000 miles, or something more than one-half of the mileage of road operated for passenger business *by the companies reporting block signals.* The lines, 70,000 miles, more or less, of roads not reporting anything of the kind, do not figure in this record.

The total which we have given, 100,000 miles, is not exact; but it is substantially correct and is an easy figure to remember; the exact total is not ascertainable from the report. There is a considerable mileage of block signaled road operated exclusively for freight trains, and not shown in the tables of the report; while, on the other hand, there is a large mileage of roads of thin traffic, which is included in the table, but on which, for much of the time, the space interval is not in force, as regards freight trains.

The totals shown in table No. 1 aggregate 99,897.7 miles of road as follows:

Miles of Road on Which the Block System is in Use.

	Jan. 1, 1919	Jan. 1, 1918
Automatic	36,989.4	34,799.0
Manual	62,908.3	64,155.0
	99,897.7	
Deduct duplications	639.9	
	99,257.8	98,954.0

The increase as compared with January 1, 1918, is, roughly, as we have shown, 304 miles; but this increase cannot be given accurately, because part of the mileage deducted for duplications is not classified; as given in the bulletin, the net increase is 366 miles, the calculation being made before the duplications are taken out. These duplications—sections of road operated jointly and reported by both of two roads—aggregate no less than 640 miles—397 miles automatic, 217 miles non-automatic, and 26 miles not classified.

The total length of road equipped with automatic block signals, on January 1, for the five preceding years, was:

January 1, 1918	34,799 miles
" 1, 1917	32,557 "
" 1, 1916	30,714 "
" 1, 1915	29,600 "
" 1, 1914	26,570 "

*Roads which have not heretofore reported block signal mileage.

The increase in automatic block signaling in 1918 was 1,796 miles; decrease in the manual system, 1,430 miles. Automatic signals controlled by track circuits, but not included in any automatic block signal system, aggregate nearly 200 miles of track.

The principal roads showing increases and decreases, as compared with January 1, 1918, are noted in the bulletin as follows (miles of road):

Names of railroads.	Increase.		Decrease, nonautomatic.
	Automatic.	Nonautomatic.	
Atchison, Topeka & Santa Fe	40.4		
Atlanta & West Point	62.6		6.0
Baltimore & Ohio:			
Eastern Lines	106.9		359.6
Western Lines	36.5	351.7	
Canadian Pacific		187.4	
Chicago, Burlington & Quincy	7.4		141.4
Chicago, Milwaukee & St. Paul	113.5		195.2
Cleveland, Southwestern & Columbus[1]	1.0	86.0	
Cumberland County Power & Light[1]	32.6		
Dayton, Toledo & Chicago		91.1	
El Paso & Southwestern	79.1		
Erie			21.6
Chicago & Erie	35.0		35.0
Grand Trunk Railway System	13.4		953.2
Great Northern	138.9	31.6	
Illinois Central	185.8		
Los Angeles & Salt Lake	132.6		
Louisville & Nashville	45.2		45.0
Missouri, Kansas & Texas	24.1		
Missouri Pacific			303.4
New Iberia & Northern		49.3	
New York Central:			
Eastern Lines			128.9
Western Lines	3.0		42.9
New York, New Haven & Hartford	26.3		21.1
Central New England		217.8	
New York, Ontario & Western		33.3	
Norfolk & Western	52.0		50.5
Northern Pacific	221.7		57.7
Pennsylvania System:			
New York, Philadelphia & Norfolk	30.6		20.8
Pittsburgh, Cincinnati, Chicago & St. Louis	10.3	101.6	
Pere Marquette	56.0		
Southern Railway	102.3		102.2
Southern Pacific (Pacific System)	11.4	39.5	
Arizona Eastern		251.6	
Houston East & West Texas			188.5
Southern Pacific Lines North of Ashland	162.1		
Texas & Pacific		132.2	
Washington, Baltimore & Annapolis	24.7		

[1]Roads which have not heretofore reported block signal mileage.

Table No. 2 of the bulletin, showing kinds of automatic signals in use, contains no less than 34 items under the head of "not classified." Color-light signals on the Chicago, Milwaukee & St. Paul, account for 403 miles of this total, and position-light signals on roads in the Pennsylvania System, 44 miles; the remainder is mainly or wholly made up of street railroads and interurban lines using color-light signals.

The bulletin shows, by roads, the mileage of telegraph line used for the transmission of train orders, a total of 136,584 miles; and the mileage on which the telephone is used for this purpose amounts to 113,440 miles. Many roads use, on considerable lengths, both the telegraph and the telephone. A number of important roads, for their train despatching, use the telephone exclusively, among which are the Alabama Great Southern, the Cincinnati, New Orleans & Texas Pacific, the Boston & Albany, the Delaware, Lackawanna & Western, the Michigan Central, the New York Central (Western Lines), and the Virginian.

It will be noted that the table showing increases and decreases includes a number of items where the manual block system has been discontinued and no automatic signaling has been provided to take its place.

A New Advocate of Government Operation

Improvement of Present System Is Preferable to Return to Former Methods

Joseph B. Eastman, of Massachusetts, the most recently appointed member of the Interstate Commerce Commission, has addressed a letter to the Senate committee on interstate commerce, outlining his views on the railroad problem, because, when the commission's ideas were expressed before the committee in January, he was not a member. His suggestion is that the present form of government operation, with the modification proposed in the Cummins bill, be continued "for an appropriate period of time," in order that uncertainty as to the immediate future may be ended and sufficient time gained for the deliberate and constructive consideration of the entire problem. The commissioner also indicates a strong tendency toward belief in public operation as the final solution and a distrust of private management. He believes that it would be much easier for the government to finance the roads and to meet deficits by taxation than to try to make them earn enough to attract the necessary capital. An abstract of his letter follows:

I believe that the roads should continue in the possession and control of the nation, for the following principal reasons:

(1) To ensure necessary capital, at low cost.

(2) To avoid unduly high rates.

(3) To solve the problem of the "weak" roads.

(4) To obtain the operating advantages which come from unification.

(5) To promote right relations with labor.

I further believe that while unfavorable criticism may be made of "federal control," as it has been administered, the record is not discouraging and the defects may be remedied. Better results can, I feel, be obtained by maintaining and improving national operation than by returning to old methods in whatever guise.

In the case of capital, national operation has a clear and marked advantage, one of great public consequence. The credit of the United States is squarely behind the roads, and it is certain that capital can be obtained at low cost without underwriting syndicates, commissions, or bankers' profits. The credit of private railroad corporations depends upon ability to issue common stock. Most of our roads are already heavily bonded. Before the war, the roads asserted that new stock could not be sold without income sufficient to pay 6 per cent dividends with a protective margin of 3 per cent on par value each year for reserve. Under present conditions, 6 per cent would probably fall short of making common or even preferred stock a popular investment. Financiers are now claiming that, to insure good credit, net income must equal at least 125 per cent of the amount necessary to pay interest and such dividends, however great, as may be required to market new stock.

We need not accept these claims at face value to prove the serious disadvantage of private railroad credit. To maintain credit and attract capital private operation will, I fear, require either a government guaranty or the raising of rates. A guaranty of dividends is a mongrel and unsatisfactory arrangement. It would impair whatever initiative private management may still possess and it would not be long before complete and direct control over the affairs of the corporations would be placed in the hands of the government.

As for raising rates, there never was a time when conservatism was more desirable. Increases in freight rates affect the price both of the raw material and of the finished product. The director general has felt, and I think wisely, that the present depression may be temporary and that the country can better afford, for a time at least, to carry the burden of insufficient revenues through taxation, as a part of the war cost, than to suffer further advances in rates whose ultimate effects no man can foretell.

Under private operation, it is proposed to meet the problem of the "weak" roads by lowering the bars against mergers and encouraging the strong to absorb the weak. By the same gradual process or by pooling of interests, it is proposed at length to secure the advantages in the handling of freight and in the development and use of terminals which come from unification. Aside from the effect on public sentiment, the practical difficulties in the way of bringing about such mergers on any large scale—in deciding what they are to be, in fixing the terms, in dealing with state laws, in arranging the necessary exchanges of securities—are very great. If experience is any criterion, the chief beneficiaries for some years would be the bankers and lawyers in charge of the negotiations. Under national operation no such difficulties arise. The "weak" roads cease to be a problem, and progress in realizing the benefits of unification need only be continued.

The fact that further raising of rates could more easily be avoided under national operation would make the labor situation less difficult, for advances in rates and wages are apt to go hand in hand. But I also believe that the government can deal with the problem with a stronger and surer hand than private operators and, under present conditions, more easily secure co-operation.

The feeling that the roads ought not to remain under federal control is based upon a belief in "private initiative," strengthened by the impression that the roads have not been well managed since they were taken over; upon the fear that federal control will be used for political purposes; and upon a distrust of what are termed "socialistic" experiments. Faith in "private initiative" springs, I think from experience in competitive industries. Probably it is true that maximum efficiency is a product of the struggle where profits and even the right to live depend, by reason of keen competition, almost wholly upon efficiency. Competition has been a factor in railroad enterprise, but its influence has lessened with the combinations which have been formed and with the public regulation which has been established, and will shrink still more if further extensive mergers are encouraged. The assumption that private railroad owners have a peculiar self-interest in efficient management and economical operation has slender foundation. Those who use the railroads and pay for the service rendered have a greater interest in these matters. The primary interest of a stockholder is in dividends, and these may be obtained under even very poor management, provided rates are sufficiently high. The tendency of railroad stockholders for some time past has been to think more of rates than of management. The control which is exercised by these stockholders is more apparent than real. In practice, actual control usually falls into the hands of bankers, and experience has shown that efficient management and economical operation are not their most immediate concern.

Probably the sentiment in favor of a return to private operation springs chiefly from a feeling that national operation has been a failure. Such discouragement is not justified. So sudden and radical a change in the administration of an immense industry was never before made in this country. It came on the eve of the worst winter in railroad his-

tory, at a time when serious congestion existed in the eastern territory . . . but the Railroad Administration succeeded in relieving congestion and handled both troops and war freight with credit to itself. It is also conceded that it was able, through unification, to bring about improvements in operation and terminal practices which were of substantial benefit.

Rates have been raised, but in less degree than contemporaneous increases in the prices of staple commodities. Increases in wages have been large but I do not believe it will be found that they have been disproportionate, on the whole, to the rise in the cost of living or to the increases granted in most competitive industries. It may be that standardization has been carried too far, but I question whether the situation would have been essentially different if the roads had remained in private hands. The pressure of the cost of living and the rise of wages generally would have made increases on the railroads inevitable. No doubt the process would have been a threatened strike and reference of the matter to the national War Labor Board, or to some special board of arbitration.

During the war, it is probably true that the efficiency of railroad labor decreased, particularly in the shops. But it does not follow that this was the result of federal control. Chiefly it was due to the impairment in personnel and discipline caused by shortage of men, and it was equally marked in the case of street railways, which remained under private management.

I think it is true that certain changes in rate structure and practices have been arbitrarily made, and that there has been over-centralization. Probably the fault sprang from the grant of too unlimited authority and the opportunity which railroad officials, suddenly transformed into government officers, saw to achieve changes which they had long desired, and from defects in organization natural in the inception of the new mode of administration. But these are not faults which cannot be remedied.

Summing up the situation, there are grounds for criticism of operation and policy since the beginning of federal control. But none of them justifies the conclusion that national operation is unsound. The statements that the government never has done and never can do anything well are a slander upon the people of the country, and breed distrust and anarchy. No doubt it is true that we have often been guilty of wasteful, dilatory and unbusinesslike practices in the conduct of our public affairs but one of the reasons has been that so many influential men have preferred to sneer rather than to help in improvement. No greater opportunity for useful and genuinely creative work anywhere exists than in the public service; the great body of employees are faithful, loyal and willing to work; inefficiency in the service springs from the top rather than from the bottom; and all the efficiency that is wholesome and desirable can be developed, without the incentive of excessive financial rewards, if constructive thought and criticism are substituted in sufficient measure for mere cynicism.

Having in mind the conditions by which this country is now faced, it is unwise to return the railroads to the uncertainties of private financing, and the confusion bound to ensue upon the inauguration of new schemes of public regulation, the raising of rates, and attempts at mergers and the pooling of interests. All agree that private operation has had many defects in the past and much thought is being spent on possible means of curing these defects. The mistake lies in assuming that flaws in private operation are less vital and easier of remedy than flaws in public operation. There are patent elements of strength, simplicity and power in national operation and I venture to offer these general suggestions:

(1) Too much power has been granted, especially over rates. This has resulted at times in arbitrary action, and has given rise to the disquieting fear that such actions may be more frequent in the future. No important change should be made without opportunity for full hearing before some disinterested tribunal. The Interstate Commerce Commission has been dealing with rates for years and is well organized for the purpose. It should be given the same power over rates under national as under private operation. The Commission should also retain its control over accounts and its powers of research and investigation. The state commissions should be permitted to retain similar powers and to exercise, in general, the authority over service which they now possess. These local tribunals, easily accessible and independent of the federal government, can be of great public benefit. The more opportunity there is to watch, check and criticize from independent sources, the better national operation will be.

(2) There has been too great centralization of authority. The roads nationally operated should, I think, be divided into regional or other systems, and these should be given a far larger measure of autonomy or "home rule," so that all minor policies and some of greater moment can be determined on the spot.

(3) While the federal government should retain final control, independent interests should have a means of watching and helping in the management, either through advisory committees, or more directly. The two groups which should be particularly considered in this connection are the shippers who use the roads, and the employees by whose labor they are operated. The self-interest of shippers in good service and low rates is obvious. The similar interest of the employees is not so clear, but none the less a fact. Labor is fast coming to realize that increases in wages may not of themselves achieve desired results. So long as only a few trades were organized and increases were confined to small groups, net gains were large but with more widespread organization and more general increases, the gains are small, for prices rise rapidly on the heels of wages and wipe out the advantages secured. Under such conditions, there are probably only two ways in which labor can permanently better its condition. One is to reduce excessive profits and place the burden of taxation where it can most easily be borne; the other, and the more important in its direct results, is to increase the productive power of labor and thus bring down prices. I believe the railroad labor leaders appreciate the situation and are ready to co-operate in promoting efficiency, if given a fair opportunity. No group of men in the country have a greater stake in the railroads than their employees, and they are entitled to be consulted in the management. Such a policy would also, I feel confident, reduce friction and the number of serious labor disputes.

Plans for stimulating efficiency of employees by giving them a share of the profits are unsound, because such profits can more easily be secured by raising rates than by promoting efficiency. Plans whereby increased compensation is made directly dependent upon a demonstrated record of efficiency are more desirable and can be developed, if safeguarded from abuse by proper co-operation.

The problem is really one of organization, and the important thing at the moment, as I see it, is to turn attention in this direction. If this is done, I believe that the director general and his assistants, representatives of shippers and employees, and many others can give you valuable help in devising ways and means for improving the organization and supervision of national operation so that it will better accomplish the purposes which all desire. It is a question which can be dealt with without haste, and the same may be said of the still more difficult question as to the compensation finally to be paid to the owners of the roads if the policy of national operation is permanently adopted, a question which can more wisely be determined, in all probability, in the light of the valuation which is now in process.

Doings of the United States Railroad Administration

Roads Earn $272,000,000 Less Than Guarantee for Five Months. Director General to Confer with President

WASHINGTON, D. C.

DIRECTOR GENERAL HINES expects to have an early conference with the President, who has just returned from abroad, regarding the entire railroad situation and the steps necessary to be taken preceding a return of the roads to private management. The date for the return of the roads is regarded as rather definitely fixed by the President's statement that they would be returned at the end of the year, but the manner of the return involves some considerations aside from the legislation regarded as necessary to put the regulation of transportation on a workable basis. Probably the most important point on which Mr. Hines will desire consultation with the President is the question of an advance in freight rates. This is also an important consideration affecting the return of the roads to corporations that cannot depend upon the taxing power to make up deficits. The possibility of restoring the direction of operation to the corporate organizations as agents for the government for a short time before the actual termination of federal control is under consideration only in a general way. Mr. Hines has indicated that he sees no advantages in such a plan except from the standpoint of the companies that would require a little time to get organized, and that if it is done it is likely to be only very shortly before the end of the year.

Earnings and Expenses of the Larger Roads

The railroads having operating revenues above $25,000,000 for 1918 had a net railway operating income in May of $29,807,312, as compared with $57,107,562, according to a bulletin issued by the Interstate Commerce Commission.

For five months the net railway operating income for these roads, which represent about 80 per cent of the revenues of the Class I roads, was $89,671,612, as compared with $164,690,020 in the corresponding period of 1918. Total operating revenues for May were $326,474,917, as compared with $299,546,065. Operating expenses were $281,209,063, as compared with $227,176,859. Six roads, the Boston & Maine, the Central of New Jersey, the Chicago & Eastern Illinois, the Pittsburgh & Lake Erie, the Pittsburgh, Cincinnati, Chicago & St. Louis, and the Seaboard Air had deficits in May, and nine roads, the Baltimore & Ohio, Boston & Maine, Chicago & Eastern Illinois, Delaware & Hudson, Erie, New York, New Haven & Hartford, Philadelphia & Reading, Wabash, and Chicago, Milwaukee & St. Paul, had deficits for the five months' period.

Certificates of Indebtedness to Be Retired

The $750,000,000 appropriation for the Railroad Administration became available this week upon the arrival of President Wilson with the copy of the bill which he had signed in mid-ocean, but which the Treasury could not officially recognize until after it had received a certified copy. Director General Hines has issued a notice to all holders of the certificates of indebtedness issued by the Railroad Administration giving 10 days' notice, in accordance with the terms of the certificates, that he will pay them all on July 15, in full with principal and interest, upon surrender of the certificates properly endorsed for cancellation. Arrangements have been made for the redemption of the certificates at all Federal Reserve district banks. The total issue of these certificates since March 4 has been $282,511,704.

To assist the railroad companies in meeting their July 1 requirements the Railroad Administration paid out approximately $95,000,000 in cash, which was available without waiting for the President to sign the appropriation bill. Mr. Hines issued a statement denying a story published in a New York paper that he had sent out checks not to be used unless the bill had become a law by July 1. He also denied the reports of an understanding between the Railroad Administration and the Treasury department that the former's demands would be honored upon cabled notification that the President had acted. The Treasury department takes no chances in such cases, and as Mr. Hines pointed out, there was no necessity for it, because with the appropriation about to become available he could draw on his working cash. It is understood that the $441,000,000 balance due the railroads for 1918 is also to be paid up as fast as the contracts are signed. A part of this was represented by the certificates and some of the money is advanced without waiting for the contracts to be agreed upon.

Roads Earn $272,000,000 Less Than Guarantee for Five Months

During the first five months of this year Class 1 railroads have earned $105,000,000 of net operating income or $213,000,000 less than the $318,000,000 earned in the corresponding five months of the test period. As compared with the guarantee accrued for five months, or five-twelfths of the year's guarantee, however, the government's loss is $272,000,000, as the railroad rentals are payable in equal quarterly instalments. On the basis of $904,000,000 guarantee for the Class 1 roads it would be necessary for them to earn $899,000,000 in the remaining seven months to come out even.

Walker D. Hines, Director General of Railroads, has authorized the following regarding the May results:

"Detailed statistics will shortly become available of the operating results for the month of May of practically all the Class I railroads in federal operation. These results will indicate that the net operating income for the month of May, 1919, was about $39,000,000. After allowing for one-twelfth of the annual rental due the railroad companies whose railroads are covered by these statistics, the net loss to the government on account of these properties was for the month of May about $36,000,000.

"The corresponding net loss for these same properties by months of the present calendar year has been as follows:

Month	Net loss to the government after allowing for one-twelfth of the annual rental
January	$56,635,893
February	65,313,327
March	64,576,987
April	49,304,381
May	36,419,595

"The falling off in freight business as compared with the years 1918 and 1917 continues to be an important factor in this unfavorable showing. This is indicated by the following comparison of net ton miles per mile of road per day:

NET TON MILES PER MILE OF ROAD PER DAY
(Revenue and Non-Revenue)

	1919	1918	1917
January	4,275	3,878	4,770
February	4,002	4,591	4,511
March	4,059	5,273	5,192
April	4,134	5,471	5,257
May	4,524	5,226	5,617

"It will be observed that in comparison with the year 1917, the falling off in freight business on this basis in May, 1919, was almost as great as in any preceding month of the year.

"The unfavorable showing also continues to be due in part to the fact that the increase in rates has been on a much lower percentage than the increases in wages and prices of materials.

"In carrying out my policy to keep the public as fully informed as possible as to the cost of government control, I have been endeavoring to bring together for public statement all elements of costs to the government outside of the mere monthly operating results of the principal railroads. These other elements have reference to the smaller railroads, to relations with the short line railroads, to the inland waterways, to the deficit in the express business (due to the fact that the increase in express rates has been very much less than the increase in costs) and to various other elements of liability which will have to be taken into account in the final settlement with the railroad companies. I hope to be able to make a comprehensive statement of these various costs in the near future. The figures above given relate merely to the current operation of the Class I railroads to which especial attention has always been paid."

Freight Traffic Movement and Car Performance

Net ton miles of freight handled by the railroads in May amounted to 32,440,708,000, a decrease of 13.5 per cent, as compared with May, 1918, according to the monthly report of the Operating Statistics Section. The decrease for the five months' period ending May 30 was 14.3 per cent. For May the net ton miles per mile of road per day were 4,527, as compared with 5,219 in May, 1918. Train miles decreased 19.2 per cent and freight car miles decreased 14.5 per cent, while the average number of freight cars on line daily decreased 1.4 per cent. The net ton miles per train mile averaged 708, as compared with 661 in May, 1918, while the tons per loaded car averaged 27.7, the same as in May, 1918. The car miles per car day show a decrease from 26.3 to 22.8. The percentage of unserviceable freight cars was 7.3, as compared with 5.4. The net ton miles per car day increased 12.3 per cent, from 486 to 426.

The five months' figures show that the campaign for heavy carloading is losing ground. The average tonnage per loaded car has been reduced from 28.5 to 27.9. The tonnage per train still shows an increase from 642 to 659. For the five months the net ton miles amounted to 146,129,826,000, a decrease of 14.3 per cent. Train mileage was reduced by 16.5 per cent and freight car mileage by 10 per cent. The percentage of unserviceable freight cars was 6.2, as compared with 5.3. The percentage of loaded to total car miles was 67.4, as compared with 69.3 in the corresponding period of last year. The car miles per car day averaged 21.2, as compared with 23.3, a decrease of 9 per cent, and the net ton miles per car day averaged 398, as compared with 460, a decrease of 13.5 per cent.

Heavy Troop Movements

In connection with the request made by the War Department on June 4 that the use of railroad equipment for excursions and recreation purposes be limited to the absolute minimum during the months of June and July because of the expected heavy movement of troops from France, a report received from the Troop Movement Section of the Railroad Administration shows that during the month of June a total of 342,686 men were returned from overseas service, 92,780 of these men arriving during the last week in June. During the week ended July 7 there arrived a total of 90,084 men.

The War Department estimated that arrivals during the month of June would be 375,000 men, which was reduced to 342,686 men by the actual figures. The arrivals for the two week period ended July 7 by days follow: June 24th, 3,315; 25th, 9,567; 26th, 14,311; 27th, 24,035; 28th and 29th, 18,378; 30th, 23,174; July 1st, 1,613; 2nd, 8,119; 3rd, 6,839; 4th, 12,276; 5th and 6th, 36,742; 7th, 26,495.

In addition there were three ships carrying 5,420 men due July 4 which have not yet arrived. The daily flow of arrivals is not steady owing to the uncertainty of water transportation, which makes it necessary for the railroads to anticipate the maximum daily arrivals and handle them on short notice.

In accordance with instructions of the director general, and upon the urgent request of the Secretary of War that the movement of troops should have preference at all times and particularly that excursions should not be permitted to interfere with such prompt movement, it was found necessary to requisition from the railroads effective June 23 approximately 40 per cent additional coaches over those then in use.

There were approximately 200 special trains operated from the ports alone from July 1 to 4, inclusive. While arranging to fully comply with the request of the War Department that excursion trains not be permitted to interfere with returning troops from overseas, constant efforts were made over the Fourth of July to handle the regular heavy travel taking place at that time. On the afternoons of July 3 and 4 the Pennsylvania Railroad was permitted to use extra troop cars that it had on its own line, numbering approximately 70 cars, for regular passenger business. These cars would have been needed from shipside to port camps except for the light arrivals on July 3 and 4, and in addition there were offered to other lines approximately 150 tourist cars.

In addition to the movements from the East to demobilization camps, there are in progress numerous other troop movements throughout the entire United States, including daily movement of discharged men.

Contracts Executed

The Railroad Administration has executed a compensation contract with the Denver & Rio Grande for $8,319,376. The Baltimore and Ohio contract, which also covers some subsidiaries, is for $30,035,093, instead of $30,031,009, as stated last week.

Railroad Administration Bulletin

The Railroad Administration has recently begun the publication of the United States Railroad Administration Bulletin to be circulated free to employees on all railroads under federal control that do not have employees' magazines of their own. The bulletin is to be issued monthly and the first issue contains eight pages, largely devoted to news of the activities of the Railroad Administration, but including two pages of local matter contributed by 85 local editors on the various railroads. The circulation is 1,000,000 copies a month and the bulletin is printed in six different cities in 85 editions, one for each railroad or group of railroads, each containing the articles prepared in Washington and the distinct local matter. Thomas H. MacRae, formerly managing editor of the Santa Fe Employees' Magazine, is editor in chief of the publication.

A Bit of Modern Construction on the Trans-Siberian

Extensive Electrification Proposed for Sweden

State Railways Are Being Forced to the Consideration of Main Line Electric Operation

FUEL CONDITIONS in Sweden are primarily responsible for the consideration the State Railways of that country have had to give to the project of electrifying a large part of the State-owned railway mileage. The State railways completed the electrification of an 80-mile section from Kiruna to Riksgränsen in the extreme north in 1914 with operating results beyond expectation. Presumably this would have been extended in the normal course of events, but the outbreak of the war introduced an entirely new factor in the way of greatly increased coal costs and a great difficulty in securing coal at all, with the result that the railway administration had to give the matter very thorough consideration. In 1915 a commission was appointed

Map of the Railways of Sweden, Showing in Heavy Lines the Kiruna-Riksgränsen Electrification in the Extreme North

to study the matter in detail. This commission has recently issued a report in which it reaches the conclusion that the entire State railway system can be electrified in 30 years at an estimated cost of 192,000,000 kr.

In 1917 the State railways were paying $20 a ton for coal, but in October, 1918, the price had risen to $46.90. This and the difficulty of securing coal at all led to the use of wood for firing locomotives. This greatly reduced the efficiency of operation, particularly as it lowered the speed of train operation. Furthermore, so serious was the situation that in 1917, even with the use of coal as fuel, 825,000,000 cubic feet of the country's wood supply was used up in locomotives, whereas the annual increase in the supply of timber is between 500,000,000 and 600,000,000 cubic feet. Under these conditions of operation, the fuel cost on the railways in 1918 amounted to nearly 70 per cent of the total transportation charges, with the result that the railroads were operating with an ever increasing deficit. It has been estimated that if electrification had been carried out before 1914 it would not cost more than the actual cost of the fuel burned in 1915.

Sweden has some supplies of coal of a comparatively poor quality, but it is most advantageously situated from the standpoint of water power. Many water power plants are in operation, but these represent only a small part of the possible development.

There is in Europe only one country—Norway—which has a greater supply of water power available than Sweden. It has been estimated that the available water power in Sweden is at least 5,000,000 h.p. Of this total about 1,000,000 h.p. has been developed. Power for electric operation can be obtained from seven principal sources. These are Logan: the Indal river in the central part of the country; the Ume, further to the north; the Dal; power plants already developed on the Lule river, in the extreme north; the Motala in the south, and the Göta, also in the south. Many of the existing installations are already fully loaded. The power plant at Trollhätten on the Göta has been enlarged several times and now develops 150,000 h.p. with normal stream flow. It is hoped that the control of water level in Lake Vänern may increase the capacity of the plant to 300,000 h.p. The Vargön fall and the Lilla Edet, also on the Göta river are expected to yield 40,000 h.p. and 65,000 h.p., respectively. The first installation at Lilla Edet to yield 26,500 h.p. is now under construction and is so planned that extensions can be made when needed.

Typical Catenary and Power Line Construction on the Kiruna-Riksgränsen Electrification

The first installation on the Motala river will develop 10,000 h.p. It is estimated that 600,000 h.p. can be developed on the Lule river. The government plant at Porjus which supplies current for the Kiruna-Riksgränsen line, which is referred to in more detail below, will undoubtedly need to be enlarged to meet future railway and industrial demands. Another power development has been planned

on the Lule river at Harsprånget which will develop 150,000 h.p.

It is further proposed to connect Trollhätten (on the Göta river), and the power system of East Sweden, called the Alvkarleby system, to permit a more complete utilization of all the power generated in these widely separated regions.

The State owns the falls at Vargön and Tyttbo on the Dal, and it is proposed to develop these sites in the near future. Other falls, such as those at Kerseforsen in the Lagan and Ljungsfallen on the Motala river will probably be developed to assist in the electrification of the railroads.

Electric operation seems to be the only solution of the railroad problem, and the problem has become not "shall we electrify," but "how shall electrification be financed and where will the equipment be built." The heavier types of machinery required for railway electrification are manufactured in Sweden, but much railway equipment and electrical material was formerly imported from Germany. There will probably be an increased demand for this kind of equipment, and with Germany out of the field, other countries will be called upon to supply a part of the demand.

The equipment to be used on new electrification projects will probably have to conform to a large extent with that now in use on the one electrified line in Sweden. For this reason a brief description of the equipment on this line is of timely interest.

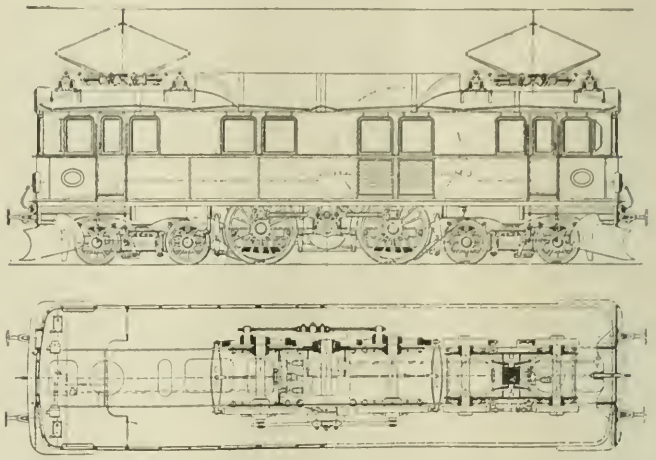
The electrification of the section of the State railways

Contact Wires Overlap at Section Divisions

between Kiruna and Riksgränsen was completed in 1914. It comprises the most northerly part of the Swedish State railways, is entirely within the Arctic Circle, and the electrified section is 81 miles long. The line is of single track, 4 feet 8½ inch gage, and its principal traffic is iron ore.

Power is supplied from the power development at Porjus on the Lule river, five miles south of Lake St. Lule, and the power is transmitted 75 miles to Kiruna, the nearest point of the electrified section. The power line parallels the railroad from Kiruna northward, serving four substations along the line. The equipment in the powerhouse consists principally of four water turbines and five generators. Two of the turbines are direct connected to 4,000-volt, 15-cycle single phase alternating current generators, which develop the railroad power. A third turbine is direct connected to a direct current exciter, and the fourth is direct connected to two generators; a three-phase for lighting and local service and a single-phase for reserve railroad power.

The 4,000-volt power is stepped up through transformers to 80,000 volts and transmitted over a steel tower transmission line to the substations at Kiruna, Torneträsk, Abisko and Vassijaure, where it is stepped down to 10,000 volts, the voltage used on the over-head contact wire. There are two single-phase circuits on the steel towers of the transmission line. At no place is the transmission line but a short distance from the railroad. The towers are from 60 to 73 feet in height and are spaced 660 feet apart. The slack in the transmission wires is from 26½ feet to 33 feet, so that the wires in no place are less than 23 feet above the ground. There are three kinds of towers, one for straight and slightly curved stretches, one for sharp curves and the third for dead-end towers. The dead-end towers are placed at intervals of about one and a quarter miles and are of sufficient strength to hold the strain of all four wires in case the wires

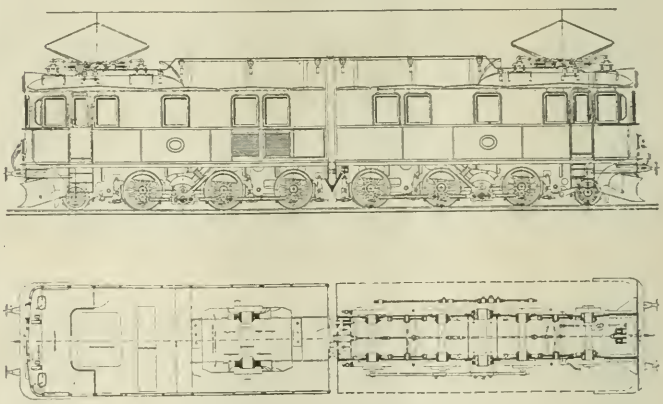


Plan and Side Elevation of the Electric Passenger Locomotive

break on one side of the tower. They are four cornered and are constructed of 90-degree angle iron, whereas the other types of towers are three cornered and are constructed of 60-degree angle iron.

The substations at Torneträsk, Abisko and Vassijaure are each part of the railway stations at these points. In each substation there are three transformers, lightning arresters and the necessary switching arrangement. There is a repair shop in the substation at Kiruna.

The catenary is supported on structural steel poles placed



Plan and Side Elevation of the Electric Freight Locomotive

175 feet apart on tangent track. These poles are always placed on the outside on curves to permit clear vision for the locomotive runner. The contact wire is hard drawn copper of figure 8 section of 80 sq. mm. area. The catenary is a seven-strand copper cable of 50 sq. mm. section. The contact wire is supported at each pole and to the catenary at two points between each pole. The sag in the catenary

between poles is 4 feet 3 inches, and the sag of the contact wire between supports is about 3 inches. The contact wire is divided in sections about seven-eighths of a mile long. The method of paralleling two contact wires at section divisions is shown in one of the illustrations. Over open track the contact wire is 18 feet 6 inches above the rail; in tunnels and snowsheds this is reduced to a minimum of 15 feet. At stations and yards the catenary is supported by overhead bridges.

When the line was put in operation late in 1914, 15 locomotives were provided, two passenger and 13 freight. The passenger locomotives are of the 4-4-4 type, weigh 82 tons and are capable of a speed of over 60 miles an hour. The freight locomotives are of the 2-6-6-2 articulated type, weigh 140 tons, have a tractive effort of 33,000 pounds, and are capable of a speed of 43 miles an hour.

The principal dimensions of these locomotives follow:

	Passenger	Freight
Diameter of driving wheels	62 in.	43½ in.
Diameter of guiding truck wheels	38 in.	28¾ in.
Rigid wheel base	9 ft. 6½ in.	14 ft. 1½ in.
Total wheel base	33 ft. 2 in.	47 ft. 11 in.
Length over all	40 ft. 1 in.	61 ft. 1 in.
Number of driving motors	1	2
Horsepower per motor	1,000	850
Revolutions per minute	170	150
Tractive effort	12,000 lb.	33,000 lb.
Weight per driving axle	33,000 lb.	38,600 lb.
Weight per truck axle	28,700 lb.	38,600 lb.
Total weight	181,800 lb.	308,800 lb.
Weight on drivers	66,000 lb.	231,600 lb.

It has already been decided to extend the Kiruna-Riksgränsen electrification to Svartön on the Baltic Coast. This will mean a 143-mile extension, the cost of which has been estimated at $7,800,000. Another electrification project is proposed in connection with a new direct route between Stockholm and Göteborg. This line will supplement existing steam railway lines and would not only take care of the traffic between England and Finland and the express traffic from Stockholm to Göteborg and from Stockholm to Christiania, but also the express traffic south to Denmark and the continent and between Denmark, the continent and Norway.

Accident Bulletin No. 69

THE INTERSTATE COMMERCE COMMISSION has issued its quarterly accident bulletin, No. 69, dated March 31, 1919, showing the number of railroad accidents occurring in the United States during the months of July, August and September, 1918. In train accidents, 129 passengers, 153 employees, and 66 other persons were killed, and, 1,118 passengers, 939 employees, and 90 other persons were injured; a total of 348 persons killed, and 2,147 injured. Of the passengers killed, 119 were the victims of collisions, and 9 of derailments.

This report includes the following disastrous collisions: Nashville, Tenn., July 9th, 80 passengers killed; Chelsea, Mich., July 20th, 12 passengers killed; Birdsall, Neb., Sept. 10th, and Marshfield, Mo., September 17th, 11 passengers killed in each. The collision at Chelsea, Mich., was on an electric road, the Detroit, Jackson & Chicago. The collision was due to the neglect of the conductor and motorman of a westbound freight car in assuming that two sections of an eastbound train had been met when only one had reached the meeting point. The conductor of the westbound train, seeing the first section of the eastbound train moving away from the station, assumed that it was the second section because he saw no green flags; and the absence of the green flags on the front of the car, where they should have been, was due to the disregard of the rule by the motorman in substituting green lights for green flags before sunset. The weather was clear and bright. The bulletin contains, besides the usual reports of investigations of collisions and derailments, a report also of an accident in Chicago, on September 14, killing five persons, where a switching freight, because of some cars getting out of control of the brakemen, struck a street car on a crossing.

Comparisons of certain totals for this quarter, with the same quarter of 1917, are shown below:

	1918	1917
Train accidents and train-service accidents		
Passengers killed in train accidents	129	39
Employees killed in train accidents	153	108
Total persons killed in train accidents	348	195
Total persons killed, all causes	2,429	2,719
Total persons injured, all causes	...	...
Nontrain accidents		
Industrial employees killed	154	94
Industrial employees injured	28,701	31,377
Other persons killed	17	28
Other persons injured	479	590

The total number of collisions recorded in Bulletin 69 is 2,358, and of derailments, 3,432. Comparisons with the same quarter of 1917 show:

Train Accidents, Three Months, 1918 and 1917

	1918, Bulletin 69	1917, Bulletin 65
Collisions, number	2,358	2,061
Number per million locomotive miles	5.09	4.34
Damage to railway property	$1,844,320	$1,547,620
Derailments, number	3,432	2,556
Number per million locomotive-miles	7.41	5.44
Damage to railway property	$3,153,550	$2,404,450
Locomotive boiler accidents, number	55	77
Number per million locomotive-miles	0.12	0.16
Damage to railway property	$51,670	$9,220
Other locomotive accidents, number	50	80
Number per million locomotive-miles	0.11	0.17
Damage to railway property	$16,270	$27,630
Miscellaneous train accidents, number	562	423
Number per million locomotive-miles	1.21	0.89
Damage to railway property	$189,650	$156,610
Total number of accidents	6,457	5,227
Number per million locomotive-miles	1.21	0.89
Damage to railway property	$5,255,460	$4,144,930
Thousands of locomotive-miles	462,989	475,321

Of the 2,358 collisions, 273 are classed as rear, and 134 as butting; and of the 185 persons (excluding trespassers) killed in collisions, 154 are charged against these 407 collisions; but of the total damage ascribed in the report to collisions, $1,844,320, more than 57 per cent was charged to the 1,951 miscellaneous collisions not included under the head of rear or butting.

Table No. 13 recording statistics of casualties to workmen—mainly men in the shops and on the tracks—engaged in work not connected with the movement of trains, shows the following totals and averages:

Casualties in Non-Train Accidents, Quarters Ending September 30

	1918, Bulletin 69		1917, Bulletin 65	
	Killed	Inj'd	Killed	Inj'd
1—Class 1 roads, industrial casualties	145	27,819	98	30,342
2—Shopmen (included in item 1)	52	16,554	27	17,527
3—Trackmen (included in item 1)	27	4,670	16	5,415
4—Class 1 roads, other non-train accidents	10	432	12	478
5—Class 1 roads, total	155	28,251	110	30,820
6—Roads of Class 2, Class 3 and Switching	16	929	12	1,147
7—Total non-train accident casualties	171	29,180	122	31,967
8—Millions of man-hrs. Class 1 r'ds, shopmen	410.44		350.38	
9—Millions of man-hrs. Class 1 r'ds, trackmen	271.48		271.72	
10—Casualties per million man-hours, shopmen	46.46		56.13	
11—Casualties per million man-hrs., trackmen	17.30		19.99	

As compared with the last preceding quarter (bulletin 68) the totals of the casualties in all of the items are considerably larger, the total number of men killed, item 7, being, in the preceding quarter, 127. The number man-hours worked was more, in the present record, both for shopmen and for trackmen, but the averages shown in item 10 and 11 are lower in bulletin 69 than in bulletin 68. Comparisons with the corresponding quarter one year previous, bulletin 65, are shown in the table. In this latest record (bulletin 69), as in the last preceding one, it is to be noted that the casualties in the shops are much more numerous than on the track; but now, as before, if we take the killed alone, omitting the injured, the differences in the ratios, as between the two classes of workmen, are not so great. The number of trackmen killed on class 1 roads, bulletin 69, was 27, or about 1 in ten million man-hours, while the number of shopmen killed (52, was equal to about 1 in eight million.

Unit Price Versus Percentage Contracts*

By W. L. Darling
Consulting Engineer, St. Paul, Minn.

In the construction of a plant one or more of three different methods are employed: 1. Company force. 2. Unit prices or an agreed sum with a provision for a percentage for increase or decrease, as the cost of the work decreases or increases, compared with the agreed cost. 3. A percentage based on the actual cost of the work.

In the present state of the art I think it can safely be assumed that the first method is to be used only when the work is too small to contract, when the local or emergency conditions are such that it is not practical to contract, or when the owner has experts in a certain specialized line who are superior to those of the contractor's. The main question, therefore is, shall the second or the third method be used and if the third, will its protect the art and consequently the public.

To discuss this question it is necessary to examine the effort of the contractor himself. The great incentive is to make money and it is this incentive that has created his value to the owner and to the public. The overcoming of obstacles, financial as well as physical, has produced energy and versatility that could have been acquired in no other way and to my mind energy is its greatest asset. What use is it if he has all the intellect and physical qualities in existence, if he has not the energy to use them. A contractor must have a knowledge of men and plant; where labor can be readily obtained and the plants available; he must understand about his supplies, where they can be obtained and how best transported; he must know of the market conditions and have an intimate knowledge of the work to be done.

If the work is done on the unit price basis, the owner gets the results of the judgment and the experience of many men and many firms; one will see better where supplies are obtainable; another may have a better plant for the job; another may have a better method of doing the work; it is the pitting of all these men, one against the other, that the owner gets the advantage of. By the other method a man or firm is selected to manage the work, hence the owner gets the benefit of this one man's knowledge and the wrong man may have been selected.

I have known men to make a bid on a piece of work by merely sizing it up and knowing where the necessary outfits were and the men to whom it could be sublet. If he has made a bad guess, he simply has to find some way or means to back up his judgment. I believe some men become so familiar with certain lines of work that their guess is as good, if not better, than some men's figuring. At any rate, the difficult task that they set for themselves brings out all the surplus energy that is in them and this is what the owner gets the benefit of.

The contractor working on a unit price basis has not only his reputation but also his very livelihood at stake. We have often seen men take work at unit prices so low that a heavy loss seemed inevitable, but by using new methods and new tools and exerting surplus energy, they have been able to turn an almost certain loss into a profit for themselves and a much greater profit for the public, as these new methods can be used on further work and by other men.

Looking back over the past 40 or 50 years, one can easily see the march of improved methods and tools. Most contractors can remember the time when the first drag scraper came into use; it was soon reinforced by the tongue scraper. Then came the wheel scraper, then the grader, and then the steam shovel, gradually increasing in capacity to the enormous ones now used and finally the drag pan.

*Read before a meeting of the Northwest Contractors' Association at St. Paul in March, 1919.

Contractors can materially improve the art by drawing closer lines between their business and that of the owners. Unit prices and specifications should be more definite. The question of custom between contractor and owner should be eliminated. The contractor should have better data on which to place his bid. There has been a growing custom to pay less attention to the contract than to the customary settlement. I believe that much better results could be obtained if the contractors would insist on the contract and specifications being followed and, if conditions should arise where the intent of the contract would be materially affected, by having, if possible, a definite understanding as to prices and the conditions before going ahead.

Under past practices, work has been authorized suddenly, with no time for either the engineer or the contractor to determine costs or make intelligent bids. A much smaller margin between the estimate and the actual cost of the work would result if these conditions could be known, for the risk of the contractor would be much smaller and the owner would have more definite knowledge of the cost of his work is going to be to him.

Where the percentage method is used the contractor has few financial troubles to overcome; no particular inducement, except pride, to introduce new methods or tools; no sleepless nights to figure out some new scheme for the next day; no surplus energy to exert in himself or employees. The employee, knowing that his superior is not in financial trouble, does not exert himself unnecessarily. The contractor does not try new methods or new tools, as he may think he has no right to risk a failure. On the other hand, the unit price men must take a risk and bend all their energy to make it successful.

My point is this: that the necessities of unit price men have produced a personnel that could not otherwise have been acquired and that as soon as the incentive is eliminated, progress will slow down if the art does not actually retrograde. There is no question but what there are men doing percentage work who are just as competent and perhaps just as energetic as the unit price men, but I claim that it is because of the state of the art and its personnel and due to previous efforts of unit price men.

The main objection to the unit price method is that in instances contractors make too much money and the percentage method will eliminate that danger. Frequently a large profit is due to the fact that a contract was taken on a high market and the work done as the market fell. If the reverse condition obtained, there would have been a loss and no comment made.

It has seemed to me that the best way to determine the amount of money made by contractors is to compare the work done in the Northwest during the last 40 years with the wealth of the various men who have been engaged solely in that business and who have not lost their money elsewhere. While it is true, perhaps, that in individual cases owners have paid larger sums than by the percentage method, I do not think it is generally true. The largest profits to contractors are generally in pioneer work, where conditions are not well known, or where there are but few firms to undertake it.

I believe that if we give up unit prices or other competitive methods, it will result in a lot of superintendents, or in a few large concerns which will control the business. The great result of the unit price method is in the fact that during the last 40 years, under normal conditions, unit prices have decreased in the face of rising costs of labor and materials, and this method has produced a class of men who, when the emergency came, were able to accomplish things that did not seem possible.

There is a growing disposition all over the country to eliminate competition, but it seems to me that better results will be obtained only where competition produces waste, but not where it is a creator of new methods, inventions and energy.

Railway Claim Agents Hold Annual Convention

Association Has Most Successful Meeting at Chicago with 275 Delegates in Attendance

The Association of Railway Claim Agents held its 30th annual convention at the Hotel La Salle, Chicago, June 25 and 26, R. C. Richards, general claim agent of the Chicago & North Western and president of the association, presided and there were 275 delegates in attendance representing 118 railroad systems.

The meeting was addressed by Charles F. Patterson, assistant general counsel of the Division of Law of the United States Railroad Administration. Considerable attention was given to the relation of the claim agent and other departments of the railroads and to the new developments over the last year in the claim agent's work. Abstracts of some of the papers follow:

Report of Committee on Grade Crossings

This committee of which W. B. Spaulding, claims attorney of the St. Louis-San Francisco is chairman, presented an extensive report on the prevention of accidents at grade crossings in which it discussed the large number of accidents of this kind. It presented figures of such accidents and reviewed at length the investigations and work that have been carried out by commissions, associations and railroads, the effect of statutes, court decisions, etc., and then considered the preventive measures that have been tried. It recommended as remedies, better education concerning care at grade crossings particularly by automobile dealers selling to new owners, and the use of the so-called "bumpers" or impediments necessitating low speed at grade crossing approaches. In conclusion, the report said:

"Your committee has nothing to say against the continuance of the very expensive precautions railroads are taking to prevent people being harmed at highway crossings, nor does it wish to discourage those enthusiasts who believe that every sort of difficulty can be overcome, every evil rectified by passing a law. The committee's duty is performed when it recommends to your careful consideration what it deems the superior efficacy and simple practicability of the attention-compelling 'bumper' and the painstaking auto-selling teacher and scare-thrower. . . . It is remarkable what power to carry conviction of needless sacrifice the mere reading at one time of brief statements of the facts in a dozen of these occurrences has."

Committee on Standard Forms

The committee on this subject, of which B. C. Winston, general claim agent of the Wabash is chairman, presented a number of suggested standard forms for handling claims. The meeting voted to have these printed and to bring them up later for further consideration and adoption.

Co-operation Between Law and Claim Departments

By James C. Davis
General Solicitor, Chicago & North Western

I think there should be a continued interest between the law and claim departments from the time of the inception of the accident to the final conclusion, whether it is settled in court or settled out of court.

I do not mean by that to take away the discretion or the dignity or the judgment of any man like Mr. Richards, but I am a firm believer in the judgment and in the discretion of the man on the ground, and I think that if you have got a man in charge of a district or a territory and he has not got better judgment than the man that is away off 500 or 600 miles, you ought to get somebody else.

The reason I feel that way is I have been a good many years away from headquarters, and I have come in with a very definite conclusion in regard to that. Of course, you do not want to lose the general supervision in the important cases, you want the advice of the head of the department, and I believe that the law department and the claim department ought to have the same general jurisdiction, if you have an attorney for a state, have a claim agent covering the same territory, if you have a district attorney, have a district claim agent covering the same territory, and then when you come to make your adjustments,—I do not mean in trifling cases, I do not mean to carry this to the extreme, but in ordinary cases, take the joint judgment of the man on the ground, the claim agent, and the lawyer I believe it will expedite your work, and I believe that you will ordinarily get better conclusions, I believe that it dignifies the man on the ground and makes him feel his responsibility, and he is more anxious to successfully respond to the same.

There was a time, and very fortunately it is rapidly disappearing, that I am frank to say when I tried cases over in Iowa that I did not care to have the claim agent about because the fellow on the other side usually tried the claim agent instead of the railroad, and in the old days they used to convict him, but that has entirely gone by I think now; I think that wherever a claim agent makes an investigation and takes the statements of witnesses, that he ought to follow that with the law department through to the end. I believe, on the other hand, where your claim agent has adjustments to make, that he ought to have access to the law department so that he may receive advice from them; when you gentlemen pay a man it is your judgment, you have the discretion, generally you are told to pay from $3,000 to $5,000 or from $5,000 to $10,000, why most of you can make your salary on any one settlement that you make, and I believe you ought to have co-operation in that, I believe sometimes that two heads are better than one, therefore I would give some discretion to the man on the ground making the settlement, provided it was endorsed by both the law department and the claim department and then hold that district or territory or state claim agent responsible for the suits that were brought therein. I was looking over our statement the other day, and I think there were 8,900 accidents reported in one year and only 214 lawsuits. I think, of course, that reflects on the efficiency of the claim department and saves the law department a great deal of labor that it would otherwise have, and so, I say to you gentlemen that I am in favor of cordial co-operation, I don't believe that either department ought to be entirely divorced from the other or should lose their interest at any period from the inception to the final conclusion of the controversy.

Mr. Davis then spoke of the general railway situation.

Address of the President

Mr. Richards, in his address spoke of the work of the association over the past year. He noted that there were 302 members of claim departments in military service. He also spoke of the association's bulletin and the furnishing of index cards of the decisions of the Appellate

Courts of the United States on claim questions. "I do not believe," he said, "there is another railroad association or any association of men which has so valuable a publication as the bulletin."

The Claim Departments Under Federal Control

By Charles F. Patterson
Assistant General Counsel, Division of Law, Railroad Administration

Railroading is the most fascinating business in the world, and it has at all times engaged the best intellect of the leading men of all countries. Of all branches of the transportation business, that is most attractive and interesting which has about it the human element, and in the investigation and settlement of personal injury claims this element is more pronounced than in any other. The infinite variety of situations presented and the innumerable kinds and classes of people with whom the claims men come in contact give to each case its own peculiar setting.

To my mind claim work presents more interesting features, has more variety, is more attractive than any other railroad department.

During federal control you have been placed in a difficult and trying position. All of you formerly were connected with individual railroads. With those railroads lay your affections, but during federal control you have been working for one common master, you have been engaged in one common effort, you have served one common cause. And it has not always been easy to lay aside previous ties, to overcome old prejudices, to remember that your duty and your loyalty lay with one common employer. I congratulate you that you have been able to do this with such signal success.

I have felt from the beginning of my service that the opportunity for joint service, for helpful association, for united effort toward raising the standard of claim departments was a splendid one. Never before has the operation of such a tremendous transportation system been combined under one management. Never before has our own branch of the service been so closely inter-related under a single head. We have had the opportunity of exchange of thought one with another without the fear of jealousy. It has been possible for all of us to obtain information from a central source. We have had the benefit of an exchange of experience, and of having that experience freely and always at our command. And I assure you that my observation at the central point of contact has convinced me that we have splendidly grasped the opportunity presented and have in the past profited, as we will in the future be benefited, from the knowledge, information and wisdom which we have gained during the period of unified control and operation.

We will be able, I am sure, when the roads go back to private control, to put to good account what we have learned. We ought to enter upon a period of private control with an enlarged experience, a clearer vision and a broader outlook. I am no idealist, but I have ideals, and I am quite sure that a reputation for fair dealing, squareness and honesty on the part of the claim departments will do as much in aid of any individual road as it has done for the railroad administration as a whole.

Perhaps more than any other branch of the service, we come in contact with the individual. We are able to create in many instances a sentiment favorable to the railroads. We can with tact and diplomacy so run our departments that the indirect influence for good for our railroads will be of enormous help to the other branches of the service.

In a short address that I made some time since at another meeting I instanced a case in which the proper and prompt settlement of a claim has been of material advantage to the railroad involved in connection with other branches of its operation. And the instance to which I then referred is but one of many. Money-making and position are not man's chief end. Honesty, loyalty, reputation, an upright spirit, a consciousness of duty well done—these are the great things in life, and their cultivation in our actions and in ourselves is certain to have resultant effect on all those with whom we come in contact. I appreciate that we do not always deal with the high-minded and the noble. On the contrary, we daily meet the mean, the contemptible and the false. But a continued course of fair dealing, of squareness, of uprightness, is certain unless all human experience is vain, to be of immense help not only in our own departments but in other departments of railroad work. These things must come from above. Your field men must be trained not only in tact and diplomacy but in fair-mindedness. They must receive no conception of duty which involves only the beating down of a claimant to his lowest terms. They must acquire for themselves and the railroad for which they are working a reputation for fairness and squareness, and that reputation when acquired must be maintained. With a reputation for honest dealing a railroad can confidently submit its cause to any jury, but with a reputation for smartness, hardness, indifference to the rights of others, a strict application of legal principles to a case without regard to circumstance, ill results are sure to follow from the jury-box. It is your opportunity to initiate such a course. It is your duty to acquire this reputation. And though the course is hard and discouragement is frequent, in the end beneficial results are sure to follow. You may say I am preaching. But my experience has been that most claimants and most lawyers are willing to meet us half way if we but show them that our hearts are right.

This has been a difficult year. Wages have risen by leaps and bounds. And stock prices are going up. Living is higher and juries are not unmindful of the fact that life is more valuable, gaged by all the elements which enter into modern living. In spite of these facts the results as shown by the solicitors' reports, summarizing the results for the year 1918, are very gratifying and in many respects remarkable. Except in a few cases due to serious and untoward accidents, the aggregate amount of claim payments is not greatly in excess of the year 1917, and even in some notable instances much less. One of the greatest transcontinental systems, with gross earnings of $168,000,000, has shown a decrease in personal injury claim payments of $360,000. One of the great southern lines, with gross earnings of $126,000,000 has shown a decrease of over $112,000. A mid-continental road, with gross earnings of $144,000,000, has shown a decrease of $236,000. One of the greatest systems in the country has a percentage of disbursements on account of personal injury claims to revenue of .0067 per cent. The railroad which has the greatest gross revenue of any one system in the United States has a percentage of such disbursements to revenue of .0052 per cent. These figures are extraordinary. They show the result of the earnest effort put forth by you during the year that is just past.

Whether or not federal control of railroads is on the whole beneficial, and whether government operation is better than private operation, are questions upon which it would ill become me to express an opinion. But I have no hesitation in saying that under federal control claims are better handled, more equitable settlements are obtained, the public is treated with a greater degree of consideration, and the railroads have a fairer chance than under private management.

I propose shortly to have a bulletin prepared which will show in detail the figures of practically all federal-controlled roads. I expect to have these figures analyzed. The results of the analyses will be widely distributed. These figures and the deductions based thereon are thus available for the first time, and they ought to be valuable for future comparison.

I would like at this time to name some of the roads whose work has been particularly efficient and helpful, but to do

so would be merely to give a list of those railroads with whom I correspond. I feel in the position of the schoolmaster who on commencement day has the prizes in his hand and is prepared to deliver them to an expectant and sometimes fearful audience. I would like to publicly commend particular men who have done extraordinarily good work, but it does not seem to me that this is an occasion for such action. I would like to say something of praise and appreciation to everybody, but if I did this meeting would be prolonged until night-fall.

Some of you will say that I am a flatterer. Perhaps so. Nevertheless, I have found that most of us are very much in Fisher's position. One of his friends had been telling him what a splendid fellow he was and had been enlarging on his good qualities. Finally Fisher said: "It's all a damn lie, but tell it to me again."

All men are spurred to higher effort by a judicious praise of accomplishment rather than by blame for things left undone. Nevertheless it is a mistake in order to effect a favorable settlement to inform a poor widow that owing to the fact that the United States is running the railroads she can get little or nothing for the loss of her unfortunate husband and that she may have to wait for the Court of Claims to pass upon her claim. It is poor policy to refuse to pay for decent burial of the dismembered body of even one killed through no fault of the road. I sometimes wonder, although I am told by some railroads it is true, whether or not children of eight years have sufficient intelligence to know that a no-trespassing sign protects a private crossing and if he or she, as the case may be, wanders incontinently upon the tracks his or her fond parents are precluded from recovering anything for the loss of their son and heir or daughter and heiress.

A little more care should be used in handling soldier's claims. I have tried to be helpful, but I do not think that I should be so often called upon to repeat the same advice in similar circumstances.

Federal control, if we may expect Congress to act in time for the President to put into effect his statement that he proposes to relinquish his control at the end of the present year, will shortly cease. We are not perhaps standing around the grave, but at least notices of the funeral have been sent out. When you go back and become once more free and independent, it is my sincere hope that our common association will not have been in vain, that the lessons we have learned will not be forgotten, that the results which we have accomplished will have a permanent beneficial influence, and that we will go on growing bigger and better in our daily tasks, more worthy of the positions which we are called upon to fill.

It is not possible for me in a talk of this length and in a meeting of this character to go into the particulars of the work in which we are jointly engaged. I have studiously avoided that course. I want to direct your attention to the larger aspects of the work. I want to impress upon you the value of co-operation, the worth of spirit, and the great and overwhelming benefit to be obtained from a true enthusiasm for your undertaking. Personal interest and enthusiasm are the vital things that bring success. We must have confidence one in another. We must be willing to exchange information. We must be willing to hold out a helping hand to each other. You must remember when once more under private management that you are all railroad men, and the railroads and their successful operation must be your chief purpose.

The Claim Man—His Relation to the Public and to His Fellow Employees

By C. D. Cary
Claim Agent, Illinois Central

It is my profound opinion and conviction, that above all the claim man should be an exemplary citizen. He is fettered by no mercantile claims or political embarrassments which mitigate in favor of a compromise with those elements of our society that betray and belie us. A casual survey of any community will serve to apprise him where to cast his lot, who it is that represents the secure and substantial men of that locality, who carry with them the moral and mental uplift of that environment. No railway man serves well those who pay him who fails to share with these men in the local community, comradeship in a common enterprise of good citizenship, and such a community will welcome and serve the man who stands true to these ideals.

I believe this to be one office that should be denuded of all mystery or misgivings and the initial impression I would convey to the public is, that he who comes here to display cunning and craftiness, comes at a disadvantage, but for those whose intercourse has the ring of rectitude and uprightness we extend a wholesome welcome to transact his affairs of life with the same well-being he would display at his banking house. We hold no double standard of integrity, things are either done right or they are done wrong, and this applies to all parties to the transaction.

I believe the claim man should have within him a fixed policy and purpose that he may tread unswervingly the pathway of duty, undeterred by doubts, singleminded and straightforward. I believe that the foregoing will be to no purpose unless the private life of the claim man is clean and exemplary in the community where he lives. It is not necessary that he be a saint or puritan, but it is highly essential for all purposes and to himself alone, that he be temperate and well-balanced in his utterances, and upon those questions of public policy in his community that he enlist himself upon the side which appears to be rational, wise and enlightened, though perhaps not momentarily popular, but such as will associate him with those of our citizens who will stamp his judgment with confidence, as a living force for those things which are just and suitable.

No man connected with railway operation touches so closely the domestic affairs of all the employees as does the claim man. To him is related the financial state of the family, to him is computed the burdens of life and where they weigh most heavily, to him is confided private affairs which should have no place in a permanent file. These are those matters which one man trusts to another, and it is here that the claim man is made the confessor of those tribulations which beset humanity in its varied forms. At this juncture the claim man has an opportunity to reveal the true context of his stature, an opportunity that comes to him alone . . .

This is directing his course clear from the shoals of loan sharks and garnishments and those things that perplex and worry an employee and make him that much less efficient. If he is in debt, tell him how to get out and still retain his good name, his self respect and his credit with his creditor. Accompany the downcast man to the grocer and explain the situation to him, how misfortune and injury may have caused a halt in the meeting of the usual payments, but no restraint in the willingness of the man to fulfill his obligations if only some manner could be pointed out.

They are beset by tricky men with wily schemes, which on their face appear genuine and authentic. Spurious securities of a mongrel variety are offered at tempting rates. Most of these are utterly worthless, and I desire to add here that it is my judgment that the wage earner has no place in the stock market, this is not a wage earner's game, his place belongs among those investments that are safe, secure and sound, which tend to enlarge his faith in commercial transactions rather than curtail it. The wage earner has no place in any investment where he loses the absolute control and direction of his savings which is always the case in these stock jobbing investments. I sometimes feel that a moderate curse is extended to the wage earner by the litheral availability of charge accounts and instalment contracts.

These are some of the items that I believe the claim man should discuss with the employee, try and point out to him the pitfalls which sensible men seek to avoid, guard him

against extravagances that he need not bear, hold up the torch of thrift, economy and urge that in all his transactions and affairs that he exercise considerate judgment, and be not moved by rash and dreamy sentiments that have no place in the present judicious parley of mankind.

A mere settlement with a man is a momentary transaction, but to reach out to him with a sustaining force that enables him to hold on and to improve his situation is a perpetuity.

Psychology of Approaching Persons for Statement and Settlement

By W. H. Mooney
Claim Agent, Missouri Pacific

The person with whom we are dealing determines our course. By the very nature of his work a claim agent is being continually educated along the lines of character study, and it is, perhaps, easier for him to determine, or even anticipate, the mental attitude or character of a person than it might be for someone engaged in a different line of business, and he can, therefore, the more readily place himself in harmony with the one with whom he is dealing. The character of a person may be known through a former acquaintance. If not, we should make an effort to "discover" him in the few moments' conversation we have before broaching the subject of statement or settlement. To produce the best results your mind is in full accord and sympathy with his own. We may pave the way through a mutual friend, or, if we have both lived in the community our reputation may have preceded us by his having heard others talk of our methods, which emphasizes the importance of playing the game square. You may not always be able to induce your man to play square but for yourself, you have no excuse to do otherwise.

Our chief thought should be to get in mental harmony and sympathy with our man, listen to and take an interest in his story. After we get this we can then best determine on how to proceed toward approaching him for a settlement. If you take a personal interest in the injured person, see that he has every care and attention and the knowledge that he is indebted to you for such care and attention, you will find it produces much good influence on the subject. You must remember that even though you do desire to be fair and honest, you have still to convince your man of that fact and then prevail on him to reciprocate.

We must remove fear, aggressiveness, vindictiveness, antagonism, combativeness, shyness, trickery. We start wrong if we place a man in an argumentative mood or if we contradict him. We are more apt to place him on his honor, if he has any, if we approach instead in all fairness and honesty.

We must work along the same lines; talk the same language; work in the same environment with the person with whom we come in contact. You find as a rule you work to better advantage with cases of employees, because we are one of them, are more or less associated with them, work in the same atmosphere. We are, to a certain extent, advertised among them. They tell each other how they have been treated by us and have less of the feeling that we are smooth citizens, working for a corporation, who will take advantage of them.

Little acts of attention and kindness do much good. I make it a rule to call on employees both before and after I secure their statement or release. I like to have them feel that I am their friend, and, although a claim agent, am not heartless and can sympathize with and make friendly calls on them. We have often had the physician make extra calls, probably not necessary, because of the feeling of neglect of some injured person. It is surprising how much this is appreciated and what advancement we have made toward friendship.

Report of Committee on Restoration and Re-employment of Injured Employees

New interest has been aroused in the work of restoring or educating injured industrial employees by the splendid work that is being organized by the Federal Government for the restoration and education of wounded men, following the earlier efforts along this line in France and England.

We must remember that we are handicapped by this difference between the government restoration and our proposition in that the government can compel the wounded soldiers to submit to any course of restoration or education, no matter how long or how painful it may be. Of course, we cannot compel an injured man to go to school or take up any specific course of training, and doubtless all of us have had the sad experience of trying in vain to persuade a young man who had lost a leg or arm, and who had received a considerable amount of money in settlement to take up telegraphy, stenography or some other occupation, he was physically able to fill, but who has used his money to purchase a pool room or automobile. On the other hand any claim agent can think with pleasure and even pride of the crippled men he has helped to jobs at which they are earning good wages, enabling them and their families to live in comfort.

In approaching this subject your committee endeavored to learn if there were any general plan of restoration of crippled employees among railroads.

Our investigation indicated that none of the roads have a definite policy in this connection, none of them have schools either connected with the railroads or otherwise, and no specific manner of handling these cases as a whole. Practically all that has been done along this line has been done or at least initiated by the claim departments. The claim agent comes in direct, intimate relation with the injured man as no other official does, and can understand his needs, and sympathize with him. Further he has in mind his instructions, which one general claim agent expresses in the following words: "When spending the company's money, I want you to buy, besides a release, the good will of the claimant."

The following plan which is followed at least in a portion of its cases by one railroad, seems as nearly a general practice of railroads as so far exists. The claim agent writes as follows:

It is the purpose of the claim department, when reasonable and fair settlement has been made, to endeavor, if possible, to secure a position, which the injured individual may be able to handle. In some cases we talk the matter over, and if he seems particularly fitted for, or if his injured condition limits him to, some special line of work on the road, we endeavor to make arrangements through the operating department for a place where he can learn the duties connected with that position. As an illustration, in some places where men have lost legs or arms, we have arranged so that they might study telegraphy, and when they are sufficiently advanced, secure positions for them. In some of these instances we have made station helpers out of them, in order that they might earn wages while learning this new occupation. In other instances we have taught the men yard clerical work, or had them placed in some mechanical office, if their education was sufficient to handle such positions.

When special or difficult operations are essential it will be found easy to place the patients in private hospitals where such operations are performed. Eventually as an outgrowth of the government hospitals and work, we believe large numbers of institutions will be established for doing this work.

We would, therefore, recommend.

1. That for the present every railroad so far as practicable follow out some plan like the one indicated above. A representative of claim department who handles a particular case should discuss with the injured party, and decide what work the man can do, and what he would like to do, and when it is decided what work the injured man shall be trained for, the matter should be taken up by the claim man with the department, where his changed life will be worked out. The claim agent must have the hearty co-operation of all departments in order to replace all men. The request of the claim department should not be pigeon-holed or side-stepped. The plan will not be a success until every officer, from the general manager to the heads of the various departments has been convinced as to the wisdom of the policy.

2. When any special education is required in a particular case, that this be obtained from existing educational institutions and practical training

schools, a list of which should be kept on file and up to date. In most cases somewhere on the lines of every railroad are available opportunities in almost any direction. If a settlement has been made with the injured man for a substantial sum, and an allowance made in the settlement to cover the needed education, the injured man should then be put on his own resources. If he is not interested enough in himself to follow out the training at his own expense he is not mentally fit to succeed in the work that will follow.

3. When difficult and complicated operations are indicated, that these should be obtained at private or public hospitals, government hospitals, if possible, where such special surgical work is done. If the railroad has a complete staff of surgeons, and especially if it has its own hospitals, it is probable that it will not be necessary to send any cases, except at rare intervals, to outside hospitals or specialists. The time spent in the company hospital will undoubtedly be very beneficial to the injured man, mentally and physically.

4. That as the government and private institutions for the training and restoring of cripples are developed, further study be given to the subject by this association with the view of the adoption of some general plan by all railroads which may appeal to the injured men and secure their willingness to submit to the course of training and help minimize the great economic waste, and the pain and suffering caused by injuries to the injured ones and their families. That to this end a permanent committee on this subject be created.

We believe that the carrying out of the plan suggested will from the outset be an economic step, and that all money expended will more than come back to the railroads in better services and in the loyalty of the restored men. The work should be done on wise and well considered business principles. It might be well to take the matter up with the railroad administration to see if a department could not be created for all the roads, or in view of the possible return of the railroads to their owners at an early day it might be better to, at least, consider and take up with the various claim men the idea of establishing some central schools or shops for training of injured men after they have graduated from the hospitals, and it is believed that these schools or training shops could be very nearly self-sustaining. If a machine shop, as an illustration was established at some central point for educating the injured, work might be done for roads which would otherwise be given to outside plants.

We believe that such joint efforts on the part of the claim departments will induce the railroads to take up this work unitedly and carry it to the height of success which it should attain.

The committee which presented the report has as its chairman John S. Rockwell.

Co-operation Given "Safety First" by Claim Departments

By F. A. Hruska
Chief Claim Agent, New York Central

"Safety First" had its inception in the claim department. Now that it has become so popular it must not forget from whence it came and, on the other hand, the claim department must not be satisfied to sit by with folded arms and puffed out chest taking unto itself all credit for creating such a swell kid now so able to take care of himself. Neither should ever become too old or too self important to give and to take good advice, and they should be continually telling each other what is going on in their respective fields, they should trust each other and they should of course co-operate on a 100 per cent basis.

General information of value should be freely interchanged between officials and members of the claim and safety departments. I believe most of the claim departments make the monthly reports of accidents to the I. C. C.—if they don't they ought to. Copies of these reports should be furnished the general safety agent, with such other "classified as to cause, locality and occupation" reports as he may require to compare the results on his road to those published by the I. C. C. for all roads. On the other hand, copies of all posters, notices, instructions, and of any other form of "safety first" literature should be furnished each and every claim department office, so the members of the claim departments may have them close at hand for boosting purposes, and they should lend their eyes and ears to note the effect and report it to the general safety agent.

Instructions now provide claim department membership on every safety committee. The claim agent should be active in the committee meeting, and that means first of all he should be sure to attend them. So many accidents come under his daily observation he should be able to give valuable suggestions.

Every claim agent should be observing, and furthermore, he should be thinking and talking safety. He should write special letters about pertinent points brought out in his investigation or otherwise noticed by him, to the chairman of the local committee, sending a copy to the general safety agent, and, if he desires, to the chief claim agent. The head of the department should make it a point to know whether or not his field men are properly interested in "safety first." If they show unusually well they should be commended and if they seem to lack interest they should be encouraged.

Experts tell us one of the best ways to spread the doctrine of "safety first" is by personal contact. The claim men come in contact with many employees and outsiders and their special training undoubtedly ought to make them good talkers; in other words they should be good missionaries to carry the gospel of safety into the darkest corners.

Federal Employer's Liability Act

In an extended paper, F. Markhoe Rivinus, assistant general solicitor of the Norfolk & Western and editor of legal notes in the association's bulletin, presented a review of the past year's decision concerning this law.

The Use of Motion Pictures in the Investigation of Claims

V. J. Waltz, manager of the claim department of the Toledo Railways & Light Company, spoke of the successful use his company had made of motion pictures in the investigation of claims. He showed pictures of one particular case in which a claimant secured a judgment of $15,000 principally on evidence that he would be unable to pursue his usual occupation. By means of good planning motion pictures were taken of the man which showed him at work without crutches, and showing no apparent effects of disability. On a petition of fraud and the showing of the pictures a new trial was ordered, and the verdict considerably reduced. Mr. Waltz emphasized, however, the difficulties of using motion pictures as evidence and said that the juries were not always as readily convinced as might be expected.

Other speakers in discussing Mr. Waltz's remarks spoke along similar lines, particular reference being paid to the fact that the effect on juries was not always completely favorable. It was agreed, however, that the pictures had great value, as for example in grade crossing accidents where questions of obstructions to view, etc., came into consideration.

Election of Officers

The association elected as president for the ensuing year, John S. Douglass, general claim agent of the Gulf, Colorado & Santa Fe. A. H. Mansfield, claims attorney of the Missouri-Pacific; D. H. Kimball, general claim agent of the Great Northern, and D. Harrison, claim agent of the Seaboard Air Line, were elected vice-presidents; and W. H. Failing, assistant claim agent of the Central of New Jersey, was re-elected secretary-treasurer.

Atlantic City was chosen by a narrow vote over San Francisco as the place for next year's meeting, the convention to be held in May.

The Gospel of a Good Package*

By K. H. Gillette
Atchison, Topeka & Santa Fe

THE INTERSTATE COMMERCE COMMISSION at one time made an extended study of the many angles of the loss and damage problem, and I am going to quote one extract from a published report, which reads:

"The railroads of this country paid out $32,000,000 for loss and damage in the year 1914, and about one-half of this could have been saved had more suitable containers been used."

The total claim payments of 26 Eastern and Western roads during 1917 is $26,628,069.12, something like $10,000,000 in excess of the payments they made in the previous year. From the best information obtainable we learn the payments on all lines in the United States will reach and possibly exceed $100,000,000 in 1918.

Our efforts to reduce the total losses in carload freight should probably be directed in two ways: First, in inducing our shipping friends to load, stow and brace their consignments in a thoroughly competent manner and, second, to inculcate in the minds of all transportation employees "The Gospel of Careful Handling." Prevention work, while including, should neither begin nor end with the railroad employee in the occupation of receiving, handling, moving, or delivering of freight. It must begin with the construction of the package itself. Because of the need for a clear understandable rule, applicable at all points in the United States, this recommendation has been made:

"That each container shall be constructed of material of sufficient quantity and quality to adequately protect that which it is called upon to contain."

A rule of this sort is needed and can be defended on the ground of prevention of waste and damage in transit, and because the carriers are urged and, in fact, required to increase their tonnage on less-than-carload shipments, and this latter is accomplished only with great danger of additional loss and damage when fragile containers are permitted. It has been suggested that any package reforms that may be necessary in order to insure safety to the contents during the period of transportation, can be accomplished by the appointment of committees in localities whose duty it will be to study the package conditions on the commodities which originate in their territory, and, after a comprehensive survey in each instance, submit definite recommendations that have met with the approval of the interested shippers, and themselves, so that the package suggested may be adopted—and such committees have been appointed by the Railroad Administration. Of these the committees' work has been confined to foodstuffs but in the course of time it will broaden out to the extent of making a survey of the package used on each commodity originating on the committee's territory, and if this idea is carried out generally throughout the United States, and it is to be hoped it will be, it should not be long before our package troubles are out of the way.

Perhaps it might not be amiss to call your attention to another angle of our expenses which is represented in the column of claim payments for loss of entire package. On the Santa Fe, in a period of January to June, 1918, inclusive, there were received at stations on the Pacific Coast and returned to correct destinations, 133 shipments, weighing 15,070 lb. on which in returning to correct destination, an excess mileage of 453,047 miles was incurred with an average delay to each shipment of 20 days, the total excess mileage exceeding 18 times the distance around the world.

The carriers assume responsibility of insuring the contents as well as the condition of the contents of every package they handle, and because of this, the shippers and consignees should become willing participants in any efforts that are made to insure; (1) the use of a good package; (2) proper marking; and (3) careful checking at both ends of the journey.

Moving freight promptly is good business; moving it safely is a science; railroad carriers owe it to the shippers, the consignees, Uncle Sam and themselves to make a specialty of handling it both ways at once.

In round numbers there are 1,800,000 railroad employees in the United States, all of whom are concerned, and the majority actually engaged, in the handling of freight. The use of a poor container and the improper handling of freight in transit does more to destroy the peace of mind of the consignee and the charm of the day's work for the delivering agent and these other employees, than any two things we have.

Every shipping point in the United States is served by a representative of a railroad company, and if each of them could be impressed with the necessity of carrying to a conclusion the idea of taking his package troubles in person to the shipper, inviting the latter's transportation troubles in return, nothing would stand in the way of eliminating every faulty package from the commerce of this nation, and curing the transportation troubles that have done so much to swell the loss and damage bill.

A package that looks all right at the beginning of a journey but is all broken up at the end, is, until acquitted, under suspicion. A package that looks wrong at the beginning and is wrong at the end, is already convicted, and should forever be ostracized from the society of those of proper construction. A package that looks all right at the beginning and is all right at destination, puts joy into the dealings of the railroad agent, and the consignee.

The carriers have been unfortunate in having lost and damaged a great many packages during the huge congestion of the past two years because "Speed Up" was the slogan and the economic feature of care was automatically shelved while the great bulk of commerce was pushed forward to the seaboard or to the manufacturing hives of industry. Disruption of the existing car and train schedules, focused the attention of the transfer forces at concentration centers on a class and volume of business, unprecedented in the annals of railroad history. This, at a time when the flower of America's manhood was serving the country at the front, threw the burden of handling on inexperienced transportation forces, both in the shipping room of the consignor and the freight houses of the carriers; so, perhaps, the 1918 high-water mark in the national loss and damage account can be explained partly; (1) by faulty container; (2) by faulty handling; and (3) by inexperienced workmen.

If it has become the duty of the railroads to furnish larger and heavier cars does it not follow that the package for the shipment itself should be strengthened, and that our loading, stowing, bracing and handling methods should be made to conform?

And who is better qualified to collect and distribute the precise information necessary to secure a needed better package, or a necessary reform in the loading, stowing, bracing or handling of freight than the receiving agent at the end of the journey or the receiving merchant to whom he delivers the goods? Team-work between those two at this point, represented by joint, intelligent and constructive criticism, addressed to the shipper at point of origin, if the package is indicated, will invariably find the latter in a receptive frame of mind and accomplish a result that can be attained in no other manner. If it be that the loading, stowing, bracing or handling has caused the trouble, then the same quality of criticism should be directed through the proper officers that the practices which are wrong may be corrected.

*Abstract of an address delivered before the Pacific Railway Club, San Francisco, Cal., May 8, 1919.

Railway Developments in Foreign Countries

Reconstruction in Balkans—Americans Not Successful in Railway Building in China, Says Correspondent

ACCORDING TO DUTCH REPORTS, Holland intends to purchase American steel rails on a larger scale during the next few years, says the *Railway Gazette*, London. They ill be mainly used for the extension of the railways in the Dutch Indies, with a view to benefiting the sugar industry. The annual purchases will probably amount to 50,000 tons.

Railway Strike in Portugal

Advices from Lisbon to the state department on July 5 eported that the general railroad strike called last Tuesday ad affected the greater portion of train service in Portugal, xcept on the lines to the south and southwest of the capital. ome sabotage has been reported.

The Minister of Labor told a meeting of strikers and raiload representatives that the men need expect no assistance rom the Government as long as they countenanced sabotage.

Railway Strike in Brazil

Press despatches from Rio de Janeiro dated July 6 report iat a strike was declared Saturday night by the employees f the Central Railroad of Brazil, all traffic stopping. The ailroad, which is under government ownership, is the largest nd most important in Brazil. It is reported unofficially iat all the shopmen and other workmen struck, forcing the rain operators to abandon work.

The strikers ask increased pay, with an eight hour day, ie despatch says. No definite word has been received from ie States of Sao Paulo and Minas Geraes, but it is reported iat work in these States also ceased.

Americans Not Successful in Chinese Railway Building

[Special Correspondence from Peking]

There is some evidence that American prestige is recovring somewhat from its almost complete eclipse which folowed the decision of the peace conference with respect to hantung. Japanese propaganda did not fail to help along ie Chinese impression that the result is another evidence f the inherent incapacity of the Americans in Far Eastern olitics. Chinese were reminded that America had led hina to declare war on Germany (which has been the ccasion of her internal disturbances for the last two years) n the promise that in the peace conference to ensue China ould be dealt with not on the basis of power but on the asis of justice, that America has utterly failed to make ood, as she always has and always will.

In the words of the Japanese Consul-General at Canton, You see, might is still right." Chinese politics have been nd still are railway politics, and in the railway field the merican record has been one of consistent failure. First n the ground for contracts after the Sino-Japanese war wakening in 1895, the Americans have yet to complete a ne in China. Practically every principal route has at ome time experienced an American contract, but invariably ie American contractor has backed down before the opposion of representatives of other nations, or Chinese backed y other concessionaires. On the Pekin-Hankow line they ere outbid by the Belgians, who with the backing of the rench and the Russians insisted upon and secured improved terms as soon as the Americans gave up the fight. n the Canton-Hankow they succumbed to Chinese opposion cleverly aroused by Belgian intrigue, a certain amount of bad luck, and American desire for a quick "turn-over." On the Tientsin-Pukow they were balked by the Germans. Willard Straight's Aigun-Chinchow concession together with Senator Knox's proposal to "neutralize" Manchurian railways brought the Russians and Japanese together in such a way as to defeat the Americans and further confirm foreign control over Manchuria. Russian opposition prevented the Siems Carey extension to the Peking Suiyuan line. French opposition did the same to its south China line. A British protest stands in the way of its Szechuan line. Altogether these agreements cover some 7,000 miles of line,—equal to the entire length of line in China and extending almost without break from Siberia to Indo-China and from tidewater to the continental plateau. If these lines had been built and built by the Americans it is conceivable that there would be no Far Eastern question today. If American interests held such a line of communications would France and England have bought Japan's assistance by permission to plunder China? Would Ishii have presumed to ask Lansing to recognize Japan's "special interests" in China? But America gave up all of these routes out of "friendship" for China. Has it proven to be *friendship?* Hence the charge that Americans are too inexperienced to do anything but *muddle* in Chinese affairs. But the Chinese still say that Japan's present press abuse of America and all things American proves that America is still at heart China's friend.

* * *

The British are the first in the field, signalizing the resumption of railway construction activities in China. Mr. Whitelaw, engineer-in-charge, has just arrived in Peking and is recruiting his organization for the building of the Menghsien extension of the Taokow Chinghua line—otherwise known as the Peking Syndicate line. This extension has been noted in these columns before and being only 30 miles long, is important rather as a harbinger of things to come than for its place in the Chinese system.

* * *

Work is under way toward the raising of the north end of the Tientsin Pukow line. The surrounding country is subject to almost yearly inundations, during the late summer. Two years ago the Tientsin terminal and nearly one-fourth of the rolling stock was cut off from the remainder of the line for a period of nearly three months. The damage was done by the water over-topping the embankment rather than by any force of current, hence the present project offers hope for permanent improvement.

* * *

After a surcease of several weeks from the soldier nuisance upon the Peking-Hankow, matters have lapsed into the old condition. Following the diplomatic corps memorandum, the managing director, General Ting, secured the assistance of his former military associates in cleaning up the situation. But about a fortnight ago five trains with locomotive attached, steam up, were held by the military over a week at a small station just north of Hankow. At the same time passengers reported that their meals had to be served to them in their coupes, the dining car being absolutely full of soldiers. As a further evidence as to who is in control, at every station of importance there may be observed piles of iron ore which has been thrown out of passing trains commandeered by the military. This ore is from a mine of which General Ting, the managing director, is co-director, and in which Tsao Ju-lin, minister of communication, is

a principal shareholder. One further symptom of the demoralization of this important line is to be noted in the effect of a washout about 100 miles north of Hankow. The steel bridge at this point was washed out two years ago by the floods of that memorable year. The pile trestle which has done service since was again washed-out by a freshet about a month ago. Although the waters had subsided within a few hours so that a man could wade across, through movement of trains was not provided for two weeks.

All plans for additional construction and purchases of equipment have been held in suspense for over a month, ever since the attack by students upon the house of Tsao Ju-lin, minister of communications. Tsao offered his resignation the next day, but as the "Shuentien Shih Pao," the Japanese newspaper published in Pekin, stated, "The Japanese government will not allow the president to accept his resignation." Tsao accordingly was granted three weeks' leave of absence to "recuperate his health," which he spent in the Japanese hospital. In the meantime the tension became stronger and no one in minor authority has dared make any move, for fear of repudiation.

* * *

Peking newspapers have contained the allegation that Japanese authorities have demanded that the American Adviser to the Ministry of Communications, Accounts department, shall be superseded by a Japanese at the conclusion of his term this fall. The name associated with the position thereafter is that of Mr. Nagao, at present the Japanese representative upon the Inter-Allied Technical Commission serving under the chairmanship of John Stevens upon the Trans-Siberian railway. It is pointed out that the Japanese banks have advanced in the neighborhood of Yen 100,000,000 ($50,000,000) upon the security of the new railway lines, that this money has been dissipated upon military expenditure so that there is no property underlying the mortgage security, and that for these reasons in view of the imminence of Allied assistance to China it would be very valuable to Japanese interests to have a friend at court in the accounts department of the Ministry of Communications. It is a fact that an oral contract made with the American adviser as long ago as December providing for an additional term of three years has not yet been put into writing.

June 10 President Hsu signed the mandate permitting the resignation of Tsao Ju-lin, minister of communications. The attempts to crush the student strike proved abortive, for immediately over 10,000 students offered themselves for arrest, while from all the outlying provincial capitals they began to move in by hundreds so as to fill the places of those who became impounded. The Government University was turned into a prison, the streets have been placed under martial law, all attempts, however, to provoke the students to violence were fruitless, and finally the government decided to release the imprisoned numbers. These refused to come out, however, until the chief of police should come and make an apology. This was done and at eleven o'clock Sunday, June 8, they came out. On the next day coolies on the south end of the Tientsin Pukow went on strike and the Shanghai Nanking management was forced to publish an announcement that it could not guarantee movement of trains.

The shops in Tientsin closed, and in desperation the president accepted Tsao's resignation and offered his own as well. The latter is only Chinese good form, but the further move of Japanese interests to protect their favorite is awaited expectantly. In the meantime the Vice-Minister Tseng Yu-chung is acting minister. With the help of General Ting, managing director of the Peking Suiyuan and Peking Hankow lines, he will most probably continue the policy of the Ministry along former lines.

Reconstruction of the French Railways

M. Claveille, minister of transportation, has made a report to President Poincare showing marked progress on the reconstruction of the French transportation systems, according to a press despatch.

The report shows that since the signing of the armistice 564 miles of double-track railway lines and 567 miles of single-track lines have been restored on the Northern and Eastern Railways.

Of 645 miles of canals that were closed to navigation, 198 miles have been opened to commerce.

Seven thousand miles of highway have been put in good condition out of 24,000 miles of roads that were damaged.

British Railroad Accidents

Eight passengers, five employees, and six other persons were killed in train accidents on railroads of Great Britain and Ireland in the last calendar year, and 463 passengers, 146 employees and 25 other persons were injured. Casualties in other classes,—including 393 employees killed and 267 trespassers, including suicides, killed,—bring the total casualties for the year up to 870 killed, and 4,184 injured. The number of employees killed is 38 less than in the preceding year, and 94 less than the average in the years 1907-1916; and the number of trespassers killed, 267, is 163 less than the average in 1907-1916.

Increased Freight Rates Possibility in England

The Railway Executive Committee, which has been operating the British railways since the outbreak of the war on June 13 issued a statement complaining that the relation of railway fares to the difficulties in railway working and the financial burdens of the railways do not seem to be fully understood by the public, and announce that the 50 per cent addition to passenger fares must be continued, at any rate until freight rates are increased.

The difficulties in restoring pre-war train services are gradually being overcome, the statement continues, but a graver problem affecting railway fares has arisen through the enormous increase in the cost of railway working. Owing to the increase in railwaymen's wages and cost of materials, it is estimated that the expenditure of the railways during the current year will be more by $500,000,000 than it was in 1913, when the net revenue from all sources came to about $250,000,000.

Revenue and expenditure will have to be made to balance by some means or other. The total railway expenditure of all the railways in 1913 was, roughly, $400,000,000, and any savings that may be made as a result of central management can only go a very short way towards meeting the deficiency referred to. The balance of receipts and expenditure, including the payment of the meagre dividend on the railway stocks, which amounted in 1913 to 3.8 per cent, less income-tax, can only be adjusted by an increase of passenger, merchandise, and mineral rates.

During the war the government traffic (which was not carried at excursion rates, as has been stated) enabled the railways to maintain their pre-war profits without increasing the rates for goods train traffic. When the government traffic seriously fell off it was the intention to increase the rates for merchandise and mineral traffic, but nothing can be done in this direction owing to the introduction into Parliament of the Ways and Communications Bill. There will be still further delay owing to the decision of the committee dealing with the Bill that an Advisory Committee is to be set up, to whom all such questions must be referred.

In the meantime there is no alternative but to continue the 50 per cent addition to the passenger fares. It remains to be seen whether any reduction in this 50 per cent can be brought about when the freight rates are increased.

Now Rebuilding Serbian Railways

The American Relief Administration has made public the report sent to Herbert Hoover, director general of relief in Europe, by Colonel William G. Atwood, director of the Division of Communications in Central Europe. He reported that he found railroads generally in fair condition when he began work last March, except in Serbia, "where the destruction was almost complete." The report says in part:

"When the American Mission began operations Trieste was clogged with 41,000 tons of relief supplies, and Fiume with 12,000 tons, and the daily movement was only 700 tons from Trieste, and nothing from Fiume. Since March 23 the mission has moved from Trieste 178,000 tons, a daily average of 2,100 tons. Some days we exceeded 4,000 tons of supplies. About 125,000 tons were delivered to the Austrian Republic, and 52,000 tons to Czechoslovakia. The American Mission has furthered reconstruction and the rehabilitation of railroads and their equipment, and has given the Serbian railroads technical advice and aid in purchasing $11,000,000 worth of plant and equipment from American army stocks."

With American railway material arriving and American army engineers in the Balkans there is now a prospect that railway conditions in the Near East may soon be bettered, says a correspondent to the Philadelphia *Public Ledger,* writing from Saloniki on May 10. Heretofore the work of rebuilding the thousands of dynamited bridges and of repairing the hundreds of miles of twisted, uptorn track in Serbia has progressed slowly.

Serbian railroad engineers have been handicapped by lack of labor and material. At present it is a matter of from ten to fifteen days to cross Serbia from Salonika to Belgrade. If one link of the motor truck service breaks down because of washed out roads or floods carrying away bridges the whole work of the American Red Cross, the American food famine commission and the Serbian relief fund workers is held up and a through journey to Belgrade or Saloniki across the country may require from fifteen days to a month.

American importers, the correspondent says, should not figure on transporting freight overland through Serbia at this time. Railroads probably will not be regularly running until early in 1920. Belgrade is best reached via Trieste and Fiume rather than from Saloniki.

France Sends Locomotives to Roumania

There were only 84 locomotives available in all Roumania after the invaders withdraw from the country, according to Lieut.-Col. H. Gideon Wells of Chicago, the Red Cross Commissioner who returned from abroad last week. At the request of Queen Marie of Roumania France has loaned the Balkan state 50 locomotives, and supplies are now being sent by rail from Paris to Bukarest, the trip taking three and a half days.

When the Red Cross Commission arrived in Roumania early in 1919, Col. Wells says, there was an area of about 30,000 square miles with Bukarest, the capital, as its centre, in which the population was close to starvation when American relief arrived. Through the co-operation of the government with several Red Cross officers who preceded the Commission, preliminary arrangements for the receipt and rapid movement of the supplies were so complete that within twenty-four hours after the relief ship docked, supplies were being forwarded and in ten days every part of the country was receiving its quota. There were 50 workers in the Red Cross party, who in the absence of railroad facilities for transportation, carried the supplies long distances by motor. The commission had twenty automobiles.

"American food provided through the generosity of our people saved the day for Roumania," said Col. Wells. "She was in pretty bad shape when relief finally reached her. We have been successful in getting food, medicines and the needed surgical supplies, in some measure, to all parts of the country. When I left a few weeks ago, work on the restoration of the transportation facilities was progressing finely."

Louis A. Van Norman, trade commissioner for the Department of Commerce, who was sent abroad to investigate conditions and opportunities for American trade in the Balkan countries, has submitted his first comprehensive report on Rumania.

"The chief difficulty in the economic situation of Rumania is the lack of transportation facilities," reports Mr. Van Norman. "The Germans removed practically everything they could lay their hands on—some 2,800 out of 3,000 locomotives and all the railroad cars, particularly those used for hauling freight. The lack of locomotives and railroad cars makes it very difficult, almost impossible, to distribute the supplies the American Relief Commission sends in, to say nothing of the other necessities of life.

Shimonoseki Tunnel Has Been Decided On

The Government railways, says the Japan Advertiser for May 2, as reported in a recent issue of Commerce Reports, have decided to cut a submarine tunnel under the Shimonoseki Strait, according the chief of the construction bureau. It will be started this year and it is planned to complete it in 1928. At present the railway systems in Honshu and Kyushu are connected by ferryboats, but when the tunnel is completed the connection of the two systems will be much improved. The Advertiser continues:

According to the official, this is to be completed at the expense of 20,000,000 yen ($9,960,000). The first two years will be spent in studying the geological formation of the sea bed in the strait, drafting the general plan of work in preparation for the actual undertaking of tunneling. Experts and workmen engaged in the undertaking will be dispatched to Europe and America, where they will personally study what has been achieved over there.

In 1921 the actual work is to be begun. The official states that much depends on the geological formation of the sea bed, which is not so simple and well known as is that of the English Channel. Therefore, no definite plan of work can be established as yet. It has, however, already been planned that the tunnel line is to start far back of the Shimoneseki station. On the Moji side, also, the tunnel line will be connected with the Kyushu line at Dairi or its vicinity. This renders the level of the line low. The whole length of the line will be 7 miles, of which 1 mile will be completely under the sea.

According to this official, the completion of the tunnel will make it possible to start a through service between Tokyo and Kagoshima, and the transportation system of the country will be materially improved.

On the Docks at American Bassens Near Bordeaux

Orders of Regional Directors

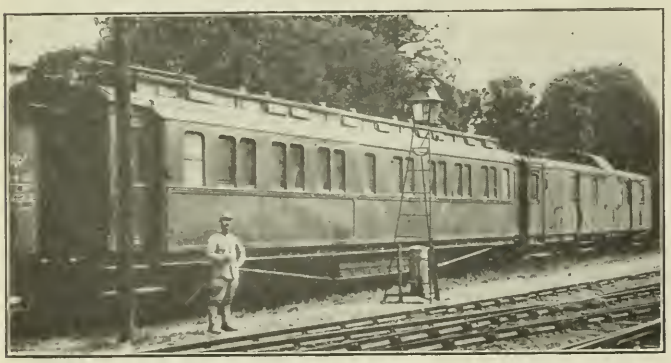
REDUCED DEMURRAGE RATES.—A. T. Hardin, regional director, eastern region, by circular 600-2-5, advises that the modified national demurrage rules which go into effect on July 20, are to be adopted also railroads not under federal control, the Interstate Commerce Commission having granted special permission No. 48001. Federal managers are to advise their non-federal connections.

Double and Triple Loading of Carload Shipments.—The regional director, eastern region, by circular 500-1.3-1, promulgates a letter from the manager of the car service section calling attention to neglect of the rules providing for loading two or three minimum carload shipments in a single car. Agents do not always make proper endorsements on the bills, conductors do not observe the instructions, and agents do not properly supervise the unloading at intermediate and final destinations. Shippers must not be allowed to gain the impression that the railroads are indifferent about this matter.

Safety Appliances on 80,000 Freight Cars.—The regional director, eastern region, by circular 500-92, promulgates a letter from Frank McManamy, assistant director of operation, calling attention to the importance of having all freight cars equipped with United States standard safety appliances by September 1. About 80,000 freight cars now in service need the equipment. These safety appliances are all of standard dimensions, therefore all cars, both home and foreign, should be equipped; there is no loss either of time or material in equipping foreign cars. These appliances constitute a betterment in the interest of safety which can properly be billed against the owners of the cars. Federal managers are called upon to report what progress they are making.

Postponement of I. C. C. Hearings.—The regional director, eastern region, by circular 1500-130, promulgates a letter from R. V. Fletcher, assistant general counsel, division of law, relative to making requests upon the Interstate Commerce Commission for the postponement of hearings in pending cases. The commission is ordinarily averse to granting such applications, as such action disturbs the itinerary of its examiners. All applications of this character should be made through the office of the General Counsel of the United States Railroad Administration so that a uniform policy may obtain. Applications should be accompanied by affidavits setting forth the facts justifying a continuance.

The contract between the States of New York and New Jersey, for the construction and operation of the highway tunnel beneath the Hudson river, between New York city and Jersey City, has been approved by both houses of Congress.



German Telegraph and Telephone Train in Use as Central Communication Headquarters for the German Emissaries at Versailles

House Committee to Begin Railroad Hearings

WASHINGTON, D. C.

CONGRESSIONAL consideration of the big problem of what kind of regulation the railroads are to have after they are returned to private management is about to begin in earnest. The House committee on Interstate and Foreign Commerce begins public hearings next Tuesday on the general railroad question, and Senator Cummins, chairman of the Senate committee on Interstate Commerce, has announced the membership of a sub-committee which he has appointed to draft a tentative railroad bill, consisting of himself and Senators Kellogg, Pomerene, Poindexter and Robinson. This sub-committee will probably hold some hearings later, but its first efforts will be devoted to a careful consideration of the material already at hand.

While various Senators and Representatives who are especially interested in the railroad problem have devoted a good deal of attention to the subject in an informal way and the House and Senate committees have devoted some attention to side issues, such as the Poindexter and Cummins bills, what has been done thus far has been largely of a preliminary nature. The Senate committee held protracted hearings during the early part of the year and to that extent has made more progress toward legislation than has the House, but the Senate hearings have served principally to arouse general discussion and to bring out various plans for the future status of the railroads and it will be necessary for the House committee to go over most of the ground again, so that the hearings will probably run through the greater part of the summer. While many of the ideas advanced and the material presented at the Senate hearings will be useful, they were directed principally at the idea of a five-year extension of the present system of federal control proposed by Mr. McAdoo, which is now an issue of the past, and many of the principal alternative plans presented at that time have since undergone considerable modification. Director General Hines at that time was primarily advocating the five-year plan which he had inherited from Mr. McAdoo, but since that was tabled he has turned his attention more specifically to a permanent plan for private management. The committee hoped to have him for its first witness but other engagements may make it necessary to defer his appearance. In that event the Interstate Commerce Commission, whose ideas are embodied in the Esch bill, will probably make the first appearance. The Esch bill represents the only concrete plan now before the committee but the various interests that appeared before the Senate committee will be given a chance to bring their plans and arguments up to date. The Association of Railway Executives, which presented a statement of principles at the former hearing, will have its ideas in more definite shape this time, among the changes being the abandonment of the idea of a secretary of transportation and the substitution of a proposed department of transportation. The Transportation Conference called by the Railroad Committee of the United States Chamber of Commerce will have an entirely new plan to present, which is in a way a composite of the plans already suggested by various interests, and its representatives are expected to be among the first witnesses. The railroad labor organizations, the only prominent remaining advocates of government ownership, will have the Plumb plan in the definite language of a bill, instead of in the tentative form in which it has been presented heretofore

Director General Hines, in his recent speeches, has dropped the word "guaranty" in describing his ideas for the permanent solution of the railroad problem. Heretofore, in advocating "a definite government guaranty" he has given to many an impression that he favored a specific percentage to be paid from the Treasury in case it were not earned, but in his

last two speeches he has changed his phraseology to make clear that he means merely that there should be a definite statutory assurance that rates must be so fixed as to produce a prescribed rate of return. In his address before the Bankers' Association of New England he said:

"We ought to have a standard to determine what the railroad companies are entitled to. It ought to be fixed with such certainty that it will constitute an assurance to the railroad companies that they will be permitted to earn a sufficient amount to attract new capital. In order to do that it will be necessary, I believe, to have an official valuation of the railroads and a specified return upon that valuation Whatever return is earned in excess of the standard return should be divided between the public and the railroad, leaving enough for the railroad company to stimulate its initiative and its desire to economize, and yet giving the public a portion of it to get rid of this feeling that if there are undue profits they will inure exclusively to the private owners."

In reply to the argument that to complete the valuation and to work out his proposed consolidations of the railroads into a few systems will take too much time, Mr. Hines proposes an interim form of regulation of the railroads after their return to private management. On this point he says:

"I do not believe there was ever a better time in the history of the country than now to get a really constructive form of railroad regulation. And I think that the fact that it is going to take time to do it should not operate to defeat the purpose to do what the situation will require. It will take time; it can not be done this month or next month, it can not be done completely this year. There may have to be some interim form of regulation. The railroad systems ought to be turned back to the private management at the end of this year, as already indicated by the President, and yet an interim form of management and control could be devised which would carry forward the railroad operations until this thoroughly necessary and important constructive program can be carried out. But the machinery for carrying out the constructive program, the principles upon which it shall be carried out, ought, in my opinion, to be determined now while the public throughout the country has its mind centered on the problem and is trying to get a genuine and permanent solution."

Non-Lifting Injector Indicator

THE USUAL FORM OF tell-tale for non-lifting injectors warns the engineer by discharging a jet of steam into the cab when the injector blows back. An indicator has been developed by William Sellers & Company, Inc., Philadelphia, Pa., which not only performs the function of the tell-tale without discharge of steam into the cab, but in addition advises the engineer if the injector is wasting water at the overflow.

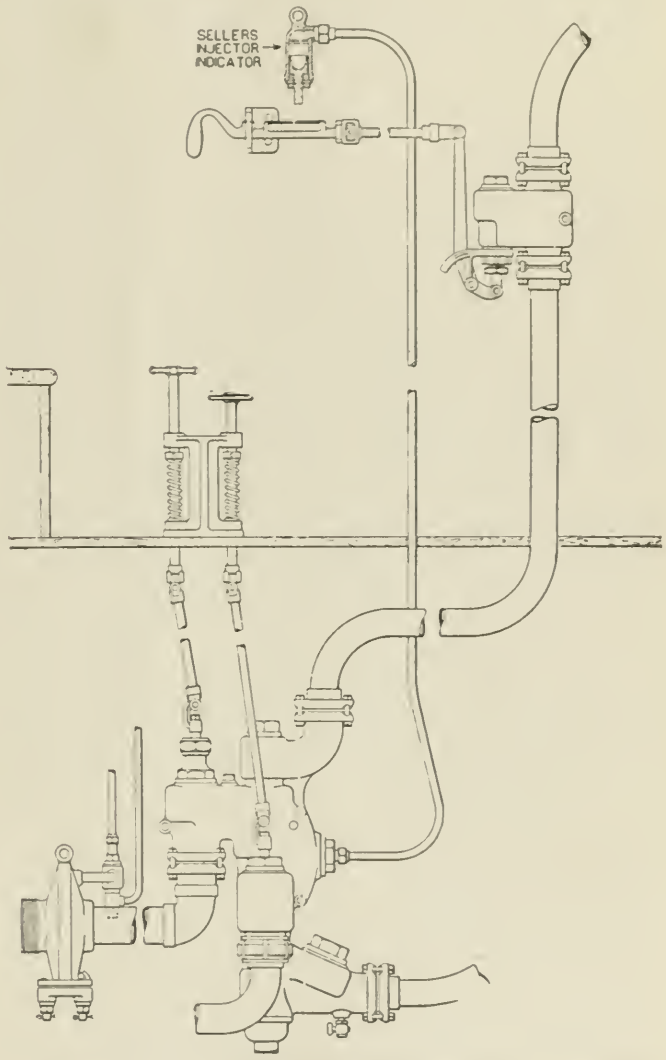
The device consists of a vertical cylinder 4 in. long, containing a loosely fitting piston, seating at each end of its stroke and provided with a projecting end, visible to the engineer when resting on its lower seat. The upper end of the cylinder is connected by a ½-in. copper pipe with the overflow chamber of the injector.

Its action depends upon the well-known principle of the working of the injector, that when feeding without waste there is always a partial vacuum within the overflow chamber of an injector of the gravity overflow type. This vacuum is utilized to raise the loosely fitting piston to its upper seat, causing the projecting plug to disappear from view.

If for any cause the injector starts to waste, the vacuum within the overflow chamber is broken, the piston drops and seats at the lower end of its stroke, exposing the projecting plug. The operator is thus warned and will partially close the lazy cock, stopping the waste. If there is interruption of the water or steam supply, and the injector "flies off," the piston will instantly drop to its lower seat, preventing outflow of steam and warning the engineer of the danger.

When the injector operating valve is open, the end of the piston must always be invisible, unless heating the water in the tank. If steam is blown back into the tank in winter, the position of the projecting plug of the indicator is a continuous reminder that the injector is not operating and there may be danger of overheating the water.

A further advantage of this form of indicator is that it enables the engineer or fireman to obtain the actual minimum capacity. Most operators do not regulate the water supply closely, fearing that the injector may break off without warning or waste at the overflow. The indicator is so sensitive to conditions in the overflow chamber of the injector that the exact minimum can be obtained by regulating the lazy cock until the end of the piston appears, due to the loss of vacuum in the overflow chamber. It is claimed that a very slight opening of the lazy cock will cause the piston to rise and the exact minimum to be obtained.



Application of the Sellers Non-Lifting Injector Indicator

The application of the indicator also will reduce the tendency of the engineer to close the heater valve, which prevents the injector from restarting automatically. It is designed to make the non-lifting injector as safe and certain to operate as an open-overflow lifting injector.

The indicator is applicable to the Sellers, Nathan WF, Nathan Simplex, Chicago and other forms using an overflow chamber which contains the combining tube and is closed against the atmosphere by a gravity overflow valve.

Reducing Live Stock Losses in Transportation

THE PROPER HANDLING and loading of livestock was the subject of an address by Dr. W. J. Embree, veterinary, Western Weighing and Inspection Bureau at the National Stock Yards, Ill., before the St. Louis Railway Club at its annual meeting. The speaker was introduced by W. H. Hunn, of the Western Weighing and Inspection Bureau, who stated that at the St. Louis and East St. Louis Stockyards the inspection bureau handled 949,556 cars of live stock received, and 205,715 cars forwarded during the year 1918, and passed upon 154,293 dead and crippled animals during the same period. During the same year there were 18,745 dead animals received, which meant a loss of approximately $560,000, figured at the market prices at the time they were moved. As the death loss is greater in the shipment of hogs than in other live stock and because much of this loss could be avoided if shipments were properly handled, especially at the time of and immediately before loading them into car, the paper given by Dr. Embree, and abstracted below, dealt almost entirely with hogs.

The great loss in the shipment of live stock can be traced to two causes, disease and injury. More than half of the losses involved while in the carriers' hands can be traced to the character and condition of the hogs at the time of loading, since a checking of cars in the same train shows that some hogs hauled a much greater distance than others arrived without loss when proper treatment is afforded before loading, while other cars traveling shorter distance arrived with heavy loss due to mistreatment prior to shipment. This is explained by the fact that many feeders place their hogs in small enclosures for a period prior to shipment to markets, and feed them with fattening foods of which corn in some form is the most common.

If the weather is hot and sultry when hogs are moved to the loading chutes for shipment, the necessity for oxygen in the air cells of the lungs to purify the blood causes the animals to inhale and exhale very rapidly, and in this condition they are placed in the stock pens where the breeze is shut off or they are crowded into a stock car where the close contact of heated bodies gives them no chance to cool. The heart is exhausted from its exertion, and the lungs, being the only organs through which the surplus heat of the body can be removed are engorged with blood, and death from suffocation is the result.

Hot and tired animals are especially susceptible to diseases of any kind. It is the history of swine plague that animals attacked will seldom develop fatal cases unless their vitality is weakened, or their resisting power lessened by some free disposing cause or some other disease. This being the case, the animals in a congested and weakened condition are excellent subjects for bacillus to work on and fatal cases of swine plague may develop in a few hours with the result that hogs will frequently develop this disease and die before they reach market, while a portion of the herd left at home will not be affected.

During the first hot weather in the spring of 1918 there were heavy losses in shipments consigned to the East St. Louis market. One day's loss alone amounted to over $11,000. The losses on six other days amounted to from $7,000 to $10,000. Ninety per cent. of the carcasses of these hogs showed death had been caused by acute congestion of the lungs, called suffocation from overheat, and in nearly every case the dead hogs were the best in the load.

Hogs should never be loaded into cars when hot or panting. If they have been driven on foot or excited when loading or unloading from a wagon, or have been hauled far in the hot sun, they should be given time to cool before being loaded. The cars should be clean, the floors sanded and thoroughly wet down before the hogs are placed in them. One place where the carrier is at fault is the inadequate supply of water that is furnished at the loading pens of the average country station. Especially is this true of non-agency stations at most of which the water supply comes from a pump, and if we are to believe the shippers' reports these pumps are always in a questionable state of repair, and the pail which should be there is usually missing. At stations where the water supply is drawn from a supply tank or from the city pressure, a pipe connected with this and so placed on or near the loading dock that water from it could be thrown directly into the car, would make it so accessible that a shipper would use it. If the train is late the water may be easily sprayed on the floor of the car under the hogs, and in this way they will not be allowed to get hot.

If the hogs are not overheated when picked up for shipment they will not suffer severely during any of our ordinary summer weather while the train is in motion. When a division or terminal point is reached at which the train is to remain for some time, the hogs should immediately be drenched with cold water, because they are in a cool condition from riding, and the cold water applied to their heads and back will not likely injure them. However, the practice of drenching hogs with cold water after allowing the load to stand until they are ready for the road and are hot, is very bad, as many hogs are instantly killed by having cold water sprayed over them while hot. When it becomes necessary to cool off hot hogs, the water should be allowed to run on the floor of the car so they will have a cool place to lay; it should never be applied to the heads and backs of hot hogs.

One of the most successful methods for keeping hogs from getting overheated in hot weather is to hang ice bags to the roof of the car; these will cool the air of the car, and the constant drip from the melting ice will keep the floor damp and cool. In checking cars of hogs arriving at the National Stock Yards, when ice bags were used there was not a single case found where hogs were dead from overheat. The most satisfactory method seems to be to hang six burlap bags containing 50 pounds of ice each in the car, two at each end and two in the center.

At all times of the year cars should be cleaned before stock is placed in them. This is especially true for hog shipments in spring and summer as a heavy collection of straw and manure that has been left in the car will develop heat which, with the gases that arise, will cause the hogs to become restless and nervous and undo all other good care that may have been given them. Sand makes the best floor covering for all shipments of live stock during the summer months. In winter the cars may be matted with straw, but too much should never be used as it is likely to heat when it becomes damp.

Another cause of loss is that of overloading cars. The minimum of 17,000 pounds that is applied to a 36-foot car seems to be taken by a great many shippers to mean that a car will transport that many pounds of hogs regardless of their size, while in reality the smallest hogs that can be loaded to this minimum are those averaging 240 to 250 pounds.

It is especially necessary when cattle are moved in mixed shipments that they be always partitioned or tied, as owing to their unusual viciousness they are almost sure to cause a great amount of damage unless so protected.

Improperly fastened doors are a cause of injuries and deaths to cattle. Shipments should not be accepted with the doors wired, as these wires will slip enough to let a foot through and a broken leg is the result. Shippers should not be allowed to build a double deck in the car, as in one instance one of these broke down and 16 head of sheep, 4 head of cattle and 3 hogs were found dead in the car, while in another case a hay-rack broke loose from its fastenings, causing serious injuries to the live stock in the car.

General News Department

The commercial telegraphers' strike was formally called off on July 2, by S. J. Konenkamp, president. In issuing the order, he admitted that the nationwide strike had been a failure.

The twenty-five-hour express of the Pennsylvania Railroad, between New York and St. Louis, discontinued last year, is to be restored shortly. The extra fare on this train will be three dollars.

The headquarters of the accounting department of the International & Great Northern, the Galveston, Houston & Henderson and the Houston & Brazos Valley have been moved from Houston, Tex., to Palestine.

Six hundred and ten miles, without a stop, at 148.44 miles an hour, is the latest reported airplane record. This was made between San Francisco and San Diego on July 7 by Captain Lowell H. Smith, of the Army Air Service.

The Veterans' Association of the Great Northern Railway recently held its annual reunion at Duluth, Minn. Over 500 members were present. All of the men, who are also known as "James J. Hill's Boys," have been in the employ of the Great Northern for 25 years or longer.

Tex Rickard, promoter of the Willard-Dempsey heavyweight championship fight at Toledo, Ohio, on July 4, denounces the Railroad Administration because of its alleged refusal to place enough coaches at the disposal of the fight fans, so that 20,000 persons were unable to attend the show.

The sundry civil bill, as finally passed by Congress on July 2, includes the proposed appropriation of $2,500,000 for the Interstate Commerce Commission's valuation work and $2,038,029 for the Alaska railroad. This was the amount adopted by the House, although the Senate made an effort to increase it to $12,000,000.

The United States Senate, on Monday, adopted without discussion the resolution proposed by Senator Newberry calling on the director general for a statement regarding the issuance of Railroad Administration annual passes good over all lines. It is said senators' curiosity was aroused by seeing such a pass bearing a serial number over 10,000.

Railway express employees of the United States and Canada, formerly members of two unions, the National Association of Expressmen and the Brotherhood of American Railroad Express Employees have organized one union, the Order of Railway Express Men. The amalgamation was completed at a joint convention held recently at Chicago. One of the first moves of the new brotherhood will be an agitation for increased wages.

The "Safe Practices" pamphlets, issued by the National Safety Council (168 North Michigan avenue, Chicago), have now reached their 24th number. These excellent pamphlets are prepared by the Council and sold without profit. The last six numbers are as follows: Nos. 19 and 24, Protection of Life Against Fire; No. 20, Woodworking Machinery and Equipment; No. 21, How to Compile Accident Records; No. 22, Shop Lighting; No. 23, Gas and Electric Welding.

Senator Sheppard, of Texas, has introduced as a bill, S. 2295, an amendment to the commerce law which he sought to have adopted as an amendment to the Cummins bill, to provide that a railroad may not be absolved from obeying any rate, rule, regulation or practice of any state with respect to transportation wholly within a state, until it shall have secured the judgment of a court of competent jurisdiction holding the rate, rule, etc., to be unreasonable.

"No-accident week" in the Northwestern region, June 22 to 28, inclusive, resulted in a decrease in casualties of 78 per cent. Of 63 roads, 50 completed the week without an accident of any kind to an employee.

During the week of the campaign, five employees were killed and 111 injured, as compared with 6 killed and 482 injured during the corresponding period last year. These figures represent decreases of 16.67 per cent in killed and 76.97 per cent in injured. The number of men employed (274,100) was about the same in both years.

The Associated General Contractors of America will contest a recent ruling of the Comptroller of the Treasury to the effect that the form of cost-plus contracts in use by the Construction Division of the War Department does not authorize the reimbursement to contractors of the cost of premium on their bonds, according to a special bulletin issued by the organization on July 2. The bulletin says that "upon inquiry of representatives of the Construction Division, it is ascertained that it is quite certain that all contractors having unsettled contracts for work under that division and money due them under such contracts will now have deducted from any balance due them the sum of all payments heretofore made to them covering reimbursement of premium on bonds." The plan of action to be taken by the Associated General Contractors of America was decided upon after a conference between the association's officers and their attorneys. The latter hold that the contracts entitle the contractor to reimbursement of these premiums, that the deduction is unlawful and that it can be recovered by future proceedings in the Treasury Department or before the Court of Claims. The plans of the association also provide for a test case before the Court of Claims if the comptroller adheres to his recent decision.

American Railroad Association

C. W. Crawford, assistant to the chairman of the general committee of the Transportation Section of the American Railroad Association, with headquarters in Chicago, has been promoted to chairman of that committee with the same headquarters.

Dirigible Airship Crosses the Ocean

The British super-dirigible R-34, the first lighter-than-air machine to cross the Atlantic Ocean, arrived at Mineola, Long Island, 20 miles east of New York City, on Sunday morning, July 6, at 9:54, completing a voyage of 108 hours, 12 minutes, from East Fortune, Scotland. The distance covered was about 3,600 land miles. The R-34 is 640 ft. long, 79 ft beam, and 79 ft. in vertical measurement. She has five motors with an aggregate of 1,000 h.p.; gasoline tank capacity of over 7,500 gal., and a cruising radius of 4,900 nautical miles. Her lifting capacity is 59 tons.

American Association of Engineers

The Pennsylvania Railroad Section of the American Association of Engineers held its first annual meeting at the Fort Pitt Hotel, Pittsburgh, on June 28. C. V. Potter, of the Chicago Terminal division, spoke on the subject "What Can Be Done to Make the Railroad Engineer's Position More Attractive?"; H. M. Sommerville, of the Lines East, and C. W. Haasis, of the Western Lines, on "What Can the Railroad Section Do Towards Increasing the Professional Abilities of Its Members?"; S. O. Klinger, of the Eastern Lines, on "Should Construction Work Be Handled by the Division?" and C. E. Adams, of the Lines West, Akron, Ohio, on "The Schedule of Salaries of the American Association of Engineers." At a dinner held in the evening addresses were made by A. M. Schoyer, assistant to the federal manager, Pennsylvania Lines, Pittsburgh; W. C. Bolin, supervising

pilot engineer, Baltimore & Ohio, Chicago and F. H. Newell, president of the American Association of Engineers.

"Some Safety Don'ts"

By Ira W. Enos, Locomotive Engineer.

DON'T say that when our time comes we shall get it. That is not good logic and leaves a wrong impression with the fellow who likes to find an excuse for taking chances.

DON'T jump into dangerous places, then look to see what the conditions are afterwards, and when you see you are wrong, depend on your legs to get you out. You might better look first and save all the trouble and perhaps an accident.

DON'T get down on the engine, tender or caboose step, while train is moving, to see what is wrong. If you have reason to believe there is something wrong, the thing to do is to stop your train and find out before it is too late.

DON'T stand close to moving cars when your duty does not require it. Something falling off, sticking out—or worse, a derailment—puts you in a very dangerous place, and there is always plenty of landscape where you can look on in safety.

DON'T think because you have practiced a thing all your life that you are always going to get away with it. When you climb on top of a tank to take water or coal before the engine has stopped, you are saving but little time and are running the risk of getting hit by a low spout or chute, or perhaps falling off.

DON'T stand near or pass close to the end of standing cars. Sometimes they make very quick moves, and if you are in the proper place for them to get you, you are "got." You would not pass close to the heels of a kicking horse—why give the cars a chance that you would not give a horse?

Shippers' Record Book

Clarence F. Pratt, of San Francisco, has got up a handsome bound blank book of 306 pages, about 12 inches square, for use by merchants or manufacturers making numerous shipments of freight in recording, in convenient and accessible shape, all desirable information about each shipment. The book is for sale by the Pratt Building Material Company, San Francisco, of which Mr. Pratt is president, and in whose business the usefulness of the book has been tested. The most prominent feature of the book is its provision for keeping track of carload shipments and the pages are so numbered that records can be kept as in ordinary car record books. The book is divided into nine sections. Section 1 is for freight paid on carloads; section 2 is for payments on other shipments; 3 is for a record of claims; 4 is for record of demurrage, etc., and so on. One section is for the names and addresses of railroad officers.

To arouse interest in his book, Mr. Pratt, in his circular, asks the following questions: "Can you tell instantly whether you have paid a certain freight bill, either carload, l. c. l. or steamship? Can you check your demurrage charges? How much switching, diversion, demurrage, express or storage charges do you pay per year? Have you a record of your claims against carriers? Can you find a rate that was quoted weeks or months ago?" In the front part of his book he shows sample pages, from actual records, to convince the reader that it is by the use of his scheme that satisfactory answers can best be given to these questions.

Does Safety First Pay?

The Santa Fe System's record for "No-Accident Week," June 22-28 inclusive, is none killed and 20 injured, as compared with four killed and 132 injured during the corresponding period last year.

Starting with the above caption, Isaiah Hale, safety superintendent of the road, says, in a bulletin:

"Here is food for reflection. Many men have questioned the statement, frequently made, that 85 per cent of injuries to Santa Fe men were avoidable, yet here is a concrete example of where, for a priod of seven days, by an implied mutual understanding, by co-operation, by team work of an admittedly high order, our record of a year ago was reduced 84 8/10 per cent. Further, 60 per cent of the remaining 15 2/10 per cent were avoidable; so, as a final analysis, we can say that only 6 per cent of our injuries to employees are unavoidable. If this be true, and it is true, then out of the 80 of our employees killed and 10,995 injured during 1918, 75 deaths and 10,245 injuries might have been avoided, and therefore must forever stand as a blot on our intelligence, our efficiency and on our interest in and regard for our fellow workmen."

One of the devices used to stimulate interest in "No-Accident Week" was a placard bearing a huge watch face, indicating 12:40 o'clock and inscribed:

This is
WATCH OUT WEEK
If you will keep yourself
WOUND UP
It is 20 to 1
We shall lead all other lines.

In the Central Western region as a whole the campaign resulted in a record of four fatalities and 94 injuries (90 per cent of which were minor), as compared with nine fatalities and 447 injuries during the same period last year. The roads in the Central Western region employ about 327,000 men.

Signal Division

H. S. Balliet, secretary, announces the nominating committee's nominees for offices of the American Railroad Association—Signal Division—for 1920. The candidates for chairman, for first vice-chairman and for second vice-chairman are, respectively, as follows: C. J. Kelloway, Atlantic Coast Line; F. W. Pfleging, Union Pacific, and F. B. Wiegand, New York Central (West).

For members of the Committee of Direction, to serve three years, the following five members are nominated: W. H. Elliott (N. Y. C., Eastern Lines), C. H. Morrison (N. Y., N. H. & H.), J. A. Peabody (C. & N. W.), F. P. Patenall (B. & O.), R. E. Trout (St. L.-S. F.); to serve two years, the following four: C. A. Dunham (G. N.), G. E. Ellis (U. S. R. A.), H. K. Lowry (C. R. I. & P.), E. E. Worthing (S. P.); to serve one year, the following four: J. H. Cormick (C. N.), W. J. Eck (Southern), A. H. Rice (D. & H.), E. G. Stradling (C. I. & L.). For members of the Nominating Committee, the following ten names are presented, five men to be elected: C. A. Dunham, W. H. Elliott, R. E. Trout, John Leisenring, B. H. Mann, D. M. Case, W. E. Boland, T. S. Stevens, W. M. Vandersluis and C. A. Christofferson.

International Railway General Foremen's Association

The annual convention of the International Railway General Foremen's Association will be held from September 2 to 5, inclusive, 1919, at the Hotel Sherman, Chicago.

Master Car and Locomotive Painters' Convention

The forty-eighth annual convention of the Master Car and Locomotive Painters' Association will be held at the Hotel LaSalle, Chicago, commencing September 9. The association has held no meetings during the past two years, and the program for this year's convention is practically the same as that selected for 1917. The following papers will be presented: The Advantage of Using Pure Paints and More Time in the Painting of Steel Equipment, by Warner Bailey (B. & M.); What Quality and Size of Sand Pebble Are the Best for Blasting Paint or Corrosion From Steel or Iron, Preparatory to Painting, by J. W. Gibbons (A. T. & S. F.), S. E. Breese (N. Y. C.) and Geo. M. Oates (Pressed Steel Car Company); The Record of Our Association, by Charles E. Copp (B. & M.); What Standardization of Painting Railway Equipment Is Necessary, Based Upon the Experience of This Association? by W. A. Buchanan (D. L. & W.), H. M. Butts (N. Y. C.) and W. O. Quest (P. & L. E.); Is the Demand for Linseed Oil as a Paint-Making Oil in Excess of the Supply; If So, What Other Oils Are Most Acceptable Substitutes for the Railway Paint Shop? by A. H. F. Phillips (N. Y. O. & W.), P. J. Hoffman, (Hocking Valley) and F. B. Davenport (Penn. Lines).

Traffic News

Grain Traffic Week Ending June 30

The Director General reports that for the week ending June 30 the grain movement in the Southwestern, Central Western and Northwestern regions showed increases over the same period a year ago; but the movement of coal in the Southwestern, Central Western, Southern and Pocohontas regions still was decidedly below a year ago. In most of the regions passenger traffic showed a heavy increase over the preceding week and over the same week a year ago.

Export Bills of Lading

The issuance of through export bills of lading via North Atlantic ports is to be resumed at once. They will be issued only when founded on written ocean contracts, and then only when shipper gives written guarantee that any storage charges accruing at the seaboard will be paid. For commercial export freight a "G. O. C. permit," issued by the traffic control manager at port of export (on application from the agent of the steamship line booking the cargo, or from representatives of foreign governments or from the United States Food Administration), must be presented by the shipper.

Arrangements for Movement of Farm Laborers

About three months ago, it was suggested to the Railroad Administration that a special rate of one cent a mile be made for the movement of farm laborers into the Kansas wheat fields during the harvest season. This was denied because it was deemed impracticable to make such reduced rates for one class of labor without making similar rates for other classes of labor and therefore the effect would have been a serious diminution of the revenues of the railroads. Such special reduced rates had not been given in the past, even by single railroad companies, for more than ten years. The Railroad Administration is ready to cooperate in every practical way to facilitate the prompt movement of unemployed men from Chicago or St. Louis or other industrial centers to the Kansas wheat fields provided the normal tariff fare is paid or a reasonable guarantee provided. The Railroad Administration agencies will assist in gathering the men and forwarding them to the wheat fields. A representative of the Railroad Administration stationed at Topeka, Kan., has been instructed to get in touch with Governor Allen, of Kansas, to arrange details.

Fourth-of-July Holiday Traffic

The Fourth-of-July passenger traffic between Philadelphia and Atlantic City was the heaviest on record. Passengers gathered in the station of the Pennsylvania at Camden, from the Philadelphia ferryboats, faster than trains could be made up to take them away. Because of some slight accident in the yard some of the trains were not ready promptly, and, according to Philadelphia papers, three trains of ten cars each, filled with passengers, stood in the station for more than an hour waiting for locomotives. Both of the roads to the shore kept all available passenger cars busy throughout the rush; yet the hotel keepers and other entertainers at Atlantic City are reported as claiming that that resort lost $400,000 to $500,000 because of the decision of the railroads to run no excursion trains—meaning no trains at reduced rates. All passengers paid the regular fare of $3.24 for the round trip. In former years, one-day excursion tickets have been sold at $1.35. The Long Island Railroad carried the largest seashore traffic in its history; the estimated number of passengers between New York (Pennsylvania station) and Rockaway and Long Beach was 350,000 each way, on the Fourth. It was estimated that 275,000 passengers were handled at the Brooklyn stations of the Long Island road.

Commission and Court News

Interstate Commerce Commission

A hearing was begun on June 27 before a board of referees appointed by the Interstate Commerce Commission to determine the just compensation of the Arkansas & Louisiana Midland, one of the short line railroads that was relinquished by the Railroad Administration in June, 1918. The road claims it was under federal control for six months. The Railroad Administration, which claims it never exercised any direct control over the road, entered a motion denying the jurisdiction of the board.

The Commission has created a new division, No. 4, consisting of Commissioners McChord, Myers, Daniels, Aitchison and Eastman, which is given authority to hear, determine, order, certify, report or otherwise act in considering and deciding proceedings relating to the valuation of railroads, except those cases comprised in dockets 1 to 6, in which tentative valuations have already been served and which are reserved for further consideration and disposition by the commission. Division No. 1 will continue to exercise authority over the conduct of the bureau of valuation, including the preparation and submission for consideration by the commission of tentative reports.

Investigation of Lake Coal Rates

The Commission, at the request of the director general of railroads, has ordered an investigation into the relationship between the rates on coal to Minnesota, North Dakota, and the northern portion of Wisconsin from mines in Ohio and West Virginia, via the lakes, and the rates to the same destinations from Illinois and Indiana, all rail, with a view to advising the director general whether the relationship heretofore existing should be restored and if so in what manner the restoration should be accomplished. The rates by lake were increased by the Railroad Administration by 52 cents a ton and the all rail rates were increased by 55 cents and after receiving numerous complaints, particularly from dock operators, that the changed relationship will seriously restrict the shipment of coal by the lakes the director general has requested the assistance of the commission.

State Commissions

A Troublesome Station Agent

The station agent at Pembroke, N. Y., on the New York Central, receives, under the orders from Washington, such a large salary that the officers of the road decided that economy demanded the abolishment of his position; and the difficulties encountered in carrying out this purpose are shown in the decision of the New York State Public Service Commission, which reported as follows:

Petition of the United States Railroad Administration, New York Central Railroad, as to changes at Akron Falls and Pembroke stations. [Case No. 6827.]

When a public utility corporation is not a success financially, care and attention must be given to its management for the purpose of correcting any deficiency in income, and an interference with the convenience and necessities of the public should be one of the last and not one of the first means employed to correct the situation. Decided June 3, 1919.

This is an application to dispense with the services of an agent at Pembroke, on a branch line running from Canandaigua to North Tonawanda. Pembroke is a village of about 250 inhabitants, surrounded by a rich and prosperous farming community. The station has been established for a great many years. The Railroad Administration proposes not to abolish the station, but to dispense with the services of the station agent. It is claimed that the public can be well served if the station is put in charge of a caretaker.

The business transacted at Pembroke station from 1913 to 1917, inclusive, appears by the following table furnished from the records of the company:

Year	Number shipments l. c. l. sent and received	Car lots sent and received	Freight earnings	Ticket revenue
1913	1,309	114	$4,300	$909
1914	1,377	151	6,071	892
1915	1,256	110	3,968	803
1916	1,300	87	3,296	773
1917	1,202	100	2,430	730

In 1918 the freight business amounted to $14,007, passenger tickets to $571, milk business, $2,429. The express business amounted to about $520.80 per year. Of the freight business, $8,736.24 was received for road material used in the repair of state roads in that vicinity, leaving $5,271.50 received from ordinary freight. The present agent also acts as express agent and telegraph operator. If the company dispenses with his services, the telegraph office must be closed. It was suggested that the caretaker to be employed in place of the agent might act as express agent, but there is no assurance that such will be the fact. The present agent is paid the amount fixed by the United States Government officials: 48 cents an hour for eight hours, and 72 cents an hour for overtime; and the station is open for practically twelve hours and thirty minutes daily, making a daily wage for the station agent of $7.08. Besides, he draws a small amount as agent for the express company, and for the month of April, 1919, received $164.50. The first proposition of the petitioner proposed to employ a caretaker in place of the agent during the winter months, whose duties would principally consist of caring for the lighting and heating of the station whenever necessary. Later, as the case developed, the proposition was changed, and it was proposed that the caretaker should do everything but bill the freight and sell the tickets. If the caretaker is to perform substantially the duties of the agent, and the salary now paid to the latter is reasonable in amount, it is quite difficult to understand how much money will be saved simply by changing the title of this representative of the road.

Under the proposed new system, all passengers from Pembroke must pay their fare on the train; all baggage to be checked must be placed where it can be readily reached by the train crew; and the passenger must, after boarding the train, reach the train baggagemaster in order to procure a check. All incoming freight must be prepaid; outgoing freight will not be billed until it reaches a point where there is an agent, who will be expected to make out the proper receipt and return it by mail to the shipper. A substantial interval must elapse between the time the shipper surrenders the possession of the property and the time when an agent returns the receipt by mail, and it might be very difficult to establish any claim for damages. Naturally, the patron of the road depends upon the local agent to adjust claims and other troubles; a letter to the company would not bring very speedy results. It appears that the freight service is so bad at the present time that shippers have been compelled to patronize the express company with its higher rates. One florist testified that his shipments and receipts of freight are mostly by express on account of the condition of the freight service. His shipments weigh at times from one thousand to fourteen hundred pounds; one in value was worth $28. Without pursuing the details further, it is quite evident that to dispense with an agent at Pembroke would seriously inconvenience the public in its use of that station.

The rates charged by the railroads for both passenger and freight service have been enormously increased within a very short period of time. If with such added burdens upon their patrons the roads are not now a success financially, the first thought should not be to add still further to the load of the public by decreasing the quality of the service. During the period of the war every patriotic citizen was not only willing but anxious to undergo inconveniences and privations if they were deemed necessary or helpful by the public authorities in reaching a successful issue of the conflict. Now that business matters are resuming their normal condition, more care and attention must be given to the management of public utilities for the purpose of correcting deficiencies in income, and an interference with the rights and conveniences of the public should be one of the last and not one of the first means employed to correct the situation.

Equipment and Supplies

Locomotives Shipped Week Ended June 28

The following new locomotives were shipped to railroads under federal control during the week ending June 28:

Works	Road	Number	Type
American	P. L. W.	1	USRA Santa Fe
		1	
Baldwin	A. T. & S. F.	2	Pacific
	B. & O.	5	USRA Pacific
	C. C. & O.	1	Mallet
	C. & O.	1	USRA Mountain
	K. C. T.	5	USRA 8W. Sw.
	N. & W.	1	Mallet
	P. & R.	1	Mallet
	S. P.	6	Santa Fe
		22	
Total		23	

Cars Built in Railroad Shops in May

The Railroad Administration has issued the following statement of new cars constructed in railroad shops during the month of May. The statement shows that 575 freight cars were built in railway shops during May, but no passenger cars. Of the freight cars, 491 were box cars.

Class of cars	Steel	Steel underframe	Steel center sills	Wood	Total
Passenger—					
Sleeping	..	..	..	..	..
Parlor	..	..	..	..	..
Dining	..	..	..	..	..
Parlor observation	..	..	..	..	..
Dining observation	..	..	..	..	..
Passenger baggage	..	..	..	..	..
Passenger coach	..	..	..	..	..
Passenger and mail	..	..	..	..	..
Mail	..	..	..	..	..
Baggage and mail	..	..	..	..	..
Baggage	..	..	..	..	..
Express	..	..	..	..	..
Express and refrig.	..	..	..	..	..
Horse express	..	..	..	..	..
Milk	..	..	..	..	..
Total passenger equipment.	..	..	..	..	..
Freight—					
Stock	..	..	..	25	25
Hopper	..	..	..	1	1
Gondola	..	3	..	..	3
Flat	..	5	..	10	15
Coke rack	..	..	..	..	..
Work car	..	..	..	..	..
Misc. freight cars	..	3	..	16	19
Caboose	7	9	5	..	21
Box	..	1	348	142	491
Refrigerator	..	..	..	..	..
Total freight	7	21	353	194	575
Grand total	7	21	353	194	575

Freight Cars

Purity Ice Cream & Dairy Company, Jacksonville, Fla., is inquiring for refrigerator baggage cars.

Oscar B. Cintas, Havana, Cuba, has ordered 10 cane cars from the American Car & Foundry, Chicago.

The Carribean Petroleum Company, Philadelphia, Pa., is inquiring for two gasoline inspection cars.

The Central Railway, Argentine, has ordered 20 tank cars from the American Car & Foundry, Chicago.

Kelly's Quick Colliery Company, Ward, W. Va., has ordered one eight-wheel wooden underframe caboose passenger car, from the American Car & Foundry, Chicago.

Passenger Cars

The Canadian National Railways have ordered 18 new steel sleeping cars and 9 steel dining cars from Canadian firms and deliveries are expected to be made during the autumn. The sleeping cars are of one drawing room, 12 section plan and are intended for first class passenger traffic.

Miscellaneous

Catalogues Wanted.—F. P. Hoeck, superintendent of materials and stores of the International Railways of Central America, writes that the material department and commissary stores of his railroad requires new catalogues to replace those destroyed during the recent earthquake. Those desiring to furnish such catalogues are requested to send them to the purchasing department of the International Railways of Central America, 17 Battery place, New York, for enclosure.

Signaling

The Long Island has placed an order with the Union Switch & Signal Company, Swissvale, Pa., for a Saxby & Farmer interlocking machine to be used at Hempstead—38 working and two spare spaces.

War-time in England.—The London & Southwestern reports that in the second week of June, for the first time since August, 1914, no ambulance trains were run over the road.

The railway mail clerks at the annual meeting of their association, discussed a proposal to ask for a standard day of 130 miles, or six hours. The clerks hope to get a proper advance in pay for all who have not had their salaries raised within the last five years and to have all increases dated back to the time when former regulations were suspended by the Postmaster General.

Englishmen, in pre-war days, wasted a great deal of eternity in walking up and down railway platforms looking for empty carriages, and when they found one, triple brass must be the armor of the traveller who evinced a desire to disturb their privacy. Whether it is the sociability of common danger or only the shortage of rolling stock, certain it is that the Englishman since the war has perforce acquired the habit of travelling more like a sardine than a lonely autocrat, and, making the best of a bad job, he has fallen into the habit of conversing with his neighbors. In fact, the Englishman, since the war, has found his tongue, just as many Frenchmen, since the war, have lost theirs.—From "The Changing Englishman," by St. John Irvine.

An American Built Car on the Trans-Siberian Converted Into an Armored Car

Supply Trade News

The Edison Storage Battery Company announces the removal of its district office in Pittsburgh, Pa., to Room 431 Union Arcade building.

The Walter A. Zelnicker Supply Company, St. Louis, Mo., has added 2,000 sq. ft. to its present office space at 325 Locust street, St. Louis, an increase of 33⅓ per cent.

David F. Jennings, who for the past 14 years has been the Chicago representative of **Guilford S. Wood,** Chicago, died suddenly in New York city, on June 26, at the age of 64 years.

Arthur Osmore Norton, president of **A. O. Norton, Inc.,** Boston, Mass., died while writing a letter, on June 8, in his home at Coaticook, Que. He was born on February 17, 1845, on a farm in Barnston township, about ten miles from Coaticook. The family moved to a farm in Coaticook when he was a small boy, and he began his business career as a clerk in the country store. When he was about 30 years old, he started a jewelry business in Coaticook, later doing a wholesale business, and subsequently was in the wholesale jewelry business in Boston under the firm name of Norton Brothers & Butters. In 1888, he started the manufacture of the Norton ball-bearing lifting jacks produced in two factories, one in Boston and the other in Coaticook. Mr. Norton was the first to make non-fluid self-lowering jacks; he was also the pioneer in the making of ball-bearing screw jacks.

A. O. Norton

T. J. Hudson, Jr., district manager of the **Chicago Pneumatic Tool Company** at Chicago, has been appointed manager of the pneumatic tool sales division, effective July 1, 1919.

L. C. Murray, for many years connected with the Carnegie Steel Company, has joined the selling forces in the "Knox" department of the **Blaw-Knox Company,** Pittsburgh, Pa., with headquarters at Pittsburgh.

Samuel O. Dunn, editor-in-chief of the *Railway Age* and other publications of the **Simmons-Boardman Publishing Company,** has been made also a vice-president of this company. His headquarters will remain at Chicago.

The **B. W. Parsons Company,** St. Paul, Minn., has been designated as northwestern sales representative of the **Pollak Company,** Cincinnati, Ohio, handling the latter's products at St. Paul, Minneapolis and Duluth and in the Iron Range district.

William B. Scaife & Sons Company, Pittsburgh, Pa., has opened a Chicago sales and engineering office. The new office will be in charge of **Charles F. O'Hagan,** chief engineer of the company at Pittsburgh, who has been appointed resident engineer and manager.

Corporal William A. Nugent, who served during the war in Company I, 21st Engineers, has returned from France, and resumed his duties with the **Independent Pneumatic Tool**

Company, Chicago, as traveling representative. He has been assigned to his former territory in Indiana.

William Holmes Black, secretary of the **Standard Scale & Supply Company**, Pittsburgh, Pa., died at his home in that city on June 30, at the age of 57. He was associated with the Standard Scale & Supply Company for over 20 years and took a prominent part in the building up of the selling organization of that company.

The Pollak Steel Company, Cincinnati, Ohio, is making tentative plans for an increase in the capacity of the company's works at Cincinnati and at Chicago. The company is about to begin work on some new buildings, including a rolling mill at the Cincinnati plant and a large drop forge plant at the Chicago works.

Charles G. Du Bois, vice-president of the **Western Electric Company**, was elected president, with headquarters at New York, on July 1, to succeed H. B. Thayer, who has resigned after 38 years of service to assume the presidency of the American Telephone & Telegraph Company. Mr. Thayer was elected chairman of the board. Mr. Du Bois was born in 1870, and after his graduation from Dartmouth College in 1891, he joined the Western Electric Company in New York as a clerk in the accounting department. In 1896, he was appointed chief clerk at the New York office, and in 1898 he was elected secretary, with office at Chicago. Shortly after assuming the duties of secretary, Mr. Du Bois was also made supervisor of branch houses. In 1907, he was transferred from the Western Electric Company to the American Telephone & Telegraph Company as its controller. In 1917, shortly after the entry of the United States into the war, he went to Washington to serve as controller for the American Red Cross, and after systematizing the Red Cross accounting work and organizing a department to carry it on, he resumed his duties with the company. On October 1, 1918, Mr. Du Bois rejoined the Western Electric Company as vice-president, which office he held until his election on July 1, as president of the same company.

C. G. Du Bois

The business of the **Gauld Company**, Portland, Ore., has been taken over by the **Gauld Supply Company**, incorporated under the laws of Maine. The directors of the new company are as follows: Wm. P. F. Ayer, president; Thomas Nickerson, vice-president; G. A. Ricker, treasurer; Theodore W. Little and Carl T. Keller, all of whom are connected with the Walworth Manufacturing Company, Boston, Mass.

The Blaw-Knox Company, Pittsburgh, Pa., has opened branch offices in the Little building, Boston, Mass., and the Owen building, Detroit, Mich. **A. W. Ransome**, formerly in the New York office of this company, has been appointed New England manager, with headquarters at Boston, while **H. J. Desson** has been transferred from Pittsburgh to Detroit, where he will become manager of the Michigan district.

The Massey Concrete Products Corporation, Chicago, announces the following appointments: **Paul Kircher**, resident manager of the Eastern district including Eastern Canada, with headquarters at 50 Church street, New York; **G. H. Redding**, resident manager, in charge of sales in the Central district, with headquarters in Chicago; **H. E. Burns**, resident manager in charge of sales in the Southwestern district, with headquarters in the Sumpter building, Dallas, Texas.

Bertram Smith, assistant general sales manager of the Edison Storage Battery Company, Orange, N. J., has resigned to become president and general manager of the **Automatic Electrical Devices Company**, Cincinnati, Ohio, effective July 15. Mr. Smith has had more than 20 years' experience in the storage battery industry. He formerly served as secretary and treasurer of the old National Battery Company, which sold the Sperry plate, and after the absorption of this company by the United States Light & Heating Company, he was for a number of years manager of the western territory, with headquarters at Chicago. In 1913, he resigned to become assistant manager of the Edison Storage Battery Supply Company, with headquarters at San Francisco, and in 1915 was appointed manager of the Detroit sales district for the Edison Storage Battery Company. In September, 1918, Mr. Smith was made assistant general sales manager of that company, with headquarters at Orange.

Trade Publications

ASH DISPOSAL.—The American Steam Conveyor Corporation, Chicago, has issued another booklet on the question of ash handling facilities, entitled Reducing Ash Disposal Costs. Of special interest is a diagram and description of a steam ash conveyor installed by this company that saved over three dollars a day in ash handling costs. The experiences of a number of other users in securing ash disposal economies are described, and the text is illustrated with a number of diagrams and photographs of actual installations.

CHAIN DRIVES.—The Morse Chain Company, Ithaca, N. Y., in a 12-page pamphlet has reprinted from the 1919 Year Book of the National Association of Cotton Manufacturers an article by J. S. White, entitled Chain Drives, which explains the advantages which may be secured in the textile industry from the use of chain drives in general power transmission work. This is a short synopsis of the general subject of chain driving and does not exploit any particular make or type of power chain, and includes engineering data useful in designing silent chain drives.

LEATHER BELTING.—A 20-page pamphlet issued by the Leather Belting Exchange, Philadelphia, Pa., contains information obtained during the course of an investigation on power transmission by belting conducted by the Mellon Institute of Industrial Research of the University of Pittsburgh for the Leather Belting Exchange. The booklet is entitled A Study of Various Types of Belting and was written by Professor Ernest D. Wilson of the Mellon Institute. It describes the equipment used in the tests and the results obtained and is illustrated with several photographs.

AMERICAN INSURANCE FOR AMERICAN SHIPS.—The desirability of insuring the American merchant marine in what would amountto an American Lloyds was indicated by Edward N. Hurley, of the United States Shipping Board, testifying Wednesday before the House Committee on Merchant Marine and Fisheries. According to Mr. Hurley a profit of $27,000,000 was made during the war by the Advisory Insurance Committee of the Shipping Board, which protected all government ships, both owned and commanded, at a rate about 3 per cent under the market rate. It did business at from 25 to 30 per cent less than other such agencies, he said. Owing to the fact that insuring agencies learn the particulars of every ship's cargo and the condition of the ship itself, Mr. Hurley said, the nation represented by the insuring agency had a tremendous opportunity to profit by the information gained. This advantage, he said, was of great benefit to Germany, which did a heavy marine insurance business prior to the war, and also to England. "If we hope to develop our merchant marine," said Mr. Hurley, "we must maintain an American bureau, and American insurance and American registry."

Financial and Construction

Railway Financial News

CHICAGO, ROCK ISLAND & PACIFIC.—With the approval of the director general of railroads, this company has declared the regular semi-annual dividends of 3½ per cent on the 7 per cent preferred, and 3 per cent on the 6 per cent preferred stock, both payable July 31 to stock of record July 19.

GARDEN BAY.—This 16-mile road with headquarters at Escanaba, Michigan, was sold at a receiver's sale on June 26. Hyman Michaels and Company, Chicago, purchased the road's equipment for $40,300 and the balance of the property was sold in small lots to various bidders.

GEORGIA COAST & PIEDMONT.—This road has been sold to Gordon & Freedman of New York, dealers in radiators and boilers, for the upset price of $300,000. There is some doubt as to whether or not the sale will be confirmed, for it is pointed out that the rail alone on the road, which has a length of a hundred miles, is worth more than the price bid on the property. The waterfront terminal property in Brunswick, Ga., is worth about a hundred thousand dollars and the ferry across the Altamaha river is valued at at least $200,000. The purchasers announced that in the event the sale is confirmed, they will sell the road to suit any purchaser as a going railroad in part or in any shape purchasers may desire.

PITTSBURGH & SHAWMUT.—The Interstate Commerce Commission has appointed Commissioner E. E. Clark, A. G. Hagerty, attorney-examiner, and J. C. Fort, assistant chief of the bureau of inquiry, as a board of referees to pass on the amount of the just compensation to be paid, under the federal control act, to the Pittsburgh & Shawmut. This system was in process of construction and was operated as a common carrier only 303 days of the test period and therefore has no standard return. The company claims $613,261 as certified by the commission and also has special claims amounting to about $150,000 more, while it declares the Railroad Administration has ignored the Interstate Commerce Commission certification and offers it only $461,241.

TEXAS STATE.—Tom Cronin of Palestine, president of the Bartlett Western, has offered to purchase the Texas State Railroad. The State road has cost nearly $1,000,000 and there is an annual deficit.

Railway Construction

LOUISIANA RAILROAD & NAVIGATION COMPANY.—The rebuilding of this company's car and repair shops at Shreveport, La., which were recently destroyed by fire with a loss estimated at $100,000, will begin in the near future. The construction of the buildings will be done by the company's bridge and building forces.

TEXAS RAILROAD.—Frank Kell, president of the Clinton & Oklahoma Western, J. A. Kemp, of Wichita Falls, Tex., and associates, are constructing a railroad from Newcastle, Tex., through Breckenridge, Stevens County, to Ranger, Eastland County, which will connect with the Texas Central and the St. Louis-San Francisco in Erath County, Tex. The new road will be approximately 150 miles long.

Agricultural representatives of the railroads, who have been carrying on farming campaigns, co-operating with state and federal authorities, chambers of commerce and farmers' associations, report that more local shipping associations have been formed by farmers this year than ever before. The plan of the California fruit growers is followed to a considerable extent. Farmers are paying particular attention to grading and standardizing products wherever it is possible to do so.

Railway Officers

Railroad Administration

Federal and General Managers

Col. James A. McCrea, formerly general manager of the Long Island Railroad, who recently returned from France, has been elected a vice-president of the Bankers' Trust Company, New York.

G. F. Hawks, whose resignation as federal manager of the El Paso & Southwestern and the El Paso Union Passenger Depot, with headquarters at El Paso, Tex., was announced in the *Railway Age* (July 4, page 44), has retired permanently from railroad service and will devote his time in the future to personal business affairs. Mr. Hawks will make his home in the vicinity of Los Angeles, Cal.

Operating

G. B. Obey, general superintendent of the Monongahela Railroad, with office at Brownsville, Pa., has resigned and the office of general superintendent has been abolished; **D. K. Orr,** assistant chief engineer, has been appointed superintendent, with office at Brownsville, and his former position has been abolished.

I. B. Richards, general superintendent of the Western district of the Northern Pacific, with headquarters at Tacoma, Wash., resumed his duties July 1, after a temporary leave of absence. **J. E. Craver,** who had been acting general superintendent of the Western district during Mr. Richard's leave, has resumed his duties as superintendent of the Seattle division, with headquarters at Seattle.

Col. C. L. Whiting has returned from overseas military service and has been reappointed superintendent of the Northern Montana division of the Chicago, Milwaukee & St. Paul, with headquarters at Lewistown, Mont.; **A. C. Bowen,** superintendent at Lewistown, has been transferred to the Musselshell division, with headquarters at Miles City, vice **J. P. Phelan,** who has been appointed assistant superintendent of the Rocky Mountain division with headquarters at Three Forks, vice **A. O. Veitch,** who has been appointed trainmaster of the Trans-Missouri division, with headquarters at Mobridge, S. D.; **E. L. Cleveland,** trainmaster at Mobridge, has been transferred to the Columbia division with headquarters at Malden, Wash., vice **W. S. Johnson,** who has been assigned to other duties.

Traffic

William G. Brown, manager of the Consolidated Ticket Offices at Cincinnati, will resume his duties as assistant general passenger agent of the Baltimore & Ohio—Western

L. M. Hogsett, assistant general freight agent of the International & Great Northern, the Missouri, Kansas & Texas, (Trinity Branch), the Beaumont & Great Northern, the Galveston, Houston & Henderson and the Houston & Brazos Valley with headquarters at Houston, Tex., has been appointed assistant general freight agent in charge of interstate commerce matters of the Texas & Pacific, the International & Great Northern, the Galveston, Houston & Henderson, the Houston & Brazos Valley, the Trans-Mississippi Terminal, the Weatherford, Mineral Wells & Northwestern, the Gulf Texas & Western, the Denison & Pacific Suburban, and the Fort Worth Belt, with headquarters at Dallas, Tex. Lines.

Engineering and Rolling Stock

T. J. Bivens, assistant engineer in the maintenance of way department of the Union Pacific, with headquarters at Omaha,

Neb., has been promoted to assistant division engineer, with the same headquarters.

H. H. Maxfield, acting works manager of the Pennsylvania Railroad, Eastern Lines, with office at Altoona, Pa., has been appointed works manager, in charge of the Altoona shops, with office at Altoona.

Thomas Holt, signal inspector on the Pennsylvania, Lines West, with headquarters at Pittsburgh, Pa., has been appointed signal engineer for the Chicago Union Station Company with headquarters at Chicago.

Frank Lafond has been appointed road foreman of engines of the Los Angeles division of the Southern Pacific, (lines south of Ashland), with headquarters at Los Angeles, Cal., vice **R. N. Richardson,** assigned to other duties.

B. Blum, district engineer on the Northern Pacific, with office at St. Paul, Minn., has been promoted to engineer of maintenance of way, lines east of Paradise, with headquarters at St. Paul, vice **L. Yager,** who has taken a position in the office of assistant director, Division of Operation, Washington, D. C., and **J. T. Derrig** has been appointed district engineer, lines east of Mandan, with headquarters at St. Paul, vice Mr. Blum.

H. P. Anderson, mechanical superintendent of the Missouri, Kansas & Texas and the Missouri, Kansas & Texas of Texas, with office at Denison, Texas, has been transferred to the staff of the federal manager, at St. Louis, Mo., in charge of executive and administrative matters of the mechanical department on the roads under the jurisdiction of **C. N. Whitehead,** federal manager at St. Louis and **C. I. Evans,** chief fuel supervisor, has been appointed chief assistant mechanical superintendent with office at Denison, in charge of maintenance of equipment.

Corporate

Executive, Financial, Legal and Accounting

Serapio Aguirre has been appointed general treasurer of the National Railways of Mexico (Government Administration), with office at Mexico, D. F., in place of **A. G. Roel,** who has been promoted.

J. M. Rosevear, general auditor of the Grand Trunk and the Grand Trunk Pacific, has been appointed auditor of the Toronto Terminals Railway Company, with headquarters at Montreal, Que., vice **W. H. Ardley,** retired.

Operating

Col. Paulino Fontes, general manager at Mexico City of the southeastern lines of Mexico, including the Mexican Railway and all other government controlled lines south of Mexico City, has had his authority extended to include the management of the National Railways of Mexico, which includes all the lines operated by the Mexican government. He succeeds **F. Pescador,** director general of the National Railways of Mexico, who has resigned. A portrait of Mr. Fontes and a sketch of his career were published in the *Railway Age* of May 23, 1919, on page 1277.

Traffic

A. G. Roel, general treasurer of the National Railways of Mexico (Government Administration), has been appointed traffic manager, with headquarters at Mexico, D. F.

William Baird has been appointed general agent in the passenger department of the Canadian Pacific Ocean Services, Ltd., with headquarters at the Pier Head, Liverpool, England.

Engineering and Rolling Stock

J. McWood has been appointed master car builder of the Grand Trunk, Eastern Lines, with headquarters at Montreal, Que., succeeding **J. Hendry,** assigned to other duties.

Carl B. Andrews, for the past ten years chief engineer of the Oahu Railway & Land Company of Honolulu, Hawaii, has resigned this position to take up the work of planning and constructing a railway system for the Pampanga Sugar Development Company of Manila, Philippine Islands. He left Honolulu on July 6 for Manila to take up this work, which is expected to require about a year and a half for completion.

Obituary

Arthur Wray Street, formerly general eastern freight agent of the Great Northern, with office at New York, died in that city on July 9, at the age of 71.

Walter E. Beecham, formerly car accountant of the Chicago, Milwaukee & St. Paul, died on July 3, at Elmhurst, Ill., after several months' illness. Mr. Beecham was 73 years old.

Joshua A. Leach, founder of the Brotherhood of Locomotive Firemen & Enginemen, died on June 27, at Denver, Colo., where he was attending the organization's triennial convention Mr. Leach organized the Brotherhood of Locomotive Firemen & Enginemen at Port Jervis, N. Y., in 1873. He was 76 years old.

Frank T. Crandon, formerly tax commissioner of the Chicago & North Western, died on July 4, at his home in Evanston, Ill., at the age of 84 years. Mr. Crandon was one of the pioneer tax commissioners in the United States, having held that position with the Chicago & North Western for 42 years. He was retired at the age of 70.

Augustus C. Doan, secretary and assistant treasurer of the Minneapolis & St. Louis Railroad Company, with headquarters at New York, died on July 5, at the age of 50. He was born on January 10, 1869, at Edgewood, Pa., and was educated in the public schools. In 1889, he began railway work with the Pennsylvania Railroad as a clerk in the assistant engineer's office. From June, 1892, to May, 1901, he served as a clerk in the office of the assistant treasurer of the Southern Pacific Railroad and was then to March, 1902, a clerk in the traffic department of the Southern Pacific Company, at New York. In 1903, he was appointed assistant secretary of the Minneapolis & St. Louis, and later was promoted to secretary and assistant treasurer. At the time of his death, Mr. Doan was also secretary and treasurer of the Shippers' & Manufacturers' Export Corporation, New York.

The Ohio Bankers' Association, at its 29th annual convention, held recently at Toledo, adopted resolutions expressing disapproval of government control of railroads and urging their early return to their former owners.

George F. Conroy, a conductor on the Erie Railroad, has received notice of a legacy of $15,000 in the will of J. J. Adams, a shoe merchant who died recently at Allendale, N. J., "as a mark of appreciation of his kindly treatment of me and other passengers."

Mystery Solved.—Walker D. Hines, United States Railroad Administrator, has reported deficits of half a billion dollars in the operations of the railroads since the first of the year, and has informed Congress that it will take a billion two hundred thousand dollars in excess of receipts to keep the roads going until the end of 1919. This satisfactorily solves the mystery surrounding the resignation of Mr. McAdoo as Secretary of the Treasury and Railroad Administrator.—SAMUEL G. BLYTHE, in The Saturday Evening Post.

Forgetful Fans.—The President (President Wilson) descended to the train level from the main level of the station in an elevator and went immediately to the parlor car that had been assigned to him and Mrs. Wilson for the trip. He had been in his car but a few minutes when he emerged again, hat in hand mopping his head with his handkerchief. "It's a little too hot there for me," he said. Then, after some scurrying around, several electric fans were set in motion and he returned to the car. . . .—*New York Tribune*, July 9.

EDITORIAL

Railway Age

Table of Contents will be found on Page 5 of the Advertising Section

The Builders Suggest Oriental Labor

The suggestion made by builders testifying before the legislative committee on housing, that millions of Japanese and Chinese should be brought into the country to relieve the shortage in the ranks of unskilled labor is food for thought. The consensus of opinion seemed to be while skilled workmen could be secured in sufficient numbers, that the insoluble problem is the securing of unskilled labor. Without discussing pro and con the desirability of importing Oriental labor this testimony adds weight to the opinion of many railroad engineers that the day of unskilled labor in railway construction and maintenance of way is past and that the successful carrying out of work of this character hinges on radical departures from the present practice in the method of its prosecution. In fact, it seems to be the one best argument for the necessity, on the railroads, for increased supervision and the development of labor saving devices.

A Problem for the Valuation Engineer

There has probably never been a time since the Civil War when railway construction has been so nearly at a standstill as now. Almost no new projects of any magnitude are being authorized, while activities on a large part of those which were started last year have been held up, and work on the remainder is fast drawing to completion. As a result, more extension and improvement projects are standing in an incomplete state today than ever before. The amount of money which has already been spent on these projects aggregates hundreds of millions of dollars on which no return is being earned. The drain on railway revenues for the interest on these unproductive investments is correspondingly large. This creates a problem for the valuation engineers to consider. One of the points of controversy between the railways and the federal engineers has been the length of the construction period to be allowed for the determination of interest during construction, one of the elements entering into the cost of reproduction of the property. In general, the engineers of the railways have contended that the government employees have not allowed for the delays which may and do occur in the construction of large projects. While the repetition of the stagnation in construction activities resulting from government control may be a remote contingency in the future it is an established fact that such delays do occur from one cause or another and that regardless of the causes, they contribute to the ultimate cost of the project.

The Flagging Zeal of the Flagman

The incurable propensity of the American flagman to put forth the "minimum effort," noticed in our issue of June 20, is a subject which touches a responsive chord in many minds. H. E. McGee, general superintendent of the Missouri Kansas & Texas, at Dallas, writes: "I have read in your issue of June 20 the editorial note on the Fort Washington collision and the article by Commissioner McChord on the flagging rule. The 'minimum effort' on the part of the flagman, referred to by him, certainly was exemplified in the Fort Washington collision. The history of American railroads records many collisions due to the failure of the flagman to go back a proper distance. The proper method of flagging is a question of the greatest concern to operating officers. Many ideas prevail as to the right and wrong way to flag. The rules of many roads [and of the American Railroad Association, supposed to represent the majority of all the roads] instead of definitely providing a minimum distance which the flagman shall go, leave this question to the flagman's judgment and discretion. Does not this encourage the 'minimum effort' on the part of the flagman?" The words, in brackets, which we have added to Mr. McGee's letter, will serve to remind the reader, if he needs a reminder, that this question has been asked (and answered) a hundred times before. The only way to settle the question and have it stay settled is to abandon our reliance on the time interval system and to perfect the space interval system. For a temporary answer the suggestion concerning fusees, printed in our last issue, may be worth our correspondent's attention. To Mr. McGee's specific question, Does the rule encourage laziness? the members of the committee, which, after days of discussion, adopted the present phrasing, "go, immediately, a sufficient distance to insure full protection" might answer in the negative; but even if their opinion were to be disputed as wrong they would, no doubt, reply that they had been no better off when the rule specified a distance. The trouble is that the more specific the rule the more numerous must be the exceptions; so we are back where we started; the flagman must exercise discretion. A rule forbidding the exercise of discretion would have to provide for a dozen flagmen on each train.

Politics as Usual

The proposed contract ordinance between the City of Chicago and the Illinois Central for extensive terminal improvements in that city described in the *Railway Age* of July 11, page 51, is now being subjected to the usual rough handling in the council chamber after a tentative agreement had been reached between the council's Committee on Terminals and the railroad company. The form of the ordinance as presented to the council was not arrived at until after exhaustive study and discussion between officers of the company and members of the committee and their technical advisors. The hearings before the committee were open to the public and furthermore were given ample publicity by the daily papers, so that members of the council and the public at large were afforded opportunity to become conversant with the limitations as well as the possibilities of the project. This, however, has not deterred a number of aldermen from coming forward later with numerous proposed amendments which would increase the cost of what, even in its present form, promises to be a very expensive undertaking for the Illinois Central. The disregard of the economics of the problem evidenced by the spirit in which many of these amendments are submitted savors of a form of politics which fortunately is not so prevalent at the present time as in the past. The serious phase of the matter is that it threatens to jeopardize the entire undertaking.

Attitude of Interstate Commerce Commissioners

THE NEWEST MEMBER of the Interstate Commerce Commission, Joseph B. Eastman, has struck a blow which is adapted to shatter any hope the optimistic might still have had that the Interstate Commerce Commission, as now constituted, would in the absence of specific instructions from Congress to do so, so regulate rates as to enable the railways under private operation to prosper and adequately develop their facilities. Mr. Eastman has sent a letter to the Senate Committee on Interstate Commerce, in which he says: "I believe that the roads should continue in the possession and control of the nation." He makes clear that he has no confidence in private management and is unqualifiedly in favor of government ownership and operation.

The law provides for the Interstate Commerce Commission to have nine members. It has only eight members now, because Commissioner Harlan's term expired some months ago and no successor to him has been appointed. The attitude of a majority of the present members of the Commission regarding the matter of adequate rates is indicated by a brief review of their records.

Commissioner Meyer has opposed advances in rates in every important advance rate case. He rendered a dissenting opinion in the 15 per cent case, the original decision in which was rendered on June 27, 1917, in which he opposed even the comparatively small advances favored by the majority of the Commission at that time. He declared he did not believe an emergency existed "in regard to carriers in the Eastern district of such a character as to make it imperative to authorize at this time the increase of class rates sanctioned by the majority." Within eight months, however—after government operation had been adopted—the Commission itself silently granted the rest of the 15 per cent advance in Eastern territory; within three months more the Railroad Administration advanced freight rates 25 per cent and passenger rates 50 per cent throughout the country. All these advances in rates, amounting to perhaps $1,200,000,000 a year, are proving unequal to the extent of several hundred millions of dollars a year to the increases in expenses which have occurred since Mr. Meyer said two years ago that he could see no conditions justifying any advance.

Commissioner McChord also dissented in the 15 per cent case and opposed the advances in rates then granted. Recently he has attempted to show that the railways before government operation was adopted were allowed to charge adequate rates, and has even contended that no considerable advance in rates may be necessary to save the railway companies from bankruptcy after the roads are returned. How much reliance may be put upon Messrs. Meyer's and McChord's foresight and judgment in future is indicated by the extent to which they have shown these qualities in the past.

Commissioner Woolley, in a recent address, has opposed any further advances in rates and has argued that any deficiency of railroad revenues should continue to be made good from taxes.

Commissioner Aitchison was formerly a member of the Oregon Railroad Commission, served as the solicitor of the National Association of Railroad Commissioners, and always has been hostile in his attitude toward the railroad companies.

Commissioner Eastman, as we have seen, is an advocate of government ownership, and a man who has no faith in private management and favors government management, can hardly be relied on to help to so regulate the railways under private management as to enable them to prosper and furnish good and adequate service.

So much for the attitude of a majority of the present members of the Commission.

Commissioner Harlan favored a larger advance in rates than was granted in the five per cent case and advocated a larger advance in rates than was made in the original decision in the 15 per cent case. He said emphatically: "The record, in my judgment, demonstrates a proposition that has long been clear to me, viz., that a rate is a public question and that the existing rates, aside from any interest that the owners of the railroads may have in the matter, could well be advanced in the public interest, in order that assurance may thus be given for the early enlargement of our transportation facilities." Subsequent developments have shown that Commissioner Harlan had more foresight than either the members of the Commission who favored granting only part of the 15 per cent increase or those who opposed any increase, but he has not been reappointed by President Wilson.

The Cummins bill, which is pending in Congress, provides for the restoration of its old power of rate regulation to the Interstate Commerce Commission before government operation is abandoned. The Esch-Pomerene bill, which has the backing of the Interstate Commerce Commission, provides that when the railroads are returned to private operation the Commission shall exercise practically supreme power in the fixing of rates, and gives it no instructions as to how it shall regulate them except that it shall make them "reasonable" and in doing so shall take into consideration the cost of labor and other operating costs.

The *Railway Age* long was disposed to favor the concentration of all authority for the regulation of rates in the Interstate Commerce Commission, under instructions, however, that it must make the rates sufficient to enable the railways adequately to develop their facilities. We supposed that the members of the Commission had learned as much about the regulation and operation of railroads from the experience of recent years as had other people. The recent utterances of Commissioner McChord and Commissioner Woolley had greatly reduced our optimism. The recent statement of Commissioner Eastman has destroyed it.

The present crisis in the railroad industry demands frank speaking. The members of the Commission deserve commendation for having told just where they stand. With the past record and present views of the members of the Commission before it, Congress can have no excuse for acting on any false assumption as to what the Commission will do with any authority which it may be granted. It should be plain beyond peradventure to Congress, in the light of these things, that if the Commission is given, as proposed in the Esch-Pomerene bill, complete authority over rate-making, with no express instructions to make rates sufficiently high to enable the carriers adequately to develop their facilities, or to so make them as to enable the roads to earn an average of, say, at least six per cent, it is as certain as any future thing can be that the Commission, as at present constituted, will not make rates that will be adequate. If the Commission does not make rates adequate the expansion of railroad facilities will not be revived and private management will break down.

But if private operation is to be foredoomed to failure from the start, why return to it? Private ownership and operation will be as harmful to the country as government ownership and operation unless private operation is allowed to be carried on under a policy of regulation which will enable the railways to earn adequate net returns. The *Railway Age* is opposed to government ownership and operation. It is also opposed, however, to a return to private operation under legislation such as the Esch-Pomerene bill, which, instead of causing a revival of the prosperous operation and adequate development of our railroads, would merely insure that their prosperous operation and adequate development would be made impossible.

If we cannot get needed reforms in our policy of regula-

tion now, after 18 months' experience with government operation, we never shall be able to get them; and if we are never going to be able to get them we should frankly recognize the fact that government ownership sooner or later is inevitable. If government ownership sooner or later is inevitable, let us take it now. If we don't want government ownership either now or later, let us adopt a policy of regulation under which private management can be made successful.

Government Ownership in Canada

CANADA IS DRIFTING into a policy of more and more extensive government ownership and operation of railroads. "Drifting" is the right word, because its extension of this policy is not the result of thorough and intelligent consideration by either public men or the public. Canada has had a good deal of experience with government ownership, and yet its people, if one may judge by what is said by most of the newspapers and by persons met casually on trains and in hotels, know little about what that experience has been. Furthermore, the Canadian public, although it is being committed to a policy of extensive government ownership, seems to know almost nothing about the question of principle involved or the experience of other countries with government ownership.

Referring in a recent article in the *Railway Age* (June 20, page 1155) to the trend toward government ownership in Canada, J. L. Payne, Comptroller of Statistics of the Department of Railways and Canals of that country, said: "The point to keep definitely in view is that the far-reaching changes of 1918 and the current year came about without a direct decision being reached by either the government or the people on the underlying principle. Nobody may say at this moment that the judgment of either the administration or the voters of Canada has been declared in favor of or against state ownership of railways as distinct from corporate ownership. Whatever may happen in that regard in the future, scarcely a single aspect of the whole matter has been presented as a clear-cut issue." Mr. Payne was careful to state that he did not write as an advocate or an opponent of government ownership, but merely to present the facts.

While Canada is thus drifting into the extensive adoption of a policy to the probable consequences of which neither her public men nor her people have given much consideration, it is worth while to recall some of the history of government ownership in that country. The people of Canada don't seem to know it, but the history of government ownership in their own country is as replete with evidence and arguments against that policy as that of any other country in the world. It is a remarkable fact that in a land where some of the most conspicuous successes of private management have been achieved and some of the most conspicuous failures of government management have occurred, there should be a strong and steady drift toward more and more extensive government ownership.

Canada now has about 40,000 miles of railway in operation. Of this, about 17,000 miles, or 44 per cent, is being operated directly or indirectly by the government. Recently —and especially since the Canadian Northern was taken over—the management of the government lines has been left very largely in the hands of experienced railroad men appointed on their merits. If this should continue to be the case the results of government management in the future would be much better than in the past. There is much ground for fearing, however, that in the future, as in the past, political changes in Canada will have evil effects on railroad management; and if the losses incurred in the operation of the present and prospective very large government railroad system should be as large in proportion as have been those incurred in the past by the Intercolonial, the Prince Edward Island, and other government lines, the burden imposed upon the taxpayers of Canada by the railway deficit would be so huge as very seriously to interfere with the progress and development of the entire Dominion.

In order to give the people of both the United States and Canada more information than they have had regarding the past history of government ownership in Canada, the *Railway Age* begins this week the publication of a series of three articles regarding Canada's experience which have been written by Harold G. Villard. In the article which we publish this week Mr. Villard goes back about 70 years, to the time when Nova Scotia began the construction of the first government line in Canada—a provincial line, which is now a part of the Intercolonial. He shows that the time it took to build this railway was greatly underestimated, that it cost more than twice as much as was originally expected, that it steadily failed to earn its fixed charges and usually failed to earn its operating expenses, and that it was the cause of serious political scandals.

It may be said that this is all ancient history and that government management would not be conducted now as then. The fact is, however, that the Intercolonial, of which Nova Scotia's Provincial Railway became a part, always has lost money as steadily as did the Provincial Railway. Besides, railways which have been constructed in Canada much more recently under government auspices—notably, the National Transcontinental, which cost three times the amount estimated—had had somewhat similar results. In a later article Mr. Villard will review briefly the history of the Temiskaming & Northern Ontario, which was built in comparatively recent years by the Province of Ontario, and which at times has been held up as a good example of successful government construction and operation.

Perhaps by reviewing the history of government ownership in Canada we may strengthen the opposition to it in the United States, and at the same time reduce Canada's tendency to drift into it. If, however, nothing can prevent Canada from drifting farther and farther into government ownership, it is at least desirable that its true history in that country should be told as a means to helping government management to avoid in future the mistakes of the past. Our readers in the United States, Canada and elsewhere will find Mr. Villard's chapters on Canadian government ownership both instructive and highly entertaining.

The World's Coal Shortage and Electrification

THE PRESS DESPATCHES from London, quoted in the Foreign Railway News column of this week's issue, indicate that there is in the United Kingdom a serious condition, which, if it is not promptly remedied, is going to prove of world-wide importance. England is on the point of giving its coal miners increased wages, and effective July 16, 1919, it will, through the so-called Sankey award, also reduce the coal miners' day underground from eight to seven hours, and "subject to the economic position of the industry at the end of 1920," the hours of labor underground are to be reduced to six. This has already resulted in an attempted increase of six shillings in the price of coal to British industries, and Sir Auckland Geddes has expresed the fear that this increase may have to be made nine shillings, two pence. Combined with this there has been a very considerable decrease in the output of coal.

Sir Auckland Geddes has estimated that with the seven-hour day there will be produced in the year beginning July 16, the effective date of the reduction in hours, only between

214,000,000 and 217,000,000 tons, whereas in 1913 the output was 287,000,000 tons. An increase in the price of coal to British industries is handicap enough in the competition which Great Britain has to meet as the greatest export nation of the globe. But the shortage of coal is even more serious and is of even greater world-wide importance. Coal has always been one of Great Britain's greatest factors in export trade. In 1913 her exportable surplus was 77,000,000 tons. In the twelve months beginning in July, 1919, it is estimated that there will be only 20,000,000 tons available for export. This means that South America, Italy, Spain, South Africa, as well as many other countries, are going to be short of coal and that prices for coal in these countries, already twice as high as before the war, are going still higher. Considering that the mines of France were destroyed by the Germans and the fact that the product of the mines of the Ruhr and the Saar will be needed in Germany and in France, it is evident that America is the only other country that can supply coal for the countries mentioned, as not having suitable supplies of their own. This, if it works out as expected, will give the United States the great export trade in coal that Great Britain formerly had, but from the international railroad point of view it is going to mean much more.

The *Railway Age* has had articles recently on the consideration that is being given to electrification in Sweden, Brazil, Italy, France, Belgium and other countries. With the high price of coal, even if large supplies are secured from America, the use of hydro electric power must increase. That electrification is on an upward trend and that great extensions of electrified line are to be expected in many countries in the near future, seems a natural conclusion.

Wabash

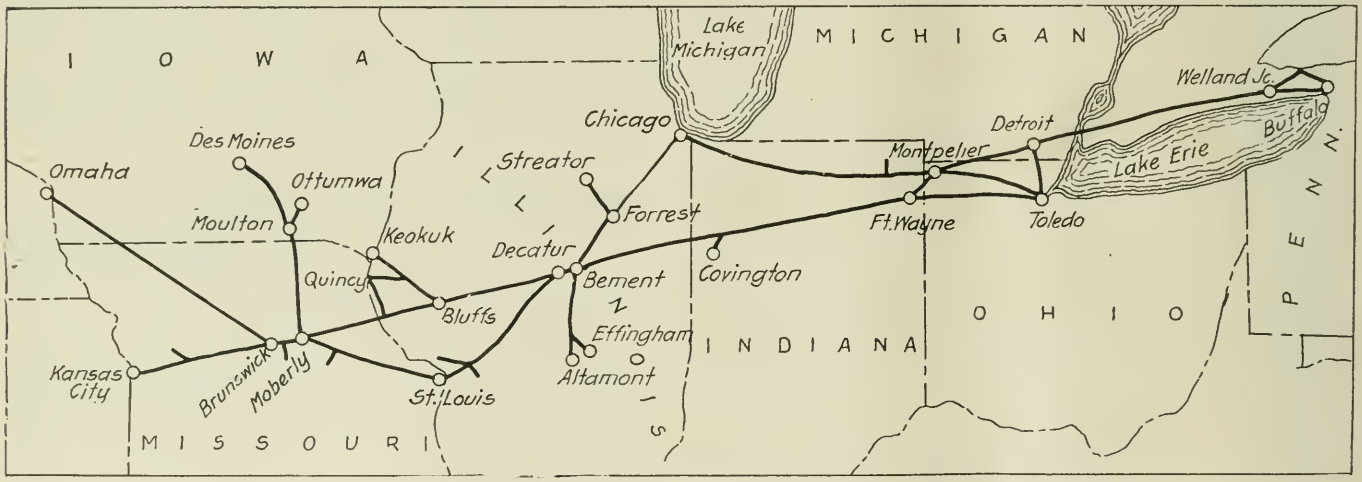
The Wabash was reorganized and taken out of the hands of receivers November 1, 1915. Prior to the receivership, which took place in 1912, the company had struggled along for a number of years, just scraping off the rocks of receivership, without money for wholly adequate maintenance, much less for keeping abreast of the development of modern railroading. During the receivership the property was greatly improved. The reorganization was a drastic one and the new company, except for a rather small working capital, entered into possession with good prospects of successful operation. Insofar as gross earning power was concerned the property more than justified the predictions of the reorganization committee. The earnings for the calendar year 1917 amounted to $40,472,000, as compared with the estimated earnings on which the reorganization was based of $37,659,000 for the fiscal year ended June 30, 1917. In 1918 the property earned $48,246,000.

During the receivership and in the following period up to January 1, 1918, $15,840,000 had been spent for additions and betterments from the sums provided for this purpose in the reorganization plans. In addition $5,860,000 surplus earned after payment of dividends on the preferred "A" stock since November 1, 1915, to January 1, 1918, was spent for improvements and $2,258,000 interest bearing securities were retired. A total of $2,310,000 was paid out in dividends during this period.

In addition to the extra heavy charges for maintenance during the receivership necessitated by deferred maintenance and improvement work which tended to bring down the operating income for the first part of the test period on which the government rental is based, the expenditure of the large sums for additions and betterments during 1916 and 1917 tended to increase the earning capacity of the road in 1918, for which increase in earning capacity no allowance is made in the standard rental contract. Since the receivership the company has bought 25 Santa Fe type locomotives, 2,300 steel underframe freight cars and placed steel underframes and steel draft gears on 7,000 additional freight cars and installed superheaters on 150 locomotives. The government in 1918 got the benefit of all these improvements. It is rather interesting to note that Chairman W. H. Williams in his report to stockholders estimates that the installation of superheaters on 150 locomotives increased "the operating efficiency over 15 per cent."

Notwithstanding the war conditions, the operation of the property in 1918 strongly reflects the improvement in its condition during and since the receivership. With total operating revenues of $48,246,000 in 1918, as against $40,472,000 in 1917, operating income amounted to $6,785,000. This compares with $10,539,000 operating income in 1917. Net income amounted to $5,668,000 in 1918, comparing with $4,227,000 in 1917. This net income (to the government) in 1918 compares with an average net operating income for the test period of $5,867,000. The company claims that instead of this latter amount it is entitled to $8,681,000 rental.

As an indication of the benefit which the government received from improvements made during the test period, the increase in trainload is striking. The average revenue trainload in 1918 was 606 tons and in 1917 568 tons. This was in spite of the fact that there was an average of 10.07 empty freight cars per train-mile in 1918, as against 9.37 in 1917. A big improvement in car loading is to be noted.



The Wabash

The tons of freight per loaded car averaged 24.40 in 1918, as against 21.79 in 1917. The loaded car mileage was reduced from 219,393,000 in 1917 to 188,961,000 in 1918, and empty car mileage from 78,180,000 in 1917 to 75,752,000 in 1918.

There was a falling off in freight tonnage, due apparently to a deflection of traffic to other lines. The total tonnage carried in 1918 amounted to 17,106,000 tons and in 1917 to 18,156,000 tons. Of the total tonnage in 1918, 8,421,000 tons originated on the Wabash and 8,685,000 tons was received from connections. Of the total in 1917, 8,420,000 tons originated on the Wabash and 9,736,000 tons was received from connections. The principal changes in the character of the commodities carried were an increase in the proportion of products of agriculture in 1918 and a decrease in the proportion of products of mines. Thus, in 1918, the total tonnage of products of agriculture was 3,321,000, or 19.4 per cent of the total tonnage carried, whereas in 1917 the tonnage of products of agriculture amounted to 2,791,000, or but 16.4 per cent of the total tonnage carried. Products of mines amounted to 6,544,000 in 1918 and to 7,202,000 tons in 1917, these being, respectively, 38.3 per cent of the total tonnage in 1918 and 39.8 per cent in 1917.

Handling a smaller freight tonnage and running a less number of both freight train-miles and passenger train-miles, the Wabash under government operation had an average of 17,332 employees in service in 1918, as against 16,563, the average for the previous year under private operation.

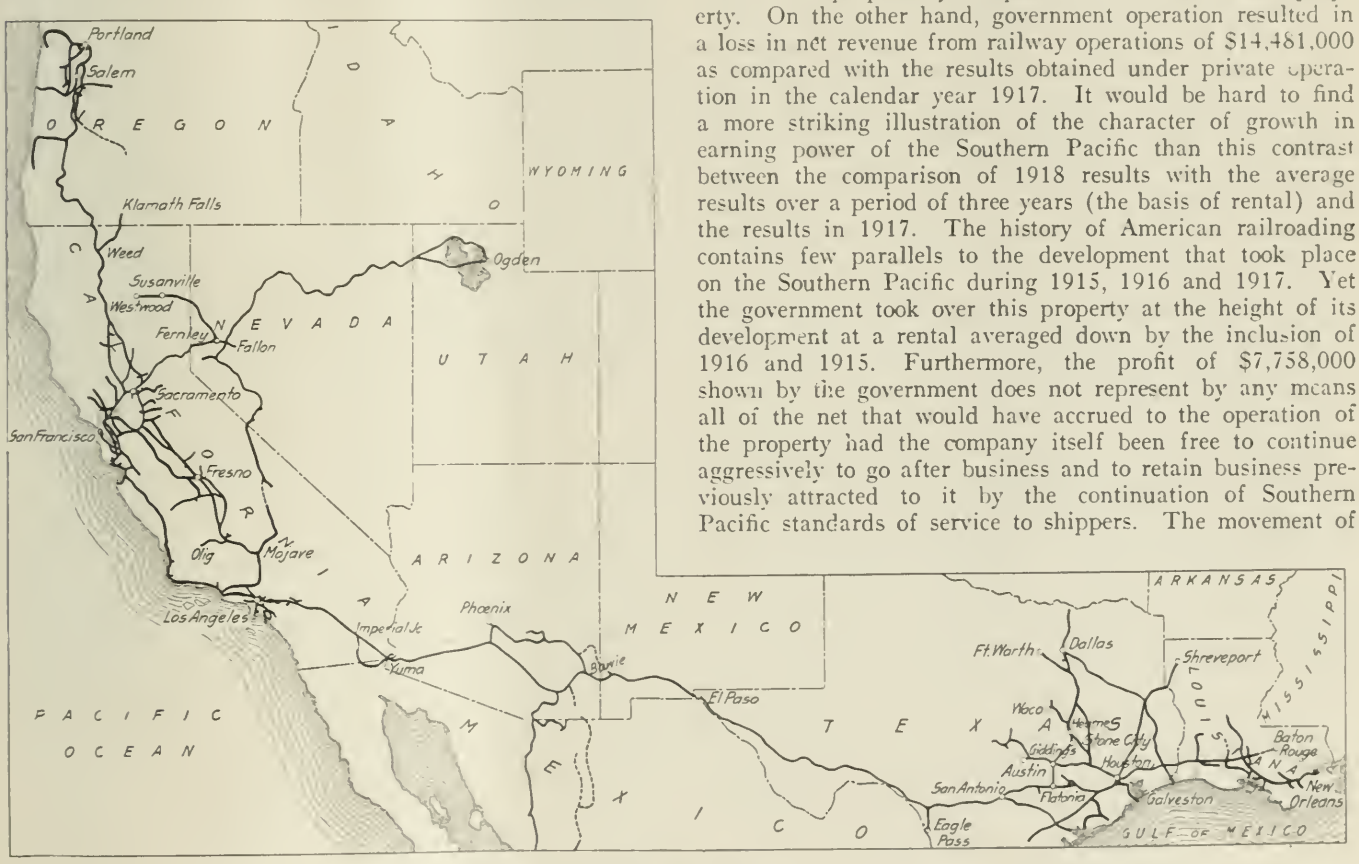
The Wabash was hard hit in 1918 by the increase in cost per ton of fuel. In 1917 coal averaged $1.977 per ton. This low cost was probably due to the hold over of contracts made in previous years. Apparently these contracts ran out, or many of them did, in 1917, for in 1918 the average cost of coal was $2.639.

The following table shows the principal figures for the operation of the property by the government in 1918 and the corresponding figures for private operation in 1917. This is not the income account of the company in 1918:

	1918	1917
Total mileage operated	2,519.49	2,519.06
Freight revenue	$34,498,242	$29,342,855
Passenger revenue	9,993,359	7,673,810
Total operating revenues	48,246,411	40,471,998
Maintenance of ways and structures	6,104,353	3,961,075
Maintenance of equipment	9,497,765	5,466,120
Traffic expenses	711,877	1,039,212
Transportation expenses	22,489,629	16,888,331
General expenses	1,099,241	918,040
Total operating expenses	40,124,609	28,468,896
Taxes	1,334,103	1,458,624
Operating income	6,785,398	10,538,851
Gross income	9,653,173	11,098,969
Net income	5,668,339	4,227,105

Southern Pacific

GOVERNMENT OPERATION of the Southern Pacific in 1918 netted the government a profit of $7,758,000, over and above the rental which the Administration paid the Southern Pacific and proprietary companies for the use of the property. On the other hand, government operation resulted in a loss in net revenue from railway operations of $14,481,000 as compared with the results obtained under private operation in the calendar year 1917. It would be hard to find a more striking illustration of the character of growth in earning power of the Southern Pacific than this contrast between the comparison of 1918 results with the average results over a period of three years (the basis of rental) and the results in 1917. The history of American railroading contains few parallels to the development that took place on the Southern Pacific during 1915, 1916 and 1917. Yet the government took over this property at the height of its development at a rental averaged down by the inclusion of 1916 and 1915. Furthermore, the profit of $7,758,000 shown by the government does not represent by any means all of the net that would have accrued to the operation of the property had the company itself been free to continue aggressively to go after business and to retain business previously attracted to it by the continuation of Southern Pacific standards of service to shippers. The movement of deciduous fruit from the Pacific Coast and of live stock and packing house products were very large in 1918, and the demand for California canned goods for shipment overseas was very great. The lumber business was good and the shipbuilding activities on the Pacific Coast increased many classes of traffic in addition to the movement of raw materials used specifically in the building of ships.



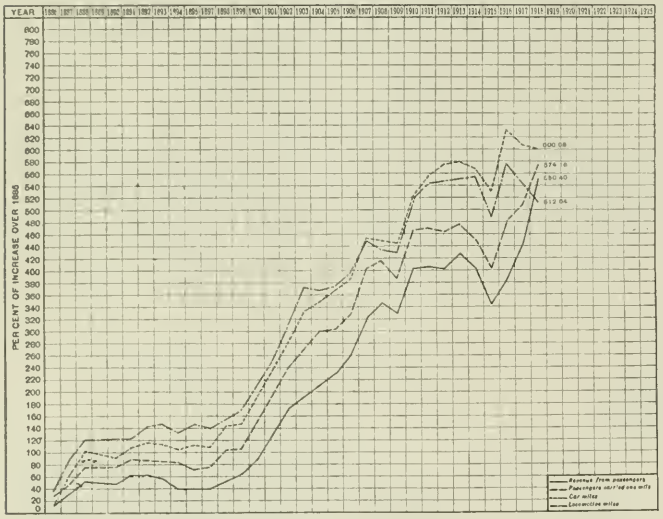
The Southern Pacific

In commenting on these conditions, Julius Kruttschnitt, chairman of the executive committee, in his annual report to the stockholders, says:

"These conditions, combined with the absence of regular steamship service through the Panama Canal and along the Pacific Coast, would have insured to your lines under the management of your own organization a volume of traffic at least equal to that of the calendar year 1917, which

produced the largest gross earnings in the history of the company; but, after the management of your lines was taken out of the hands of your officers, the closing of the traffic agencies through which daily intercourse with your patrons had been maintained, the disturbance of the relationship of both rates and service to the disadvantage of your lines, and the diversion of traffic to competitive routes, resulted in your rail lines transporting 653,707,093 ton miles of freight less than handled during the preceding year, a decrease of 4.87 per cent."

In 1918 total operating revenues amounted to $221,611,000, comparing with $193,971,000 operating revenues in 1917. Total operating expenses in 1918 amounted to $162,722,000, compared with $120,602,000 in 1917. Tons of revenue freight carried in 1918 totaled 44,014,000, a decrease of 964,000 tons, or 2.14 per cent. Ton mileage of revenue freight was 12,765,000,000 in 1918, a decrease of 654,000,000 ton miles or 4.87 per cent. Freight train mileage decreased in even greater proportion, amounting to 20,417,000 in 1918, or 2,467,000 less than in 1917, a decrease of 10.78 per cent. Freight locomotive mileage totaled 26,091,000 in 1918, which was 2,730,000 less than in 1917, a decrease of 9.47 per cent. The average number of loaded cars to a train was the same in the two years, an average of 24 cars each year. But there was on an average almost one more empty car per train, making the average of the total number of cars per train between 34 and 35 in 1918, and less than 34 in 1917. The revenue freight train load averaged 577 tons in 1918, an increase of 5.59 per cent over 1917. The average load per loaded car was 24.29 tons in 1918 and 22.97 in 1917, an increase of 5.75 per cent.



Passenger Service and Traffic

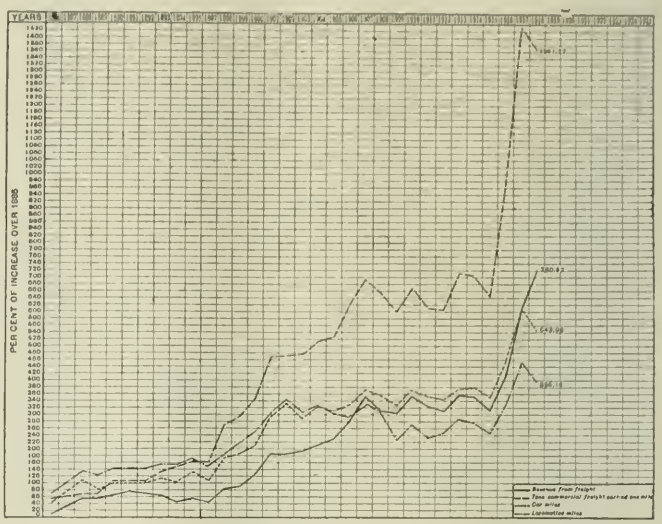
Showing by Years to December 31, 1918, the Per Cent of Increase Over the Calendar Year 1885

The revenue per ton per mile of freight was 1.113 cents in 1918, as against 0.923 cents in 1917, an increase of 21.59 per cent.

Mr. Kruttschnitt brings out in a striking way how small a part of the increased cost of living to the consumer is made up of increased transportation charges. He says: "In the period from 1910 to 1919 the price of dressed beef originating in Chicago and transported to New York increased from 22½ cents to 40 cents per pound, or, expressed in our smallest unit of value, 175 mills, while the freight rate increased 2.4 mills, or only 1.4 per cent. The price per pound of ham and bacon transported between the same points increased 205 mills, whereof the increase in freight rate was responsible for 1½ mills, or only 0.73 per cent. The increase in the cost of a suit of underwear transported from Boston to Chicago in the period 1910 to 1919 was 1,250 mills, to which the increase in freight rate contributed 3 mills, or 0.25 per cent. A pair of shoes, transported from Boston to Chicago in the same period, increased in price 3,500 mills, of which the increase in freight rate was responsible for 6 mills, or 0.16 per cent.

"No coin is small enough to represent any of these increases in cost, but if the dealer should add one copper cent in each case to the 1910 prices, to reimburse him for the increased cost of his commodity due to increased freight rates, he would grossly overcharge the purchaser in every case.

"He would make him pay nearly double the proper amount in the case of a pair of shoes, and over six times the proper amount in the case of a pound of ham or bacon."



Freight Service and Traffic

Showing by Years to December 31, 1918, the Per Cent of Increase Over the Calendar Year 1885

Passenger business was helped by a considerable troop movement, and revenues were increased somewhat through the establishment of the three-cent-a-mile rate, although this did not help western lines as much as it did eastern lines. Passenger revenue in 1918 amounted to $52,995,000, an increase of $8,120,000, or over 18 per cent. The number of passengers carried was 26,624,000 (excluding ferry suburban passengers), an increase of 12 per cent. The average journey per passenger, however, was slightly shorter, being 42.21 miles in 1918.

Increases of 47 per cent in expenses of maintenance of way, 81 per cent in expenses for maintenance of equipment exclusive of depreciation and retirements, and of 27 per cent in the cost of transportation seem high, although the increase in transportation is lower than that of many other large American systems. It is rather interesting to compare these percentages of increase in 1918 over 1917 with the percentages of increase in 1918 over the three-year test period. Maintenance of way increased 48 per cent, maintenance of equipment 83 per cent (including depreciation), and transportation expenses 70 per cent. It would appear that either transportation expenses in 1918 were held down remarkably well as compared with 1917, or that maintenance expenses were comparatively more liberal in 1918 than in 1917. This latter assumption, however, is by no means borne out by the figures for units of work done in maintenance.

In 1917 473 track miles of new 90-lb. steel rail was used for renewals, as against 373 miles in 1918. In 1917 1,200,000 burnettized ties were used in renewal, as against 1,473,000 in 1918, and 1,877,000 untreated ties were used

in renewal in 1917 as against 2,417,000 in 1918. The number of tie plates used in 1917 was 2,644,000, in 1918 1,910,000. The number of continuous rail joints used in 1917 was 522,000; in 1918 302,000. The number of feet of untreated timber used in repairs and renewals in 1917 was 15,978,000; in 1918 5,822,000. At the end of 1917 43 per cent of all locomotives were in thorough order, 31 per cent in good order, 15 per cent requiring repairs and 11 per cent in shop, while at the end of 1918 46 per cent were in thorough order, 29 per cent in good order, 14 per cent requiring repairs and 11 per cent in shops, and yet the cost of repairs per locomotive, exclusive of replacements and depreciation, was $4,758 in 1917 and $8,804 in 1918. It is hard to readjust one's ideas of maintenance costs to appreciate what it means for repairs of locomotives to average nearly $9,000 per locomotive. Repairs of passenger cars is almost equally bad insofar as increase in cost is concerned. In 1917 the average cost for repairs alone averaged $826 per car; in 1918 the average was $1,426. Repairs of freight cars averaged $104 in 1917 and $194 in 1918. The cost per hundred miles run was 62 cents in 1917 and $1.34 in 1918.

The Southern Pacific has been very liberal in expenditures for maintenance of its equipment in years past. It has been liberal also in providing ample equipment for the business to be handled, and at the time the government took over the road the company had orders outstanding for 57 locomotives, 41 passenger cars and 718 freight cars, and was building in its own shops 56 locomotives and 3,808 freight cars. The director general, however, refused to sign a contract with the Southern Pacific unless the company would agree to buy 1,000 box cars at a cost of over $3,000,000. The Southern Pacific Company claims, apparently with a good deal of justice, that the design of these cars was poor and their cost was excessive and that in buying them they yielded only to major force.

In 1918 there was a total of $20,188,000 spent for additions and betterments on the Southern Pacific system Taking into account the equipment retirements, etc., the net increase in investment in road and equipment was $14,714,000.

In 1909 the Southern Pacific issued $81,814,000 four per cent 20-year convertible bonds. The holders of these bonds had the privilege of converting their bonds at par value into common stock at 130 up to June 1, 1919. Of the total issue of bonds, $26,657,000 or 33.39 per cent were converted up to the day of the closing of this privilege. Taken in its full significance, this is a remarkably comprehensive commentary on the success of the Southern Pacific in the face of conditions generally adverse to railroad development and profitable operation.

The following table shows the principal figures for operation in 1918, 1917, and the average for the three years of the test period:

	1918	1917	Three Years' Test Period
Mileage Operated	11,181	11,127	10,978
Freight Revenue*	$142,030,791	$123,845,562	$101,747,123
Passenger Revenue*	52,965,302	44,875,012	39,561,045
Total Railway Operating Revenue	221,611,206	193,971,400	155,148,196
Maintenance of Way and Structures	25,824,726	17,522,352	17,454,799
Maintenance of Equipment	40,747,835	28,261,507	22,266,503
Traffic Expenses	2,244,269	3,121,417	3,075,421
Transportation Expenses	86,184,508	68,778,430	59,449,283
General Expenses	4,925,247	4,584,982	4,127,596
Total operating expenses	162,722,372	120,001,823	99,469,518
Operating Income	49,430,475	58,505,253	47,736,670

CORPORATION INCOME ACCOUNT FOR 1918

Standard return (rental)	$38,421,846
Miscellaneous operating income	4,317,995
Non-operating income	28,448,906
Gross income	71,188,748
Net income	24,000,529
Dividends	16,404,055
Surplus	7,686,474

Delaware & Hudson

THE DELAWARE & HUDSON carried less freight in 1918 than in 1917. The falling off in tonnage occurred almost entirely in the freight received from connections. In 1918 24,934,000 tons of revenue freight were handled by the Delaware & Hudson and of this tonnage 14,231 tons originated on the company's own lines and 10,703,000 tons were received from connections. In 1917 the total tonnage handled was 26,748,000 tons, of which 14,396,000 tons originated on the company's lines and 12,352,000 tons were received from connections. Under private operation, the Delaware & Hudson is a competitor of the Rutland and the New York Central for business from Albany to Canada. Less directly it competes with the Boston & Maine route to Canada. Under government operation freight was routed in accordance with regional orders irrespective of the wishes of shippers. Other roads in eastern territory showed large increases in freight business and it is safe to assume that the Delaware & Hudson, under non-competitive conditions and government operation, did not handle the business that it could have handled under private management and competitive conditions.

Total operating revenues in 1918 amounted to $34,790,000, comparing with $29,936,000 in 1917. Freight revenue amounted to $30,105,000, in 1918 and to $25,323,000 in 1917. The increase in freight revenue was, therefore, but 19 per cent or less than the average increase in freight rates alone.

Without large increases in gross to offset increased wage schedules, net was hard hit. In 1918 the operating ratio was 90.12 per cent; in 1917 this raio was 78.08 per cent. Total operating expenses in 1918 amounted to $31,354,000 as compared with $23,375,000 in 1917. Transportation expenses amounted to $16,556,000, an increase of 30 per cent over 1917. This is not abnormally high as compared with other eastern roads.

The freight train mileage in 1918 totaled 5,173,000, of which 93,000 was light as compared with 5,180,000 in 1917, of which 105,000 was light. The number of loaded freight cars per train was 23 in 1918 and 24 in 1917. The number of empty cars was 12 in 1918 and about the same in 1917.

The average revenue train load was 770 tons in 1918 and 748 tons in 1917. The number of tons of revenue freight per loaded car mile was 34 in 1918 and 32 in 1917. The average haul of freight was 163 miles in 1918 and 148 miles in 1917.

Although much larger sums were spent on both maintenance of way and maintenance of equipment, the physical units, showing the amount of replacement in maintenance of way, were smaller in 1918 than in 1917. Maintenance of way and structures cost $3,738,000 in 1918, comparing with $2,501,000 in 1917.

The total number of ties laid in replacement and betterment in 1918 was 242,000, of which 187,000 were untreated pine ties and 36,000 untreated oak ties. This compares with a total number in 1917 of 335,000, of which 225,000 were untreated pine and 70,000 untreated oak.

The total tonnage of rail laid in replacement and betterment in 1918 was 12,614 comparing with 14,952, in 1917. The cost averaged from $32 per ton for open hearth 90-lb. rail to $20 per ton for second-hand 90-lb. rail in 1918, and prices were about the same in 1917.

The number of locomotives in service at the beginning of the year, 1918, was 474; 23 were added and 6 were destroyed during the year. The number of freight cars at the beginning of the year was 18,295 and 244 were added and 478 retired during the year. The number of passenger cars at the beginning of the year, 1918, was 468; none were added and 14 were retired.

Maintenance of equipment cost $9,536,000 in 1918, com-

paring with $6,055,000 in 1917. Of course, repairs to equipment and renewals of equipment are distinct, so that the much larger sums spent for maintenance of equipment may reflect not only higher wage costs but actually more work done, although no data is available to make an accurate comparison.

The rental which the government is to pay the company is $7,415,000. In 1918, operating income amounted to $2,585,000, and gross income to $4,050,000. Disregarding any adjustments which may be made, the amount which the government will receive from the operation of the Delaware & Hudson will be somewhere between these two income figures. The road, therefore, has been operated during 1918 at a considerable loss. In the *Railway Age* of May 9, an extended comment was made on the development of the property as described in the annual report of President L. F. Loree to his stockholders. The figures used in the present comments are those reported to the Interstate Commerce Commission by the federal auditor. The record of the development of this, one of the oldest American railroads, compared with the record of the results of government operation in 1918 makes a striking contrast, explainable in part probably because of abnormal conditions, but, nevertheless, an interesting contrast.

The following table shows the principal figures for operation of the property under the government in 1918 and under private management in 1917:

	1918	1917
Mileage operated	910	879
Freight revenue	$30,104,926	$25,322,988
Passenger revenue	2,804,056	3,020,185
Total operating revenues	34,789,864	29,935,625
Maintenance of way and structures	3,737,523	2,501,166
Maintenanceof equipment	9,536,063	6,654,710
Traffic expenses	254,673	325,557
Transportation expenses	16,556,076	12,702,049
General expenses	1,052,963	1,071,236
Total operating expenses	31,353,784	23,374,755
Taxes	849,289	855,551
Operating income	2,585,123	5,701,869
Gross income	4,049,526	.....
Net income	3,577,217	.....

The corporation income account is as follows:

	1918
Rental	$7,415,149
Gross income	10.602,781
Net income	4,714,792
Dividends	3,825 272

New Books

Cambria Steel Handbook. Prepared and compiled by George E. Thackray, C.E. 603 pages, illustrated, 4½ in. by 6¾ in., flexible binding. Published by the Cambria Steel Company, Philadelphia, Pa.

This is the twelfth edition of the Cambria handbook and in addition to a thorough revision of all data pertaining to the various structural steel sections manufactured by the Cambria Steel Company, it contains a large amount of new material covering the wider range of structural steel sections now manufactured, and includes additional tables of use in calculations involved in the design of structures in which the sections are used. Among the new sections for which illustrations and properties are included in the new edition are a number of bulb angles, small channels for cars, ship channels, T-bars and three sizes of rolled steel car stakes. Among the large number of new tables which have been added are weights of flat and corrugated steel sheathing, roof truss dimensions and stresses, sizes of spikes and wood screws, square roots and cube roots of fractions, weights of circular steel plates, trigonometric formulae, and similar information.

Letters to the Editor

The Dunkirk Wreck and the Deadly Angle Cock

New York.

To the Editor:

Nearly forty-seven years have passed since the automatic air brake came into use as a means for controlling the motion of railway trains, and for over thirty years it has been in general use on both passenger and freight trains, yet it still retains that fundamental element of danger—the closed angle cock.

With the automatic brakes now in general use, the train may be charged, the brakes tested and everything put in working order before leaving the terminal, and yet before or after the train departs, an angle cock may be closed between the engine and tender, or elsewhere in the train, without the knowledge of the engineman or of any member of the train crew and thus deprive them, at the critical moment, of the only means on which they rely for safely controlling the train. This may be caused accidentally through something falling upon the angle cock, by a tramp accidentally or maliciously, or by an employee forgetting to open a closed angle cock. There have been many cases of the last.

No more convincing evidence of this truth is required than that furnished by the investigation of the recent rear collision at Dunkirk, resulting in the loss of many lives, the serious injury to a score or more of passengers and a heavy loss in property damage, due to an angle cock being closed between the engine and the first car.

It is reported as a result of the investigation that the engineman of the second train shut off steam probably half a mile east of the distant signal, and that he began to sound the whistle signal for brakes at about the time the locomotive passed the distant signal, which was some 6,000 ft. east of the point at which the collision occurred. The evidence indicated quite positively, therefore, that the angle cock on the rear of the tender must have been closed before passing the distant signal, or at any rate but very little later. The engineman probably realized he was powerless to stop his train fully a minute and a half before the collision occurred.

It has remained for the Automatic Straight Air Brake Company to provide against this menace to the safety of the movement of passenger and freight trains by the development of a brake designed on superior principles, in which, when an angle cock is closed, the brakes apply within a few seconds. On the other hand, a sluggish feed valve does not cause the brakes to apply.

The application of the A. S. A. brake depends merely upon a brake pipe reduction being made, and is positive and precise regardless of the *rate* of reduction, which is such a vital element in the operation of other types of brake equipment. With brake pipe leakage of, say, two pounds per minute, which is a reasonable assumption for a train of that character, it may be positively asserted that had A. S. A. brake equipment been in use on Train No. 7, the train brakes would have been applied before the collision occurred, with the result of, if not entirely preventing the accident, at least greatly mitigating the severity of the collision and reducing the extent of the disaster. Had the angle cock been as far back as the water station pans the A. S. A. brake would have stopped the train without any collision whatever. It is obvious that the improved brake is an urgent necessity for the protection of lives and property in the daily operation of the railroads.

Spencer G. Neal.

Railway Electrification in France and Belgium

Important Plans Under Consideration in Both Countries—Especially Desirable in France, with Large Water Supplies

By Robert E. Thayer
European Editor of the *Railway Age*

Paris, June 16, 1919.

Along with other matters of railroad construction in France and Belgium due to the devastation caused by the war, very serious consideration is being given to line electrification. In France this is particularly desirable on account of the increased cost of coal, and because of the fact there are in certain sections of the country large water supplies, which can very easily be used for the operation of hydro-electric plants.

Committees of railway men and engineers have been formed in both countries, and a committee of French railway engineers has already arrived in America to study the situation there.

Electrification in France

M. Claveille, Minister of Public Works and Transports of France, in a report made on the future development of French railways, states that it is highly important for France to make the most of its vast resources in water power for generating electricity, particularly at a time when its supplies of mineral combustibles are not going to be sufficient to meet the needs of its industries. With this end in view, he had an inventory made, at the end of 1916, of the available hydraulic power of the public water courses, and later reports were requested for each region, showing exactly the quantity of hydraulic energy which could be used by the public services, employing the most modern methods, without completely using up the energy of the watercourses. A particular study was to be made of the economical use of electricity for motive power on railroads, the kind of traffic, its density, the grade of the lines, and the difference in cost of each region being considered.

The Service of the Control of Railroads, in agreement with the technical services, is in charge of the studies to be made regarding the use of hydro-electricity on the railroads. Particularly attention is to be paid to the fair division of electric power between the public services and agricultural and industrial interests, and committees were formed made up of officers of the Government, manufacturers, etc.

The special committee appointed to draw up a program for the electrification of the principal railroads has pursued its studies with energy and by the end of March, 1919, had been able to gather together much valuable data concerning the use of hydro-electricity. Its program proposes the electrification of 5,220 miles of lines as follows:

Paris-Orleans	1,926 miles out of a total of 4,839 miles
Paris, Lyons & Mediterranean	1,367 miles out of a total of 6,040 miles
Midi	1,926 miles out of a total of 2,524 miles

With the traffic of 1913 the kilowatt-hour consumption would have reached:

Paris-Orleans	280 millions kw-hr.
Paris, Lyons & Mediterranean	550 millions kw-hr.
Midi	330 millions kw-hr.
Total	1,600 millions kw-hr.

With the estimated traffic in the immediate future the consumption is estimated at:

Paris-Orleans	560 millions kw-hr.
Paris, Lyon & Mediterrean	1,100 millions kw-hr.
Midi	600 millions kw-hr.
Total	2,260 millions kw-hr.

In determining upon lines to be electrified, the Midi and the Paris-Orleans considered the relation of the cost of electric power as compared with the cost of power with steam locomotives, and the comparison showed that mountain lines with sufficient traffic should be among the first to be electrified. They also considered the location of the source of hydro-electric energy in relation to the lines, and the importance of this power to other industries.

On the Paris, Lyons & Mediterranean, however, the possibility has been considered of using electricity on lines of low grade where there is a heavy traffic, even before putting it on mountain lines where the traffic of these lines is very small.

The proposed sources of electric power are the following:

For the Paris-Orleans—The Upper Dordogne River and its branches.
For the Midi—The Pyrénées.
For the Paris, Lyons & Mediterranean—Certain waterfalls in the Central Plateau and in the Alps, and the enormous reservoir of energy formed by the great plants at present existing or going to be constructed in the region.

The probable cost is estimated as follows, based on prices before the war:

Paris-Orleans	$94,000,000
Paris, Lyon & Mediterranean	93,000,000
Midi	148,000,000
Total	$335,000,000

With the traffic of 1913, electrification would save 1,500,000 metric tons of coal, and in the near future the economy should not be less than 3,000,000 metric tons.

A special committee has been formed for the purpose of studying the use of electric energy. It at first obtained all the information possible from the principal electric companies, and it will use this as a basis for improving the present legislation, if necessary, in order to promote the development of the distribution of power. Members of the committee have already visited America to study conditions there. The committee has also had a general map made of France, showing the present plants and the lines for distribution of electric power.

Electrification in Belgium

The plans for electrification on the Belgian State railways has not progressed to the same extent as on the French railways. An extensive commission has been formed, however, for consideration of the work. This commission is under the direction of Le Baron Ancoin, a member of the Belgian Senate, with M. Jacquin, who carries on the active work of the committee, as general secretary. He is located at 25 Rue de la Charité, Brussels. The commission has been divided into three sections, one considering the distribution of power, which is under the direction of M. de Loneux, Director General of electric power of Belgium; a second section to consider the rolling stock to be used, which is under the direction of M. Gerard, General Secretary of the Belgian State railways; and a third section on the management, which is under the direction of M. Tondelier, who is President of the Belgian State railways. Both English and French expert engineers are included in this commission; two of the members are, at the present time, in America with the French commission.

While no definite plans have been adopted, a direct current system, using the third rail with 1,500 volts, and a three phase alternating current system with 50 cycles, is being considered.

The plan under consideration now is to electrify important

lines radiating from Brussels. The first line to be considered will probably be that between Antwerp and Arlon, a distance of about 147 miles. Consideration is also being given to electrification of the line from Brussels to Louvain, a distance of about 18.5 miles; from Brussels to Charleroi, a distance of about 35 miles; from Brussels to Braine-le-Compte, a distance of about 18.5 miles; from Brussels to Enghien, a distance of about 18.5 miles; and from Brussels to Ghent, a distance of about 36 miles.

Government Ownership a Dead Issue

Charles E. Elmquist, president of the National Association of Railway and Utilities Commissioners, has written a letter to Joseph B. Eastman, of the Interstate Commerce Commission, taking issue with the position assumed by Mr. Eastman, also a former State railway commissioner, in his letter to the Senate Committee, published in last week's issue. Mr. Elmquist says:

"I agree with many of your statements, but must reject some of your conclusions, because the logic of your argument leads to immediate acceptance of the permanent policy of government ownership and operation.

"It is conceivable that the people may in the future declare for such a policy, but not, I take it, until they have become convinced that it will afford better and cheaper service than private operation, under strict regulation. Before we determine on the policy of government ownership and operation, however, the people of the country are entitled to have our regulating system rounded out and made adequate to cover all phases of the relations between the public service agency, the public it serves, and its employees. Just now the practically unanimous opinion of statesmen, economists, business men, shippers, stock-owners and bankers, railroads and regulating commissions, both state and federal, is that the hour has struck for the enactment of legislation which will strengthen the arm of regulation so as to prevent well known abuses, financial and otherwise, and give the public adequate service at reasonable rates, and at the same time enable the carriers to so function as to ensure a proper return upon capital, invite credit, make natural approved consolidations in the interest of the public, and secure the equipment, terminals and extensions necessary to the development of the country.

"In my judgment, Congress is preparing to take action along these lines. It should receive from regulating commissions that full measure of assistance which their wide experience and diligent study so well qualify them to render. Your communication raises an economic question of profound importance. This we need not now discuss, as there is one practical objection to your proposal which to me appears insuperable:

"The fact is that the railroads are going back to private operation. The President so stated in his message last June, and set the time at the end of the year. This harmonizes with the purpose of war-time government operation. It was as a war measure that the carriers were taken over. But the war emergency ended, apparently when the armistice was signed, and beyond all question with the signing of the treaty of peace. The President's decision is in accord with the overwhelming sentiment of the country. This sentiment is a natural reaction from the tremendous expansion of governmental activities during the war. That expansion devitalized business initiative outside of its own sphere, causing the curtailment of production and the interference with long established customs, usages and practices.

"The sentiment against government ownership and operation has been crystallized by the experience in shipbuilding and aircraft production, futile in results and appalling in losses; by the oft-repeated charges of extravagance in the ordnance and other war departments; by the unhappy and costly experiment in the operation of the wire systems with its largely increased charges and inferior service; by the character of the freight and passenger service rendered during government operation; repeated orders that ultimately increased wages about a billion dollars, although the Railroad Administration knew that it was facing a large deficit in operation; the extraordinary increases in freight and passenger rates at a moment's notice and without giving a hearing to those from whose pockets the money was to come; and the dreary story of losses ranging from $36,000,000 to $60,000,000 a month since the first day of the year, accompanied by the uninviting prospect of still another large increase in rates.

"The tide against government ownership and operation is practically irresistible. We are facing a condition, and, since private operation is inevitable, all students of regulation should join forces to secure the most helpful and constructive legislation.

"Advocates of government ownership and operation present very persuasive arguments. Equally persuasive arguments against such proposals can readily be suggested. In the present state of mind, however, the public will not give the subject fair consideration. And yet the proper determination of the question is so vitally important to the American people that it should not be considered until they are ready to listen to all arguments, give to them proper weight, and determine the question after frank and thoughtful discussion.

"It is apparent, therefore, that this is not the time to consider the question."

Casualties to Railroad Employees in April

The Safety Section, Division of Operation, of the United States Railroad Administration, has issued Bulletin No. 5, giving a summary of the statistics of persons killed and injured on Class 1 railroads for the month of April, 1919. The totals for each of the seven regions are given in a large table, and the aggregate for the whole seven is: Employees killed, 131; injured, 9,057; all cases, including employees, killed 511, injured 10,032. The same totals for April, 1918, are 229 employees killed and 11,706 injured; all cases, killed 685, and injured 13,143. The net decreases are employees killed 98, injured 2649; all cases, killed 174, injured 3,111.

The number of meetings held during the month by general and local safety committees was 2,089; attendance, 31,555; absentees, 5,921. The number of papers read and specific topics discussed aggregated 2,859; illustrative accidents, specifically discussed 4434. Safety rallies held, 189.

With this bulletin the manager of the Section, A. F. Duffy, sends to the safety supervisors copies of resolutions praising the work of the Section which have been adopted by the brotherhoods of conductors, brakemen, firemen and clerks. Among suggestions for improvement which have been received by Mr. Duffy is one that pictures used for interpreting methods of safety, should be those of real persons, not exaggerated imaginary pictures.

W. H. Moore, claim agent of the San Diego (Cal.) Electric Railway Company, was elected president of the Pacific Claim Agents' Association at its recent annual convention at Oakland, Cal. Other officers elected were: First vice-president, C. A. Blackburn, Butte, Mont.; second vice-president, J. B. Mills, Oakland; third vice-president, F. B. Oakley, Tacoma, Wash.; secretary-treasurer, D. F. Boynton, Portland, Ore.

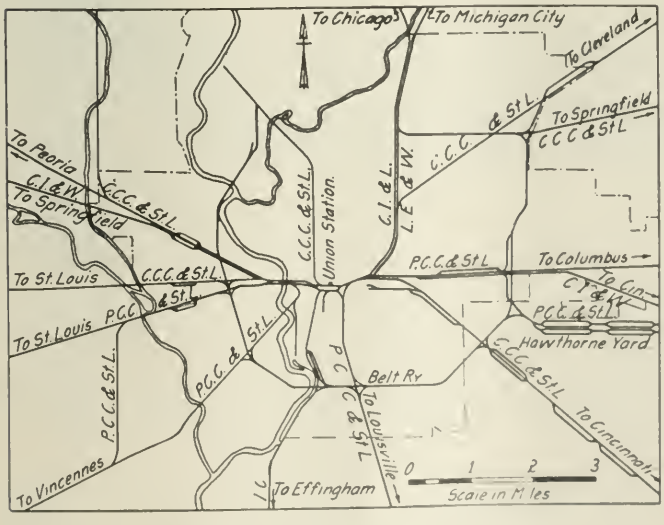
The Pennsylvania Lines and the Indianapolis Union Bridges Over South Street

Extensive Grade Separation Work at Indianapolis

The Improvements Embrace a Four-Track High-Level Line and Additional Station Facilities

IN ORDER TO COMPLY with an order of the City of Indianapolis requiring the elimination of all the street crossings at grade with the tracks in the business section of Indianapolis, Ind., the Indianapolis Union Railroad now has under way one of the most important track elevation projects undertaken in recent years. The improvement will, at the same time, provide adequate facilities for handling the large and rapidly increasing passenger and freight traffic in this city. This project involves all of the six railways having lines in the city and resolves itself into two sections.

The most important part is the work undertaken by the Indianapolis Union itself. This includes the substitution of a four-track, high-level line for the old two-track line at the street grade, eliminating all crossings at grade with the intersecting streets, and improved facilities at the Union passenger station, including a new high level train shed having a track capacity twice that of the old. The estimated cost of this portion of the work exceeds $8,000,000 and involves 110,000 cu. yd. of excavation, 105,000 cu. yd. of concrete, 500,000 cu. yd. of embankment and more than 50,000,000 lb. of structural steel. The second part of the project consists in revising the lines of the other railways concerned to conform to the new conditions created by the changes made by the Indianapolis Union.



Railroad Connections at Indianapolis

The Railroads of Indianapolis

As shown on the map of the city, the lines of six railways enter Indianapolis. Of these roads the Big Four has six divisions, the Chicago, the Peoria and the St. Louis divisions entering the city from the west, and lines from Cleveland, Springfield and Cincinnati from the east. The Pennsylvania has five divisions converging at Indianapolis, consisting of the St. Louis and Vincennes divisions from the west, the Louisville division line from Louisville, Ky., entering from the south, the Columbus division from the east and the Michigan division from Chicago from the north. The Cincinnati, Indianapolis & Western has a line extending from Springfield, Ill., on the west through Indianapolis to Cincinnati on the east and the Chicago, Indianapolis & Louisville, the Illinois Central and the Lake Erie & Western each has one line entering the city.

The Indianapolis Union railway was organized to provide both freight and passenger connections between these various lines. It was first formed in 1850, and in 1883 the present operating agreement was established. It operates a belt line for freight traffic 14 miles long and a passenger line 1.23 miles long. The belt or freight line is located in the outskirts of the city, thus avoiding the necessity of moving freight trains through the busy downtown section, but the passenger line passes through the heart of the business section of the city. All of the passenger lines of the six railways entering Indianapolis converge on this line and all of the passenger traffic into and through the city is handled over it into the Union station, which is also operated by the Indianapolis Union.

Under normal conditions the passenger line handles 87 trains into and 85 trains out of the Union station every 24 hours. The busiest periods are between 10:40 a. m. and noon and between 2 and 3 p. m. Between 10:40 a. m. and 11 o'clock five trains arrive at the station and three depart, while at 3 p. m. four trains depart and two arrive. The

Union station furnishes the only passenger terminal facilities in the city and serves as a through station for the Big Four, the Pennsylvania and the Cincinnati, Indianapolis & Western and as a terminal for the Illinois Central, the Monon and the Lake Erie & Western. Prior to Federal control through trains were also operated from Chicago to Cincinnati over the Chicago, Indianapolis & Louisville and the Cincinnati, Indianapolis & Western.

Prior to the present project the grades of the streets and the passenger tracks had been separated at West street and at the joint crossing of Kentucky avenue and Missouri street, in both cases the streets being depressed somewhat and carried under the tracks. An undercrossing at Illinois street had also been provided about 30 years ago and a steel viaduct at Virginia avenue carried the traffic of that street over the tracks, thus leaving grade crossings at Senate, Capitol, Meridian, Pennsylvania, Delaware, Virginia, New Jersey, East, Washington and Noble streets on the main line and at Pennsylvania and South streets on the wye connection to the Louisville division of the Pennsylvania.

The objectives of the improvements undertaken by the Union Railway were (1), the elimination of the crossings at grade with the streets enumerated above; (2), to provide additional line facilities for handling the heavy traffic for which the old two-track line was, and had been for years entirely inadequate, and (3), the provision of amplified station facilities, those of the old station being insufficient to handle satisfactorily the large transfer of mail, express and baggage between the 16 separate divisions converging at the station and between the railroads and the various city post and express offices.

The necessity for this improvement had long been apparent but had been deferred because of a law, recently amended, which limited the city to an annual expenditure of $100,000 for grade separation and the impracticability of undertaking the project in other than the comprehensive manner of the present plan, which was impossible under the old law if the municipality were to bear its just proportion of the expense of grade separation.

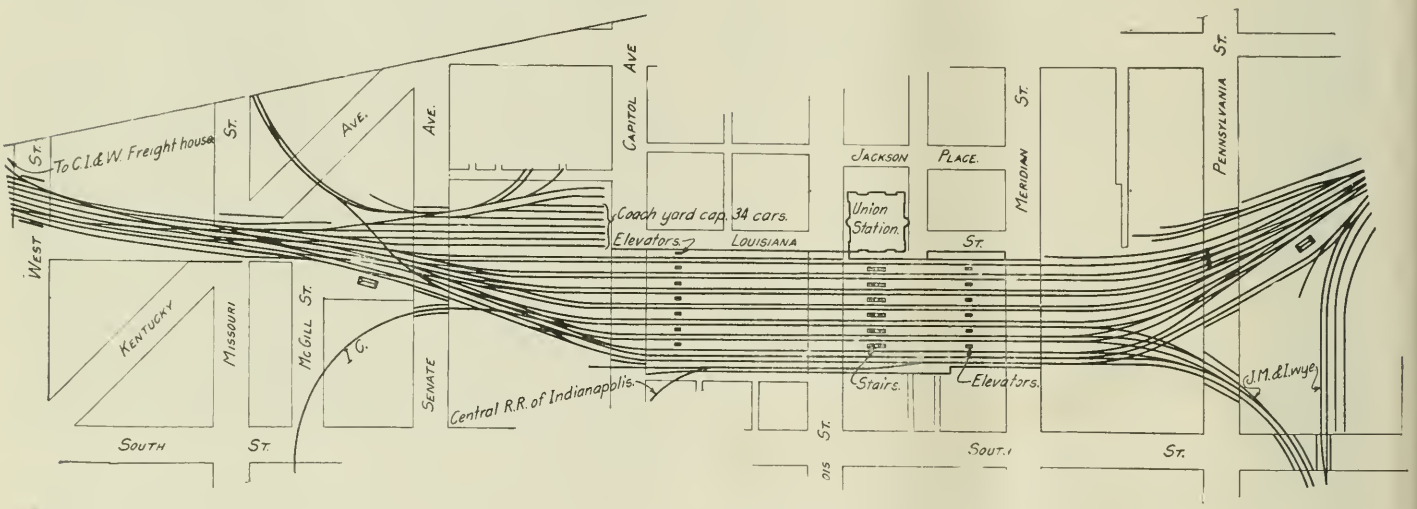
The amplification of the line facilities is provided for by the construction of two additional main tracks and the grade separation is accomplished by the elevation of the tracks, the grade of the streets remaining unchanged except as herein mentioned. The elevation of the tracks makes it possible to amplify the station facilities by utilizing the space under the new train shed tracks as the site for new baggage, mail, express, milk and other auxiliary station facilities. The present station will remain practically unchanged and it provides space for waiting rooms, ticket and restaurant facilities, telephone and telegraph, news stands, toilets, etc.

The present elevation work is confined to the district between Missouri street, where the grades had been separated previously and Washington and Noble streets. The plans provide for the closing of New Jersey street across the tracks, restoring Illinois street to its old level, removing the steel viaduct at Virginia avenue and the depression of this street to permit the construction of a subway and the carrying of all other intersecting streets under the tracks by means of subways.

Between Capitol avenue and Meridian street the new train shed extending between these streets will provide the support for the high level tracks. Outside of the train shed limits the general plan for the elevation is to support the track on fills, providing retaining walls where the width of right-of-way is insufficient to permit of slopes.

All of the retaining walls are of concrete and mass section design. The subways consist of steel bridges of trough floor construction supported on concrete abutments also of mass section design.

The first work done on the project was the diversion of Pogues run. Originally this creek flowed in an open channel closely paralleling the tracks in the district east of Meridian street. By its diversion into a double box concrete sewer (each box being 8 ft. high by 18 ft. wide) the old creek bed was made available for the additional right-of-way required through this section. This work was done by the city at a cost of $1,079.852, part of this cost being borne by the various railroads. Wherever the drain crossed under the location of a subway, foundations for the bridge supports were provided by placing three lines of columns, one on each side of the drain and one in the wall between the boxes. The girders resting on the columns spanning the drains were then placed.



Plan of the Station Layout

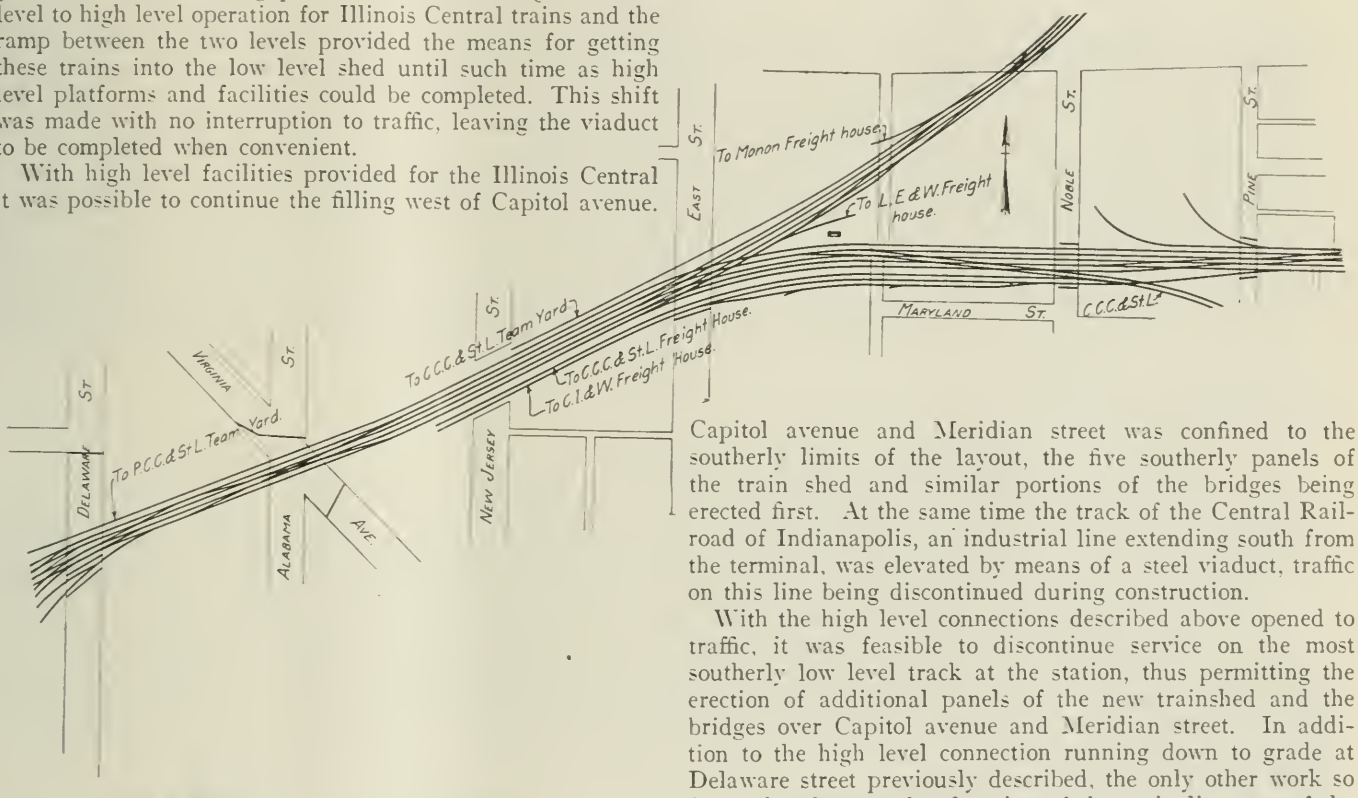
Construction Plan

The controlling factor in the construction program for this project was that of handling traffic and all of the work has been so planned as to interfere as little as possible with traffic during construction. After the completion of the Pogues run diversion had made available all of the property owned, work was begun on the construction of the subways at Senate avenue, Capitol avenue and Meridian street, on the train shed which extends between the latter two streets and on the fill west of Capitol avenue, enough of this embankment being placed to permit the construction of a ramp track between the level of the new train shed and that of the tracks at Missouri street.

At this same time the Illinois Central was engaged in the construction of its high level line between the new train shed and Henry street, about one-half mile south of the station, where it joined with previous elevation work thus completing the separation of grades for that railroad. The Illinois Central track was elevated by the construction of a reinforced concrete viaduct built approximately on the location of the old line.

During this period traffic over the Illinois Central was diverted to a temporary line built free of the new work except where it crossed under the new line to permit a connection being made with the low level tracks. This crossing necessitated the leaving of a gap in the viaduct. With the viaduct completed both ways from the gap and a track installed on the train shed connected with the ramp mentioned above to permit the Illinois Central trains to pass from one level to the other, it was only necessary to set in temporary bents to support the rails across the gap in the viaduct to change from low level to high level operation for Illinois Central trains and the ramp between the two levels provided the means for getting these trains into the low level shed until such time as high level platforms and facilities could be completed. This shift was made with no interruption to traffic, leaving the viaduct to be completed when convenient.

With high level facilities provided for the Illinois Central it was possible to continue the filling west of Capitol avenue.



East Approach to the Passenger Station

It also relieved the congestion at the low level to an extent and made possible the next step in construction, that of building the high level tracks on the west leg of the wye construction to the Louisville division of the Pennsylvania.

Prior to the present work and in connection with the recently completed Pittsburgh, Cincinnati, Chicago and St. Louis local freight facilities in Indianapolis, the tracks of the Louisville division had already been elevated south of South street. The present work comprised the construction of a high level line between the new train shed and these elevated tracks and included subways at the crossings of Pennsylvania and South streets.

The construction of this high level connection necessitated the wrecking of the boiler plant which furnished the steam for heating the station building and the installation of a new heating system which will be described in connection with the new station facilities. It also necessitated the construction of a temporary low level line over which the high level tracks were carried by means of a pile bridge. With the temporary bridge in place the embankment could be placed without interference with traffic.

This was followed by the construction by the Pennsylvania of a reinforced concrete viaduct south of South street and a steel bridge over South street to carry the tracks of the east leg of the wye and the placing of the fill for the high level tracks. A temporary low level track connection to carry the traffic was again necessary in this work and a run-off was installed between the viaduct and the low level tracks at Delaware street where the low level tracks had been raised about 7½ ft. under traffic to make this connection possible of operation. A fill was also made to carry two elevated tracks on the main line to the east, from the station running off to the partially elevated grade at Delaware street. These tracks are carried over Pennsylvania street by a temporary pile trestle. With these connections made it was possible to route any train into the station at either level as desired.

In order to interfere as little as possible with the operation of the low level tracks the first work in the district between Capitol avenue and Meridian street was confined to the southerly limits of the layout, the five southerly panels of the train shed and similar portions of the bridges being erected first. At the same time the track of the Central Railroad of Indianapolis, an industrial line extending south from the terminal, was elevated by means of a steel viaduct, traffic on this line being discontinued during construction.

With the high level connections described above opened to traffic, it was feasible to discontinue service on the most southerly low level track at the station, thus permitting the erection of additional panels of the new trainshed and the bridges over Capitol avenue and Meridian street. In addition to the high level connection running down to grade at Delaware street previously described, the only other work so far undertaken on the elevation of the main line east of the train shed, is another high level, single track connection which starts at grade on the main line just east of Virginia avenue, runs to the East and connects with the high level line of the Pittsburgh, Cincinnati, Chicago & St. Louis Railroad at Noble street, being carried over East street on a temporary pile trestle.

The Structures

The bridges at the various streets are of steel, trough floor type with concrete deck, supported by concrete abutments at the property lines and steel bents of columns and cross girders at the curb lines and center of roadway. All bridge floors are provided with membrane waterproofing.

The Meridian street bridge is somewhat different from the others and is the largest on the line, having a total weight of 3,800,000 lb. It consists of a main span 60 ft. in the clear and two sidewalk spans. The center span consists of forty-two 63-ft. girders, 5 ft. 4 in. in depth, each weighing 26.5 tons. A buckle-plate floor carries the concrete deck.

The train shed, which extends between Capitol avenue and Meridian street, provides space on the upper level for 12 passenger tracks with a combined capacity for 203 cars and

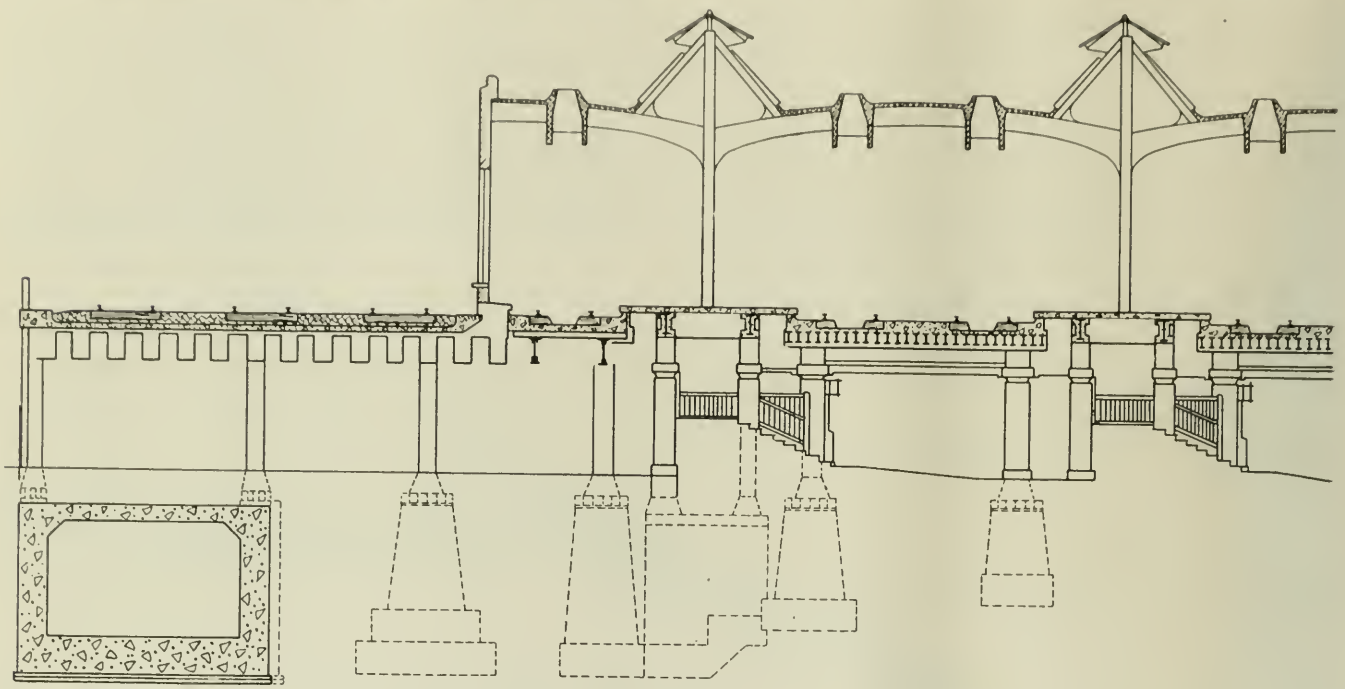
for two through freight tracks and a siding for mail, express milk, etc. The freight tracks are located on the southerly panels and are not covered. The passenger tracks are placed in pairs and are spaced 12 ft. 6 in. center to center between concrete platforms 16 ft. 7½ in. in width with the roof supports in the center of the platforms.

The lower level provides the space for station facilities. It includes a passenger concourse located symmetrically with the station building and extending the full width of the shed. Stairs lead from this concourse to each platform at the track level. This low level is divided into two sections by Illinois street which is bordered by drives reaching the various station facilities. A baggage tunnel under Illinois street connects the two sections.

The general baggage room, railway mail, telegraph office, baggage master's office, milk room, lamp room, and the power room for the hydraulic elevators are located in the easterly section of the low level, and the westerly section is devoted to facilities for handling express and United States mail. Loading platforms and elevators between the two levels are provided in each section.

The baggage tunnel is of reinforced concrete construction with the top consisting of encased I-beams under Illinois street on account of limited clearance. The bottom slab is over 3½ ft. thick and acts as an inverted beam for the purpose of transmitting to the soil heavy column loads super-imposed on the walls of the tunnel, this construction being made necessary by the fact that the south wall of the tunnel coincided with the property line. The floor slab on the inclined approaches, independent of the bottom slab, are eight inches in thickness including a two-inch wearing surface. The grades on the inclines are easy, all being less than 8 per cent. The artificial lighting in the tunnel is indirect, thus doing away with glare in the faces of truck operators, the electric lights being recessed into the side walls.

The heat for the entire layout including the station, is purchased from the Indianapolis Light & Heat Company, a commercial concern which supplies steam to various down-



A Part Cross-section of the Trainshed and Station Track Layout

View of the Steel Viaduct Carrying the Tracks Through the New Trainshed. The Old Trainshed Is Shown on the Right

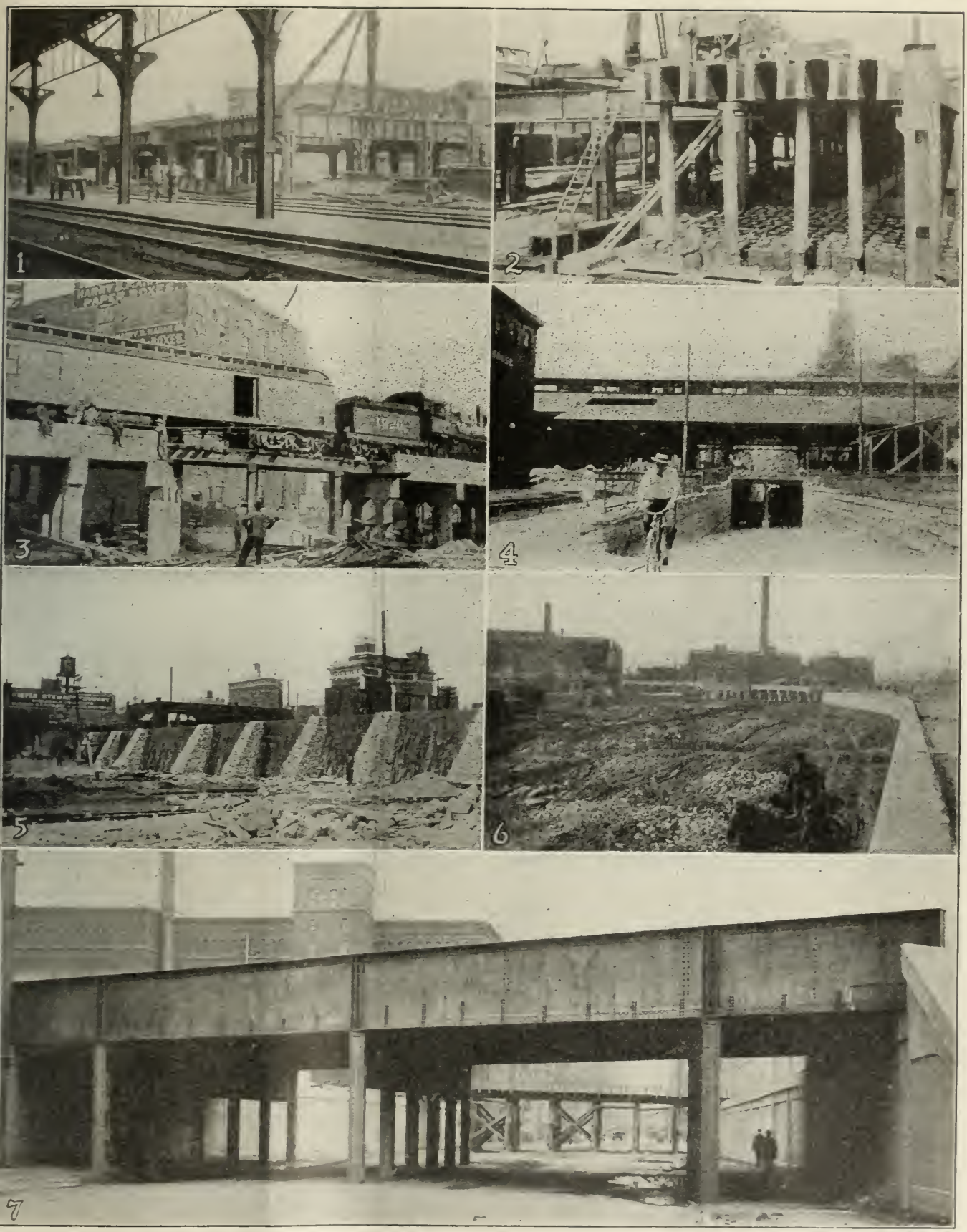
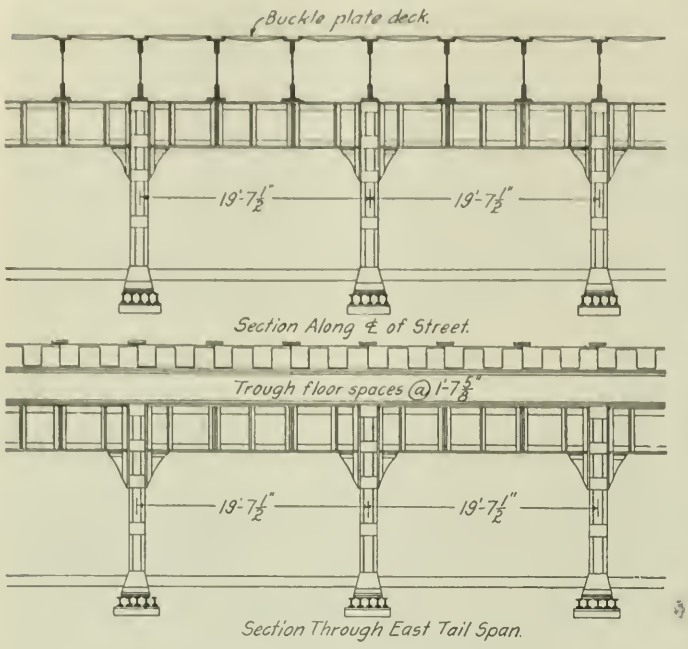


Fig. 1—Erecting the First Section of the New Trainshed. Fig. 2—Methods of Shoring the Trainshed Steel. Fig. 3—The Illinois Central Viaduct. Fig. 4—The Old Tunnel at Illinois Street. Fig. 5—Dry Packing Piers and Waterproofing. Fig. 6—Retaining Wall East of Capitol Avenue. Fig. 7—Indianapolis Union Wye Track Bridge Over Pennsylvania Street.

town buildings in Indianapolis. For this layout a combination of exhaust and live steam is used. The steam is carried from the commercial plant to the station, a distance of about



Typical Subway Construction

900 ft., in log insulation and then into a concrete tunnel provided for steam and other pipe lines, electric cables, etc. The main tunnel is 1500 ft. long with branches to the main building, elevators, power room, etc.

The power room contains the control apparatus for the hydraulic elevators and the main switchboard for the electrical system. The coils and fans for the special heating plant for the concourse are located in a room below the ground floor. The mail, express, baggage room, etc., and the building are heated by direct steam heat with the pipe radiators placed overhead to conserve wall space.

In all, 13 baggage elevators are provided, two in each long platform and one in the west end of the platform on the north side of the shed. These are all of the hydraulic type furnished by the Abell elevator company. The power plant for the elevators is designed to operate six elevators at one time and spring cushions are provided to take up the pulsations of the pumps.

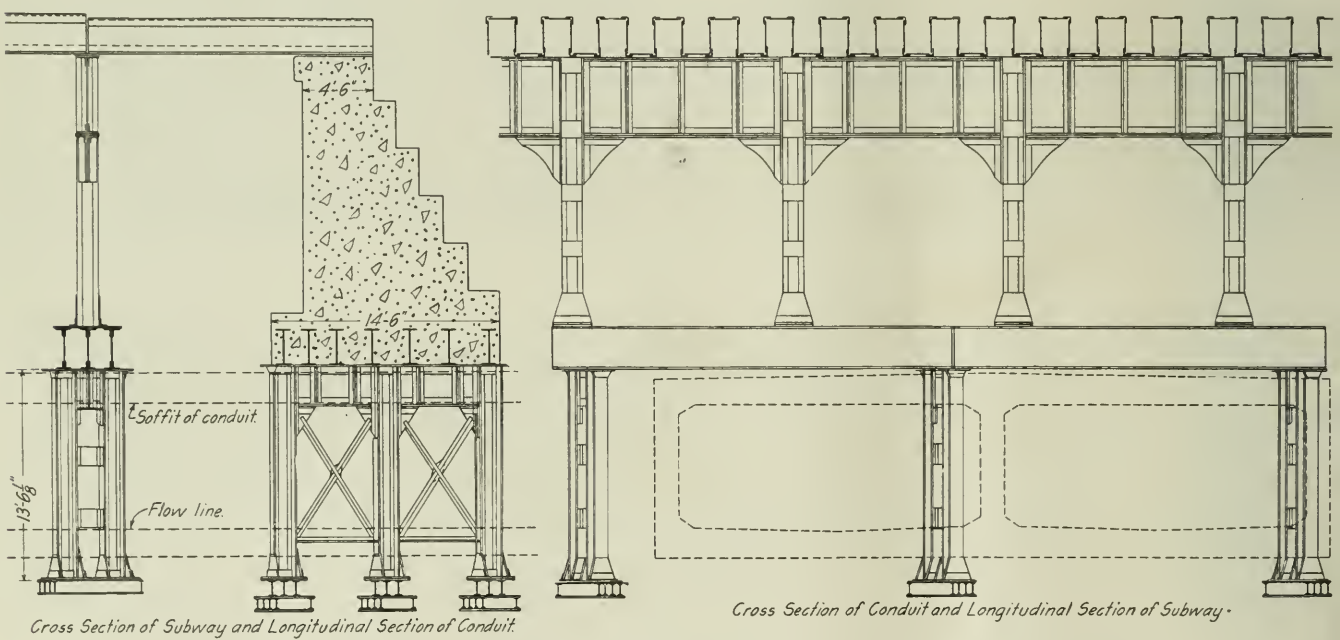
The erection of the steel work supporting the train shed was begun on the east end with the derricks placed on the Meridian street bridge. In placing the steel in that part of the floor of the trainshed structure carrying freight tracks, the ends of the troughs were shored up and brought to the proper level by means of jacks.

A ballasted deck floor is provided under the freight tracks. Under the passenger tracks the track structure was applied directly to the concrete floor. Both methods of track construction are shown in the cross-section of the trainshed.

New and interesting methods were developed in the construction of the passenger tracks. The track structure consists of short ties with standard screw spike construction. The tracks were assembled on the sub-floor as a base for the blocking and were then swung on a timber structure, consisting of a series of trusses spanning two tracks and extending 106 ft. longitudinally. These trusses were supported on the longitudinal dividing girders provided in the floor and the track was suspended from them by means of clamps and bolts, the bolts allowing for vertical adjustment. The tracks were lined by lining the trusses and when the proper grade and line was secured the finished floor was poured, the concrete being of the proper consistency to be worked thoroughly around and under the ties. Drainage is provided by means of a gutter in the center of each track leading to specially made down leaders provided with grate coverings.

Other Roads Affected by the Central Improvement

The new arrangement of the Union Tracks makes necessary extensive changes in the Big Four layout. The present line on its Chicago division east of Indianapolis occupies Louisiana street to a point just west of East street and extends in a northwesterly direction to a connection with the Indianapolis Union Tracks at Delaware street. This is a double track line and will be abandoned as a main line, but will be retained in service as a switching lead for industrial and team tracks located at New Jersey and East streets. By abandoning this line as a main line and constructing a new route a satisfactory grade will be obtained on



Details of the Structural Steel Frame to Carry Subway Over the Pogues Creek Conduit

the ladder track leading into the Big Four freight house, after it crosses Virginia avenue on a bridge adjoining that of the Indianapolis Union Railway. The new route connects with the Union tracks east of Noble street. By this scheme the elevation of the Big Four tracks will be confined to a distance of about 2,000 ft. as contrasted with approximately two miles of elevation work required if the old route were improved, including an additional bridge over Virginia avenue which would have rendered that street less passable. The relocation of the main line made necessary the purchase of considerable additional right-of-way in a residential section of the city, and while the line is to be generally carried on fills, retaining walls will be necessary at intersecting streets and alleys to allow the continuation of street traffic.

The Indianapolis division of the Big Four is affected by the improvement from a point west of the line of East Michigan street extended to an intersection with the tracks. From this point west the tracks will rise on an ascending grade, crossing over Market street and joining the general project at Washington street. In connection with the Indianapolis division work, the Alabama street team yards are to

The Baggage Tunnel Under Illinois Street

be elevated, crossing East street on the elevation and then descending to Alabama street. This is made possible by the closing of New Jersey street.

The Peoria & Eastern, one of the western divisions of the Big Four, is affected by the improvement at Capitol avenue, where a small team yard was elevated. This work is now completed. The changes in the St. Louis division and the Chicago division tracks west of Union Station are minor and confined to a distance of two blocks, where the Big Four owns trackage rights.

The Pittsburgh, Chicago, Cincinnati & St. Louis railroad is affected more than any other road by the elevation of the Union tracks. New inbound and outbound freight houses have been built, fronting respectively along Pennsylvania and Delaware streets and extending south to South street. This work was done in connection with the elevation of the Louisville division. The sites of the old freight houses, north of the Union tracks extending between Pennsylvania street and Virginia avenue will be utilized for elevated team yards. Extensive retaining walls are being built in connection with the latter work. Some elevation work will be required on the Columbus division which will join the elevated Union tracks east of Noble street and run off to present grade east of Cruse street.

The Lake Erie & Western, the Monon and the Cincinnati, Indianapolis & Western are indirectly affected by the improvement, certain rearrangements of local freight facilities being necessary because of the changes made in other lines. The Central Railroad of Indianapolis has elevated its tracks on a steel viaduct for a distance of approximately one-fourth mile to conform to the new arrangement.

The Indianapolis Union project is being carried on under the direction of T. R. Ratcliff, engineer maintenance of way of the Indianapolis Union Railroad at Indianapolis.

Plumb Plan Propaganda

The Plumb Plan League, organized to promote the adoption of the plan for government ownership of the railroads proposed by Glenn E. Plumb, counsel for the organized railroad employees, has embarked on an extensive campaign of propaganda for the plan and to secure members for the league to pay $1 a year dues. The plan was outlined in a statement before the Senate committee on interstate commerce by Mr. Plumb and has since been put in the form of a bill, with the co-operation of the officers of the railway labor organizations, the Non-Partisan League, the Farmers' National Council and various agricultural and civic bodies. Some of the details of the plan which were not specifically stated before the Senate committee have been made definite in the bill and are described in circulars distributed from the office of the Plumb Plan Lecture Bureau at Washington.

It is provided that the government shall buy the railroads on the basis of the actual number of dollars invested therein, paying for them either in cash or bonds bearing not over 4 per cent interest. Future extensions are to be built at the expense of the territory to be benefited, with such government help as may be deemed proper to be paid for out of railroad income. It is proposed that the railroads shall be operated by a corporation to be known as the National Railways Operating Corporation, without capital other than the operating skill and ability of the directors, officers and employees, who will constitute the corporation. Fifteen directors are to be chosen, one-third by the classified employees by election, one-third by the officers by election, and one-third by the President of the United States. Elected directors are to be subject to recall and appointed directors to removal by the President. It is proposed that the government shall lease to this corporation all railroad properties, to be operated as a single system divided into operating districts, managed by district railway councils representing the board of directors in local matters, and elected one-third by the classified employees within each district, one-third by the official employees, and one-third by the board of directors. The income of the operating corporation is to be applied to operating and maintenance expenses, renewals, interest and sinking fund payments of one per cent for the retirement of the bonds issued to pay for the properties. This, the circular says, "assures the early retirement of the bonds, after which the government will own the railroads free of debt." The net earnings remaining are to be divided equally between the government and the operating corporation and the corporation's half of the profits is to be declared as a dividend upon the amounts paid in wages, every classified employee receiving that proportion of the fund which his annual compensation bears to the total compensation of all classified employees and every official employed receiving that proportion which his annual compensation bears to the total compensation of all official employees, but every employed officer is to receive twice the rate of dividend that is given to the classified employee. The reason for this apparent generosity is explained in the circular, which states that the principal argument offered against the plan is that it would be pos-

sible for the officers and employees to combine and by raising wages absorb all profits so that there would be nothing to be divided between the corporation and the government. The bill proposes to provide against the possibility of such collusion by giving the official employees the double dividend rate on the ground that any increase in the level of wages would immediately wipe out the chance of an extra dividend for the official employees. The circular says their interest can be preserved only by maintaining the fixed wage level allowed the classified employees and obtaining for them the highest possible rate of dividend. The possibility of management and wage earners uniting to raise wages and salaries and thus absorbing profits and perhaps creating a deficit thus wholly disappears, the circular says. Apparently it is not considered necessary to provide such safe-guards against combinations of the employees to raise their own wages without the collusion of the management.

To protect the public from the payment of rates resulting in excessive profits, it is provided that whenever in one year the net profits received by the government shall equal or exceed 5 per cent of the gross operating revenues, the Interstate Commission shall immediately reduce the rates by an amount sufficient to absorb these profits and it is argued that every such reduction in rates will tend to increase the flow of traffic and again restore profits to their former level, again insuring a further reduction in rates.

The board of directors, according to the plan, would create, by negotiation with the employees, not less than three boards of adjustment of not less than eight members each, half from the classified employees coming within the jurisdiction of the several boards, and the other half from the official employees. These boards would decide all questions arising from the interpretation of established wage rates, wage awards, working relations, discipline cases and other disputes between the two classes of employees. Their decisions would be final except that where no majority decision can be obtained an appeal would lie to the board of directors. The board of directors would also create a central bi-partisan board of wages and working conditions to determine matters of salaries, wages, hours and other conditions of employment when brought before it by official and classified employees.

It is stated that over six million American citizens and voters have endorsed the plan. A saving of $250,000,000 a year is promised as soon as the plan goes into effect.

A million and a half copies of the circulars are being distributed by the league and membership applications are invited, both individual and lodge memberships. Membership buttons are to be given and "all individual members are authorized and expected to greet all fellow members wearing the insignia without further introduction" and all are asked to co-operate in the important task of educating public sentiment to the supreme importance of the plan. The object is to secure the enactment of the Plumb plan bill by Congress. This, the circular says, can only be accomplished by awakening public sentiment and securing public approval and endorsement. "Already Congress is aroused to the gravity of the crisis. Good work has been done in Washington during the present year. The first line trenches have been taken. The Senate and House are alert and watching. Government ownership of railroads has never been tested in this country. In 1918 amid war-time difficulties when Wall Street broke down Washington stepped in. After shifting its load to the government Wall Street continued to exercise its influence in railroad control. Private operation at public expense was the result. Extravagance and economy went hand in hand. Government administration worked wonders but it could not change human nature. Every railroad man knows the facts."

Another circular gives the A. B. C. of the Plumb plan by means of a series of questions and answers. This explains further how it is proposed to save $250,000,000 a year. For instance, the circular says, if the entire surplus is $500,000,000 and this is 10 per cent of the gross operating revenue, the government receives $250,000,000 and because this is 5 per cent rates are decreased 5 per cent and without new economies or new business the profits the next year would be only $250,000,000, but decreased rates mean more business and the prospect of a reduction in dividends would stimulate the employees to improve their operation by applying better methods.

Samuel Gompers, president of the American Federation of Labor, is honorary president of the league; A. B. Garretson, ex-president, Order of Railway Conductors, is honorary vice-president; Warren S. Stone, grand chief, Brotherhood of Locomotive Engineers, is president, and the vice-presidents are executive officers of 14 railroad labor organizations.

Elkhart to Toledo, 7 Cars, 70 Miles an Hour

EASTBOUND EXPRESS TRAIN No. 4, of the New York Central, on Sunday, May 14, being more than an hour behind time, traversed the division from Elkhart, Ind., to Toledo, Ohio, 133.01 miles, in one hour, 54 minutes, or at the rate of 70 miles an hour. From Millersburg, Ind., 18 miles east of Elkhart, to Nasby Tower, about 4 miles short of Toledo, a distance of 111.31 miles, the time was one hour, 27 minutes, equal to 76.76 miles an hour.

The train, in charge of Conductor Cantrick, consisted of 7 steel cars, weighing about 940,900 lbs. The engine, No. 4853, weighs, with its tender, about 250 tons, and it was run by H. Evans. The weather was clear.

This division of the New York Central, is as nearly straight and level, probably, as any road of equal length and importance in the United States, there being one tangent about seventy miles long. The time of the train, as reported by C. V. Cook, is as follows:

Miles from Elkhart	Station	Schedule time a. m.	Actual time a. m	Altitude
	Elkhart Station	10.40	11.47	764
.15	B Tower, Elkhart	....	11.48	764
10.23	Goshen Tower	10.55	12 00	798
18.03	Millersburg	11.05	12 08 p.m.	879
25.08	Ligonier	11.13	12.14	895
34.91	Brimfield	11.24	12.21	952
41.63	Kendallville Tower	11.33	12.27	976
48.00	Corunna	11.41	12.32	967
54.35	Waterloo Tower	11.48	12.37	916
62.26	Butler	11.57	12.43½	869
62.89	WB Tower, Butler, Ind.	....	12.44	864
67.84	Edgerton Switch, Ohio	12.03 p.m.	12.48	862
79.93	Bryan Tower	12.16	12.57	764
92.60	Archbold	12.31	1.07	739
100.88	Wauseon Tower	12.41	1.13	774
114.58	Swanton	12.56	1.24	....
124.06	Holland	1.06	1.31	637
129.34	Nasby Tower	1.13	1.35	....
133.01	Toledo, Union Station	1.20	Arr. 1.41	587

Railroads were crossed at Goshen, Kendallville, Waterloo, Butler, Bryan and Wauseon; at the crossing two miles east of Wauseon, and at Nasby Tower. Water was taken from track pans at Grismore, east of Millersburg; at Corunna, and at Stryker, about seven miles east of Bryan.

The principal significance of this record of speed is in the weight of the cars. Equally good time was made over this division, westbound, by the Twentieth Century Limited, sixteen years ago, (May 25, 1903,) but that train had only four cars. On June 8, 1905, a train of the Pennsylvania Lines, Western division, No. 18, eastbound, second section, three cars, was run 50 miles at 79 miles an hour; 100 miles at 77.2 miles an hour; and 200 miles, including two stops, at 71.3 miles an hour. On October 24 of the same year, a Pennsylvania special train of four cars, westbound, weighing 260 tons, was run from Crestline, Ohio, to Clarke Junction, Indiana, 257.4 miles, at 74.55 miles an hour. In this run a distance of 131 miles was covered at 77.81 miles an hour.

Doings of the United States Railroad Administration

Railroads Carried 4,276,949 Troops During the First Six Months of 1919—I. C. C. May Figures Issued

DURING the first six months of 1919, the railroads of the United States carried 4,276,949 troops on special and on regular trains. In addition, something like two million officers and enlisted men made railroad trips while on furlough. There were also approximately one million men who traveled to their homes from the camps where they were discharged. The aggregate, therefore, was approximately seven and one-fourth millions of military passengers who, in addition to the civilian passengers, were carried by the railoads from January 1 to June 30, 1919.

The average journey of the troops carried on special trains during that period was 660 miles. For other military passengers the length of the average trip is not available, but it was probably shorter than the average trip on special trains. Assuming that the general average journey was 500 miles, the seven and one-fourth millions of soldiers made approximately 3,625,000,000 passenger miles. While the final figures for June are not yet available it is estimated that the passenger miles of civilian passengers in the six months' period were approximately 17,737,000,000. The addition of the 3,625,000,000 military passenger miles will give an aggregate of approximately 21,362,000,000 passenger miles, an increase of 20 per cent. over the total of civilian traffic alone.

The military traffic during the first six months of 1919 required something like nine millions of train miles, or approximately one hundred million passenger train car miles for the one-way journeys. As in practically all cases the equipment had to be sent light in one direction, either going or returning, these figures should be doubled to express the aggregate transportation demand of our military traffic.

During the first two weeks of July, 160,633 soldiers returned from Europe, practically all of them being moved for long or short distances by railroad. The number arriving during the first week of July in which civilian passenger travel was also unusually high because of the occurrence of the Fourth of July, was 92,084, while the second week of July the number was 68,594.

The extraordinary demand on the passenger carrying equipment of the country explains why the Railroad Administration has not been able to meet all of the requests for excursion trains, and why in some cases the cars on regular passenger trains have been crowded. In the month of June alone the railroads transported 914,314 troops, not including men discharged or on furlough, most of them over relatively long distances, and the totals for July, when they are available, will probably be nearly as large.

As these returned soldiers must be moved long distances from the Atlantic ports to all sections of the United States, the passenger cars assigned to their trains are necessarily withdrawn from regular service for comparatively long periods.

Of the troops carried during the first six months of 1919, 1,642,348 were discharged soldiers who are carried at a rate of approximately 2 cents a mile. The approximately 2,000,000 officers and enlisted men who made railroad trips while on furlough during the first 6 months of 1919, traveled generally on a rate of approximately 1 cent a mile. Land grant reductions applicable to some railroads, particularly in the west, also resulted in some of the regular troop movements being made at less than the standard rate of 3 cents per mile, applicable to civilian travelers.

WASHINGTON, D. C.

The Compensation of the Georgia & Florida

In answer to the charge made by Wade H. Cooper before the Senate committee at the hearing on June 30, that John Skelton Williams, as director of finance of the Railroad Administration had ratified and approved a contract by which the government was required to pay that road "the sum of $88,000 per year net rental when that road had sustained a net loss of about $513,000 for the year previous," Mr. Williams has submitted to the Senate committee a letter from Director General Hines showing that the railroad referred to, instead of showing a net loss of about "$513,000" for 1917, had actually made in 1917, $105,643 net, and that Mr. Williams had had no part whatsoever in connection with the taking over of that road or the fixing of its rental. The letter is in part as follows:

"You did not have anything to do at any time with the negotiation of the contract which the director general made for the Georgia & Florida Railroad, or with the fixing of the amount of compensation, or any other term of the contract, or with determining whether or not the railroad should be under Federal control at all. From the very outset of the Railroad Administration you made it clear that you did not wish to have anything to do with the matter and your wish was strictly respected.

"I notice that Mr. Cooper's testimony refers to certain deficits with respect to the Georgia & Florida Railroad. The deficits stated by him are altogether different from the figures with which the Railroad Administration had occasion to deal. Under the federal control act the Railroad Administration's starting point in dealing with these questions was the operating income or deficit, i. e., the balance or deficit remaining after deducting from the operating revenues the operating expenses, taxes, car hire, joint facility rents, etc. I state in parallel columns the deficits mentioned by Mr. Cooper and the actual figures of net operating income or deficit with respect to this railroad:

Mr. Cooper's statement of deficits		Net operating income or deficit
1917 ..... $518,991	1917	(net operating income) $105,643
1916 557,408	1916	(net operating deficit) 10,472
1915 636,558	1915	(net operating deficit) 96,862
1914 461,197	1914	(net operating income) 57,397
1913 403,234	1913	(net operating income) 33,584
1912 245,277	1912	(net operating deficit) 13,806

"In conclusion permit me to say that you had no responsibility, either directly or indirectly, by affirmative action or by acquiescence, in dealing with this matter. Other members of the staff, including myself, assumed and discharged the entire responsibility of making the recommendation to the then director general, and he acted upon that recommendation."

Contracts Executed

The Railroad Administration has executed co-operative short line contracts with the Pelham & Havana and the Delaware Valley.

The Railroad Administration has executed co-operative short line contracts with the Pelham & Havana, the Delaware Valley, the Kentucky & Tennessee, the Augusta Railroad, the Rapid Railroad, the Live Oak, Perry & Gulf, the Tuskegee Railroad and the California & Southern.

Revenues and Expenses for May

The Interstate Commerce Commission has issued the following compilations, subject to revision, from reports of revenues and expenses of steam roads having operating revenues above $1,000,000 annually, including 184 Class I roads and 17 switching and terminal companies:

REVENUES AND EXPENSES FOR MAY

Item	May — Amount		May — Per mile of road operated		Five months ending May 31 — Amount		Five months ending May 31 — Per mile of road operated	
	1919	1918	1919	1918	1919	1918	1919	1918
1—Average number miles operated	233,469.34	234,153.29	.....	.....	233,441.25	234,100.24	.....	.....
REVENUES	Dollars	Dollars	Dolls.	Dolls.	Dollars	Dollars	Dolls.	Dolls.
2—Freight	286,701,098	263,258,643	1,228	1,124	1,328,476,287	1,175,615,721	5,691	5,022
3—Passenger	92,574,253	79,172,892	397	338	437,281,231	353,714,334	1,873	1,511
4—Mail	4,375,974	4,568,208	19	19	21,485,361	22,659,691	92	97
5—Express	9,208,334	10,221,406	40	44	42,748,527	47,170,087	183	201
6—All other transportation	10,349,842	10,508,177	44	45	46,929,146	46,084,410	201	197
7—Incidental	10,317,945	10,893,336	44	47	51,147,954	46,454,631	219	198
8—Joint facility—Cr.	531,016	491,650	2	2	2,723,002	2,267,208	12	10
9—Joint facility—Dr.	160,041	152,637	1	1	813,371	679,150	3	3
10—Railway operating revenues	413,898,421	378,961,675	1,773	1,618	1,929,978,137	1,693,286,932	8,268	7,233
EXPENSES—								
11—Maintenance of way and structures	68,898,116	49,534,025	295	212	304,441,957	220,567,840	1,304	942
12—Maintenance of equipment	95,382,142	75,024,766	409	320	476,268,178	356,597,714	2,040	1,523
13—Traffic	3,835,421	4,036,362	17	17	18,609,326	22,307,168	80	95
14—Transportation	173,540,030	147,010,239	743	628	866,784,855	731,846,937	3,713	3,126
15—Miscellaneous operations	3,987,364	3,064,929	17	13	18,572,791	14,613,818	80	63
16—General	10,356,021	8,499,554	44	36	51,457,357	42,440,430	221	181
17—Transportation for investment—Cr.	419,145	591,453	2	2	2,471,397	2,393,694	11	10
18—Railway operating expenses	355,579,949	286,578,422	1,523	1,224	1,733,663,067	1,385,980,213	7,427	5,920
19—Net revenue from railway operations	58,318,472	92,383,253	250	394	196,315,070	307,306,719	841	1,313
20—Railway tax accruals (excluding "War taxes")	15,835,371	15,707,920	68	67	77,087,357	75,298,521	330	322
21—Uncollectible railway revenues	54,413	40,300	...	...	293,685	250,384	2	1
22—Railway operating income	42,428,688	76,635,033	182	327	118,934,028	231,757,814	509	990
23—Equipment rents (Dr. Bal.)	1,788,975	2,613,951	8	11	7,808,787	11,204,088	33	48
24—Joint facility rents (Dr. Bal.)	1,177,346	686,597	5	3	5,909,791	5,173,524	25	22
25—Net of items 22, 23 and 24	39,462,367	73,334,485	169	313	105,215,450	215,380,202	451	920
26—Ratio of operating expenses to operating rev., per cent.	85.91	75.62	...	...	89.83	81.85	...	...

NOTE.—The average railway operating income corresponding to item No. 22 above for the month of May in the three years 1915, 1916 and 1917, included in the "test" period of three years ended June 30, 1917, was $351 per mile of line for the United States.

The increase in earnings for the five months period is 14 per cent as compared with 1918. As compared with the corresponding five months of the test period the increase is 41 per cent. The expenses, which increased 25.1 per cent as compared with last year, was 79 per cent higher than for the test period. Maintenance of way and structures shows an increase of 38 per cent over last year but 88 per cent as compared with the test period. Maintenance of equipment increased 33.6 per cent as compared with last year and 98 per cent as compared with the test period. Transportation expenses were 18.4 per cent higher than in 1918, but 74 per cent higher than in the test period.

The Railroad Administration statement regarding the May figures, says that inasmuch as the present rates are considered to be approximately 25 per cent. higher than they were last year, the increase in operating revenues of not more than 98 per cent would seem to indicate that total traffic as expressed in ton miles and passenger miles has fallen off approximately 12 per cent. The falling off in freight traffic alone amounted to 13.5 per cent. This decrease was partially offset by an increase in passenger traffic, the complete figures for which, however, are not yet available. In making further comparisons with 1918, it should also be borne in mind that the increased wages for May, 1918, were not charged into operating expenses until subsequent months.

It must also be remembered that the comparison between the five months' periods is substantially affected by the fact that the wage increases for these five months in 1918 could not be included in the accounts until later months, and that the rate increases approximating 25 per cent, which were in effect this year, were not effective during these five months last year.

Thousands of returned soldiers are being put back in their former positions on the Baltimore & Ohio, the Western Maryland, Pennsylvania and other railroads, according to a press despatch from Cumberland, Md. This is one result of the tremendous exodus of foreign railroad men and laborers to their own countries. Foreigners who are said to have moved in large numbers from West Virginia, when that State went "dry," to Pennsylvania and to Maryland have been leaving this country at a high rate for the past month, anticipating country-wide prohibition. They expect to secure lucrative work in their native lands and also have alcoholic stimulants. Six new coal mines have been opened or have resumed work on the Cumberland division of the Baltimore & Ohio, since June 15, increasing the demand for trainmen.

A Comprehensive Revised Interstate Commerce Law

Suggestion for Law Which Shall Correlate Laws Passed Since and Including That of 1887

L. F. LOREE, president of the Delaware & Hudson, has drawn up a revised Interstate Commerce law which has been sent to legislators and others interested, and which occupies about 95 printed pages. The provisions of the Act of 1887 and subsequent amendments are given in full, with those portions which it is proposed to omit placed in brackets, in italics, and the words which it is proposed to add shown in capitals. In a brief introduction Mr. Loree summarizes his purposes as follows:

"The act to regulate commerce of February 4, 1887, has been so many times amended that it is not possible to determine with certainty what the law now is without recourse to many volumes and much study. For this reason alone, a comprehensive revision and consolidation of the existing law, with the repeal of the original statutes, is desirable.

"Moreover, it is recognized on all hands that the law had become oppressive rather than remedial; that it tends to deprive the public of needed facilities and service and denies to legitimate investors the fair returns to which they are legally and morally entitled.

"The statute here proposed follows the present law as closely as the necessities of the situation permit. It is offered in the hope that proposals based upon 40 years' service, involving personal acquaintance with problems dealt with under many and varied conditions and in many aspects, will prove to be suggestive and helpful.

"It proposes extension of the power of the Interstate Commerce Commission to cover state rates which in any way affect interstate commerce.

"It proposes extension of the power of the Interstate Commerce Commission to labor disputes, requiring that wages and conditions of employment shall be just and reasonable. Employees should be forbidden to conspire to interrupt interstate commerce. Strikes should be permitted only on condition that the dispute must first have been submitted to the Interstate Commerce Commission and, subsequent to its decision (or its failure to decide within six months), there must be a vote to strike, which vote should be by secret ballot on a question defined by the Commission, the taking and counting of the vote being supervised by the Bureau of Interstate Transportation.

"It proposes that the Interstate Commerce Commission shall become wholly an adjudicating body, the terms of office of the commissioners, after the retirement of those now in office, to be extended to nine years; and the division of the country into five interstate commerce regions, following the natural traffic divisions of the United States one commissioner to have his office in each region, leaving three to sit in Washington. Commissioners assigned to regions should perform only such duties as may be devolved upon them by the three remaining in Washington, these three to exercise all the powers of the commission except those thus provided for.

"It proposes that the Interstate Commerce Commission shall be required, as soon as practicable, to fix, either for the United States as a whole or for each interstate commerce region, the percentage by which existing rates ought generally to be increased in order to meet expenses and provide proper revenues. No rates not exceeding the present rates by more than these percentages should be regarded as unreasonable in themselves, but any rate may be condemned in case it is found to produce unjust discrimination. Until these maximum percentages are made effective, the Secretary of the Treasury should pay to each system surrendered from Federal control the difference between the actual income and the standard return under the federal control act, if the actual income is less.

"It proposes that the power to suspend rates pending investigation should be abolished.

"It proposes to create a Bureau of Interstate Transportation to operate under the direction of a chief, to be designated from among the members of the Interstate Commerce Commission, but this commissioner, during the period of such designation, not to perform any duties as commissioner. This bureau should take over all the executive and administrative functions of the commission.

"It proposes that the Interstate Commerce Commission shall no longer be permitted to institute proceedings of its own volition, but provides that the Bureau of Interstate Transportation, as well as state commissions, trade organizations, individuals, firms and corporations may be complainants before the commission.

"It proposes that carriers shall be given power to exchange passenger transportation for advertising in periodicals. The practice of barter should be recognized to be as legitimate as are cash or credit transactions.

"It proposes to provide for immediate judicial review of findings under the 'Valuation Act.' The law already provides for such review, but does not clearly provide that it may be obtained immediately, and unless this is possible, it might not be obtainable until much of the evidence had disappeared.

"It proposes to repeal the commodities clause, the anti-pooling clause and section 10 of the Clayton Act and that the Sherman anti-trust law shall be made inapplicable to carriers subject to the Interstate Commerce law.

"It proposes that the Secretary of the Treasury shall be authorized to settle and pay claims on account of acts or omissions of federal officers during federal control and an account of just compensation for the use of properties. Many such matters will be left open at the end of federal control and there should be an expeditious method of obtaining just settlement without litigation, similar to that under which the War Department is now empowered to settle claims growing out of orders for munitions, etc. Appeal to the Court of Claims should, however, be allowed in cases in which agreement is found to be impracticable. Provision should also be made for funding of balances due the United States on account of additions and betterments to the properties during the period of federal control. The acceptance of serial notes payable within 15 years and bearing interest at a rate slightly above that which the government paid on the Victory loan would appear to be reasonable.

"It does not propose anything which would increase the number of federal officers and employees or the expense, to the taxpayers, of federal regulation.

"It does propose a restoration of the American concept of healthy competition with private responsibility and private reward, subject to affective means for the prompt correction of any rates which are found to be unreasonable in themselves or unjustly discriminatory. It would establish an impartial tribunal which would exercise powers that are judicial in their essential character and provide a separate executive, administrative and prosecuting agency, available to any interest requiring relief, while giving to the same impartial

tribunal power to determine labor controversies, thus protecting industry against unnecessary interruption of service.

"It does propose a desirable decentralization of regulative power and the prompt and equitable adjustment of claims arising out of federal control."

The bill is drawn in a form with which congressmen are entirely familiar and its comprehensiveness and form are both integral parts of the work. It is impossible, however, to print the bill in full in the *Railway Age* and a summary only, therefore, can be given of how the present laws are revised to accomplish the 11 purposes which Mr. Loree has attempted to accomplish. The following is such a summary:

In section 1-A of the new law the words "and to every employee of any such common carrier or carriers" are added to the original Interstate Commerce Commission Act in order to bring labor disputes within the purview of the law, and in the same section the clause describing an interstate shipment is amended so as to read "from any place in the United States to any other place in the United States;" and the clause excepting intra-state traffic from the jurisdiction of the Interstate Commerce Commission is limited by adding the words "unless in a particular case the Interstate Commerce Commission shall be of the opinion and shall find that the application thereto of the provisions of this act is necessary to prevent undue or unreasonable preference or advantage and to relieve a particular person, company, firm, corporation, or locality, or a particular description of traffic otherwise subject to said provisions, from undue or unreasonable prejudice or disadvantage."

To section 1-B, which defines common carriers, is added, "and the owners of all cars or other rolling stock, whether for passenger or freight, used in interstate commerce," so as to bring the owners of rolling stock clearly within the law.

To section C, which provides that charges for service shall be reasonable, is added the provision that "all rates of wages and hours of service and conditions of employment of all employees engaged in transportation subject to this act shall be just and reasonable * * * * and every unjust and unreasonable rate of wages or requirement or condition of employment is prohibited."

A new section, E, is added, which makes it binding on the Interstate Commerce Commission to fix the percentages of increase of present rates which shall meet expenses and provide proper revenues. This section contains the following paragraph:

"Except as hereinbefore provided all rates and charges for any service rendered or to be rendered in the transportation of passengers or property and all classifications of property for transportation and all tariffs, regulations, and practices affecting such transportation lawfully in force 60 days before the end of federal control, as defined in the act entitled 'An Act to Provide for the Operation of Transportation Systems while under Federal Control, for the Just Compensation of their Owners and for Other Purposes' approved March 21, 1918, are hereby declared to be prima facie, reasonable, just and lawful and no common carrier shall be required to reduce or to modify any such rate, charge, classification, regulation or practice unless the Interstate Commerce Commission shall be of the opinion and shall find that such rate, charge, classification, regulation, or practice is in violation of the third section of this act."

To section F, which prohibits passes, etc., is added the following provision:

"Nothing in this act shall be construed to prohibit common carriers from transporting passengers in consideration of the publication of advertisements in periodicals admitted to the mails as second class matter, but such passengers shall be carried only on tickets accounted for at the rates lawfully in force and advertising paid for in this manner shall be charged for at the regular rates of the respective periodicals."

This section is amended so that tariffs shall be filed with the Bureau of Interstate Transportation instead of with the Interstate Commerce Commission, and this section is further amended by the striking out of the so-called commodities clause which forbids a common carrier to transport commodities which it owns in whole or in part, or in which it has an interest direct or indirect.

Section G is so amended as to provide for a complaint being made to the Commission by any person, firm or corporation and striking out the provision limiting the power to make complaint to a shipper or owner of a lateral branch railroad.

Section I is amended so as to provide that complaints may be brought by the Bureau of Interstate Transportation and the provision that the Interstate Commerce Commission can act on its own initiative without complaint is stricken out.

In section 3-B the clause exempting common carriers from being required to give the use of tracks or terminals to other carriers is stricken out and a new clause C is added as follows:

"That it shall be unlawful for any employee, subject to the provisions of this act, to combine with any other employee or employees for the purpose of preventing, interrupting, or impeding, whether by concerted action in ceasing to work or abandoning employment or otherwise, any transportation of persons or property or the operation of any common carrier by railroad or partly by railroad and partly by water when both are used under a common control, management or arrangement for a continuous carriage or shipment, and every contract, combination, or agreement between any two or more persons for the purpose of preventing, interrupting, or impeding, as aforesaid, such transportation or such operation, is hereby declared to be a conspiracy in restraint of interstate commerce and every person who shall make any such contract or enter into any such combination, agreement, or conspiracy, or commit any act in furtherance thereof, shall be deemed guilty of a misdemeanor, and, on conviction thereof, shall be punished by a fine not exceeding $2,000 or imprisonment for not more than one year or both said punishments in the discretion of the court: Provided, however, that no strike or agreement to strike shall be held to be within the prohibition of this paragraph if, previous to such strike or agreement, the Interstate Commerce Commission has rendered its decision with reference to the matter or matters in dispute or, having had such matters or matters in dispute under consideration for more than six months from the filing of a complaint covering such disputed matter or matters, has not rendered its decision, and if, in addition thereto, previous to such strike or agreement, the parties thereto or a majority of them have voted to strike or to enter into such agreement, the question having first been submitted to them in a form determined by the Interstate Commerce Commission and; provided, further, that it shall be the duty of the Interstate Commerce Commission, on the written request of any party or parties in interest submitted not more than 60 days after the rendering of any opinion involving a dispute as to rates of wages or hours or conditions of employment or service or within 60 days after any such complaint has been before said Interstate Commerce Commission for more than six months without decision, immediately to define and submit for the vote of the employees designated in any such written request, the question whether they will strike or enter into an agreement to strike and thereupon the persons so designated shall be permitted to vote by secret ballot 'Yes' or 'No,' upon the question so defined, and the taking and counting of every such vote shall be under the supervision of the Bureau of Interstate Transportation and the ballots cast shall be counted by the Bureau of Interstate Transportation which shall forthwith announce the result. Any person or persons voting or attempting to vote fraudulently upon any question so submitted or attempting by bribery, intimidation, or other corrupt means to influence the result

thereof or in any way contributing to or participating in any false or fraudulent statement of the results thereof, or disclosing the manner in which any person or persons voted, shall be deemed guilty of a misdemeanor and, upon conviction thereof, shall be punished by a fine of not exceeding $2,000 or by imprisonment for not more than one year or by both said punishments in the discretion of the court."

In section 5 the anti-pooling clause is stricken out and certain formal changes are made.

Section 11 is amended so as to extend the term of office of Interstate Commerce commissioners from seven years, as provided in the Hepburn law, to nine years, and that one commissioner only should be go out of office at the end of each year and that, "Said commissioners shall be appointed without regard to political affiliations. If at the time of any appointment to fill any vacancy in said commission, there shall be one or more among the Interstate Commerce regions, hereinafter provided for, which is not represented on said commission by a commissioner who at the time of his appointment was entitled to vote for members of the most numerous branch of the legislature in some state or territory lying wholly or partly within such Interstate Commerce region, the appointment shall be made from among the persons so entitled to vote in one of said Interstate Commerce regions. There shall not be at any time among said commissioners more than two commissioners who at the time of their appointment were so entitled to vote within the same Interstate Commerce region, but this provision shall not be construed to compel the retirement of any commissioner now in office during the term for which he has been appointed. All appointments made after the passage of this act shall be from among the persons so qualified that, as soon as practicable, not less than three of said commissioners shall be persons broadly experienced in the financial, engineering, or operating management of extensive railway undertakings, but no person in the employ of or holding any official relation to any common carrier subject to the provisions of this act, or owning stock or bonds thereof, or who is in any manner pecuniarily interested therein, or who, within three years next preceding the date of such appointment has been defeated for election to any office of the United States or of any state or territory or any political subdivision thereof, shall enter upon the duties of or hold such office."

To this section is added the following:

"For the purposes of this act, the United States shall be divided into five regions to be known as Interstate Commerce regions, as follows:

"Interstate Commerce Region No. 1. This region shall include the states of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, West Virginia, Ohio, Indiana and Illinois and the District of Columbia, and the lower peninsula of the state of Michigan.

"Interstate Commerce Region No. 2. This region shall include the states of Virginia, North Carolina, South Carolina, Georgia, Florida, Kentucky, Tennessee, Alabama and Mississippi and that portion of the state of Louisiana which lies east of the Mississippi river.

"Interstate Commerce Region No. 3. This region shall include the states of Wisconsin, Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, Kansas and Colorado and the northern peninsula of the state of Michigan.

"Interstate Commerce Region No. 4. This region shall include the states of Arkansas, Oklahoma, Texas, New Mexico and Arizona and all that portion of the state of Louisiana not included in region No. 2.

"Interstate Commerce Region No. 5. This region shall include the states of Montana, Wyoming, Utah, Idaho, Washington, Oregon, Nevada and California, and the territories of Alaska and Hawaii."

Section 13 is amended so that the Interstate Commerce Commission shall no longer be empowered to institute complaints for its own adjudication and the Bureau of Interstate Transportation is empowered to make complaints to the commission.

Section 15-A is amended so that the commission is authorized to declare unjust or unreasonable "any rate or rates of wages or hours of service or condition or conditions of employment or service" and to determine and prescribe what shall be just and reasonable, rates of wages, hours of service, etc. Section 15-A is further amended so as to omit the paragraph which gives the Interstate Commerce Commission the right to suspend rates.

Section 15-D is amended by the addition of the following: "And provided further, that in order to prevent or to relieve congestion of freight or facilities which the Bureau of Interstate Transportation shall find to exist or to be threatened, the bureau shall have power to order the movement of any shipment or shipments over such route or routes as it may designate."

Section 17 has added to it the following: "Within 90 days next following the passage of this act, the Interstate Commerce Commission shall designate one member of the commission who shall be and act as chairman of the commission and another member of the commission who shall be and act as chief of the Bureau of Interstate Transportation hereinafter provided for and may, from time to time, change such designations, or either of them, but no person shall act as chairman of the commission, or as chief of the Bureau of Interstate Transportation, for more than five out of any six successive years. The commissioner designated as chief of the Bureau of Interstate Transportation shall not, while so designated or acting, exercise or be authorized to exercise any other authority or power whatsoever as a commissioner or as a member of said commission. Within 90 days next following the passage of this act, the Interstate Commerce Commission shall designate and assign a member of the commission to each of the Interstate Commerce regions provided for in section 11 hereof, and each commissioner so designated shall have his principal office at a convenient place, to be designated by the commission, within the Interstate Commerce region to which he has been assigned, but the Interstate Commerce Commission shall have power from time to time to change these designations. The commissioners not designated or assigned to particular Interstate Commerce regions, but not including the chief of the Bureau of Interstate Transportation, together with the chairman of the commission, shall be authorized and empowered to perform all the acts and duties required by this act to be performed by the commission except that they may, by general or special order, authorize and require any commissioner assigned to an Interstate Commerce region to exercise any of the powers of the commission, and any act performed by any commissioner, in accordance with any such general or special order, shall have the same force and effect as though performed by the commission; provided, however, that commissioners assigned to Interstate Commerce regions, while so assigned, shall be authorized to participate in the designation of the chairman of the commission, and the chief of the Bureau of Interstate Transportation, and in the designation or assignment of commissioners to particular Interstate Commerce districts, but shall not exercise or be authorized to exercise any other powers except as provided in such general or special order or orders. Every commissioner shall be assigned to an Interstate Commerce region for at least one year during each successive six years. Whenever necessary to facilitate the public business the commission may transfer temporarily and for a stated period, one or more commissioners assigned to particular districts to any other districts. Any one of the commissioners, including the chairman of the commission or otherwise, but not including

the chief of the Bureau of Interstate Transportation, not assigned to particular judicial circuits, shall constitute a quorum to do business. Whenever any matter shall be pending before any commissioner assigned to any particular Interstate Commerce region, and at any stage in any proceeding before such commissioner, the commission may require the entire record in such proceeding to be transmitted forthwith to the principal office of the commission in the District of Columbia and thereupon the record shall be transmitted as directed and the proceeding shall be transferred and shall proceed before the commissioners, including the chairman of the commission, but not including the chief of the Bureau of Interstate Transportation, or any one or more of them, not assigned to particular Interstate Commerce regions, and shall be determined by them and their determination shall be the determination of the commission. Such order for the transfer of any proceeding may be entered at any time before the day fixed for the taking effect of any final order entered therein and the commission may postpone the effective date of any order pending the final determination."

Section 19-B is amended so as to transfer the valuation work from the Interstate Commerce Commission to the Bureau of Interstate Transportation and to provide for an immediate judicial review wherever necessary to protect the property interests affected.

Section 22 is amended so as to provide that "there shall be in the office of the Interstate Commerce Commission a bureau to be called the Bureau of Interstate Transportation which shall be exclusively directed by a member of the Interstate Commerce Commission, designated as hereinbefore provided, who shall be the chief of said bureau and shall perform no other functions as a member of said commission. There shall be in said bureau such clerical and other assistants as may, from time to time, be authorized by Congress. It shall be the province and duty of said bureau to foster, promote and develop the interstate transportation industries of the United States and their efficient, reasonable and proper adaptation to the service and promotion of the interests of the consumers and producers of all articles carried in interstate and foreign commerce, as well as the interests of those who use or desire to use such agencies of interstate transportation for purposes of travel or shipment, and of interstate and foreign trade and commerce."

The remainder of section 22 is amended so as to transfer the executive duties heretofore performed by the commission, such as requiring operating statistics, annual reports, etc., to the Bureau of Interstate Transportation and providing penalties for the violations of the orders of the bureau.

Orders of Regional Directors

STANDARD CROSS TIES; SPECIFICATIONS.—Supplement 18 to Northwestern Regional Purchasing Committee Circular 19 contains diagrams of certain types of ties that will be acceptable under the United States Railroad Administration specification; also some that should be rejected.

Fire Prevention.—Northwestern Regional Purchasing Committee Circular 70 contains suggestion for fire prevention around storeshouses, lumber yards, etc.

Waste of Ice.—Northwestern Regional Purchasing Committee Circular 69 states that there is a serious shortage of ice, that the cost is very high and that every precaution should be exercised to prevent loss and conserve the supply. Ice houses should be examined for leakage, service buildings should be provided with insulation and openings kept closed, careful supervision should be given the issuing of ice to trainmen; ice should be kept under lock and key.

Routing Instructions, Pocahontas Region.—Routing Circular 1-A canceling Routing Circular 1 issued by H. P. Hathaway, Chicago representative of the traffic assistant to the regional director of the Pocahontas region contains routing instructions applying on carload freight originating in the Chicago switching district or in territory west thereof, moving through Chicago or Chicago junctions to the Pocahontas region. These instructions do not apply when in conflict with current embargoes.

Interchange Records.—The Northwestern regional director, File 20-1-37, states that since per diem settlements were discontinued a feeling has prevailed that interchange reports, junction records and car records of foreign cars are not of the same relative importance as before. However, the opportunity afforded by reduction of labor in connection with per diem accounts has been utilized by some roads to give special attention to improving all car records and reports. In view of the fact that some form of accounting for car hire will presumably be made effective on or before January 1, 1920, it is important that: (1) Close attention be given to interchange of cars at junction points. (2) The records kept by those handling the cars be accurate to the last degree. (3) Permanent records of car location and movements be maintained in the same complete and accurate manner that would be the case were actual settlements being made for car hire. (4) Careful attention be given to reports to car owners of junction movements of cars. (5) The forces engaged on car accounts be so organized that actual car hire settlements can be undertaken when necessary and on proper notice. It is suggested that a system of checking errors in the records of cars handled at junction points through a system of compiling monthly a statement showing conditions at each point, be instituted.

Traveling Engineers' Association.—The Northwestern regional director, file 77-1-100, suggests that where it is deemed advisable, traveling engineers attend the convention of the Traveling Engineers' Association at Chicago commencing Thursday, September 9. Transportation should be furnished to the men attending and reasonable expenses allowed.

Safety Appliances on Freight Cars.—The Northwestern regional director in a letter to Northwestern railroads dated July 2, gives orders similar to those issued by the regional director of the Eastern region in Circular 500-92A767 (*Railway Age,* June 6, page 1383).

Routing Instructions, Eastern Region.—Circular 71-N gives routing instructions for carload shipments of fresh meat and fish originating in the Chicago district or beyond and moving by way of Chicago or Chicago junctions to destinations in the Eastern region or neutral territory as described in Eastern and Allegheny region Joint Circular 1 of April 7, 1919, including Cincinnati, Ohio, and Louisville, Ky. Circular 74-J, superseding Circular 74-I and Supplement 1 thereto, contains similar routing instructions for perishable freight in carloads. Circular 78-C, superseding Circular 78-B, contains similar routing instructions for other freight (carloads).

Passenger Cars.—Order 214 of Southwestern regional director similar to orders issued by the Northwestern regional director, file 119-1-66 (Noted in the *Railway Age* of July 4, page 12).

Application of Floor Racks to Refrigerator Cars.—Circular 225 of the Southwestern regional director states that the Division of Capital Expenditures will approve forms for the application of standard floor racks to refrigerator cars not now equipped with such floor racks and which are used for the transportation of perishable freight requiring floor racks for their proper refrigeration, provided such forms are approved by the corporation, with a commitment that it will take care of the finances. This is not to be construed, however, to require application of standard floor racks to cars now equipped with floor racks, except as renewals are required.

Railway Developments in Foreign Countries

Export Figures for May Show Large Increases—Britain Faces Reduction of Coal Output

Locomotives to the value of £10,000 were imported into Australia during the year ending June 30, 1918, as compared with £78,000 in the previous year, and £425,000 in 1913. Also the importations of insulated wire and cable declined from £637,000 in 1913 to £181,000 in 1918.

Glasgow, Scotland, it is reported, has placed an order for 5,000 tons of tramway rails with the United States Steel Products Company, which has promised an earlier delivery than can be guaranteed by Scottish or English firms. The price quoted is £17 9s. per ton, as compared with £19 1s. 3d., the lowest British offer.

The Government of Jamaica, a British Dominion, is to buy 90 cane cars, 40 box cars and 5 locomotives. The Government is seeking to supply these needs with second-hand equipment used by the American military forces in France. In commenting on this order, the London *Times* stated that the manufacturers of railway trucks in England have orders which will take them five years to fill.

Proposed Railway From Algeciras, Spain, to French Frontier Abandoned

The American embassy at Madrid, Spain, has been informed, says Commerce Reports, that the Spanish Government has abandoned the project of constructing a direct railway from Algeciras to the French frontier. This railway was intended to form a link in the proposed Paris-Dakar line.

Belgian Railways Bill

The Belgian government has introduced into the chamber a bill placing the management of the railways in the hands of a self-governing body to be known as the National Belgian Railways Administration.

In a memorandum explaining the objects of the bill the government states that the chambers will supervise the activities of the administration and the parliamentary responsibility of the minister of railways will remain unaffected. The bill lays down in broad outline the legal status of the personnel of the administration, who will be in a position similar to that of civil servants. The right of all members of the personnel to unite for the defense of their interests is explicitly recognized, and both the lower employees and the members of the council of administration will have an interest in the results of the working of the railways.

The government asks for a speedy passage for the bill so that the new administration may begin its activities by January 1, 1920.

Japanese Developing Steel Industry

The American Chamber of Commerce in London understands that a British naval correspondent in Japan foresees the end of Japan's dependence on imported steel from the United States and from Great Britain. The Japanese are said to be exploiting on a large scale the ores which they have discovered in Korea, and to be making extensions of their industries to handle this new source of supply. Ore concessions in China will further increase the Japanese raw material.

This British correspondent predicts not only that Japan will soon be independent of outside sources of supply, but that in another ten years' time she will be exporting cheap steel to the Pacific markets and even breaking into more distant markets.

The return to lower ocean freight rates together with the development of the Japanese merchant marine, may make it possible for Japan to sell her steel even on the British market.

Exports of Locomotives in May

The exports of locomotives in May numbering 97, of a total value of $4,040,551, were nearly double those of April when 55, of a value of $2,193,168 were exported, and considerably in excess of those of any previous month this year. Italy took over half the May shipments. The figures as compiled by the Division of Statistics of the Bureau of Foreign and Domestic Commerce were as follows:

Countries	Number	Dollars
France	4	189,800
Italy	45	2,115,000
Canada	4	40,656
Costa Rica	14	796,600
Guatemala	2	2,100
Mexico	2	20,188
Cuba	1	23,700
Dominican Republic	1	16,900
Brazil	4	157,000
Chile	1	18,650
China	3	107,257
Russia in Asia	11	495,000
Philippine Islands	2	6,500
Belgian Kongo	4	51,200
Total	97	4,040,551

Exports of Cars in May

The exports of passenger cars and freight cars in May reached totals several times in excess of previous months. The exports of passenger cars totaling 44 at a value of $960,616, compared with 8 at a value of $1,913,728 in April, while the exports of freight cars in May totaled 3,008 at a value of $6,268,078, as compared with 1,005 at a value of only $1,913,728 in April. Canada took 39 of the 44 passenger cars and the larger number of freight cars were consigned to France. The figures for May as compiled by the Division Statistics of the Bureau of Foreign and Domestic Commerce are as follows:

	Passenger cars for steam railways		Freight and other cars for steam railways	
Countries	Number	Dollars	Number	Dollars
Denmark	1	2,800	...	.....
France	...	.....	2,317	5,022,119
Italy	...	.....	450	772,200
Canada	39	937,833	53	75,917
Honduras	...	.....	1	947
Mexico	4	19,983	11	10,000
Cuba	...	.....	76	61,895
China	...	.....	100	325,000
Total	44	960,616	3,008	6,268,078

Locomotive Conditions in England

London, July 1, 1919.

The conditions of the locomotives of the London, Brighton & South Coast Railway, which is considered indicative of the general conditions throughout the country, was made a matter of comment in the London Post of July 1.

It is reported that out of about 600 locomotives there are 166 awaiting repairs. At the same time the traffic conditions of this road has increased from 80,000,000 passengers a year before the war to 100,000,000 passengers a year at the present time, or an increase of 25 per cent. This is being

handled with a 25 per cent reduction in service and a 20 per cent reduction in force. This company released 5,263 men or nearly 33 per cent of its total force for war service, out of which 2,279 have returned. A large number of those who have not as yet come back are men of technical skill, and this is largely responsible for the retarded repairs. Also many of the skilled workmen have left the railroad to go to the ship yards. This is particularly the case with the boilermakers. At the repair shops at Brighton in July, 1914, there were 70 locomotives under repair with only seven awaiting shop. In May of this year there were 107 locomotives under repair with 59 awaiting shop. The situation is so bad that this company has found it necessary to have locomotives repaired in contract shops. One shop promised to repair two engines a month, beginning with January of this year, but as yet none have been delivered. In addition to the shortage of men, a reduction of working hours has accentuated the difficulty. With the present situation the company does not expect to get back to pre-war conditions for at least another twelve months.

There is considerable pressure brought to bear for the reduction in fares, but if this were done, traffic would increase beyond the capacity of the company to handle it. The increase in the cost of wages and materials is more than 50 per cent of pre-war conditions.

Exports of Car Wheels and Axles in May

The exports of car wheels and axles in May, totaling $769,733, were less than in April, but in excess of those in March. Russia in Asia, France and Japan took the greater share of the shipments. The figures as compiled by the Division of Statistics of the Bureau of Foreign and Domestic Commerce are as follows:

Countries	Car wheels and axles. Dollars
France	159,972
Iceland and Faroe Islands	157
Italy	14,276
Norway	426
England	400
Canada	46,776
Panama	2,072
Salvador	14
Mexico	2,284
Jamaica	4,096
Other British West Indies	500
Cuba	9,013
Dominican Republic	56
Brazil	11,566
Chile	4,906
Columbia	5,161
Peru	10,119
Uruguay	1,100
Japanese China	43,392
British India	840
Straits Settlements	21,900
Dutch East Indies	20,879
Japan	154,234
Russia in Asia	236,794
Australia	3,949
Philippine Islands	14,017
British South Africa	840
Total	769,733

Proposed Swedish Ferry Line to England

The Swedish Railway Board, says an article quoted in Commerce Reports, has just submitted a report relative to the establishment of daily connections between Sweden and England, by a steam-ferry line between Goteborg and a harbor on the Humber, either Hull or Immingham.

After discussing the relative advantages of a steam vessel or a steam ferry line, the board decided upon the latter, as a ferry line to the Humber can count on a higher income, as well as lower costs of operation, than an ordinary boat line, if the vessels are of equal size.

As the intention is to construct ferries with four tracks, it would be possible to carry across on every trip 50 cars, corresponding at a low estimate to a yearly cargo of 126,000 tons. As it has been considered necessary, however, to get space for more cargo, the ferries would also be furnished with holds, of 500 tons each. It is intended to take coal from England when there is a lack of cargo. The coal is to be considered as supplementary cargo, as the freight rates must correspond to those of general coal steamers; when higher paying goods are available the coal cargoes will not be accepted.

The ferries are to be seaworthy and comfortably fitted up. They will accommodate 454 passengers.

The transit traffic between England and eastern Europe has also been taken into consideration for the new line. This traffic can probably be developed, as England, through the possibility of sending goods in direct cars to Russia, will have the same advantages that Germany had before. As conditions are now, however, the Railway Board thinks this traffic should not be counted on, but attention concentrated on Swedish traffic requirements with England.

Lack of Railroad Facilities Hampers All Eastern Europe

"Transportation is the chief difficulty alike in relief work and reconstruction throughout eastern Europe. Adequate railways in the Balkan states would unlock great natural resources and open up endless possibilities. The next decade in this part of the world must be an era of railroad building if the people are to live and prosper."

This paragraph, quoted from the monthly report of the American Red Cross mission at Bucharest, says a correspondent to the Philadelphia Public Ledger, points out the most serious problem which faces the new governments of the countries of eastern Europe. There are at present fewer than 100 trains in the whole of Rumania and no more than 400 locomotives, counting every available engine—good, bad and indifferent.

The most luxurious train in Rumania today includes one first-class coach and three coaches of a nondescript third-class type. Thousands of men are at work repairing the lines, but their work is hampered by lack of material. Bridges by the score were destroyed during the war by both Rumanians and Germans. These have been repaired in part only. Trains in Rumania creep along at one-third the old-time speed, with peasants and other travelers riding wherever they can find foot room, either on the steps of the coaches, on the couplers or on the roof.

As a rule, about 50 persons are accommodated on the roof of each coach. This is fine enough in fair weather, until the train pulls into a tunnel, when the roof-riders and those on the steps are half asphyxiated by the thick black coal smoke that pours from the locomotive. The locomotives used fuel oil before the war, Rumania being an oil-producing country; but the Germans took away all the oil burners from the engine fire-boxes and the locomotives have to get along now as best they can with whatever fuel is available.

Plans for English Channel Train Ferries

The train ferry service that was worked out by the British military authorities between Richborough, England and Calais, France, is going to be followed by a permanent commercial service, if plans of French business men work out as hoped.

Long before the end of the war plans had been completed for the installation of an English Channel ferry for the transport of goods and passenger cars between England and France. The interest centered in this project was largely due to the efforts of Michel Mercurio, the Paris banker, and organizer of the Societe Francaise d'Action Economique, under whose leadership there was formed the Societe Centrale des Ferry Boats. As a first step, this company bought the Inter-Continental Railway Co., Ltd., which had perfected rights for the installation of train ferries between New Haven and Dieppe.

An intensive study has already been made of the opportunities for developing train ferries, both from the engineering and commercial points of view, the Societe Centrale bringing together a consulting council for the purpose.

Beginning with the New Haven-Dieppe ferry, the Societe Centrale has now organized two other undertakings, one of which is known as the North of France and Orient ferry,

which has the full co-operation of the International Sleeping Car Co., and the approval of the French government, which has already assured a subsidy for the carrying of mails by this route. By this means trains will be operated without change from England to Brindisi and Constantinople.

A third train ferry project, also mothered by the Societe Centrale, will run between Harwich and Ostend. This latter project has already gained the co-operation of the Great Eastern Railway. In Belgium the Harwich-Ostend ferry is actively supported by Monsieur Paul Siegers, late Minister of Marine, and at present holding another portfolio in the Belgian government.

The specification on which tenders have been asked from English shipbuilders call for boats of 21 knots speed, the "utilizable" length of rails on ferry to be 210 meters. This trackage would accommodate 22 freight cars of 20 tons each or 10 freight cars and a train comprising 7 passenger cars of 15 meters in length, and one luggage van. The draught of the boats is not to exceed 4.80 meters.

Inter-Allied Railway Systems

The map accompanying this article shows in very graphic form the extent to which international transit between Western and Eastern Europe depended before the war on the railway systems of the German and Austro-Hungarian Empires. It was necessary, says the Railway Gazette, London, from a recent issue of which the map is reproduced, to make use of these systems in order to obtain the shortest routes available for such diverse journeys as England to Denmark

Map of Central European Railway Connections in August, 1914, Showing the Pre-war Dependence on German and Austrian Railways

and the Scandinavian Kingdoms; England and France, to Russia, Greece, Turkey, Serbia, Bulgaria and Roumania; Italy to Scandinavia and Russia; and from Scandinavia to the Balkans. But for the war and the resulting check to Germany's near and middle eastern ambitions, this dependence on the railways of the Central Empires would have undergone a very important increase, inasmuch as these railways represented the bulk of the mileage of the only land route to Constantinople, which in its turn is the gateway to the Bagdad Railway, as well as to Egypt, and thus, eventually, to the Cape-to-Cairo route.

In discussing post-war schemes for eliminating this dependence on the German-Austrian railways, it has to be borne in mind that the results of the Peace-Conference are likely to accentuate the necessity for the creation of Inter-Allied routes, owing to the detachment from the Central Empire and the handing over to Allied nations or those in sympathy with the Allies of such territories as Prussian Poland, Galicia, Bosnia-Herzegovina and the Trentino. A glance at the map will make this position clear, and the situation will be understandable to any newspaper reader who has followed recent discussions in regard to the future of Poland, a country whose economic freedom from Germany is as necessary as its national independence. It will thus be seen that this whole question of new international railway routes is bound up with economic and political problems whose solution is by no means easy and will call for no small measure of international goodwill and co-operation.

The precise "lay-out" of the proposed new Inter-Allied routes, avoiding the former dependence on the Central Empires will, of course, depend on the Peace Conference settlement of new international boundaries. An example is East Prussia, which it is proposed to set up as a German State between Poland and Russia. This arrangement, and the proposed status of Danzig as a free port, will have an obvious bearing on the establishment of new through routes between Russia and Western Europe, and other instances could be cited.

Britain Faces Reduction of Coal Output

Increased wages of coal miners, shorter hours, reduction of output, discussion concerning the nationalization of coal mines, and increased prices for coal, are leading factors confronting the users of coal in the United Kingdom, and in the countries that have in the past depended upon British coal mines for their fuel.

For America the situation has special importance not only because of the fact that America will probably be called upon to supply a large share of the coal that England will be unable to supply, but also because in many countries coal has become so high in price and hard to obtain that electrification of railways through the use of hydro-electric developments may prove an absolute necessity.

Press despatches from London on July 14 refer to the latest step in the difficulty in the form of the government's desire to increase the price of coal 6 shillings a ton, which, however, was so strongly opposed as to result in a postponement for three months. In seeking to justify the attempted increase, Sir Auckland Geddes, president of the Board of Trade, not only said that the increase was necessary but expressed the fear that the increase might have to be made 9 shillings 2 pence unless England could maintain her output, her markets and her prices for export in the face of American competition in coal and the use of oil. The situation is felt to be serious also in that the increased price of coal may prove a great handicap to industries manufacturing for export trade.

Perhaps the worst feature of the situation is the reduction in output not only because of shorter hours, but also because of decreased output per man. One coal mine owner presented figures at a recent meeting of the National Association of Colliery Managers, at Glasgow, showing that whereas from 1886 to 1914 the production of coal per person in the United Kingdom fell from 315 tons to 252 tons, in the United States from 1886 to 1912 it rose from 400 to 600 tons, and has since advanced to nearer 900 tons. He explained, of course, that this was partly due to the thicker and more accessible seams in America. It is a fact, however, that the output per man which in 1913 was one ton per shift is now only 0.88 tons, while absenteeism has risen to from 10.7 per cent in 1913 to 13 per cent during the past few months.

The British government has now announced that it will put in effect the Sankey award, which was a report of a

Parliamentary committee, called the Coal Industry Commission, headed by Justice Sankey. The award in addition to increasing wages 2 shillings per shift, also calls for a reduction in the hours of labor underground from eight to seven hours effective July 16, 1919, and provides for a further reduction of hours to six, "subject to the economic position of the industry at the end of 1920."

The output of British coal for the 12 months from July 16, 1919, when the 7-hour working day comes into effect, is estimated at between 214,000,000 and 217,000,000 tons, as compared with 287,000,000 tons in the year 1913, says the American Chamber of Commerce in London, quoting the figures announced in the House of Commons by Sir Auckland Geddes after the conference with the Controller of Coal Mines.

In 1913, the British coal production of 287,000,000 tons allowed an exportable surplus of 77,000,000 tons. In 1918, with the war still going on, the production was 230,000,000 tons, of which 34,000,000 were exported. The drop in output to 214,000,000 tons for the coming year, becomes all the more serious, when it is realized that there is no longer any shortage of miners, many thousands having been demobilized and returned to work since the armistice. The outstanding fact is the decline in the production per man.

Even if the amount of coal kept for home consumption is kept down to the amount used last year on a strict rationing basis—196,000,000 tons—the export surplus available will amount only to about 20,000,000 tons. This will have most serious results, the American Chamber in London points out. Not only must Great Britain's continental allies go without the coal for which they almost are entirely dependent upon Great Britain, but Great Britain herself will be tremendously handicapped by the fact that she will no longer be able to rely upon coal, which for years has been her stand-by in foreign trade as a substitute for currency. She will now have to pay for her imports in other goods or sterling. Furthermore, the increase in the price of coal for domestic consumption will increase prices in practically all branches of industry and living. The coal problem affects Britain's entire national life and its world position as a trader. The whole nation is now becoming aroused to its alarming seriousness.

The situation is further complicated by talk of nationalization of the coal industry, but the opposition to that step will no doubt prove very formidable. It is felt on many sides that the government has gone too far already and is truckling to the miner's union.

The threatened shortage of coal in Great Britain is as serious for the countries that formerly secured coal from Great Britain as for the United Kingdom itself. These countries include France, Italy, Sweden, Norway and Spain as well as South America and South Africa. These countries are now paying practically double the price for coal they paid in 1914; and during the war, as has been noted from time to time in the *Railway Age* recently, coal was almost unobtainable and the burning of wood had to be resorted to.

The United States Bureau of Mines in a report issued last week summarizing the investigations of George S. Rice, chief mining engineer of the bureau, explains the situation in the following words:

"In 1913, Great Britain supplied 31,000,000 tons to north Europe, 32,000,000 tons to France and south Europe; that is, 63,000,000 tons to the above named countries, and others, in Europe, in addition to which about 9,000,000 tons was sent to South America; and 5,000,000 tons to other parts of the world.

"If the statements made before the Parliamentary Commission are correct, from the most favorable point of view, as estimated by Sir Richard Redmayne, conditioned on maintaining of war time restrictions on domestic consumption, Great Britain will be able to supply only 23,000,000 tons of coal for export during the coming year, dating from July 16. If, on the other hand, the domestic consumption was on a pre-war basis, there would be but 7,000,000 tons available. But, on the basis of Sir Redmayne's figures, if all the coal were shipped to western and southern Europe, there would be a deficiency of over 25,000,000 tons without considering the 14,000,000 tons that Great Britain, in 1913, supplied for other parts of the world. There is thus a total deficit of approximately 40,000,000 tons, which if it is to be supplied at all, can be supplied by America only, on the assumption that Westphalia and Belgium are unable to materially increase production for several years. At best, there is evidently a very large amount of coal that the United States could and should supply to relieve the situation in Europe and in South America, now that there is likely to be enough shipping flying the American flag to take care of the business."

Cost of Freight By Motor Truck

R. E. Fulton, vice-president of the International Motor Company, in a comparison of railway freight charges with motor truck costs, says that he finds that, as compared with first-class freight rates, the motors often have the advantage on distances as great as 100 miles; and he calls attention to factors which often are overlooked. A railroad freight rate of 50 cents means just the bare transportation; it ignores the expense of making the shipment, starting with the boxing or packing cost, and all other expenses incurred until delivery is made to the receiver in good order. In figuring railway freight cost, says Mr. Fulton, there should always be included the first class freight rate plus 15 cents per 100 lb. cartage to freight house, plus 15 cents per 100 lb. to receiver's warehouse, plus 24 cents per 100 lb. increased cost of boxing and to cover increased weight caused by increased boxing.

Without including several other items of expense, he figures out the following comparisons per 100 lb.:

From	To	Approx. distance miles	By railroad freight	By motor truck
Yonkers, N. Y.	New York	14	$1.04	$0.20
New York	Newark, N. J.	9	.91	.15
New York	New Brunswick, N. J.	33	.91	.40
New York	Trenton, N. J.	58	.98	.60
New York	Philadelphia, Pa.	90	1.02	.80
New York	Greenwich, Conn	30	1.02	.63
New York	New Haven, Conn.	75	1.13	.73
New York	Hartford, Conn.	110	1.21	.90
New York	Springfield, Mass.	135	1.25	1.00
New York	Worcester, Mass.	180	1.31	1.50
New York	Boston, Mass.	230	1.36	1.50

Again, it is necessary in practically every case, says Mr. Fulton, to prepare material for freight shipment in a way entirely different from that employed when it is shipped by motor truck direct from shipper to receiver. There is a considerable additional expense for crating, for by motor truck the packages only need protection for loading at shipper's warehouse, in transit without transfer, and unloading at receiver's warehouse. In shipping by motor truck, "a great amount" of clerical work is eliminated. Where extra packing is necessary extra room is required for the boxing department. If railway freight shipments are delayed there is the additional trouble of tracing them. If the shipment arrives in damaged condition there is the further difficulty of collecting from the railroad company. Marshall Field & Company, Chicago, guarantee to make delivery within 50 miles of their store within 24 hours. Boxing often carries from 10 per cent to 20 per cent of its weight in moisture, unless it is kiln dried prior to boxing. The Otis Elevator Company estimates that by the use of motor trucks it saves $100,000 a year in lumber alone.

Often trucks will do unusual mileage at surprisingly small costs for repairs. The 2-ton Mack operated by M. Mauro, of Plainfield, N. J., has traveled 45,000 miles with practically no expense for repairs.

Personal Injuries Due to Locomotive Failures

Suggestions for Their Reduction Based on a Review of I. C. C. Locomotive Inspection Reports

By John L. Mohun
Assistant to Consulting Engineer, Union Pacific System

By presenting the personal injury accidents, as listed in the several annual reports of the Chief Inspector of Locomotive Boilers to the Interstate Commerce Commission in a comparative graphic form, with an analysis of the cause of the principal locomotive failures which caused these accidents, it seems possible that means may be devised whereby accidents due to such failures may further be reduced.

As these reports emanate from a source independent of the railroads and are national in scope, tendencies toward faulty construction or improper maintenance are naturally more forcibly brought out than in the case of the usual railroad mechanical department reports covering locomotive failures, which are confined to a single or a system of roads. Therefore, all concerned should give serious attention to these reports and the recommendations as to improvements made by the Chief Inspector.

The Federal Locomotive Boiler Inspection Law enacted February 17, 1911, made it unlawful to operate a locomotive with its boiler in an unsafe condition and prescribed rules and regulations for the inspection and test of the boiler. The law further requires the railroads to report to the Interstate Commerce Commission all accidents resulting from locomotive boiler failures or their appurtenances causing serious personal injury or death. The Commission considers a serious injury as one causing the person involved to be incapacitated for more than three days in the aggregate within ten days immediately following the accident. The law also requires the facts concerning such accidents to be investigated by the Chief Inspector of Locomotive Boilers or one of his assistants.

The Congress on March 4, 1915, amended the original Locomotive Boiler Inspection Law by making its provisions apply to the entire locomotive and its tender and all their appurtenances. The features as to reporting and investigating accidents remain the same.

Attention is invited to the charts, which present the personal injury accidents in a comparative graphic form for the years 1912 to 1918, inclusive. As the law at first related solely to the locomotive boiler, Fig. 1 lists the personal injury accidents chargeable to the failure of locomotive boilers and their appurtenances only, for the years 1912 to 1915. As the law was later amended to cover the locomotive and its tender, Fig. 2 covers all personal injury accidents chargeable to the entire locomotive and tender, and their appurtenances, for the years 1916 to 1918 inclusive.

It is obvious that certain tendencies indicated by these charts must be interpreted with reservations, as there are a number of conditions varying from time to time which should be given consideration before drawing definite conclusions, such as the amount of traffic, number of locomotives in service, weather and labor conditions, and the very abnormal state of affairs brought about by the world war in the past few years. However, these charts and the information given in detail, covering individual accidents in the annual reports of the Chief Inspector, bring out certain features in such a pronounced manner that quite definite conclusions can be drawn notwithstanding the effect of these variable conditions.

The predominating feature in Fig. 1 is the consistent reduction each year in the total number of accidents, number killed, and number injured. In a majority of cases this is also true of the number of accidents chargeable to the failure of individual parts of the boiler or its appurtenances. Evidently the material falling off in traffic during the years 1912 to 1915 had considerable to do with reducing the number of accidents, but undoubtedly a large amount of this improvement was directly attributable to the rules and regulations governing the inspection and testing of locomotive boilers and their appurtenances, put into effect in 1911 and 1912 by the Division of Locomotive Boiler Inspection of the Interstate Commerce Commission, and the general co-operation of the railroads, locomotive builders and the railway supply companies.

Fig. 2 shows a reverse state of affairs, with the exception of the number killed, in this respect 1918 showing an improvement over 1917.

The increased number of accidents between the years 1915 and 1916 was primarily due to the extension of the law to include the entire locomotive and tender; and the increase each year from 1916 to 1918 no doubt was principally caused by the abnormal condition the railroads were working under during these years, resulting from the war and the severe winter of 1917-1918. It is obvious that even if conditions had been normal during these years the same ratio of reduction in accidents which occurred in the first few years after the Locomotive Boiler Inspection Act went into effect, could hardly have been expected.

The principal accidents causing personal injuries shown by these Charts were due to the failure of the following locomotive parts or their appurtenances:

Boilers, flues, grate shakers, injectors and connections, injector steam pipes, reverse levers, squirt hose, lubricator glasses and water glasses.

Boilers and Their Appurtenances

Of these items, boiler failures are, of course, the most serious, both in the loss of life and damage to property. Fig. 1 shows a large reduction in the number of boiler explosions from all causes, there being 97 in 1912 as compared with 25 in 1915. Fig. 2 shows just the reverse, there being an increase in the number of boiler explosions from all causes from 41 in 1916 to 90 in 1918.

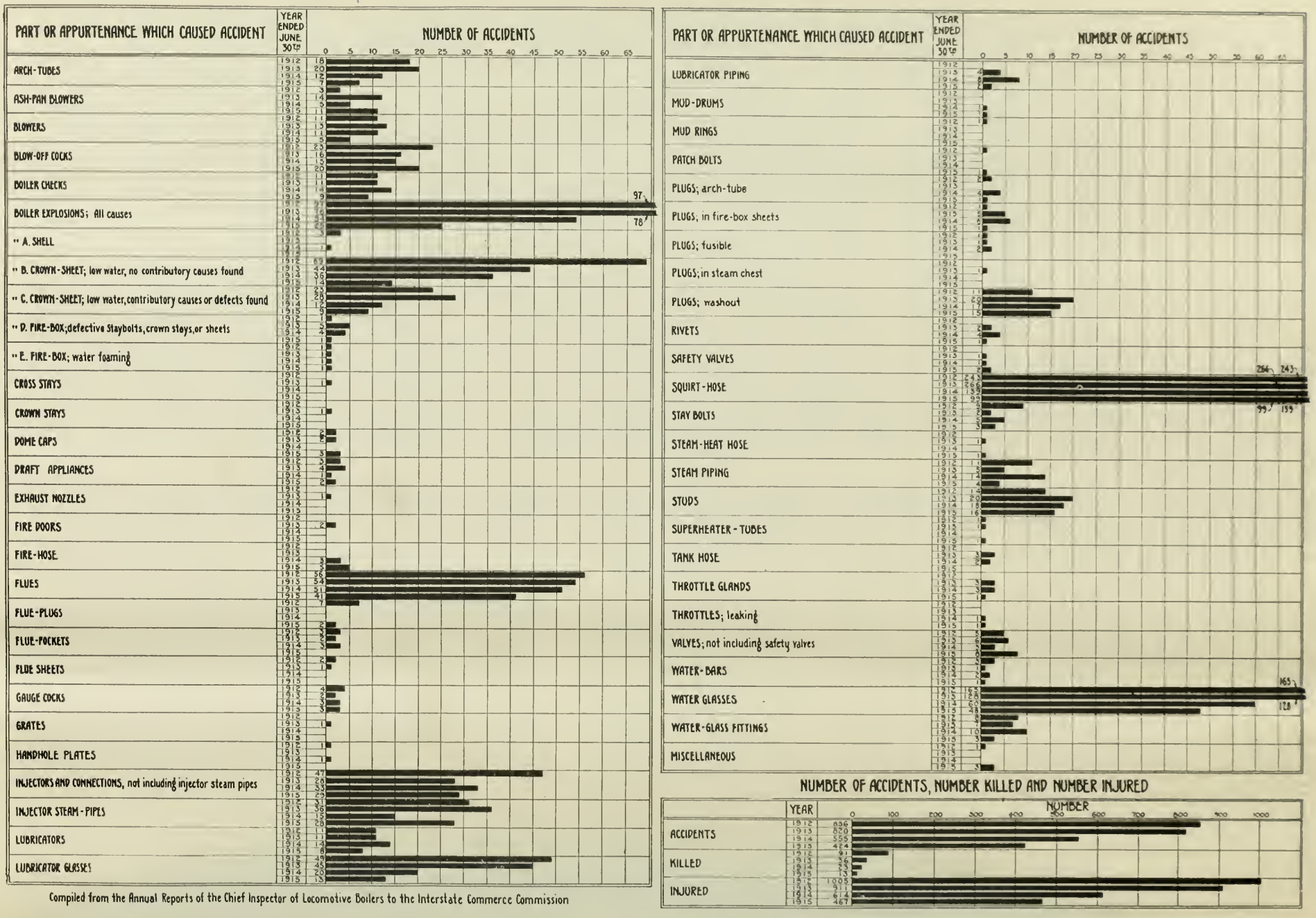
As will be seen by these charts, boiler explosions due to low water, no contributory cause, fell off fairly constantly from 69 in 1912 to 34 in 1918, but explosions due to low water contributory causes or defects found, increased during the same period from 23 to 51.

The following cases of contributory causes to boiler explosions are taken from the Chief Inspector's reports for the years 1912 to 1918, and a considerable percentage of all boiler explosions disclose similar self-evident defects:

"A bad leak was found in packing nut of top water glass cock; no packing in nut at all, and valve handle was wired to prevent it from being blown out. Union nut in steam pipe to water glass was very loose and had been leaking badly. Such leaks cause water to raise in the glass and show an incorrect water level. These leaks had been reported four times previous to accident."

"Improperly located water glass and gage cocks; lowest reading of water glass one-eighth inch above highest point of crown sheet; bottom gage cock 1⅛ inches above highest point of crown sheet; locomotive received new fire box nine months before accident and had evidently been operating in this dangerous condition for that length of time."

"Obstruction in bottom water glass fitting; bottom gage cock stopped up



Compiled from the Annual Reports of the Chief Inspector of Locomotive Boilers to the Interstate Commerce Commission

Fig. 1—Personal Injury Accidents Resulting from Failures of Locomotive Boilers and Their Appurtenances—1912 to 1915 Inclusive

with solid scale and inoperative and water glass cocks and three gage cocks not extending through reinforcing plates."

"Both injectors defective; injectors reported 14 times previous to accident."

"The failure occurred along the edge of the longitudinal seam where a crack had formed completely through the plate in several places, and more than half-way through for the entire length of the course. The engineer had reported a leak under the jacket at this point three times immediately prior to the accident."

"Crown bolt heads defective and excessively calked, due to having been overheated some time previous."

"Crown sheet failure, overheated; water foaming badly; reported six times by different engineers prior to accident, but boiler not washed."

"Twelve crown bar braces were defective on account of seven pins missing, four pins broken and one brace broken. Scale was found in the crowfoot holes, where pins should have been, showing that pins had been out for some time."

"Mud ring cracked and leaking badly; reported 18 times, and crown bolts reported leaking badly 16 times within 30 days prior to the accident."

"Opening in fusible plug filled with sediment or slag, rendering it inoperative; report of inspection made three days before accident occurred shows fusible plug removed and cleaned, yet it was found in this condition and had to be cut out of the sheet."

It is realized that quite often locomotive running repairs have to be made from day to day, under the most trying circumstances as to constant demand for and shortage of power, lack of proper facilities, and other unfavorable conditions. These facts should not, however, be considered valid reasons for placing locomotives in service without knowing that such serious defects as those listed above do not exist.

Boiler Studs

The charts show a yearly average of about fourteen personal injury accidents chargeable to the failure of boiler studs, but the Chief Inspector's reports disclose many times this number found by the district inspectors in a leaky or defective condition. A large number of accidents are shown to be due to studs blowing out on account of improper application, in some cases not more than two or three threads having entered the sheet. A number of accidents were also caused by studs failing, while being tightened, under pressure. The Chief Inspector in his sixth annual report states that studs should not be repaired by calking and under no circumstances should an attempt be made to tighten them while there is steam pressure on the boiler.

An effort should be made to reduce as much as possible the large number of studs now being placed in the boiler for attaching various parts and auxiliary devices, especially when the device produces vibrations or shocks on the studs, such as is the case with air compressors and reverse lever quadrants.

In connection with large Mallet locomotives, several railroads and the Railroad Administration have placed the air compressors on the front of the locomotive and it is believed that this should be followed generally with respect to all large locomotives for the reasons that all boiler studs are dispensed with, the compressors can more readily be looked after by the engine crew when running and as two compressors are usually used on large locomotives, by placing one on each side of the center line an equal weight distribution is obtained. By placing the compressors on the front, instead of on one side of the locomotive, more free air would be passed over the air cylinders when running, thus securing a better cooling effect.

The reports show a number of failures of studs which attach the reverse lever quadrant, undoubtedly due to vibration set up in the reach rod. The use of a power reverse gear wherein the shocks or vibrations are cushioned by the air in the cylinder, would seem to offer means for avoiding this trouble.

There are also a number of minor parts fastened to the boiler by studs which by a little study on the part of the designer, could be avoided; for example, usually two steps are provided in connection with the sand box, requiring altogether four boiler studs. A light ladder could readily be substituted; secured at the top to the base of the sand box, and at the bottom to the running board.

On all of the locomotives recently ordered by the Railroad Administration, with the exception of the switchers, the bell stand is attached to the front end. This is good practice, as it is not only the logical place for the bell, but all boiler studs for attaching the stand are dispensed with. Such matters as the fastening of sand box steps and bell bases may seem of little moment, but there are many such parts which may be similarly treated to eliminate boiler studs, which taken in the aggregate assume considerable importance.

When a new firebox, back end or an entire boiler is applied to an old locomotive it is generally renewed in kind, with the possible exception of the application of a superheater and a brick arch, and certain improved features of construction developed in the past few years are not usually employed, although such improvements may cost little or nothing. In renewals of this kind where boilers have originally been attached to the frame by means of pads and clamps in connection with which a large number of studs are placed in the firebox sheets, it would seem advisable to substitute furnace bearers or furnace expansion plates attached to the mud ring of the firebox, thus dispensing with the troublesome boiler studs. If the side grate bearers had originally been supported by studs placed in the side sheets of the furnace, it would also seem desirable when renewing a firebox or back end to substitute the more modern method of supporting the grate bearers; that is, by brackets fastened by studs placed in the mud ring, thus further dispensing with boiler studs.

When a firebox, back end or a new boiler is installed, the steam turret and possibly the injectors could be placed outside the cab; thereby reducing the possibility of accidents due to the failure of their steam connections.

Boiler Washout Plugs

These reports show that quite a number of accidents are caused by boiler washout plugs being tightened while under pressure. After a boiler has been washed, filled with water and fired up, if a washout plug should be found leaking it is a very natural temptation, in order to save time and labor, to attempt to tighten the plug while under pressure. But the very fact that the plug is leaking indicates that the fine threads may have been crossed and it should in no case be touched with a wrench while the boiler is under pressure.

Arch Tubes

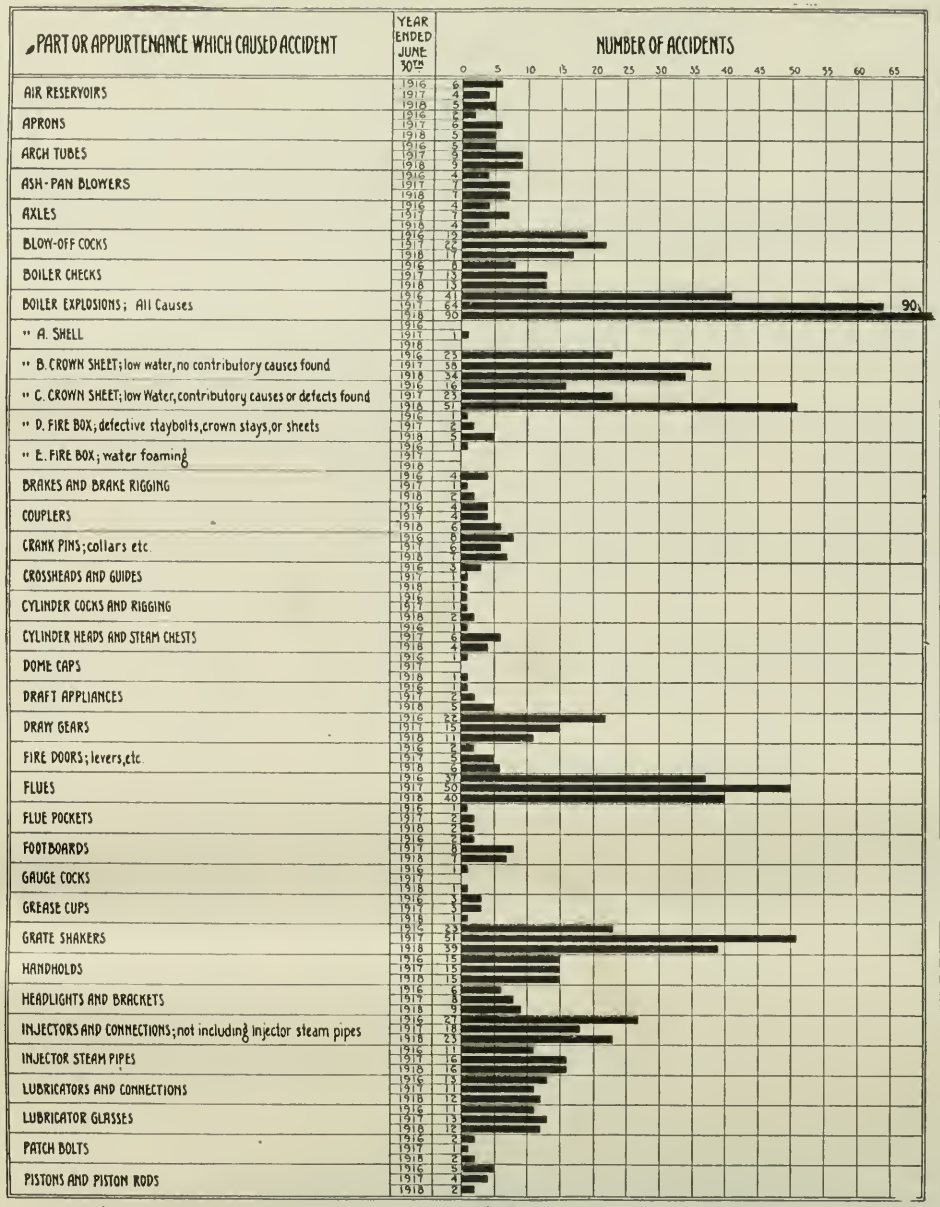
The charts indicate a yearly average of about 11 accidents caused by the failure of arch tubes. The reports show the major number of failures due either to an accumulation of mud within the tubes or faulty setting. In 1912 there were 18, and in 1918 only 9 accidents chargeable to arch tubes. Considering the fact that the number of arch tubes in service increased in this period from approximately 40,000 to 100,000, the showing may be considered a very satisfactory one and indicates that those concerned realize the importance of keeping arch tubes free from obstructions in order to obtain proper circulation through the tubes and thereby prevent them from being burnt.

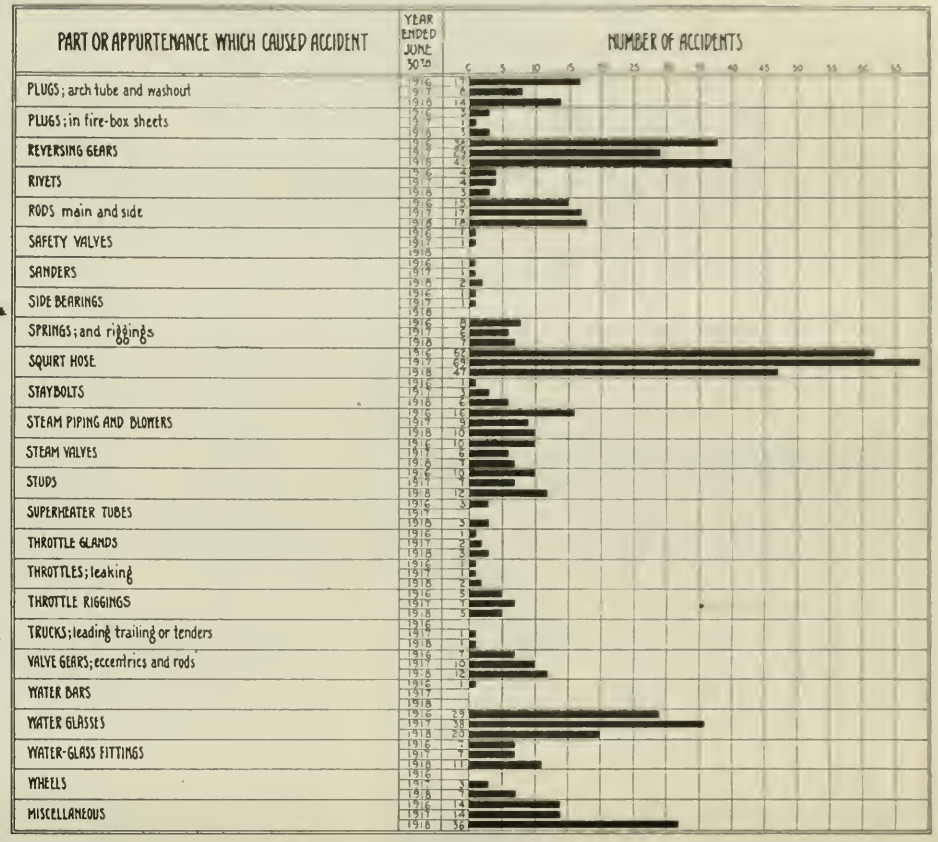
Tubes

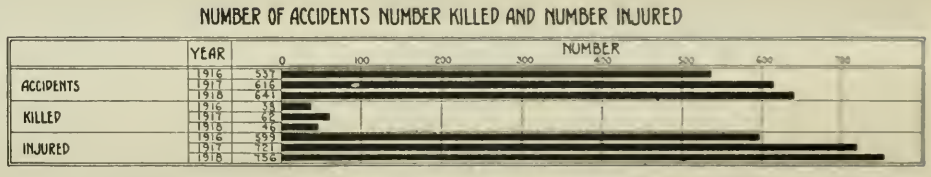
By referring to the charts it will be noted that personal injury accidents due to the failure of tubes fell off quite consistently from 56 in 1912 to 40 in 1918, most of the failures being due to poor welds; but the reports show a much greater improvement in the number of defective or leaky tubes found by the district inspectors, the decrease being from about 2,270 in 1912 to 565 in 1918. Unquestionably this improvement was largely due to better methods of setting tubes, electric welding of beads, and the rule of the Commission limiting the use of tube plugs and specifying, when they are used, they must be tied together with a rod through the tube.

Superheater Flues

Only nine accidents are shown by the charts for the years 1912 to 1918, due to the failure of superheater flues, which







Compiled from the Annual Reports of the Chief Inspector of Locomotive Boilers to the Interstate Commerce Commission

Note: Record for 1916 includes accidents due to failure of locomotive boilers and their appurtenances for the entire year and accidents due to failure of parts of locomotives and tenders covered by the amendment to the law for 9 months and 26 days only

Fig. 2—Personal Injury Accidents Resulting from Failures of Locomotives and Tenders and their Appurtenances—1916 to 1918 Inclusive

indicates that these tubes are being well maintained, especially when it is considered that the total number of superheater tubes in service increased from about 125,000 in 1912 to 980,000 in 1918.

Automatic Fire Doors

In order to reduce as much as possible the serious consequences of firebox, flue, and arch tube failures, the Chief Inspector in his annual report for the year ended June 30, 1917, recommends that all new and all locomotives then in service, when receiving general repairs, be provided with a mechanically operated fire door, so constructed that it is only open when the operator places his foot on the pedal. He further states that with the ordinary swing door, such boiler failures invariably result in blowing the fire door open and discharging steam and boiling water, together with the contents of the firebox, into the cab of the locomotive, seriously or fatally burning persons therein. He also directs attention to the fact that with the automatic fire door, the door will remain closed if the failure occurs while it is closed, and if the failure takes place while it is open, it will automatically close the instant the fireman's foot is removed from the operating device, thus preventing the direct discharge of steam and scalding water into the cab of the locomotive.

From the above it would appear that the automatic fire door is a most important safety device, and its use is well warranted solely for this reason and regardless of its coal saving features, which are generally recognized.

Grate Shakers

As disclosed by Fig. 2, personal injury accidents chargeable to grate shakers amounted to 23 in 1916; 51 in 1917 and 39 in 1918. Reports show these accidents principally due to improper maintenance of the grate shaker mechanism, such as worn or missing pins and hand shaker bars slipping off staff, due to wear in the socket and the lever stub. The use of steam operated grate shakers should preclude the possibility of such accidents.

As a large number of grate bars on old locomotives are connected by single rods placed on one side of the lug on the grate bars and employ rather small pins, lost motion is soon set up and the whole grate shaker mechanism becomes loose and wobbly and when in this condition is liable to cause an accident.

It would appear advisable in such cases to substitute a more modern method consisting of double connecting rods, one placed on each side of the grate bar lugs with large, substantial pins. This change could be made at a relatively small cost. If it should require a change in, or relocating of, the lugs on the grate bars, this could readily be taken care of at practically no increase in cost, as grate bars have to be renewed constantly. At the same time it might be found expedient to redesign the grates in order to conform to more modern practice, especially as to providing maximum air openings obtainable without the loss of coal, thereby increasing the coal burning efficiency of the grates. This can be done at small cost due, as stated before, to the fact that grates have to be repeatedly replaced.

As coal dust frequently accumulates on the top of the grate lever stubs, the socket of the detachable hand bar should be so arranged that there would be at least one inch clear space between the bottom of the socket and the top of the stub lever when the socket is placed home on the stub. Further, a hole should be drilled through the sides and at the bottom of the socket in order to allow any coal which may have lodged on the top of the lever to fall out.

Injectors and Connections

The charts show that personal injury accidents chargeable to the failure of injectors and connections (not including injector steam pipes) decreased almost constantly from 47 in 1912 to 23 in 1918 and accidents chargeable to injector steam pipes fell off in the same period from 31 to 16. The reports indicate that practically all of these accidents were due to the union nuts or brazed on collars. Failures of union nuts were due in most cases to threads stripping, nuts too large or broken by the use of improper tools, such as hammer and chisel. A large number of accidents are shown to be due to the failure of union nuts while being tightened under pressure. This is, needless to say, a dangerous undertaking and should be avoided. Failure of the brazed collars and sleeves is generally due to poor brazing. The district inspectors' reports disclose the fact that there were 26,342 injectors and connections found defective in 1913 and that there was practically a consistent reduction to 5,803 in 1918. Even the latter figure seems to indicate a rather bad state of affairs as to the proper maintaining of so important a piece of apparatus, especially in view of the Commission rule requiring the injectors to be tested before each trip.

Undoubtedly the use of non-lift injectors placed outside of the cab, and the so-called "mechanical" pipe joints in place of brazed collars, both of which are now coming into general use, will materially improve conditions in this respect.

Reverse Levers

Fig. 2 shows that there were 38 accidents in 1916, 29 in 1917 and 40 in 1918 chargeable to the failure of reverse levers.

District inspectors' reports disclose that there were 60 defective levers found in 1916, 380 found in 1917 and 308 in 1918. Practically all of these accidents are shown to be due to the reverse lever slipping out of the quadrant, caused by the worn condition of the teeth of the quadrant or lever latch, defective latch springs or dirt in the quadrant. On account of the incessant vibrations which the valve motion sets up in the reach rod it is very difficult to keep lost motion out of the teeth of the quadrant and reverse lever latch. The writer believes that the most practical way to reduce accidents of this kind is by the use of a power reverse gear in which the vibrations in the reach rod are cushioned and absorbed by the compressed air within the reversing cylinder.

Squirt Hose

There were 266 personal injury accidents in 1913 due to squirt hose. The number has quite consistently been reduced to 47 in 1918. District inspectors' reports show 3,711 squirt hose or applications found defective in 1913, which was consistently reduced to 511 in 1918. Practically all of these accidents are shown to be due to the squirt hose blowing off, parting at splice or bursting caused by defective hose or clamps. These accidents usually resulted in scalding the fireman, as until recently the water for the squirt was generally taken from the delivery pipe of the injector. Undoubtedly the very satisfactory improvement in the number of accidents chargeable to this device is due to the fact that the attention of all concerned was focused on the large number of accidents caused by such an insignificant piece of apparatus, with the result that a one-piece hose of better quality, sometimes armored, was used and more substantial clamps and attachments generally provided. A considerable amount of credit for this improvement is also due to the several injector manufacturers who have developed squirt hose attachments which deliver water cool enough to be handled safely.

Lubricator and Water Gage Glasses

Accidents chargeable to the failure or breaking of lubricator glasses fell off quite consistently from 49 in 1912 to 12 in 1918, and those due to the failure of water gage glasses from 165 in 1912 to 20 in 1918. The decided improvement between the years 1912 and 1918 must be largely attributed to the Commission's rule requiring all tubular water and

lubricator glasses to be provided with a suitable shield, although the reports indicate that there are still occurring a number of accidents chargeable to inefficient shields. The more general use of the "bulls-eye" type of lubricators and the "reflex" type of water gage also probably contributed to this improvement; however, the reports show that the glasses in these two devices are failing and causing accidents to a considerable extent.

Air Reservoirs

Fig. 2 indicates that there were from four to six accidents each year chargeable to the failure of air reservoirs generally caused by corrosion through the underside of reservoir. In at least one case the material had wasted away until only 1/64 in. remained at the time of bursting. Possibly these reservoirs were old and had not been enameled and baked inside and out, as has been the practice of the air-brake companies for the past several years. However, it would seem that if these reservoirs had received the proper hydrostatic and hammer tests, as prescribed by the rules of the Commission, the thin sheets would have been detected and the accidents avoided.

Blow-Off Cocks

The number of accidents chargeable to the failure of blow-off cocks is shown to have been from 15 to 20 each year since 1912 and to have been due to defective threads, cocks, or their operating mechanism. This would seem to indicate that these parts are not being maintained as well as their importance requires. As the cocks which are now generally being used in connection with modern locomotives are of an improved type and of more substantial construction than those formerly used, an improvement in this respect may be looked for in the future.

Draw Gears

Personal injury accidents due to the failure of draw gears fell off from 22 in 1916 to 11 in 1918—probably the result of the rigid rules of the Commission governing the proper maintenance of draw gears. These accidents are generally shown to have been due to the pins or holes in the bar being worn, or to flaws or defects in the materials of which they are made. A number of these accidents are also reported as due to excessive lost motion between locomotive and tender and in several cases the safety chains are stated as having been too long. When one of the pins or the drawbar breaks, the entire shock due to the momentum of the locomotive is taken by the safety chains or safety bars, and on account of the slack which it is necessary to provide in these parts, they generally fail to hold the locomotive and tender together. Naturally the results of such accidents are usually of a serious nature. The type of gear whereby a single heavy safety bar is placed directly under the drawbar and on the center line of the locomotive, thus requiring a very small amount of slack, would seem to offer means whereby accidents of this kind could practically be avoided.

Ceneral Conclusions

The writer is unable to say to what extent the annual reports of the Chief Inspector are in the hands of mechanical department employees, but all such employees as general foremen of locomotive department, roundhouse foremen, foremen boiler makers and their subforemen should be supplied with them as issued, for the reason that they not only list and classify all accidents, but the cause and circumstances under which they occur are clearly stated. They should also be of considerable value to the several locomotive builders and to all companies furnishing locomotive appliances.

The intelligent interpretation of the causes of these accidents should not only reduce their number, but it should also tend to improve the efficiency of the men and equipment, which is of the utmost importance at the present time on account of the prevailing high cost of labor and material.

The Chief Inspector's reports reveal the fact that personal injury accidents due to the failure of certain locomotive parts are occurring to a much greater extent on some roads than on others, in proportion to the number of locomotives operated by each road and allowing for other varying conditions. This prompts the suggestion that the mechanical department of each railroad check the design, material and maintenace methods of all parts which are shown by these reports to be causing them an excessive number of failures, with the design and maintenance practice of similar parts showing the best performance on locomotives of other roads operating under approximately the same conditions.

When the Congress passed the original Boiler Inspection Law in 1911 it was thought unnecessary by a number of railroad men, and resented by some as an unwarranted interference with their prerogatives, but largely due to the practical manner in which the provisions of the law have been administered by the Division of Locomotive Boiler Inspection under the Interstate Commerce Commission, its beneficial results are now fully recognized and railroad men generally are heartily co-operating with the Commission.

The writer has had roundhouse experience and fully realizes that it is a very simple matter to analyze locomotive accidents and to offer suggestions for their avoidance in the future, in comparison with the very difficult problem of actually maintaining running repairs in a thoroughly practical manner under the quite common conditions of shortage of power and inadequate facilities. He therefore trusts that any criticisms made in this article will be understood in this light, and as having been offered solely as constructive criticism for the possible betterment of the future service.

House Committee Begins Railroad Hearings

THE HEARINGS on the general question of the future of the railroads after their return to private management were begun before the House Committee on Interstate and Foreign Commerce on Tuesday, July 15. While the Esch-Pomerene bill to amend the act to regulate commerce is the only bill now before the committee and, therefore, in a way the basis for the hearings, Chairman Esch, of the committee, in a preliminary statement, said that other bills would doubtless be introduced and that the hearing would cover a broad field of inquiry. Because the field is so broad, however, he thought that witnesses in their testimony should keep within it and he suggested that, in view of the widespread sentiment throughout the country against government ownership, much time ought not to be spent on that proposition and, in view of the President's statement that the roads would be returned at the end of the year, it would not be necessary to spend time in discussing the proposed five-year extension of federal control. Representative Sims objected mildly to excluding consideration of an extension of federal control, saying that it had been proposed with the approval of the President. He asked if the chairman had any information that the President had changed his mind. Mr. Esch said he had no information other than the President's statement in a message to Congress that the roads would be returned this year. Mr. Esch said the important problem the committee would have to consider is the matter of railroad credit and rates and the regulation of stock and bond issues. He said there seems to be a general desire to perfect the system of regulation before government ownership is considered and he hoped it would be possible to so perfect the regulatory system as to remove any necessity for government ownership.

Commissioner Clark of the Interstate Commerce Commission was the first witness and it was announced that he

would be followed by the representatives of the United States Chamber of Commerce and later probably by S. Davies Warfield, president of the National Association of Owners of Railway Securities. It was stated that Director General Hines might appear before the committee next week. The principal interests that have proposed plans will also be heard and Mr. Esch said that it is expected the hearing would continue for about a month.

Commissioner Clark referred to previous statements made by the commission with reference to the subject under consideration, including its annual reports, its special report to Congress and its statement before the Senate Committee on Interstate Commerce, and said he would not attempt to discuss the other plans that have been proposed, at least until after they have been presented by their proponents. Therefore he devoted his statement principally to an analysis of the detailed provisions of the Esch bill, which embodies the views of the commission.

This made rather a tame beginning of the consideration of the important subject of the disposition of the railroads. Mr. Clark spent the two morning sessions on Tuesday and Wednesday in going over the details of the bill, giving the reasons for the proposed changes, with very few interruptions by members of the committee. He was to return for cross-examination on Thursday. In discussing the proposed amendment to Section 5 of the Commerce Act, he said that the shipping public has received absolutely no benefit from the provisions of the Panama Canal Act designed to divorce the railroads from ownership of competing boat lines, because, he said, strict compliance with the purposes of the act would merely result in depriving the shippers of service.

Regarding the provision to allow increased rates to go into effect after a suspension of 120 days, if the commission has not yet reached a decision, Mr. Clark said he would not concede that the commission had been dilatory but that the amendment had been proposed in recognition of the fact that if a carrier proposes rates that are later held to be reasonable it is not exactly fair to suspend them for 10 months.

After he had concluded his discussion of the bill he reverted to the provision he had passed over, requiring the commission, in reaching its conclusion as to the justness and reasonableness of any rate, to "take into consideration the cost of labor and other operating costs in so far as they become material." Chairman Esch remarked that the Traffic Club of Chicago had adopted resolutions urging that the cost of capital be also taken into consideration. Mr. Clark said such an amendment would be entirely appropriate but he could not conceive of the commission ignoring it.

Some Chapters in Canadian Government Ownership

Nova Scotia's Experience with Incompetency and Politics on the Provincial Railway, Now Part of the Intercolonial

By Harold G. Villard

I

[*This is the first of three articles Mr. Villard has written for the Railway Age regarding Canada's experience with government construction, ownership and management of railways. His material is all based on official reports and parliamentary debates, and is especially interesting at this time when Canada seems to be preparing to engage in government ownership and operation on a very large scale. In future articles Mr. Villard will deal with "Prince Edward Island's Burdensome Railway," "Ontario's Unremunerative Railway" —the Temiskaming & Northern Ontario—and "Disfranchisement of Railway Employees."—Editor.*]

Nova Scotia enjoys the distinction of having been the first of Britain's North American colonies to undertake the construction and operation of a state railway. Toward the middle of the last century Joseph Howe—who has been termed the province's greatest statesman—began to advocate the construction by the government of railway lines across the peninsula, formed by his native land. Asserting that such roads could be built for a very moderate outlay and would prove highly profitable, he eloquently urged state ownership of these proposed highways on the ground that a dangerous private monopoly of transportation and an unfair manipulation of rates could not otherwise be prevented.

Instead of following Howe's counsel, however, the Provincial Legislature in 1853[1] passed an act incorporating a company to build a railway between Halifax and New Brunswick. As the outbreak of the Crimean War rendered it impossible for those willing to engage in such a venture to raise the necessary capital within the six months prescribed by the law, the charter was allowed to lapse. Since no further hope remained of the projected line being built in the immediate future by a private corporation, the supporters of Government ownership succeeded in putting through a measure[2] at the next session of Parliament authorizing the construction of railways as provincial public works. In order to provide the funds required to build the contemplated main and branch lines, the government was empowered by a subsequent act[3] passed at the same session to issue provincial debentures, bearing 6 per cent interest and payable in twenty years. Not more than $800,000 of these debentures were to be issued in any one year. It was not realized apparently that the proposed Provincial Railway, which would have to traverse a sparsely settled country, could not be made to pay until connected through to tidewater, and that its speedy completion would have been the wiser policy under the circumstances. The plan actually pursued of building by slow degrees considerably delayed the completion of the road and postponed the time when this state undertaking could reasonably be expected to meet the interest on the money borrowed for its construction.

By the terms of the Railway Act, the completion and management of these intended railways were entrusted to a Chief Engineer and to a Board of Railway Commissioners not to exceed six in number, who were appointed by the cabinet and were removable at any time by the government. While the statute provided that the location of the line should be fixed by the commissioners in conjunction with the Chief Engineer, certain members of the House of Assembly claimed for themselves nevertheless the right of determining where the railroad should be run. Thus, at the 1856 session of Parliament,[4] it was contended in all

[1] Chapter 1, Laws of 1853.

[2] Chapter 1, Laws of 1854.
[3] Chapter 2, Laws of 1854.
[4] Nova Scotia House of Assembly Debates 1856, p. 9, et. seq.

seriousness that legislators were "best acquainted with the best localities for this great public work and should instruct the ministry accordingly." The House was earnestly urged not to permit itself to be denuded of its power of regulating the route to be chosen. Fortunately, this view of the functions of lawmakers did not prevail, and the railroad commissioners continued as the law clearly intended to direct the location of the line.

As was quite fitting, Howe was made head of the first board which began its labors in April, 1854. None of the commissioners had any practical knowledge of railway building, and construction made slow headway. During the first year only ten miles of the projected main line between Halifax and the Bay of Fundy were contracted for. Apologizing in their first report for the little progress made, the board complained that "they had an engineering staff to organize and constructors and skilled workmen to discover." Nevertheless, the commissioner anticipated having over fifty miles completed by the end of 1856, and announced that the cost of the railway when finished would not exceed £5873[5] per mile, exclusive of depots and equipment.[6]

Roseate Predictions Not Fulfilled

These roseate predictions were far from being fulfilled, however, for at the close of 1857 only 22 miles of railway were in operation. The first part of the line from Halifax north traversed a rugged and uneven country, full of rocky gorges and deep bogs, and proved both difficult and expensive to build. Railroad construction costs were further enhanced "by the rise in the price of labor and of all other commodities in the general markets of the world" caused by the Crimean War and the influx of gold from California and Australia. Furthermore, owing to the mistakes of the government engineers, unnecessary expenditures were made at many points. Under these circumstances, it is not surprising that a much greater outlay than was originally estimated was required to complete the Provincial Railway.

When, therefore, a change of government took place in 1857, and Howe's opponents came into office, the Prime Minister of the new administration after a brief period of investigation made this frank confession, concerning the outcome of his predecessor's railway policy:

"In an evil hour for Nova Scotia, the people were deluded into the belief that he (Howe) could construct railways for £5,000 a mile, and that they would be highly profitable and remunerative. Year by year the truth has been gradually breaking upon us, until at last we know that Mr. Howe has misled the public mind on this subject to the extent of nearly half a millions of money—that the road instead of being built for £5,000 a mile, will cost us over £11,000. Enormous as the miscalculation with reference to the cost has proved, I fear that we will not soon be able to realize greater accuracy in the estimation of profits." [7]

With the advent of this new administration, the Board of Railway Commissioners was reconstructed and reduced to a membership of three. An outside engineer, namely, James Laurie, was also appointed to investigate the status and the cost of completing the Provincial Railway. In the written report which he afterwards submitted this official drew a not very flattering picture of the work of the government's engineering staff.

"I consider the engineer department of the road as having been organized on too limited a scale, originating, no doubt, in the laudable desire of economy, but in this it is quite possible to go too far. The force employed has not been sufficient to give the requisite levels and stakes during the progress of the work, and we consequently find at several places the grading out of line—the excavations and embankments too wide and at others not wide enough; improper ballasting used and other matters of detail imperfectly executed. Some of the bogs and lakes which have swallowed up large quantities of material could have been partially or wholly avoided, and no doubt would have been, had proper soundings been taken to determine their depths on the original surveys. The services of one or two well qualified assistant engineers, in addition to those who have been employed on the road, would have saved large expenditures at many points." [8]

The inadequate engineering force had not only caused unnecessary expenditures to be made on the road, but had resulted in an underestimation of the quantities of material required to be removed by the contractors. "So far from every care having been taken to insure accuracy in the quantities" as the specifications calling for bids read, it appeared that "no cross sections or proper soundings had been taken." In view of the large discrepancies between the amount of work represented as needed and that actually required to complete the line, the railway contractors asked for extra compensation. They claimed with some justification that they had a right to rely on the soundings made and the quantities estimated by the government engineers. These demands for extra compensation amounted to no inconsiderable sum. While the cost of the road up to September 30, 1857, had been £627,653, the claims for extra allowances actually allowed and in dispute at the close of the same year amounted to no less than £111,000.[9]

Indicative of the general laxity of the government officials, it also appeared that a much larger number of sleepers "had been received and paid for than went into the work." As against 31 miles of completed road in the early part of 1858, there were over 14,000 sleepers "or sufficient to lay seven miles of road"[10] unaccounted for. In view of all these disheartening revelations, the Conservative government—following the presentation of the Laurie report—decided to place its author in charge of railway construction and to remove for incompetency the Chief Engineer whom the Liberals had originally appointed. This change occurred in August, 1858, and was bitterly but unavailingly assailed by Howe and the opposition press, who sought to make a party issue out of it.

Under the direction of the new engineer, the Provincial Railway attained completion. The close of 1858 witnessed the finishing of the main line to Truro, while the Windsor branch had been opened to traffic in the previous June. In the following October, the Chief Engineer at the request of the government submitted a written report on the management of the railway. This throws an interesting light on the manner in which the Provincial Railway had been constructed and operated under the Conservative regime and that of the preceding administration. Concerning the letting of contracts and the purchase of supplies, he had this to say:

"On the Nova Scotia Railway many agreements are made without proper specifications of the work to be performed. * * * For want of proper specifications also, many things, when delivered, are found not suitable or adapted to the road; thus, side tipping cars are ordered without plans or specifications, and come not suitable to the material or purposes intended. Snow ploughs come too wide for the platforms, and can not pass over the road until they are altered; switches, also, but come imperfect and for a different size of rail than in use on the Nova Scotia railway." [11]

In place of contractors being exclusively subject to the orders or under the control of the Chief Engineer, "which is the common and usual course in railroad construction," it appeared that the Railway Commissioners had "carried on communications directly with the contractors."

"The result was a mass of conflicting agreements, counter demands and allowances, but neither energy in the management nor the progress in the construction of the works. * * * The right claimed and used, on the part of commissioners to give directions to inferior officers, contractors and employees, independent of those over them is fatal to all systems of management, and at once leads to confusion and antagonism. The instant an intermediate officer is passed over, and directions given to those under him, he ceases to have control or responsibility." [12]

At the close of 1859 when its construction had been completed, the cost of the Nova Scotia Railway, which then comprised 93.8 miles of main and branch lines, was officially reported at $4,197,602.79,[13] or at the rate of $44,760 per mile. These figures include the amount paid by the Province

[5] £ equals $4 in Nova Scotian, and $3.89⅔ in Canadian currency.
[6] N. S. Journals, 1856, App. No. 4, p. 60.
[7] Hon. J. W. Johnston, Nova Scotia House of Assembly, Debates, 1858, p. 185.
[8] James Laurie, Railway report—Appendix no. 35, N. Scotia Journals, 1858, p. 317.
[9] Laurie's report before cited at p. 286.
[10] Ibid., at p. 285.
[11] Laurie's letter of Oct. 3rd, 1859, N. Scotia Journals, 1860, Appendix, p. 100.
[12] Laurie's letter before cited at p. 98.
[13] N. Scotia Journals, 1861, Appendix No. 4, p. 21.

on the various sums borrowed for railway construction purposes during the four and one-half years required to complete this comparatively short road. Except in a few instances, they exclude all sums paid for right of way and for damages to property caused by the building of the railway. The act authorizing the construction of the road provided that such damages should "form a county charge, to be assessed, apportioned and paid for, according to the relative benefits derived from the railway by the several sections of the country[14] traversed by the new artery of communication.

High Cost Due to Faulty Contracts

In the opinion of Mr. (later Sir) Sandford Fleming, who was one of Canada's foremost railway engineers, the high cost of the Nova Scotia Railway was in a large measure due to the awarding of lump sum contracts for its construction instead of paying "by the quantity and measurement" for all work actually done. According to the very stringent specifications contained in these contracts, a lump sum was to be paid per mile of completed road and "no claim for extra work" was to be allowed "for any real or supposed inaccuracy" in the quantities estimated to be contained in each cutting or embankment.

"Yet, when the contracts came to be closed, every contractor had his claim for extras on the very point of quantities which he had expressly engaged to risk. Irrespective of large amounts paid for extras by the Board of Commissioners, further claims were made and pressed. The government and the legislature, relying on the terms of the contracts, fought off these claims for a year or two, but in the end, both government and legislature had to succumb, after an infinite amount of trouble and agitation, and the contracts, let by lump, had in the end to be paid for by measure.

"This system proved an utter failure in Nova Scotia, and notwithstanding that every precaution was taken in framing the contracts, it resulted in the construction of a very indifferent and unfinished road, with many perishable and now unsafe structures; in some cases even the masonry has already fallen into ruins. The system further resulted in the ruin of the Chief Engineer, an honest and estimable gentleman, the withdrawal of public confidence from the commissioners; it broke up one government, led to the destruction of another, and the work, although never properly completed, cost the province a very large sum for extras, and nearly double the amount of the original estimate." [15]

The statement of Chief Engineer Fleming that the Provincial Railway—notwithstanding its high cost—was very imperfectly built—cannot be deemed overdrawn. At the time the Nova Scotia Railway was under construction rails of a T pattern were almost universally being used in the United States. Instead of choosing this same form, which required no chair plate under the ends of the rail, the mistake was made of modeling the superstructure after that in vogue on the railways of Great Britain. Except for fourteen miles of its length, the Provincial Railway was laid with rails of the H pattern weighing 63 pounds to the yard. These were supported at intervals of 2½ feet by ponderous cast iron chairs or fastenings weighing from 29 to 37 pounds each. Wooden side keys were used to secure the rails to the chairs. While this system was found to answer well in the comparatively mild climate of Great Britain, the wide variations in temperature experienced made it both unsuitable and unsafe for the northern portion of the American continent.

Under the great heat of the summer and the marked cold of the winter months, the wooden keys employed shrank and worked loose. To replace and tighten them entailed therefore much additional labor and expenditure. As for the chairs, they had to be constantly wedged up and broke easily whenever a heavy frost occurred.

"In the month of February, a searching thaw occurred which was succeeded by one of the coldest nights of the season. The ensuing morning exhibited the permanent way greatly disturbed and racked. Several thousand joint chairs, a quantity equal probably to the entire breakage since the opening of the road, were destroyed by a single night's frost."[16]

In the words of Nova Scotia's last railway commissioner, the rails and fastenings originally placed on the Provincial Railway "were probably the worst that could have been adopted in this (Nova Scotian) climate."[17] Furthermore, as their upkeep was very expensive and as they cost one-fifth more than the better suited American rail and appendages,[18] good business judgment demanded their prompt elimination from the government's road both in the interest of safety and of economy. Yet, although Mr. Laurie had called their attention as far back as 1858 to the unsatisfactory nature of the superstructure used, the unprogressive government officials failed to make any change. It was not until after the road had passed into the possession of the Dominion in 1867 that the "cumbersome, expensive and ill-adapted" chairs began to be discarded and the steel scabbard joint substituted in their place.[19]

Despite the fact that it was of the broad gage of 5 feet and 6 inches, the Nova Scotia Railway had altogether inadequate and poorly drained embankments and cuttings. Through an unwise economy, the openings of the culverts were frequently too small.[20] In many instances, the embankments were less than the specified width of 18 feet. The slopes of the earth cuttings were originally 1½ horizontal to 1 perpendicular and were too high to permit of an economical operation of the road. Owing to the peculiar qualities of the clay soil, these slopes became undermined from the action of the frost and rain and would slip. These slips occurred every spring and fall and filled up the drains alongside of the track with a mass of material, which had all to be removed in order to maintain the road in operation.

"The absence of a thorough system of drainage and the severe action of the frost, all tend to cause slipping in nearly every clay cutting on the line. In some instances, the slopes have run so much that the original slopes of 1½ to 1, are now reduced to three and four to one." [21]

As was to be expected under these circumstances, the Provincial Railway proved expensive to maintain. At the same time, its gross earnings were very meagre and totaled less than $10,000 a month for the first few years. The road had no station in Halifax itself, but stopped at Richmond on the outskirts of the city. This lack of a terminal in the provincial capital affected unfavorably both the freight and passenger earnings.

"To make the railway already built properly available and adaptable to the wants of the public, the extension into the city becomes a necessity. People are not prone to avail themselves of a convenience by which they are only partially accommodated; farmers within a certain distance often preferring to drive their own teams between their respective homes and the city, to being obliged to transport them to Richmond in order to haul their produce from thence to Halifax." [22]

"The (railway) freight has also been subject to heavy charges for cartage between the city and Richmond, a distance of from two to three miles. The cost of this cartage on heavy freight is a serious item, and as regards the coal traffic, it is prohibitory. Shippers encounter the risks and delays of sending coal by water rather than pay the costly item of cartage. We believe that similar considerations have great weight in determining the route of other freight, which, but for this, would pass over the railway." [23]

Although recommended as of pressing importance in 1861, this so urgently needed extension into Halifax was not opened to traffic until October 2, 1876.[24] Every impartial critic must admit that the government railway officials showed great inertia and dilatoriness in carrying out this highly essential improvement.

The freight rates on the Nova Scotia Railway were appreciably lower than those prevailing in other parts of Canada.

"In order to develop business and bring as much as possible on the railway, the Nova Scotia freight tariff has been put, especially as regards

[14] Laurie's Railway report, 1858, before cited, p. 305.
[15] Letter of Chief Engineer Fleming, Dominion Sess. Papers, 1870, App. A. p. 13.
[16] Report Railway Commissioner for N. Scotia—Dominion Sessional Papers 1869, No. 8, p. 131.
[17] Railway Commissioner's Report—N. Scotia Journal's 1862, App. No. 20, p. 2.
[18] Laurie's report before cited, p. 312.
[19] Report R'way. Commissioner for N. Scotia, Dom. Sessional Papers 1869, p. 130.
[20] Chief Eng. Laurie's Report—N. Scotia Journals 1860, App. p. 407.
[21] Report Engineer H. F. Perley—N. Scotia Journals 1864. App. No. 1, p. 1. Perley's Report before cited at p. 4.
[22] Report Engineer A. L. Light, N. Scotia Journals 1861, App. No. 24, p. 5.
[23] Report Carvell Investigating Commission, Dom. Sess. Papers 1869, No. 8, p. 170.
[24] Dom. Sess. Papers 1878, No. 7, App. p. 167.

agricultural produce and articles of general consumption, about 20 per cent. lower than tariffs in the adjacent Provinces." [26]

These freight rates were not prepared according to a fixed plan and were not always published.

"All these (freight) rates have come gradually into use and are the result of precedents rather than of principles. It is desirable in all cases, but especially in a railway worked by the government, that the tariffs should be computed on some principle of general application so that as far as possible, special rates may be avoided and it is above all important that every rate should be published. It is only by pursuing this course that the imputation of favoritism can be avoided." [26]

Freight Rates Totally Inadequate

In some cases, the freight rates were totally inadequate to cover the cost of the service rendered. This was especially true of the important horse and wagon traffic, which at first yielded nearly one-fourth of the annual freight earnings.[27] While discouraged elsewhere because unremunerative, it grew to large proportions in Nova Scotia through the desire of the authorities to assist farmers seeking to market their produce in Halifax. Instead of being obliged to unload and to ship the contents of their vehicles as freight, countrymen were permitted to board trains with their horses and wagons. The rates charged for this service were entirely too low, and 30 per cent less than in New Brunswick.[28]

"This (horse and wagon) business is conducted at a loss to the department, besides being a source of detention to the trains, and cannot at all times be provided for at Way Stations without a large supply of plant. I consider the tariff on this traffic must be increased in order to make it self-sustaining." [29]

At intervals, the railway commissioners expressed their minds freely in regard to this undesirable and unprofitable form of traffic.

"Under the Tariff Regulations which have been in operation for years, a horse, wagon and driver are carried over the lines at the same rate charged for a passenger. * * * There is neither reason nor justice in this arrangemet, and as it is attended with serious loss to the Department, it ought to be at once abolished. * * * No valid excuse can be urged in favor of encouraging persons to encumber the cars with horses and wagons, for the carriage of which little or nothing is received." [30]

"In 1866, the number of teamsters carried free amounted to 11,420 (out of 160,953 total passengers transported). If these concessions could be confined to those seeking a market for their produce, it would not be so objectionable; but a great many persons travelling thus merely for convenience or pleasure took advantage of it. For instance, a person is desirous of going into the country a distance of 10 or 20 miles beyond or from some point on the railway, and as it virtually cost him nothing to take his horse and wagon along, he naturally does so. If his be the only horse and wagon to be carried, a box car and a flat car must be added to the train, and a few shillings in many cases is all that is obtained in the way of compensation, although $1,500 worth of rolling stock, to say nothing about the additional motive power required, is put into requisition for his special accommodation. It is a matter of surprise that even such an arrangement should have been made and it is equally strange that it should have been tolerated so long." [31]

Although this horse and wagon traffic was carried at a loss, the provincial authorities—perhaps for fear of alienating the farming interest—never had the courage either to raise the rates charged for or to do away with it. Not until some years after the Nova Scotia Railway had passed into the possession of the Dominion government was it finally abolished.

Completed as before stated in 1858, the Provincial Railway in the following year failed to earn its operating expenses by $8,397.31.[32] In February, 1860, another change of government took place. The new administration abolished the Board of Railway Commissioners and placed the government road under the charge of a single commissioner. One of the first acts of this new official was to remove a railway employee who had had the temerity "to appear at the hustings to poll his vote against the Attorney-General."[33] Shortly afterwards he dismissed the superintendent appointed by the former administration for inefficiency and on the ground of "the necessity of having as government employees parties who are not acting hostile to the department or the government in whose employ they are, and with whose confidence they are supposed to be entrusted."[34]

Maintenance of Way Let to Contractors

In order to make the railway pay its way, its new head felt obliged to reduce expenditure "promptly within the narrowest limits compatible with the safe working of the road." As one means of securing this desired end, he conceived the novel idea that a great saving could be effected if the maintenance of the permanent way were let out to outside contractors instead of being looked after by the railway officials themselves as heretofore. To cite his own words:

"The upholdence of the permanent way is a very large item of expenditure on every line of railway. * * * I was impressed with the belief that if the road were put up to tender and contract for upholdence, leaving contractors to find their own men and tools, the work might be more efficiently performed." [35]

Accordingly, the railway commissioner drew up specifications and contracts "of the most stringent character," and which appeared "to embrace all the conditions and stipulations necessary to insure an efficient upholdence of the road,"[36] and from August 1, 1860, on let out to contractors the maintenance of the permanent way and the fencing of the whole line in sections varying from 4½ to 11¾ miles in length.

At the same time, he sold to the contractors all the tools belonging to the railway department which had been used in keeping the track and road bed in good order.[37]

This singular plan of entrusting the maintenance of the permanent way to outside contractors remained in force for three full years. At first, it appeared to work well. In the last year, when the road was upheld by the old or day labor system under the direction of roadmasters, the maintenance of the road cost $108.74 per mile per quarter as against $67.90[38] under the tender and contract method. The resultant annual saving for the whole line was $15,151.64. Instead of incurring a good sized deficit, as in 1859, the Provincial Railway during the years the contract upholdence system was in force showed a respectable surplus above operating expenses.

When, however, the Railway Department was reorganized in June, 1863, as a result of another change of government, the new railway commissioner speedily came to the conclusion that "an efficient and economical upholdence of the road" was impossible under the contract system. As the following official utterances will show, this system had resulted in a marked deterioration in the condition of the road.

"It is quite clear that fencing, for several years was a mere nominal affair and what with fires, decay of material, and other deteriorating causes, the fencing had come to be in a most dilapidated condition." [39]

"The present system of upholding the road by contract is very unsatisfactory, and contractors are unwilling to clear out cuttings and ballast the road to the extent necessary to be done." [40]

"It was apparent to the most inexperienced observer that, whatever the cause, the work undertaken by these contractors had not been performed. The contracts and specifications, as I before remarked, are very precise and stringent in their terms and obligations, and a strict or even a reasonable compliance with these terms would, I think, have sustained the road in a condition far superior to what it was found to be on the 1st of July last. That, however, it has been found impossible to secure. Contractors, in their efforts to underbid each other, had taken the work for less than would pay the necessary labor, and they were driven to the necessity of slighting their work or doing nothing more than was barely sufficient to keep the trains on the track." [41]

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[25] Report R'way Superintendent—N. Scotia Journals 1860, Appendix, p. 411.
[26] Report Carvell Commission before cited at p. 165.
[27] N. Scotia Journals 1862, App. No. 20, p. 3.
[28] R'way Report—N. Scotia Journals 1859, App. No. 13, at p. 185.
[29] Report of R'way Sup. Taylor—N. Scotia Journals 1868, Appendix No. 1, at p. 44.
[30] R'way Commissioner Longley's Report—N. Scotia Journals 1867, Appendix No. 11, at p. 3.
[31] R'way Commissioner Longley's Report—N. Scotia Journals 1868, App. No. 1, p. 4.
[32] N. Scotia Journals 1860, App. p. 405.
[33] N. Scotia Journals 1860, App. p. 135.
[34] Ibid., p. 122.
[35] For the form of specifications see N. Scotia Journals 1864, App. No. 1, pp. 11-14.
[36] Railway Commissioner McCully's Report—N. Scotia Journals 1861, App. No. 4, p. 2.
[37] N. Scotia Journals 1864, App. No. 1, p. 7.
[38] R'way Report N. Scotia Journals, 1861, p. 2.
[39] Railway Com. Macdonald's Report N. S. Journals 1865, Appendix No. 7, p. 7.
[40] Road Inspector's Report—N. Scotia Journals 1864, App. No. 1, p. 2.
[41] Railway Report N. Scotia Journals 1864, App. No. 1, p. 1.

On August 1, 1863, therefore, the upholdence contracts were terminated and railway road masters again appointed to look after the maintenance of the permanent way. "To bring the road up to a safe and serviceable standard," it was found necessary to make large expenditures. As against $22,381.78 spent for maintenance of way in 1861, $42,004.47 had to be thus expended in 1864. Ditches and drains were cleaned out "which had been neglected for years," and an unusually large number of sleepers laid "to replace old ones so decayed as to render their retention dangerous to life and property."[42] Thus, although of brief duration, this experiment, unique in railway history of farming out the upkeep of a road, had a disappointing outcome and proved in the long run neither a safe nor an economical arrangement. Nor was it ever tried again in Canada.

Undeterred by the meagre earnings of the Provincial Railway, the Nova Scotia House of Assembly on March 14, 1864, voted to extend it from Truro to the town of Picton on the Gulf of St. Lawrence. The contracts for this new link were let on the schedule of prices plan and in the following manner:

"Soon after the Legislature had decided to build the railway, the public and intending contractors, more especially perhaps the latter, became exceedingly impatient to have the work commenced, they could not wait until the survey was properly completed. Tenders were actually invited before the line was located. A great number of persons expected or desired contracts." [43]

Doubtless, to satisfy the clamor for contracts, the Government let out the work in ten small sections of about five miles each. The contractors had little experience in railway building and had bid altogether too low prices for masonry and earth work.

"The work went on for a time, but it was soon discovered that the prices were altogether too small. The specifications were strict, the system would not admit of extras, and the work in consequence came to a stand." [44]

As the contractors were unable to go on, the government in the fall of 1865 relet the completion of the Picton line to Sanford Fleming, who agreed to finish the extension for a lump sum and within a period of seventeen months.

He made the further proviso, however, that he should be at liberty to employ whatever man he liked free from all political interference.[45] The insistence on this wise stipulation was beyond all doubt very helpful in enabling him to perform his contract satisfactorily and within the time limit specified.

Railway Run at a Heavy Loss

As before intimated, the Nova Scotia Railway—which cost the Province over a quarter of a million dollars annually in the shape of interest—was anything but a money-maker. During the twelve years, June 30, 1855, to June 30, 1867, the total gross earnings of the road was only $1,423,381.75.[46] What kept down these gross receipts was the practice inaugurated in 1861[47] of requiring the railway to transport legislators, school teachers and members of the militia free of charge. The objections to such and similar free service on the part of a government owned transportation line were forcibly stated by a Nova Scotian railway commissioner as follows:

"Exactions are made upon the railway to the extent of thousands of dollars annually for the performance of a variety of services for the various departments and general purposes of government, without the remuneration of a dollar. * * * It may be said that it makes no real difference, as the railway is a government one, and it is as well to make use of it in this way as to add directly to the cost of the services enumerated, but on the other hand, it may more appropriately be said that the railway, if paid for all the work performed, would add 10 or 15 per cent to its present receipts, and would thus enrich the provincial treasury to the same extent that it would be taxed were the system changed; with this additional advantage, that it could then be ascertained to what extent the department could legitimately swell its receipts, and what percentage of interest it would pay upon the capital invested after meeting working expenses." [48]

Whether the Provincial Railway earned enough during the period 1855-67 to meet its operating expenses appears rather doubtful. It is true that the net earnings for the twelve years mentioned were nominally $228,023.32[49] Yet, as the following extract shows, the road had in reality a much smaller surplus when it was taken over by the Dominion Government: "On the 1st of July, 1867, the revenue account was opened with a credit of $45,345.41. This sum purported to represent the net earnings of the railways up to that date, or to speak more accurately, the sum earned toward the payment of interest on capital."[50]

But, in the opinion of the railway experts appointed by the Dominion Minister of Public Works in the summer of 1868 to report on the status of the railway which had failed to meet its operating expenses during the fiscal year just passed, even this small profit and loss surplus had not been earned, as a matter of fact. As no proper allowance had been made for depreciation of rolling stock and as the inadequate stations were in a most dilapidated condition, they arrived at the following conclusion:

"In view of the number of cars which have disappeared altogether, and of the state of the existing stock, we are of the opinion that the rolling stock has lost fully one-half of its existing cost. This taken in connection with the state of the way and works and buildings justifies the conclusion that the roads have not been worked at a profit, but that on the contrary, a large sum in excess of the apparent profit with which the Revenue account was opened when the Dominion came into possession, will have to be expended in order to restore the ways and works, the stock and equipment to a satisfactory and serviceable condition." [51]

This same body of experts found further that the books of the railway "had never been properly audited," and that the salaries paid many employees were too low to secure the services of competent men. In partial explanation of the lax discipline prevailing on the road, they had this to say: "If a conductor, an agent, a driver or other subordinate knows that he can only be dismissed after tedious inquiry, proof and disproof as to alleged misconduct, it will almost be impossible to assure that degree of discipline which is essential to the safe and economical working of a railroad."[52]

Political Interference—Obsolete Operating Methods

Neither in the appointment nor removal of subordinates were the higher officials in a position to act freely. On the contrary, they were unable to disregard the wishes of the local politicians in such matters.[53]

Finally, the committee characterized the opening methods employed on the government railway as obsolete and out of date in various respects. Lack of initiative on the part of the leading officials was deemed to be the main cause for this failure to keep abreast with the times in matters pertaining to railway management.[54]

With these excerpts, this sketch of the inception and the first decade of the Nova Scotia Railway may properly be closed. Upon the formation of the Dominion on July 1, 1867, the railway became an asset of the new federal government, and shortly afterward lost its separate identity through being made a part of the Intercolonial railway system. It should be borne in mind, however, that all the defects and drawbacks which have attended government ownership of railways in Canada were revealed in connection with the building and operation of the Nova Scotia Railway. Instead of being done away with, these various evils appeared again and at times in a more aggravated form when the dominion government undertook the management and construction of railways.

[42] Ibid., p. 2.
[43] Chief Engineer Fleming—Dom. Sess. Papers 1870. No. 13, App. BB. p. 6.
[44] Ibid., same page.
[45] See N. Scotia Journals 1866, App. No. 6, p. 3.
[46] Dom. Sess. Papers 1869, App. No., p. 128.
[47] N. Scotia Journals 1862, App. No. 20, p. 3.
[48] R'way Commissioner Longley—Report N. Scotia Journals 1867, App. No. 11, p. 2.
[49] Dom. Sess. Papers 1869, No. 8, App., p. 128.
[50] Report Carvell Committee—Ibid., p. 160.
[51] Report Carvell Committee, before cited at p. 160.
[52] Carvell Report at p. 165.
[53] Carvell Report at p. 162.
[54] Carvell Report at p. 163

General News Department

The firemen's brotherhood, in convention at Denver, Colo., has adopted resolutions in favor of the establishment of municipal markets and cold storage houses; and has endorsed the "Plumb plan" for public operation of railroads.

The National Service Committee, of Engineering Council, with headquarters at Washington, D. C., has started a weekly bulletin of developments in governmental engineering work. It will contain information regarding progress in legislation, and other activities of federal agencies, of interest to engineers.

S. M. Felton, president of the Chicago Great Western Railway Company, has been given the title of commander of the Legion of Honor by the French Government in recognition of his work as director general of military railways in France. Mr. Felton has also been decorated by the United States Government with the distinguished service medal for his efficiency in connection with the same work.

The Brotherhood of Railroad Signalmen, in convention at Kansas City, Mo., proposes to open negotiations with the Railroad Administration concerning wages. These men are now rated as belonging to "shop crafts," but they maintain that their duties are more responsible than those of shop workmen, and they have called on the director general for a different classification, with wages and working conditions adjusted accordingly.

Lieutenant-Colonel T. H. Lantry, formerly division superintendent on the Northern Pacific, with headquarters at Glendive, Mont., has been appointed district inspector of the Trans-Baikal district of the Siberian Railways, and **Lieutenant-Colonel B. O. Johnson,** formerly superintendent of the Montana division of the same road, at Livingston, Mont., has been appointed district inspector of the Omsk district of the Siberian Railway.

"Two Popular Methods of Getting Killed," is the title of the latest safety-first pamphlet issued by George Bradshaw, safety supervisor of the Pere Marquette and other Michigan roads under Federal Manager F. H. Alfred. The two methods are the highway crossing method, and walking along railroad tracks. Interesting comparisons are drawn between these American methods of getting killed and ancient methods of accomplishing the same purpose; and the ancients are believed to have had the better way.

The Air Mail Service between New York and Washington is reported as having been operated during the month of June at 99 per cent. efficiency; the miles flown being 11,118, and the weight of mail carried, 15,643 lb. Between Cleveland and Chicago the percentage of efficiency is given as 100; total miles 19,825; weight of mail 19,603 lb. The average speed on this route was 97.8 miles an hour. The route from New York to Cleveland, crossing the Allegheny Mountains, has been operating successfully since July 1.

Machinists of the St. Louis-San Francisco are considering the question of striking, over the controversy which has arisen because of the appointment of W. J. Foley as general roundhouse foreman at North Springfield, Mo., and the General Committee has sent out strike ballots. The contract between the company and the machinists states that a machinist shall be placed over machine men, and it is this clause of the contract that the men claim has been violated in the appointment of Mr. Foley, who was formerly a locomotive engineer. He was later promoted to road foreman of engines and then was acting assistant superintendent in the operating department until the return of the assistant superintendent from Government service. In defense of the appointment of Mr. Foley, officers of the road say that no portion of the contract between the machinists and the company has been violated, because the duties of the general foreman cover not only machinists but boilermakers, pipefitters, electricians, tank men and miscellaneous repairmen as well as engineers and firemen. Mr. Foley has been a member of the Brotherhood of Locomotive Engineers.

Complete reports of "No Accident Week" in the Northwestern region, June 22 to 28, illustrate in several interesting ways the practical results of the campaign. Of the 62 roads competing in the campaign, 50, or 79.36 per cent, had clear records. A reduction in accidents was made from 481 (of which 6 were fatal) in the week of June 22 to 28, 1918, to 119 (of which 5 were fatal) in the corresponding week this year; a decrease of 362 accidents, or 75.46 per cent. Based on the number of accidents per hundred men employed there was accomplished a reduction of 77.78 per cent. Based on the figures for 1919 there was one accident for every 2,304.481 men employed in the region; in 1918 one accident for every 568.563 men employed, a decrease of 1,735.918, or 305.5 per cent. There was one accident to 444.269 miles of road operated in 1919, and one accident to 109.913 miles operated in 1918, a decrease of 34.356, or 304.2 per cent. The road employing the largest number of men which operated with a clear record was the Chicago Great Western. The road having the largest operated mileage and making a clear record was the Oregon-Washington Railroad & Navigation. This road also had the largest number of accidents last year. The Chicago, St. Paul, Minneapolis & Omaha made the largest reduction in accidents based on 100 men employed.

The Clover-Leaf Accepts 350 Cars

The controversy between the Toledo, St. Louis & Western and the Railroad Administration over the latter's allocation of freight cars to the road has been settled without a court trial, with the result that the company will accept 350 of the 1,250 freight cars originally allocated to it by the Director General. When this allocation was made, the receivers asked for instructions from the court, and the stockholders' and bondholders' committees filed statements setting forth that the number of cars allocated was excessive, that the road needed no new cars and that the cost of these cars was excessive. The receivers then asked the court (the Federal District Court in Ohio), for an injunction, and the court subsequently granted a preliminary injunction restraining the receiver from accepting the allocation. The Railroad Administration then suggested a compromise, and the matter was ultimately settled by the acceptance by the receiver of 350 cars.

She Got the Pass*

I understand you hold the key of the way to the shining tracks that tempt us in the spring—to wander out in some strange unknown, where the charm of the unexpected will happen.

That is what we think, but, of course, what does happen is the customary dirt and cinders—the sight of ordinary ways—and the same people in a coach instead of an office.

As I said before, desiring to wander in the spring, I have filled out the attached form.

Wish to explain to you my sudden mania for visiting all these relatives, as you may have noticed from my various requests for transportation, and which may have caused you some perplexity as Sam probably told you I was an

* Copy of request for a pass from an administration employee in Chicago.

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF MAY, 1919

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses						Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
					Maintenance of										
		Freight.	Passenger.	Total (inc. misc.)	Way and structures.	Equipment.	Traffic.	Transportation.	General.	Total.					
Alabama & Vicks	141	$140,239	$58,846	$212,350	$44,179	$60,456	$1,875	$87,199	$7,990	$200,426	94.38	$11,924	$11,331	$592	—$44,563
Ala. Great Southern	312	643,645	201,528	887,248	120,332	255,184	15,408	316,225	18,676	730,434	82.32	156,814	24,647	131,991	—32,571
Ann Arbor	301	252,937	55,499	328,176	51,546	52,046	10,432	156,054	10,397	280,503	85.47	47,673	16,700	30,934	37,201
Arizona Eastern	577	247,508	39,982	313,148	94,644	56,132	2,680	102,798	2,545	262,193	83.72	50,955	16,281	34,635	—85,934
Atch., Topeka & Santa Fe	8,636	9,678,047	3,500,350	13,827,410	2,230,180	3,377,428	122,274	4,747,658	263,260	10,718,936	77.51	3,108,474	483,375	2,622,029	—1,676,350
Atlanta & W. Point	93	113,621	98,351	233,704	24,818	41,775	2,757	88,827	6,044	167,909	71.84	65,795	8,500	57,295	—5,613
Atlanta, Birm. & At.	639	347,656	69,069	443,054	115,330	140,273	7,326	266,217	12,488	541,712	122.27	—98,658	16,000	—114,728	—85,467
Atlantic City	177	222,828	220,748	458,519	56,135	52,952	3,007	157,066	1,222	269,471	58.77	189,048	12,000	177,048	103,002
Atlantic Coast Line	4,875	3,314,607	1,362,556	4,994,377	771,951	1,199,029	54,377	2,307,755	123,751	4,479,047	89.68	515,330	210,000	203,420	—581,596
Balto. & Ohio Chicago Terminal	91	.....	5	149,065	37,477	41,953	1,024	134,801	7,360	226,655	152.05	—77,590	26,542	—104,132	—38,758
Balto. & Ohio	515	10,308,901	2,791,926	14,327,444	2,255,060	4,459,451	154,252	6,357,461	361,152	13,692,323	95.56	635,121	377,211	255,746	—710,444
Balto., Ches. & Atl.	87	78,359	34,397	117,714	15,977	29,716	81,026	80,093	3,703	130,516	110.88	—12,802	3,160	—15,962	31,226
Bangor & Aroostook	632	331,585	73,980	427,962	70,115	121,735	3,841	186,608	12,263	400,432	93.56	27,531	21,000	6,531	—83,909
Beaumont, Sour Lake & Western	118	59,639	22,981	87,398	34,451	19,132	1,854	40,387	4,409	100,232	114.68	—12,834	2,700	—15,551	—46,092
Belt Ry. Co. of Chicago	31	.....	.....	307,713	32,566	59,443	588	190,311	7,512	290,420	94.38	17,292	15,682	1,610	—75,378
Bessemer & Lake Erie	217	1,397,624	32,832	1,452,741	121,374	338,957	8,558	392,575	18,020	885,424	60.94	567,315	14,500	552,798	138,775
Bingham & Garfield	37	62,079	1,477	66,424	38,951	38,236	946	23,292	3,190	107,033	161.13	—40,609	9,902	—50,512	—191,084
Birmingham Southern	29	28,833	.....	38,772	3,845	5,208	659	20,407	2,798	32,918	84.91	5,854	1,770	4,084	—6,038
Boston & Maine	2,251	3,317,712	1,706,768	5,605,074	929,679	1,093,200	37,278	3,219,526	187,768	5,518,559	98.45	86,515	175,691	—89,217	—952,331
Buff. & Susq. R. R. Corp.	296	139,532	6,585	161,443	37,040	80,782	1,618	57,885	8,539	185,864	115.12	24,421	3,250	—27,671	—26,190
Buff., Roch. & Pitts.	589	814,658	127,186	988,330	210,247	411,066	15,535	529,692	34,852	1,203,426	121.76	—215,096	27,000	—242,095	—426,528
Canadian Pacific Line in Maine	233	81,005	31,574	124,379	57,369	26,285	2,546	89,598	2,994	178,792	143.74	—54,412	11,000	—65,412	—58,281
Carolina, Clinchfield & O.	282	442,287	31,393	481,039	85,703	174,262	4,981	121,273	11,360	397,581	82.65	83,459	16,300	67,159	—25,646
Central New England	301	646,672	22,425	694,716	179,449	77,539	3,112	221,182	25,024	506,516	72.91	188,199	16,000	172,195	93,440
Central of Georgia	1,918	1,017,227	483,865	1,656,786	286,853	309,496	34,094	731,933	58,810	1,421,709	85.81	235,076	63,075	171,061	—89,126
Central R. R. of New Jersey	685	2,562,381	639,436	3,467,311	538,820	1,000,769	24,908	1,718,657	86,535	3,388,077	97.71	99,302	157,425	—78,120	—998,505
Central Vermont	411	359,455	75,937	476,833	133,038	128,831	9,001	319,453	16,384	607,840	127.47	—131,007	17,400	—148,409	—156,523
Charleston & Western Carolina	242	194,176	51,801	255,395	43,090	42,961	2,714	122,652	8,833	219,650	86.00	35,745	8,500	27,245	—3,911
Chesapeake & Ohio	2,506	4,778,221	1,356,745	6,528,054	827,278	1,300,355	32,894	2,248,532	109,084	4,553,168	69.74	1,974,886	172,000	1,802,847	—143
Chicago & Alton	1,050	1,486,672	5,407,589	2,156,632	426,145	593,146	31,260	914,795	43,934	2,018,932	93.61	137,699	56,352	81,084	—161,150
Chicago & Eastern Ill.	1,136	1,541,012	369,697	2,051,639	291,162	733,567	22,898	886,784	45,851	1,988,626	96.92	63,013	79,500	16,646	—367,564
Chicago & Erie	269	702,905	121,592	902,258	59,262	133,127	12,701	418,748	29,138	655,420	72.64	246,838	27,678	219,760	138,912
Chicago & Northwestern	8,090	7,694,193	2,626,958	11,335,680	2,355,093	2,456,981	63,254	4,915,174	239,430	10,138,234	89.43	1,497,446	475,000	722,208	—410,365
Chicago, Burl. & Quincy	937	7,962,537	2,700,133	11,698,695	2,127,399	2,032,655	88,781	4,677,952	306,115	9,409,006	80.43	2,289,689	465,618	1,822,914	333,395
Chicago Great Western	1,496	998,362	468,904	1,596,772	423,945	393,612	26,241	731,953	44,199	1,634,273	102.35	—37,501	55,092	—93,154	—196,237
Chicago, Ind. & Lou.	657	648,554	256,553	993,641	107,537	229,939	15,071	471,165	27,373	861,278	86.67	132,363	42,825	89,480	38,970
Chicago Junction	12	.....	.....	314,915	58,769	45,159	57	216,031	7,158	327,174	103.89	—12,258	2,128	—14,387	—46,828
Chicago, Milwaukee & St. Paul	10,648	8,670,740	2,293,160	12,060,418	2,358,418	2,932,032	99,648	5,527,402	297,740	11,259,732	93.36	800,686	539,670	257,899	—358,305
Chicago, Peoria & St. L.	247	104,292	24,832	140,569	40,910	64,860	2,863	76,991	8,433	194,056	138.05	—53,487	7,400	60,887	—75,452
Chicago, Rock Island & Pacific	7,592	5,533,318	2,370,349	8,413,300	1,501,017	1,934,399	98,057	3,844,970	215,292	7,633,526	90.73	779,774	348,275	431,006	—717,323
Chicago, Rock Island & Gulf	474	266,697	77,183	365,884	70,028	81,544	7,422	182,718	11,988	354,748	96.95	11,136	13,155	—2,040	—103,447
Chicago, St. Paul, Minn. & Omaha	1,749	1,379,016	546,896	2,058,908	429,808	363,456	18,155	975,414	61,396	1,860,632	90.36	198,276	100,980	97,252	—10,753
Chicago, Terre Haute & Southeastern	374	269,485	21,016	298,005	49,023	134,382	2,994	119,680	10,063	317,356	106.49	—19,350	14,500	—33,865	—69,702
Cincinnati, Ind. & Western	321	164,056	58,516	246,894	62,565	71,849	6,011	135,034	14,417	290,477	117.65	—43,582	10,243	—53,826	—46,578
Cincinnati, New Orleans & Texas Pacific	337	1,011,996	278,380	1,350,291	183,007	461,346	19,093	517,668	33,981	1,221,546	90.47	128,746	39,715	86,767	—286,355
Cincinnati, Lebanon & Northern	76	68,757	5,141	90,477	18,012	17,076	1,415	40,822	748	78,023	86.23	12,405	4,441	7,964	16,887
Cincinnati Northern	251	221,972	16,840	244,464	39,175	51,241	1,962	87,719	5,444	185,541	75.89	58,923	8,500	50,351	41,129
Cleveland, Cincinnati, Chic. & St. Louis	2,395	5,694,377	1,422,013	5,539,159	815,050	972,341	64,492	2,284,475	118,694	4,303,179	77.68	1,235,981	185,001	1,050,451	—265,826
Colorado & Southern	1,099	770,361	190,883	1,020,945	207,858	249,404	8,252	421,108	36,178	929,497	91.04	91,447	47,000	43,919	—177,517
Colorado & Wyoming	41	23,525	1,435	94,012	12,181	18,801	146	38,451	3,842	73,423	78.09	20,590	4,000	16,589	—16,215
Cumberland Valley	163	377,803	68,908	474,746	103,197	118,466	7,116	171,605	10,299	411,783	86.73	62,963	9,163	53,787	—128,224
Delaware & Hudson	875	2,450,575	227,345	2,870,722	381,743	763,477	19,116	1,274,121	109,202	2,570,236	89.53	300,486	60,000	240,184	—60,671
Delaware, Lack. & Western	935	4,479,191	970,710	6,121,590	576,771	1,231,044	37,529	2,530,511	110,235	4,548,400	74.30	1,573,189	318,427	1,254,358	—451,724
Denver & Rio Grande	2,593	1,768,698	469,756	2,388,883	482,802	489,442	20,590	768,306	69,082	1,874,658	78.47	514,225	100,000	413,964	—61,228
Denver & Salt Lake	255	197,067	32,421	236,025	96,445	88,916	718	138,055	5,009	329,143	139.44	—93,118	9,000	—102,118	—74,380
Detroit & Mackinac	381	89,740	32,500	130,480	27,694	40,578	3,371	61,280	10,786	143,712	110.14	—13,232	8,442	—21,674	—38,163
Detroit & Toledo Shore Line	61	173,198	.....	175,542	18,462	13,608	1,202	49,020	2,933	85,227	48.55	90,315	8,250	82,065	—7,318
Detroit, Toledo & Ironton	457	234,219	11,474	247,654	94,806	98,816	2,634	148,322	14,094	358,674	144.82	—111,020	8,510	—119,699	—120,901
Duluth & Iron Range	292	1,070,359	18,851	1,159,270	128,030	99,886	419	216,124	14,849	459,312	39.62	699,958	57,868	642,044	24,330
Duluth, Missabe & Northern	410	3,213,327	41,513	3,361,898	195,076	140,388	1,925	449,354	15,865	803,953	23.92	2,557,945	168,723	2,389,221	948,232
Duluth, South Shore & Atlantic	599	291,179	102,199	420,873	102,744	65,991	7,104	200,271	9,214	390,141	92.69	30,733	19,000	11,732	—19,887
Duluth, Winnipeg & Pacific	178	121,062	20,041	143,861	38,411	30,113	1,714	63,949	7,614	141,867	98.61	1,994	8,415	—6,421	—25,451
East St. L. Connecting	3	.....	.....	101,267	15,805	17,260	285	60,236	3,874	97,459	96.23	3,807	2,000	1,807	9,742
El Paso & S. W.	1,027	819,371	178,643	1,053,024	123,056	202,575	8,740	300,842	25,458	668,137	63.44	384,887	48,364	336,502	—91,641
Elgin, Joliet & Eastern	830	1,373,250	13	1,522,132	152,308	418,159	5,647	585,751	24,491	1,186,274	77.94	335,858	53,250	282,608	—209,994
Erie R. R.	1,989	5,937,634	1,170,698	7,769,062	926,675	2,473,492	65,234	3,485,618	208,591	6,984,377	89.89	784,685	269,475	514,049	438,419
Florida East Coast	764	547,135	187,405	856,480	134,661	139,804	7,106	382,554	18,024	691,465	80.73	165,014	36,063	128,877	—141,965
Fonda, Johnstown & Gloversville	88	40,916	63,462	107,797	10,516	9,562	595	37,783	4,883	63,339	58.75	44,459	4,900	39,559	7,389
Fort Smith & Western	253	92,928	24,748	125,945	25,946	34,551	3,701	41,136	6,143	112,277	89.14	13,668	5,000	8,565	5,547
Fort Worth & Denver City	454	606,870	246,395	883,752	95,674	158,109	5,456	296,574	20,949	579,651	65.58	304,100	19,250	284,368	186,502

orphan and all my relatives so nearly as he could ascertain died rather than be bothered with me.

It is because—I state again—I just want to wander in the spring, but it seems the Administration objects to our traveling unless it's a case of death, sickness, want, woo, or relatives. Not having many relatives, I may be pardoned for wondering why relatives are put in this unhappy category. But going over the list under which it seems I must put my reason to travel—or be scornfully refused by you—I chose relatives.

As if I had some charming ones, I certainly would visit them.

The desire of the Administration to encourage dutiful journeys and to foster the kindly feelings which should come from ties of blood appeals to me. But what I want to know, having the passion for knowledge that prompts so many of our fellow countrymen to write the papers to learn why we are here, and why everything happens that does happen because we are here—being animated by a similar impulse, I rise to inquire—most respectfully, most respectfully—

WHY don't you want us to travel for a good time?

You know, being deadheads, we never would travel if we paid our way. So the roads are not out anything by giving us the pass. Trains you let me ride on are rarely patronized by other than pass holders—

Please Mr. ....., why can't we ride just to

Take a Trip
And see the sights
And delude ourselves
With the thought
That we are going
Down the world
and
Having experiences.
And get a little
Mental tonic
and Pep.

Surely you don't think we should always stay at home unless

someone dies
and besides
you make
people like myself
who have no relatives
Tell lies.

The United States Circuit Court of Appeals recently handed down an opinion in the controversy between the Cincinnati, Indianapolis & Western Railroad Company as the successor of the Cincinnati, Indianapolis & Western Railway Company and the Cincinnati, Hamilton & Dayton Railway Company, its receivers, Judson Harmon and Rufus G. Smith, and the Toledo & Cincinnati Railroad Company, successor of the old Cincinnati, Hamilton & Dayton lines. The opinion affirmed in part and modified in part a decree previously issued by United States District Judge Hollister, relating to the ownership of the bulking yard in Indianapolis, Ind. This decree held that the bulking yard belonged to the Chicago, Indianapolis & Western, even though it has been in the name of the Cincinnati, Hamilton & Dayton since 1898. Judge Hollister required the Cincinnati, Indianapolis & Western to pay the future installments on the mortgage as the only payment required in order to get its title. The parties have agreed to value the property at $96,000. The decision of the Appelate Court affirms the decision that the property belongs to the Chicago, Indianapolis & Western and also held that the payments made by the Cincinnati, Hamilton & Dayton before its receivers were appointed could not be recovered. The payments made by the receivers of the Cincinnati, Hamilton & Dayton on account of the mortgage on the property, according to the Appellate Court opinion, were made under mistake of fact and must be repaid without interest by the Cincinnati, Indianapolis & Western. Under this ruling the Cincinnati, Indianapolis & Western will be required to repay $1,450 paid by the receivers and pay the remaining installments of the mortgage note, amounting to $22,000, thereby obtaining clear title to the property.

Traffic News

Grain loading, in the Central Western region in June aggregated 29,704 cars as compared with 22,853 cars June last year, an increase of 30 per cent. Coal loading (67,979 cars) decreased 42.4 per cent from the 118,111 cars loaded in June last year. Live stock shows no change.

H. L. McReynolds, chief clerk of the Kansas City (Mo.) District Freight Traffic Committee and formerly chief clerk in the general freight office of the Chicago, Rock Island & Pacific at Kansas City, has been promoted to secretary with the same headquarters, succeeding C. P. Dowlin.

Railroads bringing cattle into this country from Canada have been notified by the Secretary of Agriculture that, beginning August 1 all cars containing animals for immediate slaughter must be so carded ("Canadian Cattle for Immediate Slaughter"), and the fact must be noted on waybills.

A strike in New York harbor has this week tied up about 300 freight ships, mostly privately owned coastwise vessels. The strikers are firemen, oilers and water tenders, and they want higher pay and recognition of their union. The United States Shipping Board, owner of a large proportion of the 300 ships, is reported to have taken a firm stand, making no move to start its ships except in a few cases where new men could be secured.

The Long Island Railroad, during the war and since demobilization began has moved between 4,000,000 and 5,000,000 soldiers to and from the camps on Long Island, besides carrying tens of thousands of visitors. Even now from 10,000 to 20,000 troops are being carried daily. The regular business of the railroad has grown rapidly. There are 5,000 more persons commuting daily than last year at this time, requiring several additional trains of eight cars each, morning and evening. Between July 3 and July 7 the road broke all records by carrying 1,433,600 passengers. This is 28 per cent. more than were carried in the same five-day period of 1918. This traffic is being handled with practically the same number of coaches and engines as were in service in 1918.

Louis F. Swift, president of Swift & Company, Chicago, in denying charges recently made against the packers by the National Wholesale Grocers' Association in a complaint filed with the Interstate Commerce Commission, said in part: "I cannot find that Swift & Company enjoys one special privilege, nor does it participate in one special rate, which cannot be secured by any other shipper in the United States. I welcome this investigation. We certainly do not wish to have any unfair advantages or discrimination and predict that the finding of the Commission will be that we have none. The route cars which we operate are operated under specific railroad tariffs which have been repeatedly approved by the Interstate Commerce Commission and which call for a certain guaranteed minimum or penalty in case of a lightly loaded car. Similar cars may be operated by any one who is willing to agree to this penalty provision. We have built up over a long period of years an efficient transportation department which looks after our shipments. It is a part of that department's duties to follow every shipment of goods to its destination and to see that there is no unnecessary delay. I understand that one of the complaints made is that we enjoy the benefits of our refrigerator cars. We do, but the building of these cars was forced on us by the refusal of the railroads to build them. Any shipper of goods who cares to tie up his money in that way may build his own cars and have his own transportation department look after them. I might add here that for a number of years our refrigerator cars have been operated at a loss. We do not benefit by any 'unlawful, unreasonable, unjustly discriminatory rates, rules, mixtures, minima. and other carload tariffs, and we do not seek special privilege."

Texas Oil Traffic

The congestion of freight traffic continues to be a serious problem in the newly developed oil regions of Central West Texas. Several hundred additional cars of oil would be shipped each day from Burkburnett, Ranger and other fields if cars and other facilities were available. The Texas & Pacific is crowded from Fort Worth westward to Sweetwater, 202 miles. At Ranger, 95 miles west of Fort Worth, the yards resemble those of a large city, and the freight receipts of the station are reported as larger than those at Dallas or any other city on the Texas & Pacific. A double track is needed between Fort Worth and Ranger. On the Fort Worth & Denver City and the Missouri, Kansas & Texas traffic conditions in the oil fields reached by those lines are little better than on the Texas & Pacific.

I. C. C. Bill-of-Lading Declared Illegal

Circuit Judge Henry G. Ward, in an opinion filed in the United States District Court in New York City, July 12, granted the petition of the Alaska Steamship Company, the Central of Georgia Railway Company, the Clyde Steamship Company, and other steamship and railroad companies for a decree setting aside an order of the Interstate Commerce Commission requiring them to use forms of bills of lading, for domestic and export shipments, prescribed by the Commission. The decision says: "Congress has unquestionably the power to declare what terms common carriers, subject to the Interstate Commerce act, may insert in their bills of lading. Examination of the statute does not convince us that Congress had any intention to confer upon the Commission the right to prescribe the terms of the bills of lading." Judge Julius M. Mayer concurred in the decision, but Judge Learned Hand dissented.

Anthracite Shipments for June

Shipments of anthracite for the month of June, as reported to the Anthracite Bureau of Information, Philadelphia, amounted to 5,619,591 tons, as compared with 5,711,915 tons in the preceding month, and with 6,867,669 tons in the corresponding month of 1918. As was the case in May, the larger part of the decrease in June of this year as compared with last was due to the smaller output of steam sizes from the washeries, more than two-thirds of the decrease being in the steam sizes.

The shipments by companies were as follows:

	June, 1919	June, 1918	Coal year, 1919-1920	Coal year, 1918-1919
Phila. & Reading	1,084,635	1,345,079	3,284,946	3,935,469
Lehigh Valley	1,041,696	1,352,820	2,937,780	3,856,311
Central of N. J.	508,702	622,005	1,489,004	1,717,865
Del., Lack. & W.	903,306	1,015,438	2,702,822	3,061,059
Del. & Hudson	661,991	773,691	1,932,697	2,371,234
Pennsylvania	372,658	482,737	1,157,826	1,424,491
Erie	616,939	756,257	1,819,718	2,212,879
N. Y., O. & W.	167,327	186,948	479,586	549,670
Lehigh & N. E.	262,337	332,694	751,842	994,320
Totals	5,619,591	6,867,669	16,556,221	20,123,298

Gasoline Transportation Dangerous

The Bureau for the Safe Transportation or Explosives and Other Dangerous Articles has sent to the shippers of gasoline, and owners, lessees and builders of tank cars, a circular calling attention to the fact that accidents and carelessness in the transportation of gasoline during 1918 caused many times as much loss and damage as the transportation of the unusually large volume of explosives required to meet war condition.

In eight years, 1910 to 1917 inclusive, 78 people were killed, 607 were injured and a property loss of $1,626,000 resulted from the transportation of gasoline on railroads, while during the same period, only 3 people were killed, 30 injured and property loss of $147,000 resulted from the transportation of explosives on the railroads.

In 1918, under war conditions, 16 deaths, 46 injuries, and a property loss of $881,000 resulted from the transportation of gasoline on railroads, while for the same year there was 1 death, 4 injuries and property loss of $33,000 resulting from the transportation of explosives alone.

Commission and Court News

Court News

Aggravation of Previous Incurable Disease

The Alabama Supreme Court holds that a railroad may be liable, under the Federal Employers' Liability Act, for the death of an employee from injuries caused by the sudden stop of a train, although the employee was suffering from a slow, but incurable and fatal disease, and although the shock received would have been of no serious consequence to a man in sound health.—Louisville & Nashville vs. Wright (Ala.) 80 So. 93. Decided November 21, 1918.

Posting of Tariffs

The Mississippi Supreme Court holds that the Interstate Commerce Rule adopted October 12, 1915, amending Rule 52 as to posting of notice of change in tariffs by dispensing with the necessity of posting notice, applies to excursion fares for which only a three-day posting of notice was necessary under the amendment of Rule 52, adopted December 2, 1912.—Mississippi Central vs. Graham (Miss.) 80 So. 66. Decided December 16, 1918.

Assault on Passenger By Newsboy

The South Dakota Supreme Court holds that a railroad, permitting a news agent on its train under contract with another, was liable for his assault on a passenger in the course of and within the scope of his business, as he was its agent in respect to the carriage of passengers.—Blankenbaker vs. Chicago, M. & St. P. (S. Dak.) 163 N. W. 744. Decided September 2, 1918.

Initials on Bills of Lading

The Maine Supreme Court holds that if the initials "O R S L & C" (Owner's Risk, Shipper's Load and Count) on a bill of lading following a description of the goods were within the general information of the court, and were in themselves plain enough to permit of judicial construction, it would be unnecessary to prove their import; otherwise it would be competent to do so, the words being of particular significance in freight transportation.—Lewis Poultry Co. vs. New York Central (Me.) 105 Atl. 108. Decided December 12, 1918.

Indemnity from Loss of Goods Being Returned

A railroad attempted to deliver goods, but the consignee obtained an order of attachment against them. The consignor thereupon requested the railroad to return them. The railroad required the consignor to sign a contract holding it harmless from liability in returning them, and constituting the railroad or connecting road the consignor's agent. The New York Appellate Division holds that the railroad was not liable for the loss of the goods while being returned.—Peugot, etc., Co. vs. New York Central, 173 N. Y. Supp. 455. Decided January 2, 1919.

Federal Employers' Liability Act—Assumption of Risk

The engineer of a freight train started the train on an interstate journey while the fireman was in a lunchroom eating. The fireman came out and, seeing the train in motion, climbed on top of a car. He stumbled and fell between cars and was killed. He was an experienced and competent fireman, and knew, or should have perceived, the dangers which he would normally and necessarily encounter in passing over the train. In an action for his death the Kansas Supreme Court held that, under the Federal Employers' Liability Act, he assumed the risk.—Briggs vs. U. P. (Kan.) 175 Pac. 105. Decided April 1, 1918.

Equipment and Supplies

Locomotives

The Dorada Extension Railway (Chile) has ordered two Prairie type locomotives from the American Locomotive Company. These locomotives will have 15 by 20 in. cylinders, 40 in. driving wheels and a total weight in working order of 85,000 lb.

The Java State Railways have ordered 12 compound superheater 2-8-8-0 type Mallet locomotives from the American Locomotive Company. These locomotives will have 17½ and 26½ by 24 in. cylinders, 43⅜ in. driving wheels and a total weight in working order of 198,000 lb.

The Imperial Railways of Formosa have ordered three Consolidation locomotives from the American Locomotive Company. These locomotives will have 20 by 24 in. cylinders, 49 in. driving wheels, a total weight in working order of 134,000 lb. and will be equipped with superheaters.

The Cordoba Central Railway (Argentina) has ordered six superheater Mikado locomotives from the American Locomotive Company. These locomotives will have 21½ by 24 in. cylinders, 48 in. driving wheels and a total weight in working order of 165,000 lb.

[The Cordoba Central is a British-owned railway, is of metre gage and about 1,200 miles in length.]

Passenger Cars

Frank M. Saunders, New York, is inquiring for 5 railway inspection trolley cars for export.

The Pennsylvania Equipment Company, 1420 Chestnut street, Philadelphia, Pa., is in the market for a second hand standard gage 40 ft. to 60 ft. baggage and express car of steel underframe or all steel construction.

Freight Cars

Thomas W. Simons, New York, is inquiring for 10 steel side-dump cars for export.

Swift & Co., Chicago, has issued an inquiry for 400 40-ton refrigerator cars.

Strong & Trowbridge Company, New York, is inquiring for 6 flat cars and 2 tip cars for export.

The Cerro De Pasco, New York, has ordered 20 40-ton steel ore cars from the American Car & Foundry Company, Chicago, for export to Peru.

The Clearfield Bituminous Coal Corp., Clearfield, Pa., has ordered 100 steel mine cars from the American Car & Foundry Company, Chicago.

The Commercial Bank of Spanish America, New York, has ordered 12 gondola cars and one observation car for the Columbian Northern from the American Car & Foundry Company, Chicago.

Oscar B. Cintas, Havana, Cuba, has ordered from the American Car & Foundry Company, Chicago, 30 cane cars for export to Cuba, 20 of which are for the Central Cunagua, and 100 flat cars and 250 box cars for the Cuban Northern.

A battleship of 43,000 tons, with 16-inch guns, has been ordered by the Secretary of the Navy, the contract having been awarded on July 10 to the Newport News Shipbuilding Company. Mr. Daniels will award a contract for another ship of the same type next week. These will be the largest battleships in the world.

Supply Trade News

Edward Law, son of the late Ernest Law, was admitted on July 1, as a partner to the firm of **Ernest Law & Co.**, iron and steel merchants, Philadelphia, Pa.

J. E. Slimp has been appointed general manager of the **United Railway Car Company**, Boston, Mass., manufacturer of interurban and short line railway cars.

J. L. Dahl has been appointed manager of the New York office of the **Gregg Company, Ltd.**, Hackensack, N. J., effective July 15. He succeeds **C. R. Gier**, who is no longer in the employ of the company.

The Liberty Car Wheel Company, Hammond, Ind., has been incorporated with $500,000 capital stock and the following officers have been elected: President, **Patrick H. Joyce**; vice-president, **F. O. Bunnell**; treasurer, **John E. Fitzgerald**; secretary, **Charles Aaron.**

L. H. Elliott has been elected vice-president and secretary of the **Upson Nut Company**, Cleveland, Ohio, succeeding Norris J. Clarke, who has resigned. Mr. Elliott will retain his former position as secretary and treasurer of the Bourne-Fuller Company, Cleveland.

The Anglo-Saxon Trading Corporation, 114-A Pitt street, Sydney, Australia, advises through its New York office that it desires to receive catalogues and full particulars from manufacturers of all kinds of devices relating to the mechanical side of railway transportation.

Elliot Reid, assistant to general manager of the **Westinghouse Lamp Company**, 165 Broadway, New York, has been appointed sales manager, and will have charge of the commercial activities of the company in both large and miniature classes of lamps in domestic territory.

Arthur S. Lewis, formerly with the Chicago, Cleveland Car Roofing Company and more recently with Flint & Chester, New York, has become associated with the **Barco Manufacturing Company**, Chicago, and will for the present be located at New York City, and cover Southern territory.

L. D. Winters, representative at Chicago of the **W. S. Tyler Company**, Cleveland, Ohio, wire netting manufacturers, has opened an office in the Peoples Gas building, Chicago, for the purpose of conducting a railway specialty business. Mr. Winters will continue to represent the W. S. Tyler Company.

H. B. Barbee has been appointed manager of eastern railroad sales for the **Chicago Pneumatic Tool Company**, Chicago, and **Nelson B. Gatch**, district manager of sales at Chicago, has been appointed district manager of sales, with headquarters at 52 Vanderbilt avenue, New York City, to succeed **L. C. Sprague**, who has been appointed manager of western railroad sales, with headquarters at Chicago.

The Interstate Iron & Steel Company, Chicago, has started work on the installation of a new 75-ton open hearth furnace and a continuous bar mill at South Chicago, Ill. In addition to this construction the company plans to rearrange its tracks and improve its facilities for handling scrap. The addition of this furnace will make a total of five at the South Chicago works.

C. D. McClary, who has been with the **Western Electric Company**, New York, since February, 1910, has been made sales manager of the Pittsburgh office. Mr. McClary was first connected with the Philadelphia office and was transferred to Pittsburgh the latter part of 1910. In April, 1916, he joined the sales force, and in April, 1918, was promoted to assistant sales manager, which position he held until his present promotion.

The Railway Motor Car Company of America, Chicago, plan to construct a manufacturing plant at Hammond, Ind., at an approximate cost of $80,000. The building will be 300 ft. long by 100 ft. wide, 50 ft. of which will be two stories high. The superstructure will be of brick construction.

The Q & C Company, with general offices at 90 West street, New York, announces the formation of **The Q & C Packing & Lubricator Company**, with general offices at the same address and a factory at 70 Pearl street, Jersey City, N. J. **Charles F. Quincy** is president of the new company; **W. W. Hoit** is vice-president, and F. F. **Kister**, treasurer, all of the present Q & C Company organization. **S. S. Whitehurst**, vice-president, and **J. G. Smaltz**, secretary, are now officials of **Steele & Condict, Inc.**, Jersey City, N. J., where increased manufacturing facilities are being provided to care for the Q & C piston rod packing and lubricator.

William Barlow Ross, assistant to the president of **Mudge & Co.**, Chicago, with headquarters at Washington, D. C., has been appointed district manager of the same company, in charge of eastern and southeastern sales, with headquarters at New York. Mr. Ross was born on December 24, 1868, at Belfast, Ireland, and was educated in Manchester, England. He came to America in April, 1889, and began railway work with the Burlington, Cedar Rapids & Northern, as a trucker and checker at Cedar Rapids, Iowa. He was later transferred to the auditor's office where he served in various capacities until December, 1892. He was then appointed timekeeper in the superintendent's office, and later chief clerk. From June 30, 1895, to August 31, 1901, he was utility clerk to the vice-president and general superintendent, and then was promoted to car accountant. When the Burlington, Cedar Rapids & Northern was absorbed by the Chicago, Rock Island & Pacific, in June, 1902, he became car agent, and the following January was appointed statistician to the general manager of the system. In September, 1903, he was appointed transportation clerk to the third vice-president and subsequently was consecutively transportation clerk to the president, statistician to the president and chief clerk to the standardization committee. On January 1, 1910, he was elected secretary of the board of pensions, and later was made secretary of the pension and personal record bureau. In July, 1916, he resigned his railway position to become secretary and assistant treasurer of Mudge & Co. The following April he was promoted to secretary and treasurer, and since May, 1918, served as assistant to president, with headquarters at Washington, D. C.,, in charge of securing priorities, etc., and also in charge of southeastern sales.

W. B. Ross

The Midwest Engine Company, Indianapolis, Ind., has opened new offices in the Florida Life building, Jacksonville, Fla., in charge of **D. J. Carrison**, formerly with the Busch-Sulzer Brothers Diesel Engine Company, St. Louis, Mo.; in the Caples building, El Paso, Tex., in charge of **Chester B. Loomis**, formerly consulting engineer and later major of engineers, of the Purchase, Storage and Traffic Division of the General Staff, U. S. A.; at 111 Broadway, New York, in charge of **B. H. Downing**, who for seven years has been engaged in the marketing of pumps and condensers; and in the Maison Blanche building, New Orleans, La., in charge of **J. R. Lowe**, who has been engaged in the marketing of prime movers and pumps for several years.

Financial and Construction

Railway Financial News

Baltimore & Ohio.—President Daniel Willard has issued a lengthy letter to stockholders in which he intimates that with early restoration to normal conditions, dividends on his company's common stock may be resumed.

On that point he says: "If federal control of the railroads is terminated on December 31 next, and if Congress in the meantime provides a wise and constructive policy of regulation for the future, and if the director general of the Interstate Commerce Commission will authorize and make effective before that date such additional advance in the rates and charges as may be necessary to restore proper relation between revenue and operating expenses, and I believe that we may reasonably expect all of these things to be done, I can see no reason why the railroads generally may not thereby be placed upon a sound and self sustaining basis or why the Baltimore & Ohio in particular may not look forward with confidence to an early restoration of normal conditions, which should, of course, be accompanied by a return of reasonable dividend payments to holders of Baltimore & Ohio common shares."

He reviews matters which led up to the necessity for passing the dividend on the common stock, which in substance are familiar. He argues that a further increase in railroad rates and charges of substantial character are imperative.

Delaware & Hudson.—See editorial elsewhere in this issue.

Georgia Coast & Piedmont.—The Brunswick Board of Trade is making a stubborn fight to prevent the confirmation of the sale of this road to Gordon & Freedman, a salvage firm of New York, which purchased the property on July 2 for $300,000.

Southern Pacific.—See editorial elsewhere in this issue.

Wabash.—See editorial elsewhere in this issue.

Railway Construction

The Edward Rutledge Timber Company Railroad, Coeur D'Alene, Idaho.—This company will build an eight-mile railroad with branches from Clarkia, Idaho, to its large timber holdings in that state. The new road will be extended gradually through its timber property.

Texas & Pacific.—The reconstruction of machine shop facilities at Marshall, Tex., to replace those destroyed by fire during 1918, will consist of extensions to the present buildings and boiler shops, one part of which will be set aside for machine shop purposes. The cost of the building work proper is estimated at $250,000, in addition to which new and improved machinery will be installed.

Seaboard Air Line.—A contract has been given to C. E. Hillyer, Jacksonville, Fla., for the reconstruction of the burned portion of the Hutchinson Island Terminal facilities of the Seaboard Air Line, near Savannah, Ga., destroyed by fire on February 14. The work will consist of the restoration of sheds, docks, wharves, and other facilities, and is expected to be finished in time to handle the fall business at these terminals.

The Whitney Company Railroad, Detroit, Mich.—This company has awarded a contract to Rajotte, Fobert & Winters, Spokane, Wash., for the construction of a 12½-mile standard gage railroad extending from Tillamook Bay, Ore., along the Kilches river to a tract of timber owned by the Whitney company. It is estimated that the work will involve 152,000 yards of excavation. About 507,000 feet of lumber will be required for trestles and bridges.

ANNUAL REPORT

Southern Pacific Company—Report of the Board of Directors

New York, N. Y., July 10, 1919.

To the Stockholders of the Southern Pacific Company:

Your Board of Directors submits this report of the operations and affairs of the Southern Pacific Company and of its Proprietary Companies for the fiscal year ended December 31, 1918.

On December 28, 1917, the President of the United States took over the possession, control, and operation of your Company's railroad and steamship lines, under terms and conditions which thereafter were embodied in the Act of Congress of March 21, 1918, which was printed in full in the annual report for 1917, and briefly summarized on pages 24 and 25 of that report.

This Act authorized the President, or his representative, the Director General of Railroads, to enter into an agreement with the individual railroads whose properties had been taken over, to fix the compensation and to provide also for up-keep, betterments and additions, accounting, payment of compensation, deductions from compensation, etc. Soon after the passage of the Act, representatives of the Director General and of the railroads began a series of conferences in the effort to agree upon appropriate standard clauses for such agreements. As a result of prolonged discussion a standard form of contract was drafted, which the representatives of the railroads reported to be the best obtainable. The directorates of substantially all other railroads reached the same conclusion as did your Directors after careful consideration; that this standard form of contract was the best that could be obtained, and was far preferable to the alternative of possession and operation of your properties until the end of Federal control without any agreement whatsoever; your compensation to be determined thereafter in a suit to be brought in the Court of Claims.

Resolutions authorizing your Board to enter into an agreement with the Director General along the lines of the standard form of contract were adopted at a Special Stockholders' meeting on October 9, 1918, and similar action was taken by the stockholders of Proprietary Companies.

It remained to negotiate an agreement with the Director General on the basis of the standard form, with such modifications as the special features in the case of our properties rendered necessary or desirable. After protracted negotiations we reached a form of agreement as satisfactory as could reasonably be expected. Accordingly, on February 19, 1919, an agreement was duly executed between the Director General of Railroads, on the one part, and, on the other, the Southern Pacific Company and the following Proprietary Companies: Arizona Eastern Railroad Company; Houston & Texas Central Railroad Company; The Galveston, Harrisburg & San Antonio Railway Company; Texas & New Orleans Railroad Company; The Houston, East & West Texas Railway Company; Houston & Shreveport Railroad Company; Morgan's Louisiana & Texas Railroad & Steamship Company; Louisiana Western Railroad Company; Lake Charles & Northern Railroad Company; and Iberia & Vermilion Railroad Company. For mutual convenience the Southern Pacific Company and the Proprietary Companies were united in one contract.

The departures in the agreement from the standard form were made at our suggestion, and were generally in accord with our contentions. For example, special clauses inserted in the standard form secured a continuance during Federal control of our hospital system, and provided in a satisfactory way for the up-keep and return of the steamships. We succeeded in securing $100,000 per year, in addition to the "standard return," on account of new ships acquired between July 1 and December 31, 1917, and a fair rental to be paid by the Director General for such space as his operating force may occupy in the new office building at San Francisco.

The Federal Control Act provides that the annual compensation (called "standard return") shall not exceed a sum equivalent, as nearly as may be, to the average annual railway operating income for the three test years ended June 30, 1917, unless, because of exceptional conditions, such basis of earnings is "plainly inequitable as a fair measure of just compensation." Such Act further provides that the Interstate Commerce Commission shall ascertain and certify to such standard return. This certification has been made "subject to such changes and corrections as the Commission may hereafter determine and certify to be requisite in order that the accounts and reports of the Company used by the Commission as the basis of computing said average annual railway operating income may be brought into conformity with the accounting rules or regulations of the Commission in force at the time of such accounting, or in order to correct computations based on such accounts or reports."

In making its certificate, the Interstate Commerce Commission has arbitrarily reduced the amount of the standard return of the Southern Pacific System lines by $328,487.22 on account of war taxes, and by $65,569.83 on account of payments to employees under the Adamson law, or a total deduction of $394,057.05. Although these deductions *represent amounts entered in the accounts subsequent to the test period*, the Commission takes the position that such amounts are applicable to that period. As a *determination of these amounts was not possible during the test period*, and as the same action was taken by the Commission with respect to the standard return of all railroads under Federal control, vigorous protest was made at a public hearing against the making of these deductions. This arbitrary act will have the effect of reducing the compensation of your Company by $394,057.05 for *every year of Federal control.*

The standard return as fixed in the agreement with the Director General was arrived at as follows:

Average annual railway operating income, years ended June 30, 1915, 1916, and 1917	$47,955,769.87	
Rental for ships not in service during test period	400,000.00	
		$48,355,769.87
Less:		
Arbitrary deduction by Interstate Commerce Commission, as explained above	$394,057.05	
Operating income of Inter-California Railway in Mexico, not taken over	1,814.74	
		395,871.79
Amount of standard return		$47,959,898.08
Divided as follows:		
Southern Pacific Company	$38,421,846.79	
Arizona Eastern Railroad Company	1,242,474.82	
Houston & Texas Central Railroad Company	1,717,505.76	
Galveston, Harrisburg & San Antonio Railway Company	3,230,644 60	
Texas & New Orleans Railroad Company	715,135.69	
Houston, East & West Texas Railway Company	375,565.53	
Houston & Shreveport Railroad Company	85,031.76	
Morgan's Louisiana & Texas Railroad & Steamship Company	1,188,525.58	
Louisiana Western Railroad Company	895,178.49	
Lake Charles & Northern Railroad Company	73,493.70	
Iberia & Vermilion Railroad Company	14,495.36	
Total		$47,959,898.08
The contract of the Southern Pacific Terminal Company, which owns the dock and wharf facilities of your Company's lines at Galveston, Texas, has not yet been executed. Based on the operations for the three test years, the standard return to be paid by the Government for the use of such property would amount to	207,444.48	
Making the total standard return on account of your Company's transportation system taken over by the Government		$48,167,342.56

Note: It is now probable that all the properties of the Southern Pacific Terminal Company (those leased to the Public as well as those operated by the Government) will be treated as under Federal control. In this event the standard return of that company will be increased by the average annual rentals received from leased properties during the test period, and its other corporate income will be decreased by the amount of rentals received during the year.

To December 31, 1918, $16,000,000.00 was received from the Director General of Railroads on account of the above-mentioned standard return. Between December 31, 1918, and July 10, 1919, further payments have been made aggregating $24,375,000, of which $14,000,000 was paid in cash and $10,375,000 in certificates of indebtedness.

Under the agreement with the Director General of Railroads, the Railroad Administration took over certain operating assets, and assumed the collection and payment for account of the corporations of certain other assets and liabilities. The state of the accounts between the Director General of Railroads, and the various corporations as a whole is shown in the combined balance sheet.

The table showing the results of Federal operations during 1918 compared with the standard return agreed upon with the Director General shows that the Federal income for 1918 exceeded the standard return by $7,757,935.04, or 16.11 per cent.

In order to preserve the continuity of statistics of operations for historic purposes, statements, in the usual form, covering operations by the Government of Southern Pacific System lines during the calendar year 1918, have been embodied in this report.

As a rule, the officers having immediate supervision of the maintenance and operation of your Company's lines at the time such lines were taken over by the Government, continued, as Federal appointees, to supervise the maintenance and operation of your properties under Federal control. The principal exceptions to this rule were (*a*) the Houston, East & West Texas Railway, and the Houston & Shreveport Railroad; and (*b*) the Houston & Texas Central Railroad. In June, 1918, the President of the Kansas City Southern Railway was appointed Federal Manager of the former, and the President of the Gulf Coast Lines was appointed Federal Manager of the latter. On March 1, 1919, however, these three lines were restored to the jurisdiction of Mr. W. B. Scott, their former President, who is now Federal Manager of all your Company's lines in Louisiana and Texas.

The Board takes this opportunity to express its appreciation of the courtesies extended by Federal officers and employees, in furnishing your Company with information concerning the maintenance and operation of your properties by the Federal Administration.

The operating revenues, operating expenses, and net revenue from railway operations of the *first year of Federal control*, compared with the *last year of private control* are:

	1918	1917	+ Increase — Decrease	Per Cent
Operating revenues	$221,611,206.21	$193,971,489.54	+$27,639,716.67	14.25
Operating expenses	162,722,371.84	120,601,822.82	+ 42,120,549.02	34.93
Net revenue from railway operations	58,888,834.37	73,369,666.72	— 14,480,832.35	19.74

The operating revenues in 1918 exceeded those of 1917 by nearly $28,000,000, the effect of 25 per cent. increase in Southern Pacific freight rates and 14 per cent. increase in Southern Pacific passenger rates (following orders of the Director General for a general advance of 25 per cent. in freight rates and in passenger rates to a minimum of three cents per mile, made in June, 1918), an increase of 9.85 per cent. in passengers carried one mile, and a decrease of 4.87 per cent. in ton miles of revenue freight.

The movement of United States troops contributed substantially to the passenger revenue which was augmented by the additional rates of fare that were charged to passengers traveling in Pullman cars, established June 10th, but withdrawn December 1st.

While the citrus fruit crop of California and the cotton crops of Louisiana and Texas were less than normal, the Pacific Coast crop of deciduous fruit was unusually large—so were the movements of live stock and packing house products. Prior to the armistice there was a great demand for the canned products of California; the copper mines and smelters were operating at their maximum and consuming a heavy volume of fuel; the lumber business was stimulated by the construction of war plants and aeroplanes; and a substantial traffic resulted from shipbuilding on the Pacific Coast and other activities of the war. During the year 1918, the ton miles of freight handled by western lines were 1.6 per cent., and, by all lines under Federal control, 1.8 per cent., in excess of the preceding year.

These conditions, combined with the absence of regular steamship service through the Panama Canal and along the Pacific Coast, would have insured to your lines under the management of your own organization a volume of traffic at least equal to that of the calendar year 1917, which produced the largest gross earnings in the history of the Company; but, after the management of your lines was taken out of the hands of your officers, the closing of the traffic agencies through which daily intercourse with your patrons had been maintained, the disturbance of the relationship of both rates and service to the disadvantage of your lines, and the diversion of traffic to competitive routes, resulted in your rail lines transporting 653,707,093 ton miles of freight less than handled during the preceding year, a decrease of 4.87 per cent.

The increase of $42,120,549 in operating expenses absorbed not only all of this increase in revenue but over $14,000,000 more, resulting in a decrease in net revenue from railway operations of $14,480,832, or 19.74 per cent. In other words, *it cost* $1.52 *to earn every additional dollar of operating revenues.* The very heavy increase in operating expenses is attributable largely to advances made in the rates of pay of employees and to increases in the cost of materials.

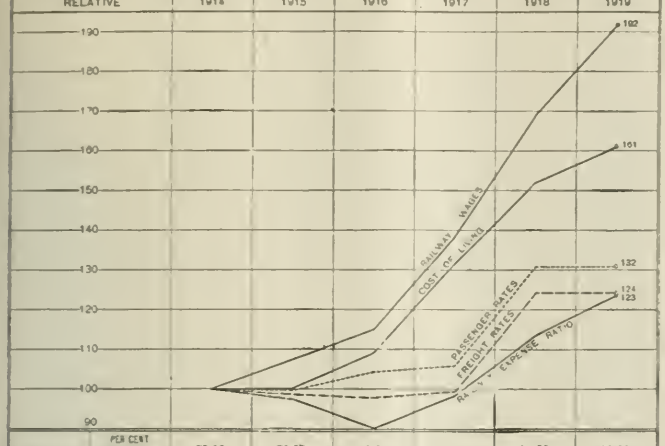
These increases itemized are:

Increased wages	$23,658,000
Increased prices paid for fuel	6,141,000
Increased prices paid for other materials	4,539,000
Total increases in wages and material prices	$34,338,000

The difference between the total of these items and the total increase of

UNITED STATES

CHANGES SINCE COMMENCEMENT OF EUROPEAN WAR IN RAILWAY RATES, RAILWAY LABOR, RAILWAY OPERATING RATIO, AND COST OF LIVING



		1914	1915	1916	1917	1918	1919
RY. OPER. RATIO	PER CENT OPER. EXPS. TO REVENUE	72.05	70.35	65.54	70.48	81.56	88.50
	PERIOD	Year ended June	Year ended June	Year ended Dec.	Year ended Dec	Year ended Dec	Month of April
RAILWAY LABOR	MONTHLY WAGES PER MAN	$65	$70	$75	$90	$110	$125
	PERIOD	Year ended June	Year ended June	Year ended Dec.	Month of Dec	Year ended Dec.	Month of Jan.
RAILWAY RATES	REV. PER PASS. MILE. MILLS	19.76	19.79	20.42	20.91	26	26
	REV. PER TON MILE. MILLS	7.23	7.22	7.07	7.15	9	9
	PERIOD	Year ended June	Year ended June	Year ended Dec.	Year ended Dec.	Last 6 Months	Based on Increases of June 1918

Authorities:- "Cost of Living" Reports of National Industrial Traffic Board. Other Data:- Reports of I.C.C. and U.S. R.R. Administration

$42,120,549 in operating expenses was caused, in the main, by reductions in hours of service, fall in efficiency, etc.

The effect of increases in rates on revenues was felt in the last half of the year only. Many of the increases in rates of pay were made retroactive to the 1st of January, 1918, but as many demands for increased pay were pending at the close of the year and have since been granted in whole, or in part, it is evident from the net income derived from the operation of your properties by the United States Railroad Administration in the first quarter of 1919 that the increases in passenger and freight rates made in 1918 are not sufficient now, and probably will not be sufficient when the properties are returned to their owners, to pay operating expenses, fixed charges, taxes, and reasonable dividends. A further increase is necessary, unless the volume of traffic should increase to an extent that cannot reasonably be expected.

The popular impression of the effect of an increase in rates on living costs is grossly exaggerated, and there is no doubt that the fear of greatly increasing living costs influenced the public and the Interstate Commerce Commission, through the pressure of public opinion, to deny the petitions of the carriers for higher rates to produce an increase in revenue commensurate with the rises in costs of labor and material. To show how slight a foundation exists for this belief, and how exaggerated is the popular conception of this influence, the following figures are adduced:

In the period from 1910 to 1919 the price of dressed beef originating in Chicago and transported to New York increased from 22½ cents to 40 cents per pound, or, expressed in our smallest unit of value, 175 mills, while the freight rate increased 2.4 mills, or only 1.4 per cent.

The price per pound of ham and bacon transported between the same points increased 205 mills, whereof the increase in freight rate was responsible for 1¼ mills, or only 0.73 per cent.

The increase in the cost of a suit of underwear transported from Boston to Chicago in the period 1910 to 1919 was 1.250 mills, to which the increase in freight rate contributed 3 mills, or 0.25 per cent.

A pair of shoes, transported from Boston to Chicago in the same period, increased in price 3.500 mills, of which the increase in freight rate was responsible for 6 mills, or 0.16 per cent.

No coin is small enough to represent any of these increases in cost, but if the dealer should add one copper cent in each case to the 1910 prices, to reimburse him for the increased cost of his commodity due to increased freight rates, *he would grossly overcharge the purchaser in every case.* He would make him pay *nearly double* the proper amount in the case of a pair of shoes, and over *six* times the proper amount in the case of a pound of ham or bacon.

The accompanying diagram illustrates the slight influence of rates on the cost of living, as to all railroads in the United States. It shows no substantial *increase* of rates from 1916 to 1917, yet the cost of living *rose* rapidly; there was a large *increase* of rates from 1917 to 1918, yet the speed of rise in the line of cost of living *was perceptibly checked.*

Although at the time your property was taken over by the Government your Company had orders outstanding for 57 locomotives, 41 passenger-train cars, and 718 freight-train cars, and had under construction in its own shops 56 locomotives and 3,808 freight-train cars, making a total of 113 locomotives, 41 passenger-train cars, and 4,526 freight-train cars, for which provision had been made, it was, nevertheless, forced to agree, as a condition precedent to the execution of its contract with the Director General of Railroads, to purchase from the Director General 1,000 box cars, at a total cost of $3,050,000. In the standard contract agreed to by him with the carriers, the Director General obligates himself not to "acquire any motive power, cars, or other equipment at the expense, or on the credit, of the Companies in excess of what in his judgment is necessary, in addition to their then existing equipment, to provide for the traffic requirements of their own systems of transportation." Notwithstanding the Companies' books showed that traffic requirements of their own system larger than those of 1918 had been provided for, and that in addition its freight equipment had earned net rentals enough on other lines to average $1,227,533 annually for the four years next preceding the date of Federal control; this and all other arguments presented to the Director General were met by a refusal to execute the contract with your Company unless

		Federal Operations Calendar Year 1918.	Standard Return. (Average for three test years.)	+ Increase. — Decrease.	Per Cent.
1.	Average miles of road operated	11,101.54	10,978.24	+ 123.30	1.12
	RAILWAY OPERATING REVENUES.				
2.	Freight	$151,079,622.80	$101,747,133.36	+ $49,332,489.44	48.49
3.	Passenger	55,247,921.76	39,561,045.08	+ 13,686,876.68	34.60
4.	Mail and express	7,839,389.77	6,421,614.92	+ 1,417,765.85	22.08
5.	All other transportation	3,548,305.77	3,031,278.29	+ 517,027.48	17.06
6.	Incidental	5,851,254.45	4,334,867.84	+ 1,516,386.61	34.98
7.	Joint facility—Credit	83,207.96	73,812.71	+ 9,395.25	12.73
8.	Joint facility—Debit	38,487.30	21,556.67	— 16,930.63	78.54
9.	Total railway operating revenues	$221,611,206.21	$155,148,195.53	+ $66,463,010.68	42.84
	RAILWAY OPERATING EXPENSES.				
10.	Maintenance of way and structures	$25,824,725.78	$17,454,799.31	+ $8,369,926.47	47.95
11.	Maintenance of equipment	40,747,834.97	22,266,303.00	+ 18,481,531.97	83.00
12.	Total maintenance	$66,572,560.75	$39,721,102.31	+ $26,851,458.44	67.60
13.	Traffic	$2,249,360.43	$3,075,420.97	— $826,060.54	26.86
14.	Transportation	86,084,897.92	50,609,283.12	+ 35,475,614.80	70.10
15.	Miscellaneous operations	3,330,398.66	2,302,300.04	+ 1,028,098.62	44.66
16.	General	4,925,247.01	4,127,596.09	+ 797,650.92	19.32
17.	Transportation for investment—Credit	440,092.93	366,183.75	— 73,909.18	20.18
18.	Total railway operating expenses	$162,722,371.84	$99,469,518.78	+ $63,252,853.06	63.59
19.	Net revenue from railway operations	$58,888,834.37	$55,678,676.75	+ $3,210,157.62	5.77
20.	Railway tax accruals	$9,398,681.08	$7,889,370.26	+ $1,509,310.82	19.13
21.	Uncollectable railway revenues	59,675.69	52,636.73	+ 7,038.96	13.17
22.	Railway operating income	$49,430,477.60	$47,736,669.76	+ $1,693,807.84	3.55
23.	Equipment rents (Net credit)	†3,661,808.59	*61,363.13	+ 3,723,171.72	.....
24.	Joint facility rent (Net credit)	195,089.66	92,035.93	+ 103,053.73	111.97
25.	Rental for steamships not in service during test period	.....	400,000.00	— 400,000.00	.....
26.	Net of items 22, 23, 24, and 25	$55,287,375.85	$48,167,342.56	+ $5,120,033.29	10.63
27.	Miscellaneous income	104,901.62	.....	+ 104,901.62	.....
28.	Expenses in excess of revenues prior to January 1, 1918, included in above but charged against corporation	2,533,000.13	.....	+ 2,533,000.13	.....
29.	Federal income for 1918 from operation of Southern Pacific Lines taken over by Government	$55,925,277.60	.....	.....	.....
30.	Standard return	.....	$48,167,342.56	.....	.....
31.	Federal income for 1918, in excess of standard return	.....	.....	+ $7,757,935.04	16.11

†Represents principally, rental for steamships under charter to U. S. Shipping Board, the earnings from which steamships during the test period were included in railway operating revenues. *Debit.

it accepted the allotment of cars that were clearly not needed for the traffic of their own system. As your Directors were compelled to make the sorry choice between Government operation of your properties without a contract, and consequent litigation in the Court of Claims after the end of Federal control for compensation during Government possession; or to accept and pay for 1,000 cars of poor design and excessive cost that your Company did not need, they yielded to major force and accepted the allotment of 1,000 cars as the lesser of the two evils.

The table on the preceding page shows the results of Federal operation of your Company's lines during 1918, compared with the standard return payable by the Government for the use of such property:

PROPERTIES AND MILEAGE

The transportation lines, herein referred to as "Proprietary Companies," constituting the Southern Pacific System, operated by the Government at December 31, 1918, were as follows:

Divisions	First main track	Additional main track	Sidings	Ferries	Water lines
A—Mileage of lines owned by or leased to Southern Pacific Company:					
1. Owned lines	537.46	15.35	203.02	.....	4,400.00
2. Leased lines:					
(a) Central Pacific Railway	2,288.97	431.15	932 58	9.90	125.00
(b) Oregon & California Railroad	701.18	4.60	186.61	.....	.....
(c) Southern Pacific Railroad	3,431.53	200.42	1,504.44	3.00	.....
(d) South Pacific Coast Railway	106.70	20.46	49.21	3.00	.....
B—Mileage of lines owned by or leased to the following companies:					
1. Arizona Eastern R. R. Co.	377.74	.....	76.72	.....	.....
2. Houston & Texas Central R. R. Co.	887.25	12.94	264.26	.....	.....
3. Galveston, Harrisburg & San Antonio Ry. Co.	1,381.90	40.87	382.05	.....	.....
4. Texas & New Orleans R. R. Co.	469.65	8.78	220.26	.....	.....
5. Houston, East and West Texas Ry. Co.	190.94	.....	58.28	.....	.....
6. Houston & Shreveport R. R. Co.	40.72	.60	7 20	.....	.....
7. Morgan's Louisiana & Texas R. R. & S. S. Co.	400.67	58.35	*250.50	3.00	.....
8. Louisiana Western R. R. Co.	207.74	.....	83.01	.....	.....
9. Lake Charles & Northern R. R. Co.	72.66	.....	11.37	.....	.....
10. Iberia & Vermilion R. R. Co.	21.44	.....	11.02	.....	.....
11. Southern Pacific Terminal Co.	.....	.....	25.68	.....	.....
Total	11,116.55	793.61	4,266.21	18.90	4,525.00
Less mileage used in connection with property of two or more of above companies and included in mileage of each	31.23	29.99	29.84	.....	.....
Total miles of road operated by Government at December 31, 1918	†11,085.32	763.62	4,236.37	18.90	4,525.00
Total miles of road operated by company at December 31, 1917	11,164.35	560.70	4,149.74	18.90	4,525.00
Increase	.....	202.92	*86.63	.....	.....
Decrease	79.03	.....	.....	.....	.....
Average miles of road operated by Government during year 1918	11,101.54	616.84	.....	.....	.....

*Includes 18.92 miles of sidings, operated under trackage rights, omitted from last year's report. †Includes 2.48 miles owned jointly with other companies, 4.87 miles leased from other companies, and 126.39 miles operated under trackage rights; and excludes 32.61 miles of owned lines leased to other companies.

In addition to the mileage above tabulated, the Southern Pacific Company solely controls through ownership of capital stock, 865.46 miles of electric lines and 1,240.52 miles of the Southern Pacific R. R. Co. of Mexico; and jointly controls (through ownership of capital stock in equal proportions with the Atchison, Topeka & Santa Fe Ry. Co.) 507.06 miles of the Northwestern Pacific Railroad, and 59.66 miles of the Sunset Railway, A GRAND TOTAL OF 13,758.02 MILES.

INCOME ACCOUNT Southern Pacific Company and Proprietary Companies, Combined (Excluding offsetting accounts)

	Year ended December 31, 1918	Year ended December 31, 1917	+Increase —Decrease	Per cent
1. Standard return	$48,167,342.56	.....	+ $48,167,342.56	.....
Operating Income				
2. Operating revenues	.....	$193,971,489.54	—$193,971,489.54	.....
3. Operating expenses	.....	120,661,822.82	— 120,661,822.82	.....
4. Net revenue from railway operations	.....	$73,369,666.72	— $73,369,666.72	.....
5. Railway tax accruals	.....	$13,792,176.17	— $13,792,176.17	.....
6. Uncollectible railway revenues	.....	70,237.57	— 70,237.57	.....
7. Railway operating income	.....	$59,507,252.98	— $59,507,252.98	.....
8. Equipment rents	.....	2,604,342.35	— 2,604,342.35	.....
9. Joint facility rents	.....	141,609.95	— 141,609.95	.....
10. Total of items 7, 8 and 9	.....	$62,253,205.28	— $62,253,205.28	.....
11. Revenues from miscellaneous operations	$20,397,863.81	$12,798,435.07	+ $7,599,428.74	.....
12. Expenses of miscellaneous operations	15,921,426.68	7,127,017.02	+ 8,794,409.66	123.40
13. Net revenue from miscellaneous operations	$4,476,437.13	$5,671,418.05	— $1,194,980.92	21.07
14. Taxes on miscellaneous operating property	159,239.80	99,860.02	+ 59,379.78	59.46
15. Miscellaneous operating income	$4,317,197.33	$5,571,558.03	— $1,254,360.70	22.51
16. Total of items 1, 10 and 15	$52,484,539.89	$67,824,763.31	— $15,340,223.42	22.62
Nonoperating Income.				
17. Income from lease of road	$27,031.90	$29,149.86	— $2,117.96	7.27
18. Miscellaneous rent income	683 722.22	421,114.42	+ 262,607.80	62.36
19. Miscellaneous nonoperating physical property	420,681.73	263,375.18	+ 157,306.55	59.73
20. Separately operated properties—Profit	50,176.24	20,960.34	+ 29,215.90	139.39
21. Dividend income	2,304,208.06	2,388,650.65	— 84,442.59	3.54
22. Income from funded securities—Bonds and notes—Affiliated and other companies	2,297,166.57	2,188,594.29	+ 108,572.28	4.96
23. Income from funded securities—Investment advances—Affiliated companies	298,335 09	542,138.18	— 243,803.09	44.97
24. Income from unfunded securities and accounts	556,093.61	1,045,011.18	— 488,917.57	46.79
25. Income from sinking and other reserve funds	714,439.71	687,322.39	+ 27,117.32	3.95
26. Miscellaneous income	102,839.25	112,926.88	— 10,087.63	8.93
27. Revenues prior to January 1, 1918	535,046.94	.....	+ 535,046.94	.....
28. Total nonoperating income	$7,989,741.32	$7,699,243.37	+ $290,497.95	3.77
29. Gross income	$60,474,281.21	$75,524,006.68	— $15,049,725.47	19.93
Deductions from Gross Income				
30. Rent for leased roads				
31. Miscellaneous rents	$329,588.93	$168,315.91	+ $161,273.02	95.82
32. Miscellaneous tax accruals	590,407.88	519,068.06	+ 71,339.82	13.74
33. Railway tax accruals—War taxes	684,460.70	630,176.48	+ 54,284.22	8.61
34. Interest on funded debt—Bonds and notes	1,707,269.24	.....	+ 1,707,269.24	.....
35. Interest on funded debt—Nonnegotiable debt to affiliated companies	23,767,103.53	24,219,075.12	— 451,971.59	1.87
36. Interest on unfunded debt	114,256.18	284,996.66	— 170,740.48	59.91
37. Amortization of discount on funded debt	146,352.61	34,279.10	+ 112,073.51	326.94
38. Corporate operating expenses	286,965.82	217,216.81	+ 69,749.01	32.11
39. Miscellaneous income charges	726,191.58	138,737.17	+ 587,454.41	423.43
40. Expenses prior to January 1, 1918	368,721.49	182,724.49	+ 185,997.00	101.79
	3,068,047.07	.....	+ 3,068,047.07	.....
41. Total deductions from gross income	$31,789,365.03	$26,394,589.80	+ $5,394,775.23	20.44
42. Net income	$28,684,916.18	$49,129,416.88	— $20,444,500.70	41.61

		Year ended December 31, 1918	Year ended December 31, 1917	+Increase —Decrease	Per cent
	DISPOSITION OF NET INCOME				
43.	Income applied to sinking and other reserve funds				
44.	Dividend appropriations of income	$997,111.48	$978,096.81	+ $19,014.67	1.94
		‡16,404,509.25	*.....	— 16,404,509.25	.....
45.	Total appropriations	$17,401,620.73	$978,096.81	+ $16,423,523.92	.....
46.	Income balance transferred to credit of profit and loss	$11,283,295.45	$48,151,320.07	— $36,868,024.62	76.57
47.	Per cent of net income on outstanding capital stock of Southern Pacific Company	10.38	17.65	— 7.27	41.19

‡Includes $454.00 dividends on stocks of Proprietary Companies held by the Public. *Dividends in 1917 were paid out of accumulated surplus.

OPERATING INCOME.

Miscellaneous Operating Income (line No. 15), substantially all of which represents the operating results of the California Fuel Oil Department of Southern Pacific Company, shows a decrease of $1,254,360.70. This decrease is made up, principally, of a decrease of $3,449,321.43, due to a decrease in the net operating income for the eight months to December 31, 1918, compared with the corresponding period of last year, less an increase of $2,195,522.16, representing the net operating income for the first four months of this year, last year's figures having included operations only for the eight months following April 30, 1917, when the Fuel Oil Department was taken over from the Kern Trading & Oil Company. The decrease of $3,449,321.43 is due, principally, to a decrease of $1,656,757.02 in net revenue from produced oil, and to an increase in operating expenses, the result of including therein this year drilling expenditures for the year amounting to $1,773,820.50, similar expenditures theretofore not having been included in operating expenses.

NONOPERATING INCOME.

Of the increase of $262,607.80 in Miscellaneous Rent Income (line No. 18), $156,188.72 represents the amount due from the United States Railroad Administration for rental of that portion of the office building at San Francisco occupied by Federal forces; and $33,994.08, represents similar rentals collected from others for space occupied in such building, corresponding rentals received last year for space in the Flood Building having been dealt with as an offset against the rent paid for the latter building.

The increase of $157,306.55 in Miscellaneous Nonoperating Physical Property (line No. 19) is due, principally, to an increase in the net income from lands belonging to the Central Pacific Railway Company.

The increase of $29,215.90 in Separately Operated Properties—Profit (line No. 20) is due, principally, to this Company's proportion of increased profits from operation of Pintsch gas plants at Houston and Portland.

The decrease in Dividend Income (line No. 21) is due, principally, to the fact that last year's income included $64,405.16 representing liquidating dividends of companies whose properties were sold to Central Pacific Railway Company and to Southern Pacific Railroad Company as set forth on page 6 of last year's report.

The increase in Income from Funded Securities—Bonds and Notes (line No. 22) is due, principally, to the increase in interest received on Liberty Loan bonds.

The decrease in Income from Funded Securities—Investment Advances (line No. 23) is the result, principally, of including in this account last year interest previously held in suspense, on construction advances repaid last year.

The decrease of $488,917.57 in Income from Unfunded Securities and Accounts (line No. 24) is the result, principally, of the decrease in interest received on surplus funds, the surplus funds on hand at December 31, 1917, having been exhausted in payment of interest, dividends, and other obligations of the Company before any advances on account of our standard return were received from the Government. As complete data necessary for the computation of interest on the accounts with the Government have not been furnished by the Federal Administration, the income account on page 13 does not include such interest. It is estimated, however, that the interest due to the Company is in excess of the interest due to the Government.

The credit to Revenues Prior to January 1, 1918 (line No. 27), is explained below in connection with the debit to Expenses Prior to January 1, 1918 (line No. 40).

DEDUCTIONS FROM GROSS INCOME.

The increase of $161,273.02 in Rent for Leased Roads (line No. 30) is the result, principally, of a rental payment amounting to $135,000, covering the period from January 1, 1912, to December 31, 1917, in controversy for several years, which was paid during the year.

DEDUCTIONS FROM GROSS INCOME.

The increase of $71,339.82 in Miscellaneous Rents (line No. 31) is due, principally, to the fact that last year, following the taking over of the Company's ships by the U. S. Shipping Board, as explained in the tenth paragraph under "Operating Income" on page 8 of last year's report, the rental for piers at New York, New Orleans, and Galveston was charged to the account of the Government.

The increase of $54,284.22 in Miscellaneous Tax Accruals (line No. 32) is due, principally, to an increase of $43,386.65 in taxes on lands covered by Central Pacific Railway Company Three and One-Half Per Cent Mortgage.

The increase of $1,707,269.24 shown against Railway Tax Accruals—War Taxes (line No. 33) is caused by the fact that the war taxes for last year are included in the item of $13,792,176.17 reported against Railway Tax Accruals (line No. 5).

The decrease of $451,971.59 in Interest on Funded Debt—Bonds and Notes (line No. 34) is due, principally, to the conversion of $3,619,500 of Five Per Cent Convertible Bonds into common stock; to the redemption of $1,841,000 of Equipment Trust Certificates; and to the acquisition by the Southern Pacific Company of the $3,839,000 of Morgan's Louisiana & Texas Railroad & Steamship Company Main Line First Mortgage Seven Per Cent Bonds, which matured April 1, 1918, the interest on which has been excluded, in the income statement both from Interest on Funded Debt (line No. 34), and from Income from Funded Securities (line No. 22).

The decrease in Interest on Funded Debt—Nonnegotiable Debt to Affiliated Companies (line No. 35) is the result of reductions in the indebtedness of Southern Pacific Company to Affiliated Companies.

The increase in Interest on Unfunded Debt (line No. 36) represents, principally, the interest paid on funds borrowed for the purchase of Liberty Loan Bonds.

The increase of $69,749.01 in Amortization of Discount on Funded Debt (line No. 37) is the result, principally, of the retirement during the year of $3,619,500, par value, of Five Per Cent Twenty-Year Convertible Gold Bonds in exchange for a like amount of common stock issued.

The amount shown in the column for last year as Corporate Operating Expenses (line No. 38) was dealt with last year as Maintenance of Investment Organization. The increase of $587,454.41 represents the salaries and expenses of corporate officers and employees at New York, San Francisco, Houston, New Orleans, and Tucson necessary to administer the corporate affairs of the companies and to protect their interest during Federal control. Although the salaries and expenses of such officers and employees were charged to operating expenses during the test period, thereby reducing the average annual railway operating income upon which the standard return was based, the Director General refused to bear any portion thereof after the appointment of Federal Managers.

The increase in Miscellaneous Income Charges (line No. 39) is the result of an adjustment on account of Federal income taxes, payable by the companies, on the interest on tax-exempt bonds.

The credits to Revenues Prior to January 1, 1918 (line No. 27), and the debits to Expenses Prior to January 1, 1918 (line No. 40) represent, respectively, the collection and payment during the year, through the Federal Administration, of revenues and expenses, commonly called "lap-over" items, applicable to the period prior to January 1, 1918. As these lap-over items represent assets and liabilities of the corporation, the Interstate Commerce Commission instructed that they be taken into the Corporation's income account and this has been done. Inasmuch, however, as the standard return is based on the average annual railway operating income for a three-year period the Corporation's income for the year is complete without including these lap-over items, and it would seem, therefore, that such items either should be held in suspense to be included in the operations in the year following the end of Federal control when similar lap-over items will be credited or charged, as the case may be, to the Government, or should be dealt with as profit and loss items. The effect, therefore, of obeying the Commission's instructions is *to understate the income for the year by* $2,533,000.13. This, added to the effect of excluding Corporate Expenses from Operating Expenses during Government Control, *reduces the income account by* $3,120,454.54. Otherwise stated the addition of this amount to Net Income (line No. 42) *would increase it* 10.87 *per cent.*

DEDUCTIONS FROM GROSS INCOME

On December 31, 1918, the principal of advances to the Southern Pacific Railroad Company of Mexico amounted to $39,792,065.33. Interest accruing on these advances has not been taken into the income of the Southern Pacific Company.

CAPITAL STOCK

The capital stock of the Southern Pacific Company outstanding at the beginning of the year amounted to		$272,823,405.64
Issued during the year:		
Common stock issued in exchange for a like amount of Five Per Cent Twenty-Year Convertible Gold Bonds surrendered and cancelled		3,619,500.00
Amount of Southern Pacific Company capital stock outstanding December 31, 1918		$276,442,905.64
The common and preferred capital stocks of Proprietary Companies outstanding at the beginning of the year amounted to	$349,082,400.00	
Add:		
Capital stock of Marion & Linn County Railroad Company, which has not heretofore been dealt with as a Proprietary Company.	250,000.00	
	$349,332,400.00	
Deduct:		
Capital stock of Inter-California Railway Company, which company is dealt with this year as an Affiliated Company	2,500,000.00	
Total capital stocks of Proprietary Companies outstanding December 31, 1918		$346,832,400.00
Capital stocks of Proprietary Companies outstanding December 31, 1918, were held as follows:		
In hands of public		$76,100.00
Owned by Southern Pacific Company	$346,456,300.00	
Owned by Morgan's Louisiana & Texas Railroad & Steamship Company	300,000.00	
		346,756,300.00
		$346,832,400.00

FUNDED DEBT

The funded and other fixed interest-bearing debt of the Southern Pacific Company and of its Proprietary Companies, outstanding December 31, 1917, was as follows:

Southern Pacific Company	$206,657,610.00	
Proprietary Companies	456,471,651.33	
Total outstanding December 31, 1917		$663,129,261.33
Deduct:		
Funded debt of Inter-California Railway Company, which company is dealt with this year as an Affiliated Company		850,000.00
		$662,279,261.33

BALANCE SHEET

SOUTHERN PACIFIC COMPANY AND PROPRIETARY COMPANIES, COMBINED

ASSETS—DECEMBER 31, 1918, COMPARED WITH DECEMBER 31, 1917, EXCLUDING OFFSETTING ACCOUNTS

Assets	December 31, 1918	December 31, 1917	Increase or decrease
INVESTMENTS			
Investment in road and equipment	$996,741,568.97	$982,028,004.54	$14,713,564.43
Improvements on leased railway property	1,416,086.78	1,454,270.66	—$38,183.88
Sinking funds	14,597,652.09	13,711,547.27	886,104.82
Deposits in lieu of mortgaged property sold	935.30	916.88	18.42
Miscellaneous physical property	*31,805,766.84	30,778,341.24	1,027,425.60
Investments in affiliated companies:			
Stocks	273,317,127.61	273,313,261.65	3,865.96
Bonds	134,690,024.70	142,156,382.61	—7,466,357.91
Stocks } Cost inseparable	12,192,301.70	12,192,301.70	.....
Bonds }	873,654.99	567,571.43	306,083.56
Notes	107,667,866.75	95,331,020.65	12,336,846.10
Advances			
Other investments:			
Stocks	156,710.29	158,971.29	—2,261.00
Bonds	16,282,632.34	14,466,777.00	1,815,855.34
Notes	6,436,716.11	7,217,023.61	—780,307.50
Advances	434,063.30	2,574,142.57	—2,140,079.27
Miscellaneous	1,847,845.29	313,124.25	1,534,721.04
Total	$1,598,460,953.06	$1,576,263,657.35	$22,197,295.71
Cash	$10,264,657.88	$11,733,162.61	—$1,468,504.73
CURRENT ASSETS			
Demand loans and deposits	.....	4,500,000.00	—4,500,000.00
Time drafts and deposits	.....	15,500,000.00	—15,500,000.00
Special deposits	59,287.52	87,728.17	—28,440.65
Loans and bills receivable	3,351,520.52	4,050,388.38	—698,867.86
Traffic and car-service balances receivable	267,880.32	1,997,112.74	—1,729,232.42
Net balance receivable from agents and conductors	.....	7,499,834.43	—7,499,834.43
Miscellaneous accounts receivable	3,503,017.08	9,174,317.16	—5,671,300.08
Material and supplies	†1,692,207.19	24,406,115.91	—22,713,908.72
Interest and dividends receivable	2,239,583.11	2,590,309.52	—350,726.41
Rents receivable	1,667,116.12	1,845,219.51	—178,103.39
Other current assets	46,824.40	74,639.29	—27,814.89
Total	$23,092,094.14	$83,458,827.72	—$60,366,733.58
ACCOUNTS WITH U. S. GOVERNMENT			
Standard return for year 1918. $48,167,342.56 *Less* received on account . 16,000,000.00	$32,167,342.56	.....	$32,167,342.56
Cash and agents' and conductors' balances taken over January 1, 1918, revenues prior to January 1, 1918, and other corporate assets collected, etc.	36,435,380.91	.....	36,435,380.91
Material and supplies, December 31, 1917	23,581,109.84	.....	23,581,109.84
Depreciation and other reserves	4,058,073.23	....	4,058,073.23
Road and equipment retired and not replaced	431,432.86	.....	431,432.86
Total	$96,673,339.40	.....	$96,673,339.40
DEFERRED ASSETS			
Working fund advances	$46,928.08	$103,434.45	—$56,506.37
Other deferred assets	5,493,027.77	4,017,883.74	$1,475,144.03
Total	$5,539,955.85	$4,121,318.19	$1,418,637.66
UNADJUSTED DEBITS			
Rents and insurance premiums paid in advance	$122,184.72	$135,618.35	—$13,433.63
Discount on capital stock	3,988,600.00	5,959,083.45	—1,970,483.45
Discount on funded debt	3,331,811.05	3,682,526.87	—350,715.82
Other unadjusted debits	5,121,547.86	11,454,127.36	—6,332,579.50
Securities issued or assumed—unpledged	‡5,849,425.00	5,720,675.00	128,750.00
Securities issued or assumed—pledged	‡231,750.00	713,000.00	—481,250.00
Total	$12,564,143.63	$21,231,356.03	—$8,667,212.40
Total assets	$1,736,330,486.08	$1,685,075,159.29	$51,255,326.79

LIABILITIES—DECEMBER 31, 1918, COMPARED WITH DECEMBER 31, 1917, EXCLUDING OFFSETTING ACCOUNTS

Liabilities	December 31, 1918	December 31, 1917	Increase or decrease
STOCK			
Capital stock of Southern Pacific Company	$276,442,905.64	$272,823,405.64	$3,619,500.00
Capital stock of Proprietary Companies	*346,832,400.00	349,082,400.00	—2,250,000.00
Total	$623,275,305.64	$621,905,805.64	$1,369,500.00
LONG TERM DEBT			
Funded debt unmatured:			
Book liability	$652,569,674.78	$669,562,936.33	—$16,993,261.55
Less held by or for company	6,081,175.00	6,433,675.00	—352,500.00
Actually outstanding:			
Southern Pacific Company	$201,189,710.00	$206,657,610.00	—$5,467,900.00
Proprietary Companies	*445,298,789.78	456,471,651.33	—11,172,861.55
Total funded debt	$646,488,499.78	$663,129,261.33	—$16,640,761.55
Non-negotiable debt to affiliated companies:			
Open accounts	3,227,258.81	2,829,872.25	$397,386.56
Total	$649,715,758.59	$665,959,133.58	—$16,243,374.99
CURRENT LIABILITIES.			
Loans and bills payable	†$6,050,000.00	.....	$6,050,000.00
Traffic and car service balances payable	94,353.40	$2,661,701.70	—$2,567,348.30
Audited accounts and wages payable	1,142,662.12	12,353,426.61	—11,210,764.49
Miscellaneous accounts payable	1,517,448.30	3,272,524.87	—1,755,076.57
Interest matured unpaid	6,296,515.21	5,520,303.01	776,212.20
Dividends matured unpaid	4,274,988.62	4,159,051.49	115,937.13
Funded debt matured unpaid	127,213.92	512,213.92	—385,000.00
Unmatured interest accrued	5,261,940.89	5,464,404.36	—202,463.47
Unmatured rents accrued	247,446.18	247,802.70	—356.52
Other current liabilities	81,287.83	672,379.48	—591,091.65
Total	$25,093,856.47	$34,863,808.14	—$9,769,951.67
ACCOUNTS WITH UNITED STATES GOVERNMENT.			
Advances for additions and betterments	$13,855,161.98	.....	$13,855,161.98
Advances for expenses prior to January 1, 1918, and other corporate liabilities paid, etc.	45,951,353.23	.....	45,951,353.23
Total	$59,806,515.21	.....	$59,806,515.21
DEFERRED LIABILITIES.			
Other deferred liabilities	$57,331.47	$135,222.20	—$77,890.73
UNADJUSTED CREDITS.			
Tax liability	$4,266,757.28	$7,639,524.97	—$3,372,767.69
Insurance and casualty reserves	3,264,555.78	3,158,472.00	106,083.78
Accrued depreciation—Road	††1,165,281.37	1,010,676.31	154,605.06
Accrued depreciation—Equipment	47,597,739.57	44,486,327.33	3,111,412.24
Accrued depreciation—Miscellaneous physical property	‡7,650,520.81	6,377,594.44	1,272,926.37
Other unadjusted credits	§50,639,151.63	48,602,771.04	2,036,380.59
Total	$114,584,006.44	$111,275,366.09	$3,308,640.35
CORPORATE SURPLUS.			
Additions to property through income and surplus	$1,271,691.65	$351,906.71	$919,784.94
Funded debt retired through income and surplus	21,566,803.76	21,087,445.45	479,358.31
Sinking fund reserves	10,337,920.61	9,397,707.47	940,213.14
Appropriated surplus not specifically invested	3,818,177.83	3,818,177.83	.....
Total appropriated surplus	$36,994,593.85	$34,655,237.46	$2,339,356.39
Profit and loss—Balance	226,803,118.41	216,280,586.18	10,522,532.23
Total corporate surplus	$263,797,712.26	$250,935,823.64	$12,861,888.62
Total liabilities	$1,736,330,486.08	$1,685,075,159.29	$51,255,326.79

*The value of the unsold Central Pacific Railway Company and Oregon & California Railroad Company land grant lands is not included in the above statement of assets. †Represents material and supplies of California Fuel Oil Department. ‡Excluded from total assets in accordance with regulations of Interstate Commerce Commission.

*The outstanding capital stock and funded debt include capital stocks and funded debt of Proprietary Companies of the par value of $346,756,300 and $102,190,216.41, respectively, a total of $448,946,516.41, which securities are owned by the Southern Pacific Company or by Proprietary Companies, or are held in sinking funds of Proprietary Companies. The cost of these securities is included in the investments shown above. Of the said amount, stocks of the par value of $249,653,161, which stand charged on the books at $232,932,667.41, are pledged against the issue of Southern Pacific Company stock and bonds. †Represents notes issued in connection with the purchase of Liberty Loan Bonds. ††Represents accrued depreciation on electric power plants and substations, general office building at San Francisco, wood preserving works, Sacramento rolling mill, oil storage plants, grain elevators, and similar facilities. ‡Represents accrued depreciation on oil lands and improvements acquired from Kern Trading & Oil Company. §Represents, principally, interest on construction advances which have not been repaid.

Retired during the year:		
SOUTHERN PACIFIC COMPANY.		
San Francisco Terminal First Mortgage Four Per Cent Bonds:		
Purchased from payments to sinking fund		$7,400.00
Five Per Cent Twenty-Year Convertible Gold Bonds:		
Retired in exchange for a like amount of common stock issued		3,619,500.00
Equipment Trust Certificates:		
Series A, Due March 1, 1918, paid off	$1,012,000.00	
Series B, Due September 1, 1918, paid off	201,000.00	
Series C, Due December 1, 1918, paid off	117,000.00	
Series D, Due May 1, 1918, paid off	511,000.00	
		1,841,000.00
CENTRAL PACIFIC RAILWAY COMPANY.		
First Refunding Mortgage Four Per Cent Bonds:		
Purchased from payments to sinking fund	$31,000.00	
Four Per Cent Thirty-Five Year European Loan of 1911:		
Adjustment in converting from French francs to U. S. gold the $24,726,905.78 of such bonds acquired by Southern Pacific Company to December 31, 1918	24.72	
Three and One-half Per Cent Mortgage Gold Bonds:		
Purchased from proceeds of sale of lands	98,500.00	
Purchased from payments to sinking fund	27,000.00	
Extensions Purchase Notes:		
Due March 1, 1917, paid off	10,139,349.53	
		10,295,874.25
SOUTH PACIFIC COAST RAILWAY COMPANY.		
First Mortgage Four Per Cent Bonds:		
Purchased from payments to sinking fund		8,000.00
SOUTHERN PACIFIC RAILROAD COMPANY.		
First Refunding Mortgage Four Per Cent Gold Bonds:		
Purchased from payments to sinking fund		14,000.00
TEXAS & NEW ORLEANS RAILROAD COMPANY.		
Payment to State of Texas account of School Fund Debt		4,987.30
Total retired during the year		15,790,761.55
Amount of funded and other fixed interest-bearing debt of the Southern Pacific Company and of its Proprietary Companies, outstanding December 31, 1918		$646,488,499.78
The outstanding securities are held as follows:		
In hands of public		$544,298,283.36
Owned by Southern Pacific Company	$87,342,216.42	
Owned by Proprietary Companies	2,544,000.00	
Held in sinking funds of Proprietary Companies	12,304,000.00	
		102,190,216.42
Total		$646,488,499.78

Under the terms of the indenture of June 1, 1909, securing the issue of Southern Pacific Company Four Per Cent Twenty-Year Convertible Gold Bonds, the holders of such bonds were given the privilege of converting their bonds at par into paid-up shares of the common stock of the Company at $130 per share of $100 par value on or before June 1, 1919. As such date, however, fell upon a Sunday the privilege was extended to and including June 2, 1919. Up to December 31, 1918, there had been converted bonds to the amount of $662,090, and from January 1, 1919, to and including June 2, 1919, bonds to the amount of $26,657,150 were converted, making a total of $27,319,240 par value of bonds (or 33.39 per cent. of the $81,814,000 of bonds issued), converted into $21,014,800 par value of stock.

LIBERTY LOAN

To enable the employees of your Company and of its affiliated companies to subscribe for Liberty Loan Bonds, they were permitted to subscribe through the Company for an amount of such bonds not exceeding twenty-five per cent of their yearly salaries, the Company advancing the subscription price of the bonds and charging interest on such advances at the bond rate, the amounts so advanced to be repaid to the Company by monthly salary deductions. The following statement shows the bonds of each issue subscribed for on behalf of employees and on behalf of the Company:

	First loan	Second loan	Third loan	Fourth loan	Fifth loan
Total number of employees subscribing	19,973	19,078	64,129	†9,474	†8,412
Per cent of employees subscribing to total employees	27%	27%	81%	†64%	†55%
Total amount subscribed for on behalf of employees	$1,918,800	$1,843,700	$5,019,400	†$1,154,050	†$996,050
Amount subscribed for on behalf of the Company	*$5,000,000	5,000,000	2,000,000	7,000,000	.....
Total subscriptions of employees and Company	$6,918,800	$6,843,700	$7,019,400	$8,154,050	$996,050

*Of the amounts subscribed there were allotted to the Company $850,000 of First Loan bonds, $4,018,750 of Second Loan bonds, $2,000,000 of Third Loan bonds, and $7,000,000 of Fourth Loan bonds. †Represents corporate employees only.

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

In the last annual report, after stating that the decision of the United States District Court at Salt Lake City in favor of the Southern Pacific Company had been appealed by the United States to the Supreme Court of the United States, it was said: "It may be that the appeal will not be brought on for hearing by the Supreme Court so long as railroads are being operated by the President." This forecast has proven to be correct. The case has twice been continued for the term, along with other important trust cases, on motion of the Attorney General. At the next term of the Supreme Court, beginning in October, 1919, if a return of the railroads has taken place or is reasonably certain in the near future, it is probable that the case will be set down for an early hearing. If so, a decision may be expected in the first half of 1920.

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

At the time of the last annual report there had been recently instituted an accounting suit by the United States, seeking to offset against the compensation of $2.50 per acre for the unsold lands moneys received by the Company, in excess of $2.50 per acre, by reason of past sales, leases and otherwise, as well as State taxes levied since the forfeiture decision in 1913 and voluntarily paid by the Federal Government to the State of Oregon. That suit is now at issue, and both parties are engaged in preparing for the trial.

THE SUITS INVOLVING TITLE TO THE OIL LANDS

The suits involving title to the productive oil lands, which more than a year ago were argued and submitted in the United States District Court in California, are still being held under advisement by that court. A decision is looked for any day. The suit to cancel patents to certain other lands alleged but not proven to be oil lands, known as the Elk Hills case, was argued in March last before the Supreme Court of the United States, and is now awaiting the decision of that court.

GENERAL

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

1½ per cent paid April 1, 1918	$4,092,351.08
1½ per cent paid July 1, 1918	4,092,351.08
1½ per cent paid October 1, 1918	4,092,351.08
1½ per cent payable January 2, 1919	4,127,002.01
	$16,404,055.25

As stated in the last annual report revolutionary disturbances on the line of the Southern Pacific Railroad of Mexico, with the exception of occasional bandit and Indian raids, practically ceased in the early winter of 1916-1917. A revised estimate places the cost of property destroyed from the beginning of the Madero Revolution, in 1910, to December 31, 1918, at approximately 4,864,700 pesos, equivalent to $2,432,350. The formation of the Government commission for the investigation and adjustment of claims for damages suffered on account of revolutionary disturbances, mentioned in last year's report, has been completed by the appointment of a president and four members; but thus far it has made little progress, and has taken no action upon our claims, although our fiscal representative in Mexico City has, periodically, filed with the Mexican Government statements showing the amounts due the Company. In addition to the claims for property destroyed there is due the Company approximately 8,460,000 pesos for freight and passenger service performed, for rental of road and equipment, and for material furnished to or confiscated by the various military authorities, bills for which will be filed with the Mexican Government as soon as conditions permit. The average mileage of road operated during the year was 1,007 miles. On account of the unsettled conditions, however, only such maintenance work was done during the year as was absolutely necessary to render it possible to operate trains over those portions of the line that were open for traffic.

The general railroad law of Mexico, under which the several concessions covering the construction and operation of the railway of the Southern Pacific Railroad Company of Mexico were granted, provides that at the end of the ninety-nine years' life of each concession the property embraced thereunder shall pass in good condition without encumbrance, and without further consideration, into the ownership and control of the Mexican Government. Under this law, however, the Mexican Government is required to purchase the rolling stock and material and supplies owned by the railroad company at the time the Government takes over the property, paying therefor in cash the value placed thereon by two appraisers. In order to provide for the loss on the property which will thus pass into the control of the Mexican Government at the end of the concession period, the Board of Directors of the Southern Pacific Railroad Company of Mexico authorized the creation of a reserve, by charging to Profit and Loss the amount estimated to have accrued from the beginning of the concession period to December 31, 1917, the remainder of such loss to be amortized by charges to income during the remaining life of the concessions. A reserve, amounting to $4,004,476.70, was therefore created during the year, $3,545,680.48 thereof, representing the proportion of the loss accruing to December 31, 1917, being debited to Profit and Loss, and the remaining $458,796.22, representing the proportion of the loss accruing during the current year, debited to Income Account.

In addition to the completed lines of railway reported under Properties and Mileage, and the still incompleted line of the Southern Pacific Railroad Company of Mexico, construction is progressing on the lines of the following companies, viz.:

	Length of projected line.	Track completed.	Grading completed.	Grading progressing
	Miles.	Miles.	Miles.	Miles.
SOUTHERN PACIFIC RAILROAD:				
Harrington to Hamilton, Cal.	*61.18	61.18	....	....
HOUSTON & TEXAS CENTRAL RAILROAD:				
Dallas, Texas—Belt Line around city	15.54	....	....	15.54
VISALIA ELECTRIC RAILROAD:				
Exeter to Strathmere, Cal.	†16.36	16.36	....	....
California Granite Company Spur	‡1.37	1.37	....	....
Extension Portex South	2.40	....	2.00	.40
Fayette to Lindsay, Cal.	1.55	....	1.55	....
§SAN DIEGO & ARIZONA RAILWAY:				
San Diego to El Centro, Cal.	147.75	135.31	7.04	5.40

* Line will not be opened to public for traffic until ballasting is completed. †Opened to public for traffic June 1, 1918. ‡Opened to public for traffic January 12, 1918. §Jointly controlled through ownership of capital stock in equal proportions with Spreckels Brothers.

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

Railway Officers

Railroad Administration

Central

R. M. Robinson, traffic manager of the Dayton (Ohio) Chamber of Commerce, has been appointed traffic assistant in the Division of Public Service, succeeding **Charles B. Heinemann**, resigned to resume his former position as secretary and traffic manager of the National Live Stock Association.

John Barton Payne, general counsel of the Railroad Administration, has been nominated by the President for appointment as a member of the United States Shipping Board, succeeding **E. N. Hurley**, resigned. Before going to the Railroad Administration Mr. Payne was counsel for the Emergency Fleet Corporation.

Financial, Legal and Accounting

L. R. Wood, has been appointed auditor, of the St. Joseph & Grand Island; and the St. Joseph Terminal Railroad, with headquarters at St. Joseph, Mo., to succed **J. A. Quinn**, transferred.

G. W. Oliver, statistician of the Atchison, Topeka & Santa Fe with headquarters at Chicago, has resigned to establish an office in Chicago as a railroad analyst. Mr. Oliver will specialize in cost analysis and statistical work in connection with freight litigation before the Interstate Commerce Commission, state commissions and the courts.

C. W. Crow, chief clerk to the auditor of the Trinity & Brazos Valley, at Houston, Texas, has been promoted to auditor, with the same headquarters. Mr. Crow was born in Texas and began his railway career in the service of the Fort Worth & Denver City, with which road he remained for 20 years. In January, 1916, he resigned from his position with the Fort Worth & Denver City to become chief clerk to the auditor of the Denver & Salt Lake, with headquarters at Denver, Colo. He continued in this capacity until June, 1918, at which time he entered the service of the Trinity & Brazos Valley as chief clerk to the auditor, with headquarters at Houston. He succeeds **L. H. Attwell, Jr.**, who recently tendered his resignation to become receiver and corporate auditor of the Trinity & Brazos Valley Railway Company.

C. W. Crow

Operating

Captain S. L. Racey, recently discharged from military service, has resumed his duties as superintendent of the Green River division of the Denver & Rio Grande, with headquarters at Helper, Utah.

H. R. Davis, general yard master of the Covington, Ky., and Silver Grove terminals of the Chesapeake & Ohio, with headquarters at Covington, has been promoted to assistant trainmaster of the Cincinnati and Northern divisions of the Chesapeake & Ohio, the Chesapeake & Ohio Railroad of Indiana, the Ashland Coal & Iron, the Sandy Valley & Elkhorn and the Long Fork, with the same headquarters.

Traffic

Edward P. Hennessey, commercial agent of the Chicago, Rock Island & Pacific, with headquarters at Omaha, Neb., has been promoted to division freight agent with the same headquarters, succeeding **John E. Udd**, who has retired.

Engineering and Rolling Stock

E. H. Roelofs, assistant engineer of motive power on the Philadelphia & Reading, with headquarters at Reading, Pa., has resigned to enter the service of the Baldwin Locomotive Works.

Purchasing

H. G. Davis, acting storekeeper on the Toledo, St. Louis & Western, with headquarters at Frankfort, Ind., has been promoted to general stores agent, with the same headquarters, in charge of the inspection of ties and other forest products. **C. N. Thacker** will succeed Mr. Davis as storekeeper, with headquarters at Frankfort.

Corporate

Executive, Financial, Legal and Accounting

William Magivny, president of the St. Paul Bridge & Terminal Railroad Company for the past 12 years, with headquarters at St. Paul, Minn., resigned on July 1 to engage in private business at Portland, Ore.

Obituary

John Bentley Sheldon, bridge and building supervisor of the Providence division of the New York, New Haven & Hartford, with headquarters at Providence, R. I., died at his summer home at West Kingston, R. I., on July 2.

Arthur Wray Street, formerly general eastern freight agent of the Great Northern, who died in New York on July 9, as was briefly noted in our issue of July 11, was born in October, 1847, at London, Ont., and began railway work in August, 1859, as a clerk in the general freight office of the Michigan Central. He later served as chief clerk in the same office and then was made assistant general freight agent. In December, 1888, he was appointed assistant general freight agent of the Toledo, St. Louis & Kansas City, at St. Louis, Mo., and later served first as a commercial agent, and then as assistant general freight agent of the Missouri Pacific. From June, 1891, to October, 1898, he was general manager of the Hoosac Tunnel Fast Freight Line, with office at Chicago, and in April, 1899, became commercial agent for the Great Northern, at Cleveland, Ohio. Mr. Street was later general freight agent of the Northern Steamship Company, and from March, 1903, until the Great Northern Railway was taken over for government operation, he served as general eastern freight agent of that road.

Matthew J. McCarthy, superintendent of maintenance of equipment of the Baltimore & Ohio, Lines West, with headquarters at Cincinnati, Ohio, died at his home in that city on July 12. He was born at Susquehanna, Pa., in 1868, and began railway work in 1889 as an apprentice on the Erie, and subsequently worked in a number of railroad shops in the West and Southwest as machinist and foreman. He was for ten years in the service of the Chicago, Burlington & Quincy, at Burlington, Iowa, as machinist, inspector and general foreman, then was with the Michigan Central, as division master mechanic at St. Thomas, Ont., for four years, and during the next two years served as division master mechanic on the Lake Shore & Michigan Southern. Mr. McCarthy then went to the Cleveland, Cincinnati, Chicago & St. Louis, as superintendent of shops at Beech Grove, Ind., and later was assistant superintendent of motive power at Indianapolis, on the same road. In January, 1913, he was appointed superintendent of motive power of the Baltimore & Ohio Southwestern and the Cincinnati, Hamilton & Dayton, at Cincinnati, Ohio, later his title was changed to superintendent of maintenance of equipment of the Baltimore & Ohio, lines west.

Railway Age

EDITORIAL

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The Results of Thoughtlessness

Thoughtlessness on the part of passengers in throwing material of all sorts out of windows of passenger coaches frequently results in serious injury to railroad employees standing along the tracks. The records in the office of the superintendent of insurance and safety of the Pennsylvania Railroad, show that in 1918 twelve employees were injured in this manner, the injuries resulting in a total of two hundred and twenty days' disability. This is a matter which particularly concerns the maintenance departments of the railroads, as by the character of their work, trackmen and bridge men are daily exposed to this menace. While it is of course a difficult matter to locate the persons in a crowded train who have caused injuries, if they are not seen in the act of throwing the articles out of the windows, prompt action in reporting such incidents together with the co-operation of the police department will result in a fair proportion of the guilty persons being apprehended and disciplined. Aside from the needless suffering caused by such thoughtlessness, with the possibility of fatalities, the loss in time which results is sufficient to warrant vigorous measures being taken to discourage this practice.

The Closed Angle Cock

The need that something be done to remove the menace of the closed angle cock requires no more striking evidence than that afforded by the circumstance of the rear collision which occurred on the New York Central at Dunkirk, N. Y., on the morning of July 1. With the standing train, No. 41, protected by a home block signal 2,000 ft. back and a distant signal 6,000 ft. back of the point at which the collision occurred, the evidence indicates that the engineman of the following train, No. 7, first attempted to control the speed of his train on approaching the distant signal, only to discover that he had no control of the train brakes. The evidence further indicates that he lost his control of the train brakes probably only a few seconds before the need for their use arose, due to the closing of the angle cock at the rear of the tender by a trespasser riding the "blind baggage," who wished to leave the train at Dunkirk. The loss of train control through the closing of an angle cock, generally that at the rear of the tender, has for years been of too frequent occurrence. This has been caused by carelessness or forgetfulness on the part of employees, by trespassers and by other accidental means not always easily identified. As long as the safety of the train may thus be jeopardized without warning the absolute removal of this menace is probably impossible. As long as human fallibility must be depended upon without check, failure to provide an unrestricted brake pipe through carelessness or forgetfulness will occasionally occur. There is no inherent reason, however, why some protection against the tampering of trespassers riding on the trains cannot be provided and some means should be evolved to prevent the possibility of moving the angle cock except by a person on the ground. Further protection at the most vulnerable point in the train might be provided by placing the control of opening and closing the brake pipe passage on the locomotive and tender in the hands of the engineman. These suggestions apply to passenger service. The means which might be justified by the terrible consequences in loss of life and personal injuries from a failure of the brakes on passenger trains, might not prove equally practicable when applied to freight equipment. The menace in the latter case, however, although perhaps not as serious as in the case of passenger trains, is great enough to demand consideration and persistent effort in the development of means for its removal.

Daylight Saving and the Milk Trains

The president has vetoed the rider which would have repealed the daylight saving bill. The chief opponents of the law which provides for setting forward the hands of the clock one hour during the summer months, are the lighting companies and the farmers. The farmers deserve consideration. They claim that their milk schedule is fixed by time of departure of milk trains which is an hour earlier (sun time) in summer than in winter, but that milch cows are not amenable in their habits to the daylight saving law. The result is a loss of milk. Could not milk train schedules be changed? There is a certain amount of expense connected with a change in time-tables and some roads, especially single track roads, might find difficulties in running milk trains an hour later (clock time) in summer than in winter. Would it not, however, be well worth while to incur this additional expense and trouble for the good that will accrue to railroad employees together with all classes of urban citizens through the retaining of the daylight saving law? Furthermore, a great number of people to whom the daylight saving law has been of inestimable value should appreciate such an act as is here suggested on the part of the railroads. Where milk is carried in passenger trains difficulties in the rearrangement of train schedules might, in some instances, be insurmountable, but if a country-wide effort were made by the railroads to accommodate the farmers during the summer months in milk train schedules it is probable that their grievances against the daylight saving law could in part be removed.

The Conservation of Ice

The conservation of ice is one of the numerous minor details incident to railway operation which is seldom given detailed attention, although when there arises an acute shortage of this material, such as exists in many localities at present, this presents a problem of real importance. The amount of ice used for drinking purposes in offices and on trains is large in the aggregate but the quantity required in the transportation of perishable freight is far larger. The railways must have ice, for its use is imperative in all of these services. The recent mild winter cut down the pack materially, with the result that many roads are now hauling ice long distances while others are buying it locally where formerly they drew on their own supplies. Both of these conditions have added materially to the cost of railway operation. Prompted by

this fact and by the present inadequacy of the supply, many roads have found it necessary to give increased supervision to the use of ice in order to curb the waste and to reduce losses which in certain forms tend to increase as the shortage elsewhere becomes more acute. This has also been the subject of recent instructions by certain of the regional directors. One road which found recently that its monthly consumption increased from 1,600,000 lb. at a certain terminal to approximately twice that figure for the same month this year under similar weather and traffic conditions, has since effected a large reduction in this consumption by increasing the supervision of the use of ice and enlisting the co-operation of employees in eliminating waste. The lesson which is now being gained can be observed with special economy this year, but it is worthy of more consideration than has been given it even in normal times.

The British Transport Bill

On July 10, the bill to establish a Ministry of Ways and Communications for the United Kingdom was passed by the House of Commons which has had it under consideration since the end of February, this year. The bill, as has been noted from time to time in the *Railway Age*, is characterized by its all-inclusiveness, for it practically puts in the control of one man—Sir Eric Geddes, the minister designate—nearly all the modes of transportation in the United Kingdom—railways, light railways, canals, waterways, inland navigation, roads, bridges, ferries, harbors, docks and piers. The government has stood up stoutly for the bill since its introduction and for that reason the bill has come through to its present stage with but few changes, these being in the form of concessions to the powerful dock and highway interests. Labor has stood with the government throughout the discussion both in the House and in the standing committee, and has especially opposed any steps that might in any way take from the bill its all-inclusive character. It has similarly made no attempt to hide its feeling and hope that the bill would eventually lead to nationalization on a large scale. It is surprising at first thought that with this in mind the railway managers and stockholders have not opposed the bill, but when it is realized that the railways of the United Kingdom are in a most serious condition financially and that the bill continues for an additional period the guaranty of dividends, the reason for their lack of opposition is plain enough. They also regard with favor the fact that Sir Eric Geddes, the minister designate, is a railway man and that five of his seven principal assistants will be railway men. Of course, it goes without saying that other interests have opposed this state of affairs, for they feel that the other modes of transport will be operated for the benefit of the railways, rather than otherwise. The term of the bill is for two years. The railway men of the world will watch with great interest to see how Sir Eric Geddes works out the problem of the eventual disposition of the British railways in the time he has available to arrive at a definite policy.

Block Signal Mileage Statement

The discontinuance of the use of the block system on American railroads in the year 1918, because of falling off in business, or for some reason, which was shown in the government report noticed in the *Railway Age* of July 11, page 56, seemed to be very extensive, the total length of road affected being over 2,000 miles; but this seeming recession in our safeguards against collisions is not so bad as it looks. Some of the statements can be explained. The large deduction to be made on the Baltimore & Ohio's eastern lines is offset by the increase on the western lines, the change being due to the transference of two divisions from the "Eastern" to the "Western" section of the system. The Erie advises us that the statement of that road as published is wrong—because, no doubt, of a clerical error. The Burlington informs us that the 141 miles shown in the table against that road is "purely a paper decrease," produced wholly by the exclusion of lines of joint track operated by other companies and erroneously reported in former years. On the Missouri Pacific, one piece of road 4½ miles long comes out because of the discontinuance of the electric train staff; but the rest of the mileage, six sections, ranging from 18 miles to 104 miles, was eliminated because the volume of traffic fell off; either all passenger trains were discontinued or the whole business of the section was done with one locomotive. The statistics of the block signal mileage of the country ought to be put on record somewhat more in detail. The totals which have been published in the last dozen years have served a good purpose in helping to keep up progress in this field, and the number of roads reporting 100 per cent. of their passenger line mileage worked by the block system is, undoubtedly, larger than would have been the case if no table had been issued; but there is room for further progress. Roads which provide the most complete safeguards should have due credit, and the facts should be lucidly shown. Roads which employ the space interval on lines of light traffic should have their enterprise recognized, and where a line is very "thin," requiring only one locomotive, that explanation should be set forth plainly. The extent to which permissive blocking is allowed on long block-sections ought to be known. In view of the bigness of the country and the impossibility of grasping the facts as a whole, it might be a good thing for the Interstate Commerce Commission to conduct an intensive study of a few typical roads, and make public a full and detailed report.

Accident Record Under Government Operation

THE ADVOCATES of government ownership of railways probably have criticised private operation of railways in this country more fiercely because of our railways' deplorable accident record than for any other cause. They have argued that the large number of casualties has been principally due to the fact that under private ownership our railways have been operated chiefly for profit, not to give the best and safest possible service; that under government operation they would be operated to give good and safe service; and that in consequence there would be a large reduction in accidents.

The *Railway Age* always has contended that this country's bad railway accident record has not been due to private operation, but to causes which would exist under either private or government operation; that the principal of these causes is the inability of the railway managements, under the conditions existing in the United States, to enforce such discipline as was enforced before the war on the railways of Germany, France and Great Britain; that discipline would be impaired rather than improved under government operation; and that therefore there would be more likely to be an increase than a reduction of accidents under that policy.

The Railroad Administration recently has issued statistics showing that there was a substantial reduction of accidents in the first three months of 1919 compared with the corresponding months of 1918. These statistics are gratifying, but not surprising, since the better weather conditions in 1919 and the smaller traffic handled were bound, other things being equal, to cause a reduction of accidents. The reduc-

tion doubtless was due both to these conditions and to the efforts to increase safety made by the officers and employees under the supervision of the Railroad Administration.

However, in order that the advocates of government ownership and operation may not base upon these statistics arguments which would be misleading, it is desirable to call attention to the fact that government operation has not by any means resulted uniformly in a reduction of accidents.

The Interstate Commerce Commission has recently issued "Accident Bulletin No. 69" which gives statistics of accidents for the nine months ending with September, 1917, and the nine months ending with September, 1918. These are the latest statistics available comparing accidents under private and government operation. Throughout the first nine months of 1917 the railways were privately operated, and were handling the densest traffic ever known up to that time. During six months of this period the country was at war and the railways were suffering from numerous changes in their employees and were losing many of their best men. During the first nine months of 1918 the country continued to be at war; the railways continued to suffer from changes in and losses of employees; they were handling almost the same volume of traffic as during the corresponding period of 1917; and they were operated by the government. A comparison of the railway casualties in these two periods is therefore interesting and may have some significance.

The accompanying table gives statistics taken from Accident Bulletin No. 69. Only statistics relating to fatal accidents are included, as the definition of an "injury" is so broad and flexible that statistics regarding injuries are much less significant than statistics regarding fatalities.

KILLED IN TRAIN OR TRAIN SERVICE ACCIDENTS

	Nine months ending Sept., 1917	Nine months ending Sept., 1918	Increase
NON-TRESPASSERS			
Employees on duty	1,879	2,089	210
a Trainmen	1,058	1,197	139
b Other employees	821	892	71
Employees not on duty	122	126	4
Passengers	192	394	202
Passengers carried under contract	33	38	5
Other non-trespassers	1,564	1,506	58*
TRESPASSERS			
Total trespassers	3,406	2,442	964*
a Employees	124	40	84*
b Other persons	3,282	2,402	880*
NON-TRAIN ACCIDENTS			
Industrial employees	308	389	81
Other persons	73	72	1*

*Decrease.

The table shows that there was an increase of 210 in the number of employees killed in train or train service accidents while on duty, and of 4 in the number of employees killed in such accidents while not on duty. The increase in the number of ordinary passengers killed in train or train service accidents was 202, or over 100 per cent. There was a slight reduction in the number of other non-trespassers killed in train or train service accidents, these being chiefly persons killed at highway crossings. There was also an increase of 81 in the number of industrial employees killed in non-train accidents. "Industrial employees" are chiefly employees working in the shops and therefore not directly engaged in train operation.

These statistics may not show the government operation increased accidents, but they certainly do show that fatal train and train service accidents increased either because or in spite of government operation.

The table also shows that the number of trespassers killed was reduced by 964, or from 3,406 to 2,442. This large and gratifying reduction in the number of trespassers killed undoubtedly was due chiefly to conditions produced by the war, and particularly to the enforcement of the "work or fight" rule. A large part of the trespassers killed under normal conditions are tramps, and the "work or fight" rule kept many tramps off railroad right-of-way. The reduction in the number of fatalities to trespassers is a striking indication of what could be accomplished by strict and consistent enforcement of laws prohibiting trespassing upon railway property.

"The 'A B C' of the Plumb Plan"

THE "PLUMB PLAN LEAGUE" has been organized to promote adoption of the plan of railroad ownership and management devised by Glenn E. Plumb. Warren S. Stone, Grand Chief of the Brotherhood of Locomotive Engineers, is president of the League, and the heads of fourteen other railway labor organizations are vice presidents. A pamphlet entitled "The A B C of the Plumb Plan" is being widely distributed by the league. It gives in question and answer form the details of the plan and the arguments in favor of it.

Any plan for the future ownership and management of the railways which the organized railway employees support is entitled to respectful consideration and to discussion upon its merits. The railway employees are a numerous body of American citizens, and because they are employees of the railways they will be as much affected, perhaps more affected, by the future of the railroads than any other class.

The "A B C," which apparently was prepared by Mr. Plumb, affords a basis for the discussion of his plan. It claims that enormous economies will be effected if the plan is adopted; that in consequence it will be possible to pay railway employees higher wages, to make large reductions in freight and passenger rates, and at the same time earn a surplus, which it is proposed should be divided between the officers and employees and the government. It is time to measure these claims and arguments by the standard of actual conditions and facts in order to determine what validity they have.

Under the Plumb plan the public would buy the railways, issuing bonds in payment for them. It would delegate their operation to a board of fifteen members, five appointed by the President of the United States, five by railway officers, and five by the classified railway employees. The board of directors would fix wages and salaries, as well as manage the roads, while the Interstate Commerce Commission would continue to fix passenger and freight rates. Disputes between officers and employees would be adjusted by boards to which the officers would elect five members and the men five. In case of failure to reach adjustment of a dispute it would be appealed to the directors. One-half of any surplus over interest charges earned would, as already stated, go to the government, and be invested in improvements and extensions and used to retire the bonds issued to buy the roads. The communities benefited would be required to pay for extensions if they could. Where, however, the general public and not a local community would be benefited the government would pay for the extensions. Doubtless, also, the government would have to pay for all improvements which could not be made from surplus earnings.

It is claimed that this is "a plan for the public ownership and the democracy in the control of the railroads." It is hard to see how it can be seriously claimed that it provides for "democracy in the control of the railroads," since it contemplates the purchase of the roads by all the people and their management by a board two-thirds of whose members would represent only that approximately one-fiftieth of the people who are employed by the railroads.

One ground upon which it is claimed that a large saving would be made under this plan is that "the public can obtain the money to purchase the lines at 4 per cent., whereas

the public is now charged rates to guarantee the roads 6 1-2 per cent. on their money. The saving on the present capital account of the railroads would be about $400,000,000 and on an honest valuation would be nearly twice this sum."

These sentences contain several statements which are erroneous. The public has never been "charged rates to guarantee the roads 6 1-2 per cent. on their money." The last year for which there are complete statistics of the Interstate Commerce Commission showing the property investment, the net capitalization and the net operating income of the railways, is the year ended December 31, 1916. In that year the percentage earned by the railways on their property investment was 5.8 per cent., and this is the largest percentage they ever earned. In the preceding five years the average earned, as reported by the Interstate Commerce Commission, was 4.56 per cent. However, it is undoubtedly true that the companies should be allowed to earn an average of at least 6 per cent on their property investment in order to enable them to operate successfully and raise sufficient new capital for extensions and improvements.

It is also incorrect, however, to say that the public can obtain money to purchase the lines at 4 per cent. The government finally had to pay as much as 4 3-4 per cent to raise about as much money to carry on the war as the reported property investment of the railroads, which is approximately $18,000,000,000. Since it was finally forced to pay 4 3-4 per cent to raise money to carry on the war, it cannot be assumed that it could raise enough to buy the railroads for less than 5 per cent. Now, if it allowed the railroads to earn 6 per cent. upon $18,000,000,000 this would be $1,080,000,000 a year, while if it bought them for $18,000,000,000 and paid five per cent. upon it, the interest would be $900,000,000 a year, or only $180,000,000 less than the net operating income of the properties would be at 6 per cent. Furthermore, if past experience is any criterion, if the railways earned 6 per cent they would put part of it back into improvements and extensions, while if the government earned only 5 per cent on the purchase price mentioned it would have to pay it all out in interest.

But, the "A B C" adds, a much larger saving even than $400,000,000 a year would be made if the roads were bought "on an honest valuation"; and elsewhere it asserts "the public will probably pay less than two-thirds of what the railroads claim as their value." The only foundation for this assertion is that some railroads are known to be over-capitalized. But other railroads are known to be under-capitalized. For example, the Pennsylvania System is capitalized at $430,000,000 less than the actual investment in it. Other large systems also are under-capitalized. The under-capitalized roads will more than offset the over-capitalized roads. Furthermore, the cost of reproduction must be given great weight in valuation; and the cost of reproducing the roads on the basis of present wages and prices would be vastly greater than their book cost. The "A B C" says that the courts would decide the value of the railroads if the public bought them; and the courts unquestionably would hold that the value which must be placed on them is not their original cost, but their present value. Instead of paying less than their present capitalization the public undoubtedly would have to pay much more for them than their present total capitalization or total reported property investment. Any person who really believes that under government ownership large savings in the capital charge of the railroads would be made is either ignorant of the facts or is deliberately misleading himself.

Besides reducing the capital charge, the "A B C" claims that the adoption of the Plumb Plan would result in a large reduction of operating expenses. For example, "A further saving" it is asserted, "would be in the operation of the roads as a unified system, which permits the interchange of equipment, the end of wasteful competition, and greater economy in buying supplies." But the roads have been operated as a unified system under government control for a year and half and are still being so operated. The present director general of railroads, Walker D. Hines, recently stated in testifying before the House Committee on Appropriations: "I think we have already gotten the benefit both last year and the early part of this year of the economies from unification." Mr. Hines doubtless knows as much about this matter as the author of the "A B C"; and the only way he intimated greater economy could be secured under unified operation is by getting a better class of labor, especially skilled labor.

Another argument made for the Plumb Plan is that it would give officers and employees an increased incentive to efficiency. As already indicated, officers and employees are to receive one-half of any surplus over interest charges that may be earned. Their share of the surplus is to be divided pro rata according to their salaries and wages among the officers and employees except that the officers are to receive twice as great amounts of "dividends" in proportion to their salaries as the employees receive in proportion to their wages. But salaries and wages are to be fixed by the board of directors, two-thirds of whose members will be elected by the officers and employees. How can it be assumed that under this arrangement salaries and wages would not be raised so high as to prevent any surplus from being earned? If a surplus were earned it would have to be divided with the government, while if salaries and wages were raised enough to prevent a surplus from being earned the officers and employees would get all of what would otherwise be earned as a surplus.

The answer made by the "A B C" is that the officers would be prevented from entering into collusion with the employees to advance salaries and wages because under this plan the officers would get twice as large a proportion of the surplus as the employees, while, on the other hand, if salaries and wages were raised so much as to prevent a surplus from being earned, the officers would be prevented from getting their "large dividends." But if a raise in salaries and wages were made the officers would know just how much they would benefit by it, while they would never know in any year how much they are going to get from the surplus at the end of the year, or, indeed whether there would ever be any surplus. Therefore the officers as well as the employees would have a far stronger incentive to raise salaries and wages than to try to earn a surplus. Certainly, this would be true at the start; for, if the roads were turned over to the officers and employees for operation under this plan without an advance of rates they would start with a deficit of one-half to three-fourths of a billion dollars a year. This would afford little ground for hope of a surplus.

Not only would this plan not afford any special incentive to officers and men to operate the properties efficiently in order to earn a surplus, but the plan itself would make efficient operation impossible. Two-thirds of the members of the managing board would be selected by the officers and the employees. But the officers are scattered all over the United States and are of many ranks and classes. The same thing is true of the employees. No means is conceivable by which men of so many ranks and classes, scattered all over the country, could possibly know and select as their representatives on the board of directors the men most competent to manage the railroads. A board thus selected would be certain not to be composed of men of the great knowledge, experience and ability needed. The board, in turn, would have to select the officers of the individual lines. But a board composed of men themselves wanting in needed knowledge, experience and ability; would be incapable of selecting or indisposed to select men of sufficient knowledge,

experience and ability to manage the various railway lines.

It may be said that the present officers of the railways would be retained. But it is doubtful if a board composed one-third of government appointees and one-third of labor appointees would be disposed to keep the present officers. Furthermore, it is certain that most of the present higher officers would not consent to work under the direction of such a board. They would quit the railroad business and go into other lines. Even if the present officers did stay they are not immortal.. Successors to them would have to be chosen from time to time; and competent successors could not and would not be developed and chosen under the organization proposed in the Plumb Plan. This ought to be plain to every intelligent railway employee. But if the railroads did not have competent officers they could not and would not be efficiently managed. If they were not efficiently managed, expenses would constantly increase, and service constantly deteriorate.

As a logical conclusion to the argument that vast economies would be effected under the Plumb Plan, the "A B C" makes the following statement: "Under this plan passenger rates of 1 1-2 cents a mile and the reduction of freight rates by 40 per cent. would be reasonable."

Just how much dependence railway employees and other persons can safely put upon the arguments and statements of fact made in the "A B C" will be indicated by the following analysis of this particular statement, which evidently was made to forestall opposition to the plan by travelers and shippers. During the first five months of 1919 the passenger earnings of the railroads were 50 per cent greater and the freight earnings 20 per cent. greater than in the corresponding months of 1917. Total earnings were 25 per cent greater and total operating expenses 57 per cent greater than in the same months of 1917. If these items of earnings and expenses shall throughout the year 1919 bear the same ratio to the similar items for 1917 as they did during the first five months of this year, passenger earnings for the entire year 1919 will be $1,238,000,000; freight earnings will be $3,395,000,000; total earnings will be $5,051,000,000; and total operating expenses will be $4,479,000,000. Now, passenger rates at present are 3 cents a mile. Therefore a reduction of them to 1 1-2 cents would reduce passenger earnings per year approximately $614,000,000. A 40 per cent. reduction of freight rates would reduce freight earnings per year approximately $1,358,000,000. These reductions in passenger and freight rates, on the basis of present business, would reduce total earnings per year from about $5,051,000,000 to about $3,075,000,000. But as we have seen, total operating expenses are now running at the rate of $4,479,000,000 a year. Therefore, after the reductions in earnings caused by these reductions in rates had been made, the total operating expenses of the roads would exceed their total earnings by $1,405,000,000 a year. But railway taxes as well as operating expenses must be paid. Taxes and operating expenses together would exceed total earnings by about $1,600,000,000 a year. Then if in addition there was, say, $900,000,000 a year interest to meet, the deficit to be paid by the public from taxes would be $2,500,000,000 a year. Talk about the "surplus" to be divided between officers and employees and the public! And while the "plan" proposes that the public should get only one-half of the surplus, if there should be one, it also proposes that the public should get all of the deficit, if there should be one. It would be a singular kind of "democracy in the control of the railroads" which would make the public pay the entire bill for buying the roads, give it only one-third of the managing directors, give it only one-half of the surplus if there was any, and send it the entire bill for the deficit if there was one!

But, it is said, the reduced rates would cause an increase of traffic. No doubt. But any increase in the traffic to be handled would also cause an increase of expenses. We are curious to know how much of an increase of traffic the author of the Plumb Plan thinks would be sufficient to offset the increase of expenses which would be caused by an increase of business and in addition a deficit of about $2,500,000,000 a year.

It can hardly be necessary to carry the analysis of the Plumb Plan and its "A B C" any further to show how preposterous they are. In fact, we have taken the trouble seriously to analyze them at all only because earnest and honest people have been misled in the past by equally preposterous arguments and assertions. We have repeatedly recalled that, in December, 1917, within two weeks of the time that government operation was adopted, an advocate of government ownership, in testifying before a Senate Committee in Washington, estimated that under unified government operation a reduction of $400,000,000 a year in railway operating expenses could be made. The country has now had one and a half years of government operation; and at present operating expenses are running $1,600,000,000 a year more than they were when this advocate of government operation made his estimate, and $2,000,000,000 a year more than he estimated they would run. Yet there were many people who accepted such arguments of advocates of government operation before it had been tried. It is to be feared that unless they are answered again and again, such assertions and arguments as those advanced in support of the Plumb Plan also will be seriously accepted.

Railway employees are contributing money to pay for the circulation of the "A B C" and other literature advocating the ownership of the railroads by the public and their management by the employees. It will be wise for the employees to study for themselves the statements made in this literature and test it by the facts, before they help in its distribution. Doubtless many employees are supporting the Plumb Plan because they believe its adoption would inure to their special benefit as a class. They could not be more mistaken. A plan better adapted to cause inefficiency and waste in the operation of the railroads could hardly be devised; and no class have more to lose in the long run by inefficient management of the railroads than the employees.

Besides, railway employees have nothing to gain and much to lose by supporting a plan of railroad ownership and management which is adapted, as this one is, to give the public the impression that it is intended to promote the selfish interests of the employees regardless of its effects upon the public. No plan which gives this impression will be adopted; but its support by the employees is sure in time to create public opinion hostile to them and their organizations.

Great Northern

If James J. Hill were alive one can imagine what his feelings would be in regard to an operating ratio for the Great Northern of 84. The ratio of transportation expenses (the cut of pocket cost of moving the freight and passenger business) was 43 per cent in 1918. On the Great Northern the ratio of transportation expenses to total operating revenues increased from 36 in 1917 to 43 in 1918 and the ratio of maintenance expenses, including both way and equipment, to total operating revenues increased from 26 in 1917 to 38 in 1918. For all the roads of the country transportation expenses increased from 38 per cent in 1917 to 42 per cent in 1918 and maintenance expenses increased from 28 per cent to 36 per cent of total operating revenues. The operating ratio and especially the ratio of transportation expenses to gross operating revenues of the Great Northern was

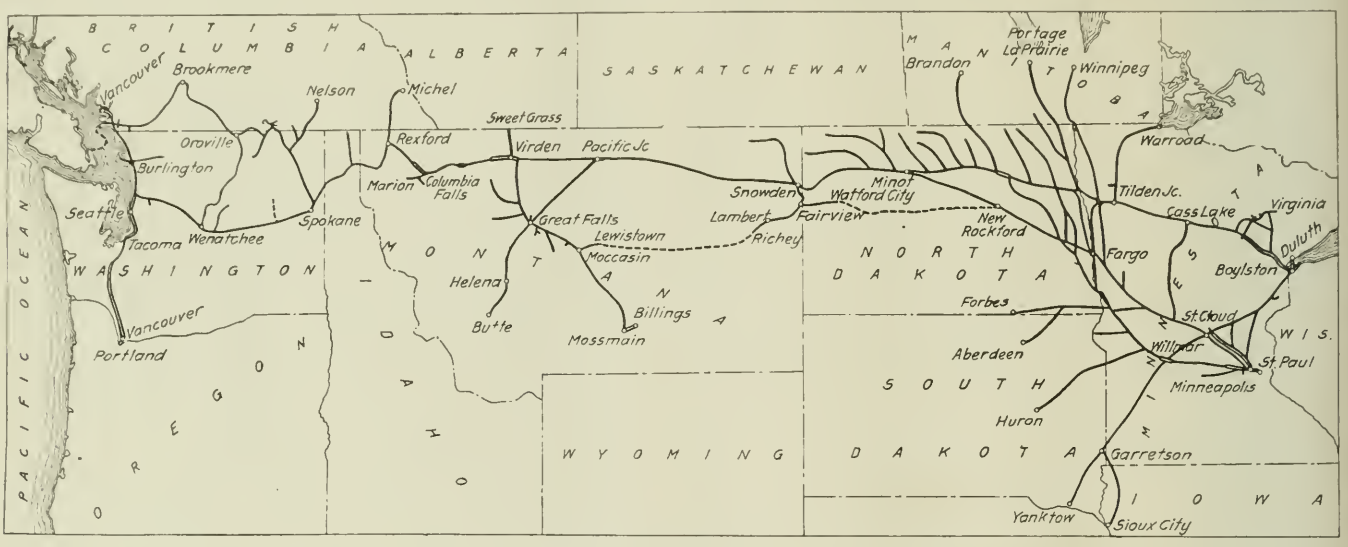
something of which in his later life James J. Hill was particularly proud. In the ten years prior to 1917 the operating ratio varied from 54 to 61 and the ratio of transportation expenses to operating revenues varied from 29 to 27. In 1917 expenses had begun to run up rather rapidly. In that year total operating revenues amounted to $88,599,000 and total operating expenses to $59,282,000, an operating ratio of 67. In 1918 total operating revenues amounted to $100,699,000 and total operating expenses to $84,429,000, an operating ratio of 84. The increase in revenues was due to a slight increase in ton-mileage of revenue freight and to an increase in the revenue per ton-mile of 14 per cent, making the average revenue per ton per mile in 1918, 8.699 mills. There was a decrease in passenger business (passengers carried one mile) of 10 per cent, the passenger mileage being 601,000,000 in 1918. This loss in passenger business was not completely offset by an increase of two mills in the average passenger mile rate. The average received per passenger per mile on the Great Northern in 1917 was 2.4 mills, in 1918 it was 2.6 mills. In other words, the increase in regular fares, exclusive of troops, etc., to three cents a mile for the whole country affected the Great Northern very little.

The rental which the government pays to the Great Northern Railway Company is $28,771,000. In addition the company had in 1918 $1,072,000 other income, making a gross corporate income of $29,758,000. After the payment of interest, sinking fund and corporation taxes there was $20,063,000 available for dividends and the regular seven per cent dividend on the stock calls for $17,463,000.

Whereas the rental which the government guarantees was $28,771,000, the net operating revenue before the payment of taxes by the government was $16,269,000. The taxes which the Railroad Administration had to pay in 1918 are not given except on a per mile basis, but apparently the operating income, exclusive of rentals in 1918 was approximately $10,600,000. This is a heavy loss, indeed, from the operation of a property which has generally been regarded as one of the most perfectly developed transportation machines in the world. Even with ample facilities for a detailed study of the operations of the Great Northern in 1918 an "explanation" of the showing would be little better than a guess. On the other hand, even without such detailed information, it is possible to name some of the factors which may have entered into the situation. Under Hill the Great Northern was developed to meet a particular set of conditions. The old man used to remark that to be a successful railroad manager one had to guess right to a copper cent in estimating the cost of moving a ton of freight one mile. The nice adjustment of the Great Northern's operations to its traffic conditions was an important factor in the financial success of the operation of the property. Traffic conditions in 1918 were no longer under the control of the Great Northern's own organization, much less under the control of the great railroad genius who built up the property.

The Great Northern lies in the Northwestern region, of which R. H. Aishton, formerly president of the Chicago & North Western, is regional director. The federal manager of the Great Northern is W. P. Kenney, who was president and before that vice-president in charge of traffic of the Great Northern and whose railroad experience has been in the traffic department and in office work. The general manager was J. M. Gruber, formerly vice-president of the Great Northern in charge of operation, and with the reputation of being one of the best operating men in the west.

The falling off in passenger traffic and the very slight gain in freight traffic has already been mentioned. As a matter of fact, had it not been for an average haul of freight of 286 miles or four per cent longer in 1917, freight traffic would have increased less than one per cent. On the other hand there was an increase in freight train miles of four per cent, the total freight train miles in 1918 being 12,111,000. Furthermore, there was an increase of 12 per cent in helper locomotive mileage, the total in 1918 being 531,000 miles.



The Great Northern

Car loading improved, the average tonnage of revenue freight per loaded car being 26, as against 24 in 1917, an increase of nine per cent, thus making a decrease of 3½ per cent in the loaded freight car miles. On the other hand, empty freight car mileage increased 21 per cent, totaling 147,521,000 in 1918.

The Great Northern spent a total of $6,799,000 during 1918 for additions and betterments. Included in these additions and betterments was the building of 52 miles of additional side tracks and 38 miles of second track, and the installation of automatic signals on 120 miles.

The following table shows the principal figures for operation for the Great Northern as operated by the Railroad Administration. It is not the company's income account.

	1918	1917
Mileage operated	8,260	8,233
Freight revenue	$76,937,445	$64,300,666
Passenger revenue	15,672,420	15,836,341
Total operating revenues	100,698,520	88,598,735
Maintenance of way and structures	17,405,470	11,570,157
Maintenance of equipment	20,757,399	11,890,989
Traffic	778,989	1,336,870
Transportation expenses	43,024,345	32,262,501
General expenses	1,246,744	1,133,911
Total operating expenses	84,429,245	59,282,156
Taxes*	5,525,060	6,306,478
Operating income	10,744,215	23,010,101

* Estimated from the per mile figures given in the 1918 annual report.

Railroad Hearings Before House Committee

U. S. Chamber of Commerce Presents Comprehensive Plan for Remedial Legislation

WASHINGTON, D. C.

A COMPREHENSIVE PROGRAM of remedial railroad legislation adopted by the National Transportation Conference called by the Railroad Committee of the Chamber of Commerce of the United States, which represents a sort of composite of the views held by the principal interests that have been devoting their efforts to a proper solution of the railroad problem, was presented to the House Committee on interstate and foreign commerce on Tuesday by Harry A. Wheeler, chairman of the conference, and supplementary statements relating to various phases of the subject were to be presented by Paul M. Warburg, formerly vice-chairman of the Federal Reserve Board; W. W. Salmon, representing the Railway Business Association; Alexander W. Smith of Atlanta, Ga., and Emory R. Johnson, professor of transportation and commerce, University of Pennsylvania. Before outlining the plan Mr. Wheeler gave an explanation of its origin to show the representative character of those who took part in formulating the program.

The National Transportation Conference was called together in December, 1918, "to consider the broader aspects of the transportation problem and the formulation of a basis for the control and operation of the transportation facilities of the United States after the conclusion of the present government control." At 5 meetings, each lasting 2 days, the conference has held 22 general sessions and numerous sessions of sub-committees appointed to report on special phases of the transportation problem. In calling this conference the Chamber of Commerce recognized that many different interests are affected by transportation and that each important interest should have a voice in determining what should be done with the railroads. It therefore invited prominent men belonging to each important interest to attend the conference and take part in its deliberations. All of the important plans were presented either in the form of printed documents or by speakers who addressed the meetings or took part in the discussions.

The shippers' and manufacturers' point of view was presented by Walter S. Dickey, of the W. S. Dickey Clay Manufacturing Company, of Kansas City; Edward J. Frost, vice-president, William Filene's Sons Company, Boston; George A. Post, president Standard Coupler Company, New York; Charles E. Lee, of Ford, Bacon & Davis, Consulting Engineers, New York City; W. W. Salmon, president of the General Railway Signal Company; Charles S. Keene, vice-president of the American Tobacco Company, and Frederick J. Koster, president of the San Francisco Chamber of Commerce.

The measures in which farmers are interested were outlined by H. C. Stuart, chairman of the National Agricultural Advisory Committee; R. L. Munce, president of the Pennsylvania Good Roads Association, and Eugene D. Funk, of Funk Brothers' Seed Company, Bloomington, Illinois.

Important financial aspects of the railroad problem were discussed by Paul M. Warburg, formerly vice-governor of the Federal Reserve Board; Harry A. Wheeler, vice-president, Union Trust Company, Chicago; Nathan L. Amster, president of the Investors' Protective Association of America, and Luther M. Walter, general counsel of the National Association of Owners of Railroad Securities.

The views of labor were presented by Frank Morrison, secretary; Henry Sterling, legislative representative, and Martin Ryan, of the Railroad Employees' Department of the American Federation of Labor; and those of the Railroad Brotherhoods by A. B. Garretson, president of the Order of Railroad Con-

Grounds for Business Confidence; Importance of Labor Situation*

By E. H. GARY,
Chairman of the United States Steel Corporation.

Never before in the history of our country has the outlook for future business been so bright, the opportunity for success so great. We are rich, we are prosperous, our resources are enormous. There is no doubt as to our financial security or our commercial progress. I predict that the next five years on the average will bring to our country the most progressive and prosperous period in its history.

There is a large and fairly profitable business ahead, but we need to be conservative, thoughtful, fair-minded. There should be no danger of business depression if the return to a peace basis is accomplished methodically and with justice to all. It is a time for constructive thought; for courage, even for sacrifice, for our problems are numerous and difficult.

FOREMOST in importance is the labor situation. Wages during the war increased materially. I believe we have not been paying more than is right and proper. The cost of living has increased and unless it is reduced wages cannot be lowered.

Employers insist they cannot reduce their selling prices; many hold they should have a higher scale. Prices generally in this country are abnormal; but simultaneous reductions in all directions would be impracticable. Reductions, therefore, must be gradual. And we should not begin with wages.

With respect to their compensation our workmen must be treated liberally. We must consider them as our valuable associates, give them no reason for complaint. If they are treated fairly they will give fair treatment in return; if their confidence is retained their loyal support is assured.

As I have said before, business conditions are good. The needs of the buying public are increasing. The enormous wheat crop, which exceeds by far the first calculations, will soon be harvested. Other crops, too, are coming on, and from all appearances the yield this year will be a record one.

Witness the crowds at the large new hotels. It is next to impossible to obtain a room. They are thronged with travelers from all parts of the land. From all sections—the South, Southwest and the Far West—they bring good reports. Their confidence in the future has charged them with optimism.

Consider the great number of purchasers to be found in retail stores. Try to rent a house in New York; they are scarce, and prices are mounting. Gaze upon the great crowds of busy people upon city streets and the constant stream of motor cars in city and country.

EVIDENCES of business activity and prosperity are everywhere. The estimated wealth of our country is more than equal to one-third of the total wealth of the world; our banks hold $15,000,000,000 or $16,000,000,000; the money in circulation is approximately $56 per capita; before the war it was $34.

Confidence is justified. And confidence, with patience, assures prosperity.

*An article in the New York *Evening Mail*, July 16, 1919.

ductors; W. G. Lee, president, and W. N. Doak, vice-president, of the Brotherhood of Railroad Trainmen; and S. E. Heberling, international president of the Switchmen's Union of North America.

Director General Hines appeared before the conference twice and explained the plans of the Railroad Administration and his own personal views in regard to the desirable solution of the railroad problem. Commissioner Winthrop M. Daniels, of the Interstate Commerce Commission, and President Charles E. Elmquist, of the National Association of Railway and Utilities Commissioners, participated actively in the deliberations of the conference.

The plans proposed by the Railway Executives' Association and by leading individuals among the executives were outlined by Daniel Willard, president of the Baltimore & Ohio; S. T. Bledsoe, general counsel of the Atchison, Topeka & Santa Fe; and E. G. Buckland, president of the New York, New Haven & Hartford; The views of the electric railway men were presented by P. H. Gadsden, chairman of the Committee on National Relations of the American Electric Railway Association, and W. V. Hill, manager of the Washington office of the association; and those of the advocates of highway transport development by John T. Stockton, president of the Joseph Stockton Transfer Company, Chicago.

H. A. Wheeler

The economic aspects were discussed by E. R. A. Seligman, professor of economics, Columbia University; Emory R. Johnson, professor of transportation and commerce, University of Pennsylvania; W. Z. Ripley, professor of Transportation, Harvard University; John R. Commons, professor of economics, University of Wisconsin; Henry W. Farnam, professor of Political Economy, Yale University, and Frederick A. Cleveland, formerly chairman of President Taft's Commission on Efficiency and Economy; and the civic and social aspects by R. G. Rhett, formerly president of the Chamber of Commerce of the United States; Alexander W. Smith, of Atlanta, Georgia, formerly president of the Georgia Bar Association; Judge F. C. Dillard, of Sherman, Texas, and Charles P. Neill, chairman of Board of Adjustment No. 1, United States Railroad Administration, and formerly commissioner of labor under the Roosevelt administration.

The conference gave careful consideration to the various plans with a view to developing a program that would include the most desirable features of each plan, combining them with new features proposed by the conference itself into a consistent harmonious whole. Some of the representatives of the railroad brotherhoods and a few of the other participants attended only one or two meetings for the purpose of presenting their views, and did not take part in the resulting action. Others attended all of the sessions and voted on all questions brought before the conference, occasionally reserving the right to dissent from some particular decision with which they could not agree. The majority of the members, however, attended practically all of the 22 sessions held and voted in favor of the program finally adopted.

Program of Remedial Railroad Legislation Adopted by the Transportation Conference

The program adopted by the conference is as follows:

Section 1. The Transportation Conference favors corporate ownership of the railroads in the United States; and is therefore opposed to government ownership of the roads and to their operation either by the government itself or, under lease from the government, by corporations whether organized as regional monopolies or as large competing systems.

Section 2. The conference favors the enactment of remedial railroad legislation at the earliest possible date. It favors the continuation of the present government possession and operation of the railroads only until such legislation can be enacted and made effective. If possible, legislation should be enacted within the present calendar year.

Section 3. The conference is in favor of permitting and facilitating the consolidation, in a manner to be approved by the government, of existing railroads into strong, competitive systems so located that each of the principal traffic districts of the country shall be served by more than one system.

Section 4. The conference favors action by Congress that will bring all interstate railroads as corporations under the jurisdiction of the United States either by federal incorporation or in such other manner as Congress may determine, the matters of local taxation and police regulation to be reserved by the States.

Section 5. The conference favors federal regulation of the issuance of securities by all railroads engaged in interstate commerce. This regulation should be exclusive and should be exercised in the following manner: Such federal agency as Congress may designate, shall be authorized to pass upon the public necessity for expenditures of capital (in excess of a stipulated amount) by carriers engaged in interstate commerce and to determine the amount and to regulate the conditions of the issuance of securities to obtain the funds required to cover authorized capital expenditures; a railroad company applying to the federal agency for authority to make capital expenditures, or to issue securities, shall be required to file with the proper authorities of the states in which the railroad is located copies of the original petition; and the federal agency shall be required to notify said state authorities of the hearings upon the petition.

Section 6. The conference favors the sole regulation by the Interstate Commerce Commission of all railroad rates and of all rules and regulations bearing thereon affecting interstate commerce. For the performance of its duties the commission should be given power to organize in the manner it may deem best, and be given authority to function through

such local officials or agencies as it may deem necessary to create or designate.

Section 7. The conference favors the creation of a Federal Transportation Board of five members. It shall be the general duty of the board to promote the development of a national system of rail, water and highway transportation, to inquire into and propose measures for preventing abuses therein, to pass upon the public necessity for capital expenditures and to regulate security issues as provided by Section 5. The Federal Transportation Board shall act as the referee in cases of the disagreement (deadlock) of a board entrusted with the adjustment of wages, hours of labor or other conditions of service of railroad employees. It shall, also, be the duty of the Federal Transportation Board to administer and enforce the means and measures that may be provided for strengthening and stabilizing railroad credit; it shall determine the grouping or consolidation of railroads deemed to be in the public interest, and carry out plans authorized by Congress for merging all railroads engaged in interstate commerce into strong competing systems severally owned and operated by companies subject as corporations to the jurisdiction of the United States.

Section 8. The conference favors the adjustment of wages, hours of labor and other conditions of service of railroad employees by boards consisting of equal numbers of representatives of employees and officers of the railroads, with appeal, in case of the disagreement (deadlock) of an adjustment board, to the Federal Transportation Board as referee.

The conference favors the adoption by Congress of the plan contained in the following Sections, 9 to 19 inclusive, for the purpose of strengthening and stabilizing railroad credit, of protecting the interest of the investing public and of promoting, in the highest degree both legal and moral accountability upon the part of railroad directorates and of railroad executive officers, and of bringing about as promptly as practicable the consolidation of existing railroads into such number of competitive systems, owned and operated by companies subject as corporations to federal jurisdiction, as shall be found to be in the public interest.

Section 9. The conference recommends that a statutory rule be enacted by Congress requiring that railroad rates and fares, to be established by public authority, shall be designed to yield the railroad companies in each traffic section of the United States (as shall be designated by federal authority) aggregate revenue sufficient to produce, after proper provision has been made for renewals and depreciation, a net return (which shall be available for interest and dividends) of not less than six (6) per cent. per annum upon the aggregate fair value of the property of the railroads devoted to the public service in each of the several sections. The items of "renewal and depreciation" shall also include unproductive improvements not properly chargeable to investment account and against which no capital or capital obligations shall be issued.

Section 10. The net return to be obtained by the railroads as a result of the enforcement of a statutory rule of rate making shall be based upon a fair value of the railroad property devoted to the public service, as ascertained by the Interstate Commerce Commission, such valuation to include a consideration of physical property, earning power, and such other elements as may be proper in determining fair value.

Until such valuation shall have been determined, the valuation to be adopted for the railroads in the United States as a whole, and by traffic sections, shall, for the purpose of making the rates that yield the aggregate net return to be provided by statute, be their aggregate railway property investment accounts.

For the purpose of ascertaining excess income, the valuation of any individual railroad system, pending the completion of the said federal valuation, upon which it shall be entitled to retain six (6) per cent. per annum, shall be that proportion of the aggregate property investment accounts of all the railroads of the traffic section in which it is located, which its average annual railway operating income (computed for the period and in the manner prescribed by the federal control act of March 21, 1918) bears to the aggregate annual railway operating income of all the railroads of such traffic section, computed in the same manner; provided, first, that if the use of the above stated formula shall produce a valuation of any particular railroad system, greater than the amount of its average property investment account for the three year period ending June 30, 1917, the amount of such property investment account shall be used instead of the valuation derived by the formula; and provided, second, that nothing herein contained shall operate to reduce the railway operating income which any particular railroad system shall be permitted to retain below its annual average railway operating income, or compensation as computed or allowed to it under the federal control act of March 21, 1918. To such valuation as shall be derived for any railroad system in the manner above stated, there shall be added all increases of property investment made by such system after June 30, 1917.

The Federal Transportation Board shall be vested with the same power to make such specific adjustments, in particular cases, as it may deem requisite and equitable, as is conferred on the director general of railroads under the railroad control act, March 21, 1918.

Section 11. All railroad companies engaged in interstate commerce shall be required to observe the following regulations under the direction of the Federal Transportation Board:

(a) Whenever the net railway operating income of a railway company available for the payment of interest and dividends (after provision has been made for renewals, depreciation and unproductive improvements as defined in Section 9) shall exceed six per cent upon the fair value of its property, or upon its temporary valuation as determined by Section 10 (the "fair value of property" being used in this section to include both temporary and permanent valuation) one-half of the said excess railway operating income above six per cent shall be placed in a contingent fund of the company until such amounts to six per cent of the fair value of the company's property. The remaining half shall be turned over to a general railroad contingent fund as provided by Section 12.

(b) A railroad company may draw upon its own contingent fund whenever, and to the extent that, its said annual railway operating income shall fall below six per cent of the fair value of the property as determined by Section 10; but whenever the railroad's contingent fund is thus drawn upon, the fund shall be replenished from the company's share in subsequent excess earnings until the fund is restored to six per cent of the fair value of the company's property.

(c) When any individual railroad company earns an annual railway operating income of six per cent upon a fair value of its property and has established and is maintaining a contingent fund of its own amounting to six per cent on the fair value of its property, the company shall turn over to a general railroad contingent fund, two-thirds of the company's railway operating income in excess of six per cent, the remaining one-third of said excess to be retained by the railroad company for distribution among its stockholders or for such other lawful purposes as it may determine.

Section 12. There shall be established a general railroad contingent fund for the purpose of making good any deficiency in any year below six per cent upon the aggregate fair value of the properties of the railroads of a section. The amount of such deficiency shall be drawn from the general railroad contingent fund for distribution among the railroads in any traffic section, upon the basis of the

gross earnings from railroad operations of the railroads within such section; and if the result of this distribution causes the railway operating income of any individual railroad to exceed six per cent this excess shall be applied as provided in Section 11.

Section 13. In any year, following the completion of the mergers hereinafter provided for, when the yield from rates established by federal authority equals six per cent upon the aggregate fair value of the property of the railroads in any traffic section, and the total contribution made in any such year to the general railroad contingent fund amounts to less than five per cent of the aggregate net earnings from operation in that traffic section, then the railroads in that section shall contribute to the general contingent fund the sum necessary to bring the contribution for the year up to five per cent of the aggregate net earnings from operation—each company being required to contribute for this purpose pro rata to its net earnings from operation for that year.

Section 14. The general railroad contingent fund shall be managed by trustees appointed by the Federal Transportation Board from men nominated by the railroad companies. Moneys turned over to the fund shall be invested by the trustees in United States Government securities, or shall be deposited in the Federal Reserve Banks.

Section 15. The general railroad contingent fund shall be accumulated by its trustees until it amounts to $750,000,000, and be maintained at that sum for the purpose hereinbefore provided, and any excess thereafter acquired shall be used when and as directed by the Federal Transportation Board for the development of the railroad transportation system of the country, or for the increase of transportation equipment and facilities, or for the pro rata reduction of the capital or capital obligations and property investment accounts of the railroads, or, if so ordered by Congress, the excess shall be turned over to the Treasury of the United States.

Section 16. To facilitate the prompt stabilization of railroad credit and such consolidation of railroads as the Federal Transportation Board shall decide to be in the public interest, it is recommended that Congress create a railroad reserve fund and appropriate for this purpose the sum of $500,000,000. This fund shall be administered by the Federal Transportation Board which shall invest it in United States bonds or notes, the interest accruing from such bonds or notes, or the earnings upon the proceeds thereof, to be paid annually into the United States Treasury. In case, at any time during the first 10 years after the enactment of this legislation, the general railroad contingent fund, provided by Section 12, shall not be sufficient to make good deficiencies as described in that section, then the Federal Transportation Board shall pay into the general railroad contingent fund, as far as the board's available funds permit, the amount necessary to enable the trustees of the general railroad contingent fund to make over to the railroads the sums due them for that year under the stipulations of said Section 12; provided, however, that any sums so paid by the Federal Transportation Board shall be repaid with interest by the trustees of the general railroad contingent fund from contributions received from the railroads after the general railroad contingent fund shall reach and be maintained at the amount of $500,000,000.

Section 17. The consolidation of railroads into a limited number of strong competitive systems under conditions to be prescribed by Congress is believed to be in the public interest and should be carried out as promptly as practicable, in accordance with plans to be submitted by the carriers and approved and announced by the Federal Transportation Board. In order to bring about this consolidation of railroad companies, jurisdiction of which has been perfected as contemplated in Section 4, the Federal Transportation Board shall determine for itself and announce the grouping of railroads in case such railroads have not within a reasonable time submitted plans for its approval for consolidation in any given section and the Board deems such consolidation to be in the public interest.

If the consolidations thus announced by the Transportation Board shall not have been affected or well advanced within five years after announcements the Board should be given power to carry through such mergers by compulsory proceedings, if in its judgment the public interest would be thereby advanced.

Section 18. Any railroad corporation, that may be allowed by the Federal Transportation Board to acquire the securities or properties of other railroad companies and to form a consolidated railroad system under the jurisdiction of the United States, shall be required by the Board to organize with a board of twelve directors, one of whom shall be a representative of the employees of the system and nominated for that position by such employees, and three of whom shall be selected by the Federal Transportation Board to represent the principal interests involved in the territory served by such system. The board of directors thus selected shall make such regular and special reports to the Transportation Board as that Board may require.

Section 19. Should it be found by the Transportation Board to be in the public interest to protect the credit and financial operations of some railroads pending the completion of the railroad consolidations herein contemplated, it is recommended that one or the other of the following plans be adopted:

1. That the Transportation Board be endowed with power, and granted the necessary funds to extend credits to such railroads during the period of consolidation; or
2. That the existing machinery of the War Finance Corporation be employed for this purpose.

If the second recommendation is adopted, appropriate legislation should be enacted to enable the War Finance Corporation to advance funds to railroads under terms that may be approved by the Federal Transportation Board.

Statement by Harry A. Wheeler

An abstract of Mr. Wheeler's statement follows:

Return of the Railroads to Corporate Operation

Necessarily, the first question considered by the conference was whether it favored corporate or government ownership and operation of the railroads. After full consideration the conference, with but few dissenting votes, decided in favor of corporate ownership and operation, and the return of the roads to their owners as soon as possible after the enactment by Congress of appropriate remedial legislation. The conference was in favor of the continuation of government operation until such legislation had been enacted and made effective, but felt that this legislation should, if possible, be enacted within the present calendar year.

A Statutory Rule of Rate-Making, Without Government Guarantee

The most fundamental problem to be solved by the legislation that must precede the return of the railroads to their owners is the adoption of measures that will give the carriers reasonable assurance of revenues sufficient to enable them adequately to perform the services required by the public. In the interest of the carriers and the public the authority which determines rates must adopt measures that will afford the carriers reasonably adequate revenues.

One method is to provide a definite government guarantee of a fixed minimum net return. A government guarantee is not favored by the conference. It believes that it will be possible for Congress to adopt a policy of rate-making

and control that will give the carriers reasonable assurance of adequate revenues without involving the government in the obligation of guaranteeing the net return of private corporations and without imposing upon the public the burden of unreasonable transportation rates.

Briefly stated, it is recommended that Congress adopt a statutory rule of rate-making requiring the Interstate Commerce Commission to be responsible for railroad rates and fares designed to yield the carriers in each designated traffic section not less than 6 per cent net upon the aggregate fair value of the property of the railroads. The statutory rule recommended by the conference provides that it shall be the duty of the commission to authorize or establish rates and fares that will produce, not for each railroad company, but for the railroads in the aggregate in each natural traffic section of the country, aggregate revenue sufficient to yield a net return of not less than 6 per cent upon the aggregate fair value of the property of the railroads devoted to the public service in each of the several traffic sections. It is recommended that "fair value" shall be ascertained by the commission by giving consideration not only to physical property but also to earning power and such elements as may properly receive attention.

The determination of the fair value whether for rate-making or for other purposes, has unavoidable difficulties. When the Interstate Commerce Commission completes the valuation it is making that will, of course, be adopted; but during the next three to five years some temporary method of determining "fair value" must be followed. The recommendation is that, pending the completion of the valuation now being made, the fair value, for rate-making purposes, of the railroads as a whole and by traffic sections, shall be their aggregate property investment accounts; while the fair value of the property of an individual railroad shall temporarily be taken to be that share of the aggregate property investment accounts of all the railroads in the traffic section in which the road is situated which the particular road's annual railway operating income bears to the aggregate railway operating income of the railroads in its traffic section—public authority having power to make equitable adjustments in special cases.

Plan for Strengthening and Stabilizing Railroad Credit

From the rates made in carrying out the foregoing statutory rule, the best situated, or most ably managed, railroads will receive more than 6 per cent net, while the less favorably located or less efficiently managed roads will obtain less than 6 per cent. By the plan adopted by the conference, each of the railroad companies that receive a net return of more than 6 per cent are to be required to put half of the excess into a company contingent fund until that fund shall amount to 6 per cent of the fair value of the company's property, while the other half of the excess is to be turned over to a general railroad contingent fund administered by trustees appointed by government authority and maintained and used for the benefit of all the railroads of the country.

When any railroad company has brought its own contingent fund up to 6 per cent, the company shall increase its annual contribution to the general railroad contingent fund to two-thirds of its net income in excess of 6 per cent, the other third of the excess being retained by the company for distribution among the stockholders or for other lawful purposes. This plan would keep the profits of individual railroad companies within reasonable limits without taking away from the management of the companies the incentive to effort and efficiency.

The purpose of the general railroad contingent fund is to assure to the railroads in the aggregate, by traffic sections, a return of 6 per cent. The fund is to be the means of strengthening and stabilizing railroad credit, and to do this (a) without making the government responsible for a fixed return to individual railroad companies, (b) without imposing unreasonable rates upon the public, and (c) without permitting the railroads that have been unfortunately located or have been over-capitalized or otherwise mismanaged to shift their burdens from their own shoulders onto the government or the public or the other railroads. The general railroad contingent fund, accumulated in the manner indicated, is to be drawn upon by all railroads of a designated traffic section when in any year the net return upon the aggregate fair value of the property of all the railroads in that section falls below 6 per cent., due to the fact that the rates authorized or established by the Interstate Commerce Commission, in consequence of fluctuations in volume of business or of an unexpected increase in expenses, have not yielded the carriers the minimum net return of 6 per cent, provided by the statutory rule of rate making.

As has been explained, the proposed general railroad contingent fund is to be created and maintained by contributions required from such companies as have net returns in excess of 6 per cent, two-thirds of the excess being contributed. The fund is to be drawn upon only when, and to the extent that, the rates and fares, which are controlled by the Interstate Commerce Commission, do not yield the railroads the contemplated annual net return of 6 per cent.

When the general railroad contingent fund is drawn upon for the purpose of bringing the aggregate net revenues of the railroads in any traffic section up to 6 per cent, all of the railroads in the traffic section shall share in the distribution pro rata to their gross earnings. By this plan the weak roads, that will presumably have contributed nothing to the general fund, will receive their share; but they will not be the sole beneficiaries of the distribution. It is not the purpose of the general contingent fund to give to the properties of the weak roads values which they do not possess; its purpose is to assure to the railroads as a whole, year by year, a net return of not less than 6 per cent. upon a fair value of their property; and thus to establish the first condition precedent to stabilizing railroad credit as a whole, and to securing for the public adequate railroad transportation at reasonable capital cost. It is not proposed to provide the weak roads with a net return upon an amount in excess of a fair value of their property.

Consolidation of Railroads Into Strong Competing Systems

The grouping or consolidation of the railroads in the United States, within a reasonable time, into a limited number, possibly 20 to 30, strong competing systems, is essential; because railroad rates must be the same for similar services, whether performed by the weak, necessitous railroad, or by the strong and prosperous one. It is in the interest of the public that railroad charges shall be neither so high as to cause the strong roads to profit unduly, nor so low as to force the weak lines, upon which large sections of the country may be vitally dependent, into bankruptcy or into such a permanently enfeebled condition as to prevent them from serving the public adequately and efficiently. All sections of the country ought in the future to be served by railroad systems managed by companies strong enough to serve the public with progressive efficiency and economy.

It will be necessary for the government to return the railroads to the companies from which they were taken, but the obstacles to the grouping or consolidation of railroads, under conditions approved by the government, should be removed, and provision should be made for bringing all of the railroads in the country within a reasonable time into such a number of strong competing systems as it may be found desirable or necessary to perpetuate in order to secure for each principal district of the country the service of more than

one system. The grouping or consolidation should be about the present strong systems, that is along commercial lines, and not by means of arbitrary territorial sub-divisions of the country.

While presumably it will not be practicable for the government to require the immediate grouping or consolidation of the railroads, voluntary consolidations should be permitted and facilitated. The railroad companies should be called upon to submit, for approval of the government, plans for the grouping or consolidation of the roads, and if the companies do not submit such plans within a reasonable time the government, acting through the appropriate authority, should determine and announce what permanent groupings or consolidations are deemed to be in the public interest. Should the consolidations thus declared to be in the public interest not have been effected, or should they not be well advanced, at the end of a reasonable period, say five years, power should be given the appropriate public authority to carry through the desirable mergers by compulsory proceedings, if in the judgment of Congress such power can be granted, and the public interests will be thereby advanced.

Federalizing Railroad Corporations

As the proposed strong competing railroad systems come into existence by consolidations, approved or required by the government, they should be owned and operated by companies subject as corporations to the jurisdiction of the United States. Congress will presumably provide for permissive federal incorporation of railroads, but it should not stop there. Some effective plan should be devised for changing the allegiance of the railroad corporations from the states to the federal government.

It is argued by some lawyers that the United States cannot compel an existing railroad company to surrender its state charter, take out a federal charter, and transfer its property to the new corporation; but it is also pointed out by others that it is not necessary to adopt this method of converting existing railroad companies from state to federal corporations. It is said to be within the power of Congress to pass an act similar in principle to the national bank act, by which railroad companies may readily transfer their allegiance from the states to the United States.

Either by compulsory federal incorporation, or, if that should not be feasible, in such other manner as Congress may determine, all railroads engaging in interstate commerce should be brought as corporations under the jurisdiction of the United States; but in so doing their powers of local taxation and police regulation should be reserved by the states. By reserving those powers the states will retain the relation to interstate carriers by rail which they should logically possess.

Labor Representatives and Government Directors

It is recognized by everybody that the railroad business is of a public nature. The public is entitled to information regarding the corporate activities of railroad companies, and provision may properly be made for participation by representatives of the government in the deliberations and actions of the directors of railroad companies. Although it may not have been necessary in the past that the public, through the government should be represented upon the directorates of the multitude of railroad corporations, it seems clearly in the public interest that the public shall have a voice in the management of the large and powerful railroad corporations that may be allowed to own and operate the limited number of consolidated systems which it is proposed shall be perpetuated. It is recommended that Congress require these large corporations of the future to organize with a board of 12 directors, 3 of whom shall be selected by appropriate authority of the federal government to represent the principal interests in the several territories served by the different systems.

The public has an especial interest in the maintenance of harmonious relations between the railroads and their employees. There should be mutual understanding and confidence on the part of the employer and the employed. It is believed that this relationship will be greatly promoted by requiring each of the railroad corporations that are to own and operate the large systems contemplated in this plan to include in its directorate one member who shall be a representative of the employees of the system managed by the board and shall be nominated for that position by the employees.

The conference favors the adjustment of wages, hours of labor and other conditions of service of railroad employees by boards consisting of equal numbers of representatives of employees and officers of the railroads, with appeal, in case of the disagreement (deadlock) of an adjustment board, to an appropriate federal authority as referee.

Federal Regulation of Capital Expenditures and Security Issues

Everybody seems to have reached the conclusion that in the future the capital expenditures and the security issues of railroad companies should be regulated by federal authority. The states should be, and apparently are, quite willing to retire from this field of regulation, provided the regulating authorities of the states are officially notified of proposed security issues and afford an opportunity to be heard thereon.

Regulation of Rates By the Interstate Commerce Commission

The Interstate Commerce Commission has performed a task of great magnitude. Its work of regulating rates and of developing and supervising the bureaus connected with rate regulation and railroad valuation has increased steadily until the commission has come to carry a heavy load. It would be unwise to add unnecessarily to its present duties, especially in view of the fact that its responsibilities must unavoidably be increased, should Congress by legislative enactment confer upon the commission such power over intrastate rates, rules and regulations affecting interstate commerce as may constitutionally be granted. It will doubtless be possible, and probably in the public interest, for the Interstate Commerce Commission to enlist the co-operation of existing state commissions in the regulation of intra-state rates affecting interstate commerce.

A Federal Transportation Board—Its Powers

To carry out the plan recommended extensive administrative powers must be vested in some federal agency. Should the commission, as is contemplated, become the authority for the sole regulation of all railroad rates, rules and regulations affecting interstate commerce, its duties will necessarily be enlarged. To require the commission to exercise the administrative functions contemplated in the proposed plan of remedial railroad legislation would be to the detriment of the public interest because it would seriously interfere with the prompt action of the commission as a body for the regulation of rates, the task for which it was especially created and for the performance of which it is peculiarly adapted.

It is recommended that a Federal Transportation Board of five members be established to exercise the administrative functions required for the enforcement of the proposed remedial railroad legislation. The following specific duties should be entrusted to this board:

(a) To pass upon the public necessity for capital expenditures and to regulate the security issues of railroads.

(b) To act as the referee in cases of disagreement (dead-

lock) of a board entrusted with the adjustment of wages, hours of employment and other conditions of the service of railroad employees.

(c) To administer the general railroad contingent fund and to enforce the means and measures that may be provided for strengthening and stabilizing railroad credit.

(d) To determine and announce the grouping or consolidation of railroads deemed to be in the public interest, and to carry out plans authorized by Congress for merging all railroads engaged in interstate commerce into strong, competing systems severally owned and operated by companies subject as corporations to the jurisdiction of the United States.

(e) To promote the development of a national system of rail, water and highway transportation, by providing for the articulation of the railroads with the waterways in a traffic sense, by bringing about the common use and construction of terminal and transfer facilities at the larger centers of traffic, and by such other means as may be found to be practicable and in the public interest.

(f) To inquire into the practices of railroad management and to propose measures for preventing abuses therein.

(g) To appoint the directors that shall represent the government upon the directorates of the proposed consolidated railroad companies.

The board which performs the duties enumerated in the foregoing list will be entrusted with an executive task of the first magnitude. It should be composed of men of the highest character and attainments. It will equal, if not exceed, in importance, the Federal Reserve Board, whose creation was most fortunate and whose services have been of great value to the public. The Federal Transportation Board should be primarily administrative in purpose and organization. It will have the large and exacting task of guiding and facilitating the development of an adequate and efficient national system of transportation.

A Railroad Reserve Fund for Use During the Period of Transition

A severe strain will be placed upon railroad credit and upon the financial stability of the railroads during the period of transition of the railroads from government to corporate operation unless special precautionary measures are adopted. At the present time the railroads are being operated with a large and increasing deficit and it is doubtful whether the deficit can be overcome during the remainder of this calendar year. In all probability many of the railroads now being operated by the government will be showing a deficit at the time they are returned to their owners.

The several railroad companies will resume the operation of their properties under abnormal conditions. Most rolling stock is being used by the railroads as a whole without much regard to individual ownership to some extent terminals are being jointly occupied and used; traffic has been largely rerouted and traffic organizations of the carriers have been to a considerable extent disintegrated. It will take the corporations some little time to readjust themselves to the new conditions and it is evident that the government will need to assist the carriers financially until they can get going.

It has been suggested by the Hon. Charles A. Prouty that "the government should guarantee for one year (after turning the railroads over to their owners) a return equal to 75 per cent of the contract compensation in all cases where contracts have been executed. And the carrier should be required to pay over to the government in all such cases 75 per cent of any excess which it may make over and above the contract compensation." If this suggestion were adopted the government would guarantee to pay the railroad companies during the first year of private operation 75 per cent of over $900,000,000, and would have little assurance that the sums which might be advanced would ever be returned to the government.

Recognizing that it will probably be necessary for the government to assist the carriers temporarily during the first few years of corporate operation while the railroad companies are building up their individual contingent funds and while a start is being made in establishing the general railroad contingent fund, the Transportation Conference recommends that Congress make an appropriation loaning $500,000,000 for the creation of a railroad reserve fund to be administered by the Federal Transportation Board. It is recommended that the board be required to invest the sum thus loaned in United States bonds or notes, the interest on the securities to be paid annually into the United States Treasury. The fund which is to be established for the purpose of bringing about the prompt stabilization of railroad credit and of facilitating such consolidation of railroads as the board shall decide to be in the public interest, may be used as follows:

The reserve fund created by Congressional loan may at any time during the first 10 years after the enactment of the proposed legislation, be drawn upon to whatever extent may be necessary to enable the trustees of the general railroad contingent found to pay over to the railroads the sums which they may be entitled to draw in accordance wih the provisions conrolling the distribution of money from the general contingent fund. The plan provides, however, that any sum advanced by the Federal Transportation Board to the trustees of the general railroad contingent fund shall be repaid to the board with interest as soon as the general railroad contingent rund shall reach, and be maintained at, the amount of $500,000,000. In other words, after the general railroad contingent fund shall, from the contributions received from the railroads, have reached $500,000,000 the first claim upon the fund will be the repayment to the government of the amount loaned at the time of the transition of the roads from the government to corporate operation.

Finally it is recommended that the Federal Transportation Board or the War Finance Corporation (the act creating that corporation having been appropriately amended) be authorized to advance public funds (under terms that will ensure the government against loss) to certain individual roads whose credit and financial operations it may be necessary, in the public interest, temporarily to protect during the transition to normal stable conditions.

Commissioner Clark's Testimony

That the provisions of the Esch-Pomerene bill, which would enlarge the powers of the commission over car service and operation and authorizing it to require joint use of transportation facilities in time of emergency, while freeing the railroads from some restrictions, would enable the commission to deal adequately with any emergency of transportation likely to arise in time of peace or war or at least to take care of the situation as well as possible with the available facilities, was the opinion expressed by Commissioner E. E. Clark in his testimony before the committee on July 17. Mr. Clark opposed the fundamental features of the principal plans for dealing with the railroad problem that have been suggested by other bodies, such as a requirement that rates should be made to produce a certain percentage of return, a guarantee of earnings, a secretary of transportation or a reorganization of the roads into a few companies by consolidation. He declared that if the provisions of the bill advocated by the commission had been in effect in 1917 there would have been no necessity for the federal control act or for the financial legislation that has followed it, and moreover that some of the embarrassments that have resulted from federal control might have been avoided.

Mr. Clark believes in compulsory mergers of operating facilities but he does not believe the government can compel

consolidations of companies. He hoped that a great deal of consolidation would be carried out under the permissive provisions of the bill, which would take care to some extent of the weak lines. He thought there are many cases where the companies would be glad to enter into mergers if they were given the right to do so.

He had not been able to satisfy himself that there is any necessity for federal incorporation. Congress, whenever it chooses to do so, can occupy the entire field and there will be no need for federal incorporation. The railroads cannot be consolidated into a few systems, except by laying a foundation for voluntary action; if compulsory consolidation were attempted the carriers would be very much "up in the air" for several years during the litigation of conflicting interests that would inevitably follow. Regional commissions would be impracticable, for regions could not be established without cutting across traffic territories and transportation systems. Transcontinental rates could not be fixed on a regional basis.

He objected to the plan of a secretary of transportation. One individual would have no better or sounder view than a tribunal whose membership changes gradually. A cabinet officer would probably change every four years or oftener.

To require the commission to establish rates which would produce a given percentage of return would put the commission up against an impossible situation; no man can figure out a level of rates which will produce a given percentage. No man can foresee the volume of traffic and there is a point beyond which an increase in rates will reduce it. A guarantee of earnings is fallacious for the net income is largely dependent upon expenses which are in the control of the carriers: the public could not be protected against improvident and perhaps extravagant expenditures for maintenance. Any government guarantee takes away to some extent the incentive to economy.

E. E. Clark

To put upon the Interstate Commerce Commission the responsibility for regulating wages would be both unwise and impracticable. The commission could not decide either a rate or a wage question without reference to the other. The commission, holding this view, is not influenced by the fear of unpopularity because "it has enjoyed some of that as it is." Regulation of wages ought to be put in the hands of a tribunal that would deal with wages on their own merits and the Interstate Commerce Commission should deal with freight and passenger rates in the light of what was done about wages.

Mr. Clark introduced again the financial statements he had presented to the Senate committee, which he thought demonstrated that the credit of the carriers had not been destroyed by niggardly regulation. He showed that while the length of railroad in receivers' hands had increased to 37,353 miles on June 30, 1916, it had been reduced to 17,366 on December 31, 1917, and he declared that certainly rate levels or regulation had absolutely nothing to do with the receiverships of the Rock Island, the Frisco, the Missouri Pacific, the Denver & Rio Grande, the Western Pacific, the Wabash, Pittsburgh Terminal, the Pere Marquette or the Cincinnati, Hamilton & Dayton.

In discussing the return of the railroads to private management, Mr. Clark said that it would undoubtedly be necessary for the government to lend them some aid and he suggested a loan, on adequate security, at a rate of interest below what could be secured in the open market. The government should pay as a war cost the large losses resulting from war operation. There should be some declaration by Congress as to the rate situation because the state rates will inevitably go back to where they were, in the case of statutory rates, and probably also in the case of rates made by state commissions. Replying to a question, he saw no prospect of any increase in traffic sufficiently to wipe out the present deficits. He assumed that wages could not be reduced and said that under the new conditions of employment established by the government he did not believe the number of employees could be reduced sufficiently to affect the situation materially.

It would be most advisable, Mr. Clark declared, for Congress to enact some temporary legislation which will stabilize the rate situation during a period of months, possibly a year, after the railroads are returned, so as to prevent reductions of intrastate rates; and traffic officers of individual roads should be restrained from cutting rates upon the resumption of competition; there should be some agency by which rates should be passed upon in each ditrict. The commission might appoint committees, composed of experienced traffic men of a judicial temperament, with possibly some representatives of the shippers.

In reply to questions by Chairman Esch as to the effect of various provisions of the bill, Mr. Clark said that while it preserves the right of the shipper to route his freight, that power could bet set aside by the commission in an emergency. The requirement of a certificate by the commission for the construction of new lines would help to stabilize railway securities but existing lines ought to be required to fully develop their own fields. He mentioned the competitive construction of lines down the Des Chutes canyon in Oregon by the Hill and Harriman lines, after the former had once declared the territory not worth building into, and the construction of the Western Pacific, as examples of lines whose building might be prevented.

Replying to a question by Mr. Esch the commissioner thought that there must be an abundance of capital seeking investment but "the railroad executives and financial interests have kept on saying, in season and out of season, since 1910, that they had no credit," so what can they expect?

Mr. Clark elaborated on the increased powers conferred by the bill to enable the commission to deal more adequately with water traffic, and also on the increased powers for dealing with such rate situations as those of the Shreveport rate

case, involving state discrimination against interstate commerce. The "Shreveport situations" are on the increase but the proposed powers would contribute largely to their reduction.

The power to prescribe divisions of rates as between carriers should make it possible to see that the short lines get a fair division, but he would not go so far as to say that they would all be enabled to live. In the course of a discussion as to meeting water competition he said that if the railroads were prevented from doing so the water lines would put the rates as high as possible. The opportunity to grant fourth section relief to the circuitous rail lines is really of more importance than the question of competition with water lines.

In reply to questions by Representative Sims regarding the effect of the bill on the weak lines, Mr. Clark said that if the provisions for supervising security issues had been in effect the "weak sisters" would not be so weak. Some companies must inevitably undergo reorganization under any circumstances. Some roads are weak because they never should have been built, some because they had not been so well managed as their competitors and some because of financial manipulation.

The commissioner said that the bill under discussion had been proposed merely as amendments to the act to regulate commerce; the return of the roads to their owners and stabilization of the rate situation should be covered by a separate measure. The roads should be returned to their owners just as soon as Congress can enact proper legislation. In reply to Mr. Sims, he said that the fifteenth section amendment, requiring the permission of the commission before an increased rate can be filed, is an unwise restriction. New tariffs are likely to be so numerous that the commission could not handle them except in the most stereotyped way.

Representative Cooper asked why no provision for dealing with labor disputes had been included in the bill. Mr. Clark said that wages ought to be dealt with by some other body than that which regulates rates. He did not propose to discuss the question of whether wages ought to be regulated, saying that he had great faith in the possibilities of mediation, conciliation and arbitration; but that a separate tribunal should be charged with administering whatever policy Congress lays down.

Replying to a question by Representative Dennison, Mr. Clark disapproved subsidies and guaranties. "If the railroads cannot be made self-supporting without a government subsidy the government had better take them and see what it can do."

Mr. Clark said that he hoped that one of the results of the bill if enacted would be the organization of joint terminal companies like that of the Terminal Railroad Association of St. Louis. He thought that all of the terminals of an industrial community should be in the hands either of the municipality or of a separate corporation like that at St. Louis. Competition would not be affected in any way, he said.

Mr. Clark's testimony and cross-examination were completed on Tuesday and he was followed by Mr. Wheeler.

Compulsory Federal Incorporation

By Alexander W. Smith

The legal aspects of federal incorporation were discussed by Mr. Smith, who said in part:

Opinions of learned counsel of the National Association of Owners of Railroad Securities have been widely circulated by that association declaring that there is no constitutional method for the creation of federal railroad corporations and compelling transfer to them of their existing properties without the consent of their stockholders, or of the states creating them, and thus forcing abdication of their corporate obligations and duties under their state charters. When we consider that this proposition rests on the premise that separate and distinct federal corporations are to be created and that they are to take over by transfer, either through negotiation or condemnation, the assets of the existing railroad companies, the legal conclusion of the eminent lawyers who have furnished or endorsed these opinions is unquestionably sound.

The country is confronted, however, with the absolute necessity of the federal government being vested with full jurisdiction of interstate carriers *in their corporate functions* in addition to the constitutional jurisdiction now exercised by Congress over the activities of these carriers in connection with interstate commerce. Unless this is accomplished, the proposition that the government shall authorize the consolidation of these existing carriers into large systems which will necessarily interfere with competition in local territory becomes a legal impossibility, because it will run counter to constitutional inhibitions in a large number of states prohibiting such consolidations by the corporations they have severally created.

Aside from the insuperable legal difficulty thus indicated, it is a wholly impracticable thing to transfer and transplant the assets and liabilities of the existing corporations engaged in interstate commerce into new corporations created for the purpose. Take the Southern Railway Company as a concrete example. It is a system made up of more than one hundred separate railroad corporations. It owns some of them; it controls others under long leases, and others by majority stockholding. It has effected their merger by all the known methods of putting one railroad under the operative control of another. Their obligations, under the kaleidoscopic arrangements it has made in bringing the system together, could not be transformed and lifted out of the several state corporations and set down in a new federal corporation.

It is respectfully submitted, however, that the problem is not insoluble, for there lies on the surface a method to accomplish the desired results in a perfectly simple way, viz.: The passage by Congress of a general federal incorporation act along lines parallel to the laws incorporating national banks and nationalizing state banks. This is the basic idea of the recommendation of the conference on this subject, and the idea has been developed in the draft of the remedial railroad law, which will be presented by the representatives of this conference.

If Congress should adopt this bill existing railroad companies engaged in interstate commerce and operating under state charters could take out certificates of incorporation, to be issued as therein provided, under which they would become federal, or national, corporations without destroying their corporate identity and existence; without changing their officers and stockholders; and without disturbing the title to their assets or the integrity of their existing liabilities; and the continuity of their business would not be interrupted.

The authorities conclusively establish that such a proceeding results in a mere transition and not a new creation, and does not destroy previous identity or corporate existence, and simply results in a continuation of the same body, with the same officers and stockholders, the same property, assets and business under a changed jurisdiction. Any interstate railroad thus nationalized would remain one and the same railroad, and would go on doing business uninterruptedly, under existing liabilities and contractual privileges and obligations.

Since no one questions the power of Congress to incorporate interstate railroads, it follows that it can authorize the conversion of such a railroad company from a state corporation into a national corporation. While Congress has no power to compel a state bank to become a national bank, because a state bank is no part of the fiscal machinery of the Nation, it is submitted that it does have the power to compel

a railroad system that is now engaged in interstate commerce to become a federal corporation.

The power of Congress to create a bank at all was contested until it was settled by the Supreme Court that said power was implicit in the power delegated to Congress to issue money and handle its finances. Jurisdiction of Congress over a railroad engaged in interstate commerce is delegated in a specific, plain, explicit, all-inclusive, and plenary paragraph of the Constitution committing to it control over interstate commerce and all its instrumentalities.

If it be true that Congress has only implied power to charter a bank as a piece of machinery in its fiscal system, it must be true that if Congress finds in the development of transportation that state lines have been wiped out, and that commerce disregards artificial obstructions, and that necessary machinery in carrying on interstate commerce is a railroad corporation, the express grant of exclusive jurisdiction over such commerce carries with it the power to create such a corporation.

If that is true, can it compel a state railroad company engaged in interstate commerce to become a federal corporation? No one questions its power to create such corporations, ab initio.

It has been decided by the Supreme Court of the United States that no single state can create a railroad company and endow it, as a matter of law, with the right to operate its lines in any other state. Indiana and Ohio tried to do this conjointly. They created two railroad companies, each endowed with the same name and having the same officers, directors and stockholders. The tracks owned by these two companies came together at the state line. Every effort was made to create a single corporation with the right to do business in states. The Supreme Court held that there were two separate and distinct corporations and that, in the very nature of the case, one state could not give the power to its creature to go into the domain of another sovereignty of equal dignity and do business there, except by permission of the other state. Hence it is that all roads that cross state lines do business outside their native state by comity between the states. Comity is a privilege merely and not a legal right.

The Southern Railway Company was able to merge its constituent lines running through 11 states by reason of the voluntary, but not necessary concurrent, action of the several states and their corporate creatures. First, the states either by special acts or by general laws gave statutory permission for the railroad corporations to combine. Second, all constitutent corporations had to take appropriate corporate action through stockholders and directors according to by-laws and charter provisions, authorizing the particular step necessary to a merger. So that each of the constituent corporations was put into the combination by virtue of its own action taken by permission of its creator. Thus, by virtue of the express consent of the several corporations and of the express legislative sanction of the 11 states in which the Southern Railway system operates, something was created different from the aggregate of corporate powers previously vested in the subsidiary companies. The Virginia corporation known as the Southern Railway Company became an instrumentality of interstate commerce, not by virtue of comity, among these 11 states, but because it crosses the lines of said states and hauls interstate commerce through them as a single entity and by virtue of the action of each of the states, and of the concurrent or supplemental action of the owners of each of the properties. *Whether they intended it or not, it is a fact that every one of those states, and every one of those corporations, by such action, voluntarily submitted themselves to the jurisdiction of Congress through its exclusive control of interstate commerce, whenever it sees fit to act.*

Congress has never exercised that power, but with all due respect to the eminent counsel who have raised legal objection to compulsory federal incorporation, no satisfactory reply has yet been made to the legal conclusion involved, viz., that Congress has the power, if it chooses to exercise it, to say that every system of railroads engaged in interstate commerce by virtue of consolidating constituent lines (and no other such system can legally exist unless originally created by Congress): "You are now an instrumentality of interstate commerce, and in the development of the commerce of this country it has become necessary that full jurisdiction of your functions shall be vested in the federal government. Therefore, you are required to transfer your allegiance from the state of your incorporation to the United States of America, in order that the federal government may take such steps hereafter in the control of your business and in the promotion of the interests of interstate commerce as from time to time it sees fit. Congress could then establish consistent control of all sytems of interstate carriers.

If federal incorporation is made permissive only it is questionable whether Congress will not be embarrassed by some of the lines declining to accept federal charters. Many of them have tax exemptions and special charter privileges which they would hesitate to imperil. Voluntary action would certainly destroy these privileges, while, under compulsory action, these property rights might be preserved under other provisions of the Constitution not necessary to be here elaborated.

It should be repeated that this argument is confined to those lines which, by voluntary action, have been consolidated into interstate systems. They have thereby waived the right (if it exists) to object to Congress doing anything with them that it may desire to do if they expect to continue in interstate commerce.

As to the necessity of federal incorporation, there does not seem to be any room for argument. If the federal government is to vise and control the issuance of railroad securities, upon what principle, without the voluntary cooperation of the state corporation, can Congress interfere with its issue of stocks and bonds expressly authorized under its state charter? They may be not necessarily connected with its interstate commerce. Their proceeds may be needed for other purposes. Many railroad corporations engage in business other than transportation. The exercise of control over the securities of a state corporation by Congress is much harder to justify under existing law than the power to compel federal incorporation by interstate systems. The basis of the securities, especially the original issues, is the charter of the constituent companies, and not of the holding or operating company. Rights in these are vested and protected by the federal Constitution itself. But when the corporation operating the interstate system is compelled to transfer its allegiance to the federal government, subsequent issues of its capital stock and bonds may be regulated as Congress directs.

The contractual relation between a state and its corporate creature presents no obstacles to compulsory federal incorporation of interstate systems hereinbefore described, because the state has consented in advance that that may happen. When the state gave permission to its corporation to become a part of the instrumentalities of interstate commerce by virtue of its legal merger into an interstate system, it relinquished its right to object to any sort of control over that corporation which Congress might choose to exercise. Of course, until Congress exercises control the allegiance of the corporation remains with the state that created it. The argument is that both the states and the corporations, by virtue of the necessities of the consolidation that produced the interstate system, have contracted in advance that Congress may exercise jurisdiction over this legally established

instrumentality of interstate commerce if, in its discretion, such action will promote the interests of interstate commerce. Such jurisdiction has been exercised in numberless ways. *If, without destroying the corporation itself,* it may be converted from a state corporation to a federal corporation, there is no legal reason why Congress may not constitutionally require it to make the change.

Judge Smith's statement aroused a great deal of interest among members of the committee, several of whom are strongly opposed to the idea of federal incorporation, and a desire was expressed to cross-examine him at length, but he was obliged to leave the city at once and promised to return later when it would be possible for him to testify as to the text of a bill being drafted to carry out the provisions of the conference plan. Representative Dennison was particularly interested in the effect of federal incorporation on the provision of the Illinois Central charter providing for a state tax on the basis of a percentage of its gross earnings in lieu of all other state taxes, which he said, was an advantage to the state. Judge Smith had said that railroads would retain the benefits of their charter provisions, but said that if the state tax constituted a burden on interstate commerce the state would have to give it up, although, he said, the conference assumed that the constitutional protection of any property rights would continue to function. Representative De Walt thought a peculiar situation would be created if both the federal government and the states had tax powers. Mr. Smith pointed out that railroads are now subject to both state and federal taxation, but he said that under the proposed plan the state's right of taxation would be somewhat limited by the power of Congress which could prevent it taxing railroad property except on the same basis as the taxation of other property. Representative Sanders asked what could be accomplished under federal incorporation which could not be done without it. Mr. Smith said he had grave doubts as to how the Interstate Commerce Commission could regulate the stock and bond issues of state corporations without it and that it would be necessary to carry out the provisions of the conference plan. He said the greatest benefit would be to get the railroads out from under the irreconcilable regulation of 48 state commissions. Representative Sanders thought it somewhat inconsistent to say that Congress could not regulate security issues, but to say it has the power to compel federal incorporation.

Paul M. Warburg followed Mr. Smith. His remarks will be published in next week's issue of the *Railway Age.*

Proposed Rule on Rate Making

By W. W. Salmon

W. W. Salmon, president of the General Railway Signal Company, and chairman of the Railway Business Association's Committee on Railways After the War, followed Mr. Warburg and introduced a number of charts illustrating the effect of the proposed rule of rate-making. Mr. Salmon said in part:

It was felt that amongst the things essential to restoration and maintenance of railway credit, two of the most important are, first, an authoritative governmental declaration as to what shall be deemed a reasonable minimum rate of net earning upon the aggregate value of railroad properties devoted to public service and, second, a recognition and assumption by the government—which regulates the rates and, in large degree, determines the expenditures of the railroads—of its obligation in fixing rates to so fix them that they shall produce revenues adequate to yield the declared reasonable minimum rate of net earning upon the aggregate value of the railroad properties devoted to public service.

In discussing what might be regarded as a reasonable minimum, attention was strongly directed to the facts that in the three years ended June 30, 1917 (hereafter referred to as the test period), the aggregate net earnings from operations of all of the Class 1 railroads of the United States were approximately 895 millions of dollars, or approximately 5.2 per cent upon their aggregate property investment accounts amounting to 17,192 millions of dollars; that during this period of relatively good average earning, the railroads were unable to secure needed funds on such terms as would warrant the emission of their securities for equipment, improvements and extensions required in the public interest—though industrials were at the same time able to sell their securities on favorable terms, by which it is meant that the funds procured from the sale of such securities would earn, in industry, a profit over and above the interest charges thereon. The conference discussion developed the fact that, in its opinion, the net earnings from railroad operation during the test period were insufficient to attract the capital that must be had if the railroads are to be organized and equipped to adequately serve the needs of the country and that they would continue insufficient unless increased in an amount at least equaling the difference between 5.2 per cent and 6 per cent on the aggregate property investment accounts.

It is the view of the conference that while the railroads as a whole must earn from operations an average aggregate annual net return of not less than 6 per cent upon the aggregate fair values of their properties devoted to the public service, if they are to be able to command the capital required for their needed development, there will doubtless be in the future, as now, substantial differences between the rates of net return of the several railroads. Therefore, in this recommendation the railroads of the country are referred to in the aggregate in each of the traffic sections designated by federal authority and it is the belief of the conference that in this, as in its further recommendations, nothing will be found that will cause lessening of zeal on the part of any railroad officer or employee to so conduct the affairs entrusted to him that his railroad may properly earn the greatest possible share of the aggregate net return of the group of railroads of which his is a part, for the conference recognizes that any rule which has such an effect inevitably decreases the efficiency and increases the cost of service to the public.

The conference discussed at length the elements that should properly be considered in arriving at a determination of the fair value of railroad property and, recognizing that a considerable time must of necessity elapse before such value can be ascertained for all of the railroads of the country, sought to find a basis of valuation which, pending an authoritative, permanent fair valuation, may serve as a fairly satisfactory temporary basis in establishing rates. It reached the conclusion that while doubtless the fair value of the property of certain railroads will be found to be much less than the amount shown by their property investment accounts, the reverse will be found to be true of many other large systems which in the past charged to operating expense large sums which, under the existing accounting rules prescribed by the Interstate Commerce Commission, would have been charged and are properly chargeable to capital account. It is the belief of the conference, based upon a comparison of the book valuation of our railroads as a whole, with that of the railroads of other countries, where labor was much cheaper, that it will be found when the federal valuations are completed that the aggregate property investment accounts of all the railroads of the United States and in each of the existing traffic districts or sections amount to less rather than more than the federal valuations will show.

It is the belief of the conference that while a great majority of the people of the United States should and will ap-

prove of a rule of rate making designed, in their interest, to yield a minimum aggregate net return adequate to attract private capital in quantities sufficient to enable the railroads of the country to economically furnish the facilities required to meet the needs of our great and constantly increasing commerce, there should and would be a vigorous protest against any rule, the effect of which is deemed likely to unduly increase the earnings of railroads whose earnings in the past are quite generally believed to have been ample. The conference therefore considered most carefully what could be done to satisfy this most natural and reasonable view, it being quite certain that if the average net return of all of the railroads of the United States should, in consequence of the proposed rule of rate making, increase from the 5.2 per cent of the test period to 6 per cent per annum on their aggregate property investment accounts, certain railroads, whose earnings in the test period were greatly in excess of 6 per cent, would have a substantial increase over their earnings in the test period and that, so far as they alone are concerned, neither the conference nor the country at large would deem it necessary to fix rates designed to obtain a greater yield than that of the test period.

The conference is of the opinion that all income in excess of 6 per cent per annum upon the fair value of the railroad property devoted to the public service should be regarded as "excess income."

It is an exceedingly simple matter to understand how excess income will be determined when the federal valuation of the railroads shall have been completed since any and all earning over 6 per cent on the ascertained valuation of any individual railroad system will constitute excess income. But the conference formula and provisos for ascertaining excess income, pending completion of the federal valuation, are not equally simple and, for clarification, the following illustrations are cited:

The amount of the average aggregate property investment accounts of the 32 Class 1 railroads of the Southern district for the three-year period ending June 30, 1917, was $2,589,615,640; the average aggregate railway operating income of all these railroads for the same period was $138,820,918. For the same period the average railway operating income of the Tennessee Central was $163,753, equal to 0.11815 per cent, of the aggregate like income of all the railroads of the Southern district. Under the conference formula, the temporary valuation of the Tennessee Central, for the purpose of ascertaining excess income, equals 0.11815 per cent of $2,589,615,640, or equals $3,058,341, instead of the $19,717,592 shown as the average amount of its property investment accounts in the period named. All of its net railway operating income over 6 per cent per annum on this $3,058,341 valuation, or over $183,500, would constitute excess income, unless in the test period its average annual railway operating income exceeded $183,500 and as such was not the case in the test period, any income in excess of $183,500 would actually constitute excess income.

Take another and extremely different illustration, that of the Norfolk & Western. Its average net income from operations for the test period were $20,893,498, equal to 15.05132 per cent of the aggregate of such earnings for all of the railroads of the Southern district during that period. Under the conference formula the temporary valuation derived for that road would be 15.05132 per cent of the aggregate property investment accounts of all of the railroads of the district, or $389,771,475; but, under proviso 1, this derived valuation cannot be used, since it exceeds the amount of the average property investment account of the railroad, which was $264,792,196. On the other hand, 6 per cent upon this last named amount would be only $15,887,532, and as this is less than its average net railway operating income for the test period, amounting to $20,893,498, only income exceeding this latter amount is regarded as excess income.

The effect of proviso 2 is thus seen to be that whereas, pending the completion of the federal valuation of railroad property, no net railway operating income not in excess of the average of the test period shall be regarded as excess income, all railway operating income in excess of such average is treated as excess income when earned by a railroad that earned 6 per cent or more on its property investment account during the test period. The purpose of this provision is that no such railway, whose earnings during the test period were 6 per cent or over, shall even temporarily unduly profit from its increase of earning, growing out of the operation of the proposed rule of rate making.

Upon a careful review of the various plans suggested as to the disposition to be made of excess income, it was the opinion of the conference that it should be used wholly or in major part to establish and maintain certain railroad contingent funds. It is obvious that no matter how honestly and ably the governmental rate fixing agency shall perform its task, there will inevitably be years when, for one or another uncontrollable cause, net railway operating income will fall below the desired and requisite percentage. It was therefore deemed wise that out of its excess earnings each railroad should contribute a part to the establishment of its own individual railroad contingent fund, upon which it may draw in any year when its net railway operating income shall fall below 6 per cent of the fair value of its property; and that it shall also contribute a part to a general railroad contingent fund which can be drawn upon only when the aggregate net operating income of all of the railroads of a traffic section falls below 6 per cent upon the aggreate property investment accounts of the railroads of that traffic section. In this way all earnings from railway operations are available for the maintenance of the credit of the railways.

In the tables are shown the estimated contributions of each of the Class 1 railroads in each traffic section to each of the contingent funds in a year when the aggregate net railway operating income of the railroads of each traffic section equals 6 per cent upon the average aggregate property investment accounts of the test period.

These contributions in such a year, while the individual contingent funds are in process of creation, and prior to the effecting of the consolidation of existing roads into a limited number of competing systems, are estimated as follows:

District	Individual contingent fund	General contingent fund	Total
Eastern	$13,676,562	$13,676,563	$27,353,125
Southern	4,881,539	4,881,539	9,763,078
Western	19,765,944	19,765,944	39,531,888
Totals	$38,324,045	$38,324,046	$76,648,091

Upon the completion and maintenance of all the individual railroad contingent funds, contributions thereto would cease and thereafter, in a year of 6 per cent railway net operating income upon the aggregate property investment accounts the aggregate contributions to the general railroad contingent fund are estimated as follows:

Eastern District	$18,235,413
Southern District	6,508,719
Western District	26,354,589
	$51,098,721

While the aggregate of contributions to the contingent funds, as above shown, are substantial and will serve greatly in the needed establishment and maintenance of railroad credit, it was realized by the conference, that upon the consolidation of existing railways into such limited number of competing systems as may be deemed by the transportation board to be in the public interest, there will of necessity be a great reduction in the amount of such contributions for the reason that as the railroads which have a large rate of net railway operating income and are the chief contributors to the contingent funds, are merged with lines of much smaller earning, there will be greatly reduced excess earnings, out of which contributions can be made.

An Unusual Form of Roundhouse Smoke Jack

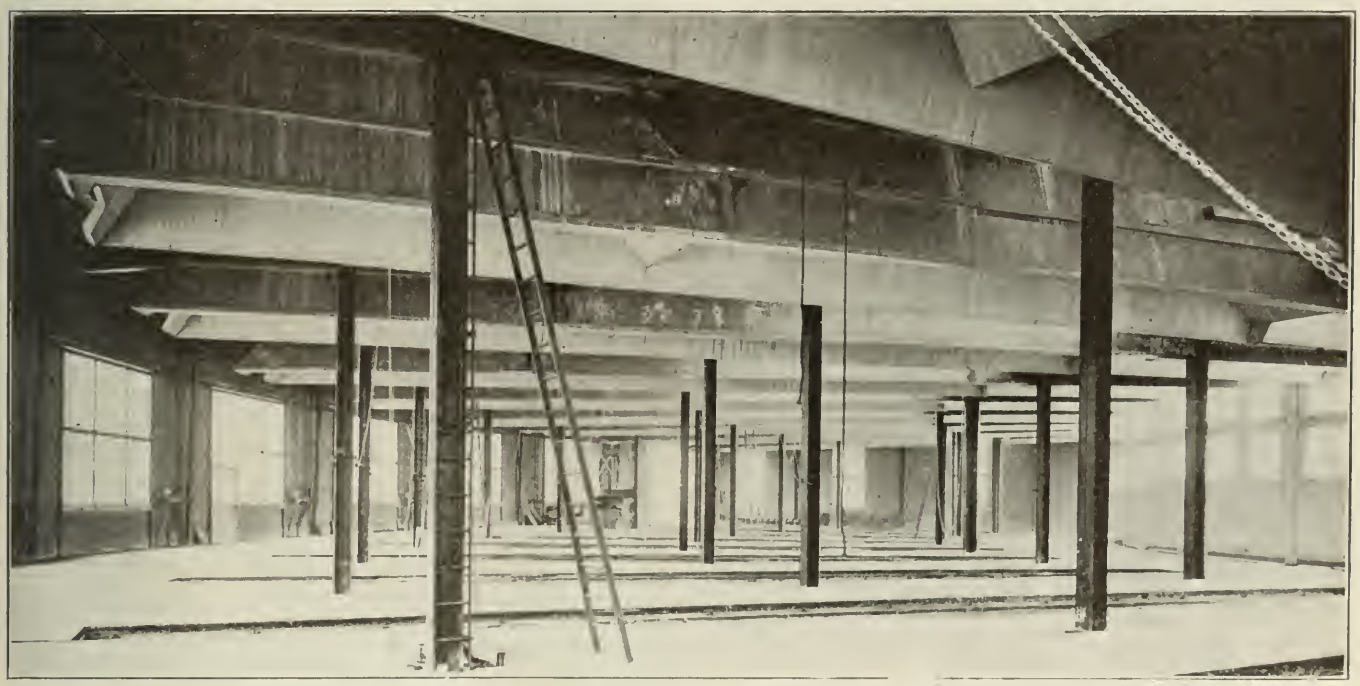
New Pittsburgh & Lake Erie Structure at Haselton Also Embodies Other Unique Features

SMOKE JACKS that cover the entire length of the stalls, a special form of door construction and a reinforced gypsum roof are features in a recently completed roundhouse of the Pittsburgh & Lake Erie at Haselton, Ohio, which make this terminal one of unusual interest to students of engine house facilities. Some of the ideas embodied in this design were applied previously in a roundhouse of this road at Dickerson Run, so while these features are new to most railway men, they bear the stamp of actual service and the form in which they have been applied in the engine terminal at Haselton embodies such modifications as were considered advisable after the experience at Dickerson Run.

The most radical feature in the Haselton house is the continuous smoke jack which may be said to constitute an elaboration of the modern tendency toward smoke jacks having a broad spread in the direction parallel to the track in the stall. Most roads have found it of great convenience to have jacks with elongated hoods so that the stack on the locomotive will be covered for a variation in location of some eight feet or more to allow for a considerable latitude in the position of the drive wheels on the track. However, jacks so designed do not offer any facilities for the collection of steam escaping from the engine at some distance behind the smoke stack or for smoke emitted from the stack while the engine is entering or leaving the house, and it has been found that considerable of the smoke nuisance in roundhouses results from an engine backing out of the house with a green fire. Studies for the elimination of the smoke thus emitted resulted in the special form of jack used in these roundhouses.

This decision was influenced largely by the fact that the officers of the Pittsburgh & Lake Erie have been advocates of the use of structural steel construction in roundhouses for some time, notwithstanding the fact that the practice on a number of other railroads has positively prohibited the use of rolled metal of any kind in roundhouse construction. Proper attention to painting and special efforts to eliminate smoke and secure ventilation in the roundhouses has demonstrated the successful use of structural steel on the Pittsburgh & Lake Erie. The special smoke jack construction evolved is in a certain sense the result of further efforts to improve conditions for the use of steel in these structures.

As shown in the drawings the smoke jacks in the Haselton roundhouse are continuous from the doors to within a few feet of the outer wall of the house, there being three outlets through the roof. Except for the one-inch rods by which the jacks are suspended from the roof and a few other rods serving as horizontal ties, the entire jack construction is of wood, using one-inch sheathing on 2 in. by 4 in., 4 in. by 6 in., and 4 in. by 8 in. wales. Experience in the Dickerson Run roundhouse shows that there is little fire hazard if the design is such that there is little opportunity for the accumulation of soot.

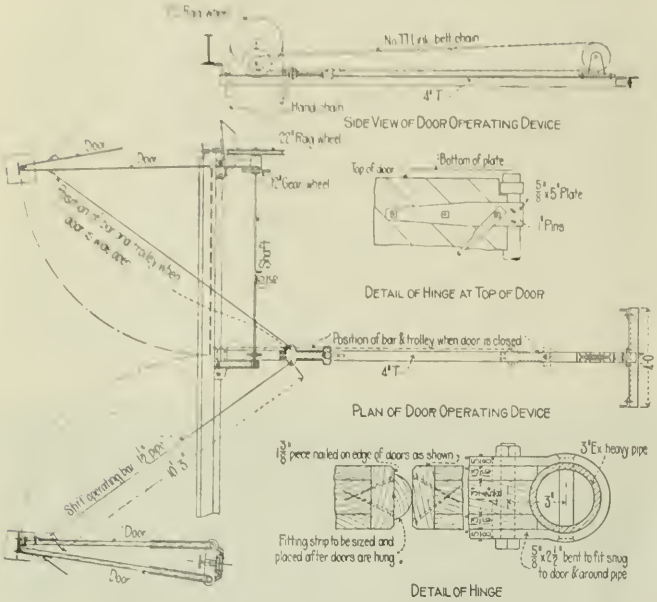


Interior of the Roundhouse, Showing Continuous Jack Construction

The successful elimination of the smoke collected by the long hood of the jacks implies ample vent area through the roof, which to avoid unnecessary heat loss in winter time must be closed by dampers when not in use. The unique design of door adopted may be said to result largely through the simple fact that jack C, i. e., the one nearest the door, is of use only at times when the door is open. In other words, the damper in this jack needs to be open only when the door is. Consideration of this fact led to the design of an operating device that opens and closes the damper of jack C with the opening and closing of the door.

This device is shown in the longitudinal section of the roundhouse stall and in the large scale detail. Each pair of doors is held open or closed and is swung to the open or

closed position by a pair of operating bars which are attached by one end to the outer ends of the doors near the top and by their other ends to a "trolley" that slides on a T-iron placed horizontally on the center line of the track over the door. This trolley is attached to a continuous No. 77 Link Belt chain run over two sprocket wheels so that the movement of the chain over the sprocket slides the

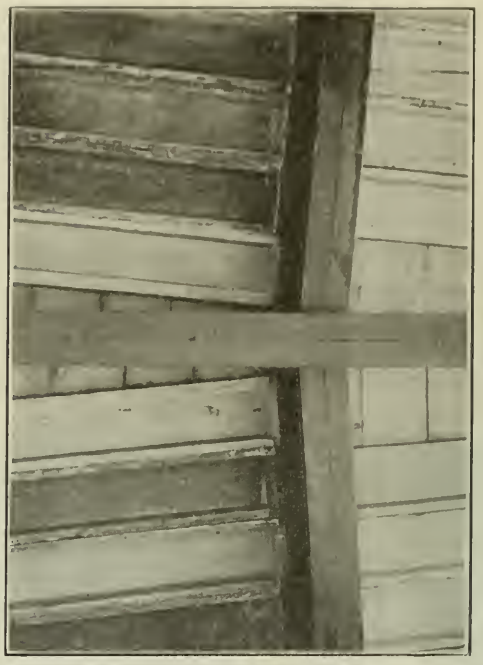


Details of Door-Opening Arrangement

trolley one way or the other and in turn swings the two doors in or out. The power for this movement is supplied by a hand chain hanging from a rag wheel attached to the door post and connected to the sprocket wheel over the door by means of a train of gears. The jack damper is operated by the link motion shown which consists of a Y-frame attached to the damper and a stiff rod attached to the trolley chain. The dampers of the other two jacks in each stall are controlled by hand chains attached to nearby posts and except in severe weather are normally left open.

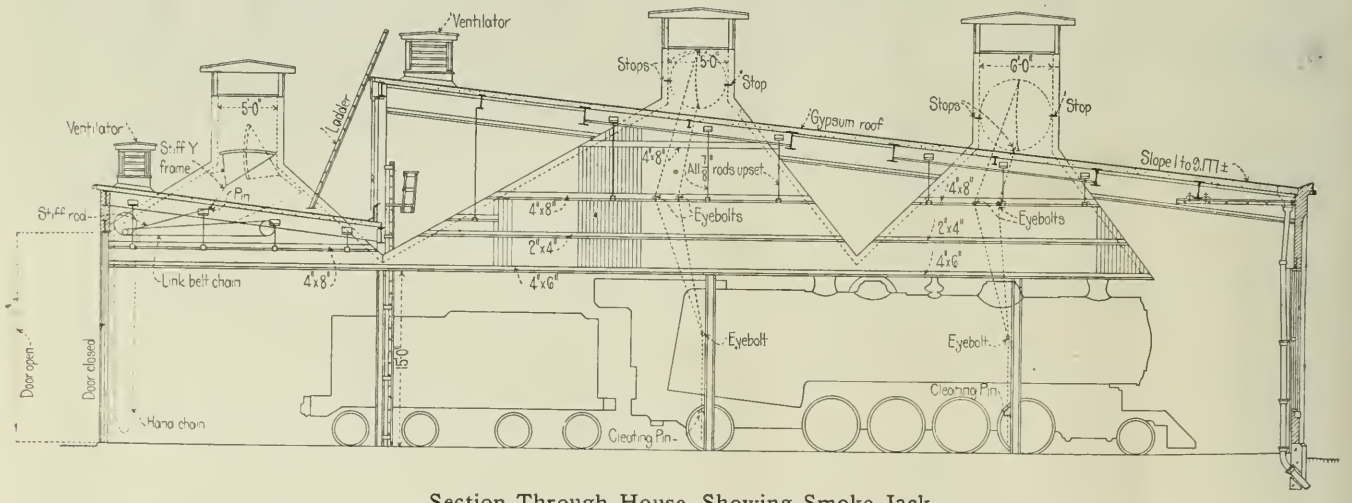
Other features of the roundhouse doors are of interest. The doors have no hinges but swing on three-inch extra-heavy pipe securely attached to the backs of the doors by heavy steel straps and turning in sockets at the top and bottom of the door frames. Owing to the fact that the two doors of each pair are opened and closed simultaneously, the meeting joint is not provided with a weatherstrip, but is equipped instead with a rubber contact as shown in the drawing.

The gypsum roof construction above referred to consists of pre-cast slabs of reinforced gypsum set on the steel purlins of the roof frame. These purlins run circumferentially,



Underside of Roof Construction, Showing Manner of Assembling Gypsum Slabs at the Junction of Two Stalls

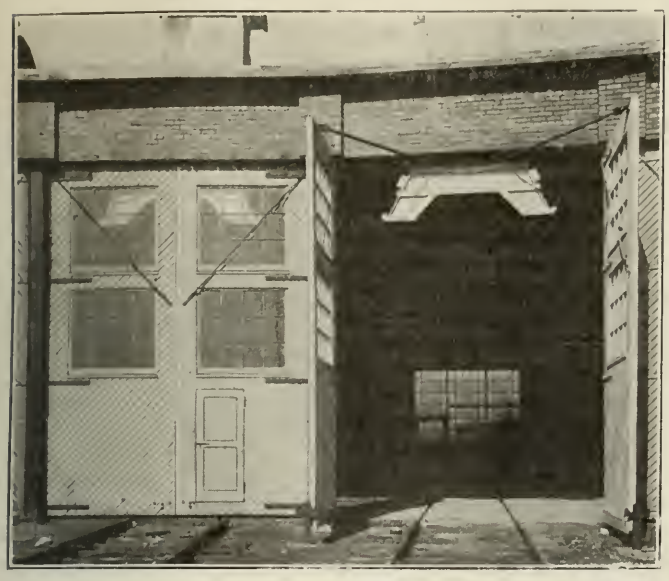
spanning between the girders on the center lines between stalls, these lines of purlins being equally spaced (about 8 ft. 9 in.) The gypsum units are placed in an approximately radial position spanning from purlin to purlin, the uniform spacing of the latter permitting the use of a large number of units of standard width and span while the wedge shaped openings on the center lines between stalls were closed by short pieces of slab spanning circumferentially and cut to fit on the job. This arrangement is readily understood by an examination of the photographs. The standard gypsum units are of a channel section placed with the flanges down. The units adjoining the center line between stalls have a special heavy flange and a recess or seat to receive the special slabs that are used to fill out the wedge-shaped open-



Section Through House, Showing Smoke Jack

ings. These special slabs are of a plain flat construction and were readily cut to fit the odd size openings. All irregularities in joints in this construction were plastered with fresh gypsum.

The reasons given for adopting this form of construction are of interest. Other types of roof considered were timber



Track Doors Opened and Closed

and concrete. As this work was in progress during the war period, heart timber was not available and sap wood untreated was considered out of the question because it would require early renewal, not only of the roof timbers but also of the high grade roofing which it was desired to install. As a consequence timber construction implied the use of cre-

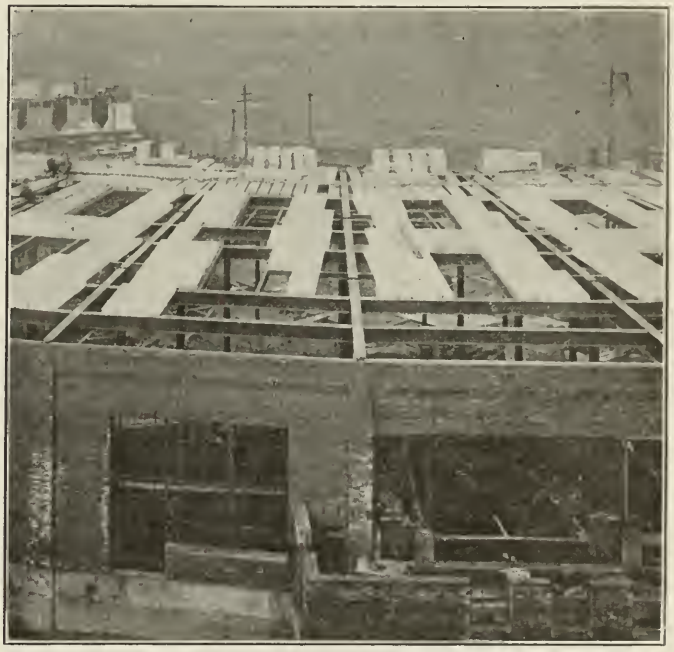
Exterior View Showing the Multiple Vents for the Smoke Jacks

osoted material and comparative estimates showed that the gypsum would be cheaper than the treated wood while the necessity for winter work led to the rejection of the concrete design. The gypsum was supplied pre-cast by the United States Gypsum Company, Chicago, with specifications requiring the gypsum units furnished to withstand an ultimate load of not less than 200 lb. per sq. ft. Tests made on stock specimens both dry and saturated fulfilled these requirements.

Other details of this roundhouse deserve special mention. The floor is of concrete; the portion between adjoining engine pits being pitched from a level coincident with that of the top of the rail near each ends of the engine pits to a level of the base of the rail half way between, where slots in the tops of the engine pits wall afforded drainage from the floor into the engine pits.

Special pains were taken to secure good natural illumination in the roundhouse, taking into consideration the points on the engine where the light is most needed, that is near the front end and inside of the cab. General illumination is afforded by a large area of windows in the outer wall of the house and also in the doors while the roof construction is so arranged as to provide a large area of windows in a position that will illuminate the cab.

The service pipes are carried around the house overhead, being suspended from hangers that permit their swinging in or out with changes in length resulting from changes in temperature. This system includes pipes for hot water, cold



How the Gypsum Roof Slabs Were Placed

water, steam and blow off in addition to a high pressure water system for testing boilers. Pipes for the first four named are connected with a manifold on the outer wall at the rear of each stall from which a service pipe is carried in a conduit to a service connection attached to a column between the stalls. A line from the high pressure water system is also carried to a similar service connection, but is kept separate from the other service pipes because it is not economical to provide and maintain valves in the manifold to withstand the high pressures carried on the boiler testing system.

The house has 24 stalls, this being the net number required for actual roundhouse service for the locomotives. Ample track space for storing engines has been provided outside of the house and a shop with space for five locomotives has been designed to be built adjoining the roundhouse for doing light running repairs. This roundhouse was designed and built under the direction of J. A. Atwood, chief engineer of the Pittsburgh & Lake Erie, and A. R. Raymer, assistant chief engineer, both with headquarters at Pittsburgh, Pa.

Some Chapters in Canadian Government Ownership

Prince Edward Island's Burdensome Railway, Which Never in Any Year Earned Its Operating Expenses

By Harold G. Villard

II

(In the first article in this series Mr. Villard told of Nova Scotia's costly experience in building and operating its Provincial Railway. In his next article Mr. Villard will show what degree of success Ontario has had with its government-owned Temiskaming & Northern Ontario road.—Editor.)

PREVIOUS to 1871 not a mile of railway had been built in the then still independent colony of Prince Edward Island. The Provincial legislature, which met in the spring of that year, had been elected after a close contest in which the subject of a government-owned railway had not even been mentioned. Nevertheless, although the people had had no chance to express their opinion upon such an important proposition, the government caused the House of Assembly to pass a resolution on April 3 approving of the construction under government auspices of a first-class railway through the Island.

Two days later, and without affording the members from the country districts an opportunity of consulting their constituents in regard to its terms, the government jammed a bill[1] through the same Lower Chamber authorizing the building of a provincial railway between certain designated terminal points. While the railway was to be of the first class, the statute directed that no construction contract should be entered into "conditioned for the payment of any greater sum than £5,000[2] per mile" of completed road, including all station grounds and equipment. It also prescribed as "an indispensable condition in construction contracts" that contractors would have to pledge themselves to accept in payment for the work to be performed by them "at par, without any allowance for discount" provincial debentures, payable 30 years after date and bearing 6 per cent. interest.

Thus in this precipitate fashion and without any urgent public demand therefor was Prince Edward Island committed to the construction of a main trunk line to cost when in complete working order not more than $16,200 per mile. As this was the maximum expenditure allowed, it was evident that—although the surface of the island is comparatively level and presents no especial difficulties in the way of railway construction—only a very inexpensive road could be built for the sum named. Hence the first move of the government was to determine on a narrow gage of 3 feet and 6 in. for the railway, which necessitated less deep cuttings and allowed the use of shorter and more frequent curves than if the customary broad gage of 4 ft. 8 1-2 in. had been insisted upon.

Having rushed through their railway legislation[3], the government lost no time in proceeding with the construction of the railway. The authorities were determined to have work on it started before the winter set in. Already on May 23, therefore, and before the first surveying party had been put in the field, advertisements were inserted in British, American and Canadian papers inviting tenders for the construction and equipment of a narrow gage railway between Casumpec and Georgetown, "a distance of about one hundred and twenty miles." On September 11 a construction contract was actually entered into with a Canadian firm for the completion of the line. To it were attached certain schedules specifying the amount of excavation, ballasting, etc., which the contractors would have to perform. All these schedules were left blank, but the contract naively recited that they "will be filled up as soon as the location of the line is approved."[4] Indeed, it was not until November 21 that the final location of the entire line was officially sanctioned by the cabinet as required by the terms of the Railway Act.[5] This action of the ministry in entering into a construction contract before the route, which the road was to follow, had been definitely determined upon, cannot be termed a very businesslike procedure.

Preliminary to agreeing on the line of the railway, the administration appointed a committee of nine legislators from each section of the Island "to attend in their respective counties with the government engineer to advise with him and arrange as to the location of the road."[6]

Passed as Many Places as Possible

This body proceeded on the theory that the main trunk line ought to pass through as many places as possible if it were to be of the greatest utility to the people of the province. Hence, instead of adhering to the plan originally proposed, of running direct between Charlottetown and Summerside by way of Freetown and the Hunter Valley, the road was deflected at the instance of a member of this advisory committee to a place called "Kensington." This detour alone added a great deal to the length of the railway "and the same was the case in bringing it to other points in order that the country at large might be accommodated."[7] In place, therefore, of the main line being 120 miles long as at first estimated by the government, its actual length proved to be over 148 miles, or nearly one-fourth greater.

Besides being made unnecessarily long through this desire "to accommodate the greatest number," the course of the road was necessarily circuitous. For, unless the contour of the ground had been closely followed and all expensive cuttings avoided as far as possible, the line could not have been completed for £5,000 as prescribed in the Railway Act. In after years, the railway was not inaptly described as "a twisting, winding, wriggling road" and at one point was facetiously said to have "so many curves that it passed at almost every man's door." In many cases, the degree of curvature was so great that it was almost unsafe to travel on the road. The following citation gives an instance of this kind:

> "The bridge across the Medgil stream is placed on a curve of a radius of 600 ft., and is approached from the east by a gradient of 58 ft. per mile, or 1 in 91, and from the west by 66 ft. per mile, or 1 in 80, thus forming a most dangerous feature in the railway. It will be necessary, for safety, to bring the trains to a stand before passing on to this structure in either direction."[8]

Nor was the character of construction changed when the

[1]Chapter 4, Laws of 1871.
[2]Equivalent to $16,222.22.
[3]The Railway act became a law on April 17, 1871.
[4]See Prince Edward Island Journals, 1872, App. L. for terms of contract.
[5]Prince Edward Island Journals, 1872, Appendix S.
[6]Ibid. ibid.
[7]Hon. Mr. Pope—Prince Edward Island House of Assembly Debates 1873, p. 67.
[8]Report of Engineer Swinyard—Quoted in Prince Edward Island House of Assembly Debates, 1875, p. 255.

branch lines came to be built. When the Conservatives failed to obtain a majority at the next election following the passage of their railway legislation, they were succeeded by a coalition administration pledged to the construction of fifty miles of branch lines. The new ministry had the good sense to avoid one of the mistakes made in contracting for the building of the main line in advance of surveys by providing that the proposed additional mileage should "be surveyed and located previously to the letting of the contract"[9] for its construction. Nevertheless, as the cost of these branch lines was likewise limited to £5,000 a mile, they had to be built with the same steep grades and short curves which were used on the main line.

In addition to determining the route to be followed, the government which fathered the construction of the railway undertook to decide the position and location of all the stations along the line. In some instances, these sites were selected not from the standpoint of the public interest, but in accordance with the wishes of the administration's most influential supporters. Thus at Summerside six acres were purchased for railway station purposes on the outskirts of the place from an adherent of the government. When the succeeding administration assumed office in 1872, therefore, it obtained authority from the Legislature to change station sites already chosen.[10] Where such changes were thereafter effected, as at Summerside and Alberton, they were made at the expense of the friends of the late government. Just as in the case of that government, however, the incoming administration was not always happy in its selection of a terminal site. For example, the station at Souris—where the Island Railway terminated in a sand pit instead of being completed through to tide-water—"was built where it was totally inaccessible" and in "the most unsuitable place imaginable."[11]

Land Damages Vastly Exceed Estimate

At the time the railway was first projected, the leader of the then Government announced that the right-of-way for the main line would cost less than $35,000.[12] This speedily proved an underestimate and by March 31, 1875, the sum expended for land damages had reached a total of $253,738.86.[13] Where a landowner was dissatisfied—as was generally the case—with the award of the government commissioners, he had the right to appeal to a Board of Appraisers. These appraisers usually found that the land condemned had been undervalued, which in a great measure accounts for the large increase in the right-of-way costs over the amount first estimated. "In every case that was referred to the late appraisers for their decision, they awarded a larger amount than had been allowed by the late railway commissioners."[14]

As has been mentioned before, the construction of the Island Railway was begun in the fall of 1871. A year or so later, one of the principal local banks was imprudent enough to make a loan far beyond its available resources secured by the Provincial debentures issued to the contractors for the railway in payment for work performed by them. The directors of this bank were "curiously intermingled with the public men of the day." When it developed that the debentures thus pledged could not be realized upon except at a heavy loss, these leading citizens saw a chance of averting such a calamity by joining Confederation. They were instrumental in bringing about a union with the rest of Canada, for the people—aware by this time that the railway would prove a burden—preferred "Confederation as a lesser evil than the grinding taxation which would result from the construction of the railroad."[15] Thus, as the direct consequence of its hasty railway legislation, Prince Edward Island—whose House of Assembly had only three years previously passed a resolution reciting "that the people were almost unanimously opposed to any change in the constitution of the colony"—ceased to exist as an independent Province and on July 1, 1873, became a part of the Dominion of Canada.

"Worst Built Road in America"

Besides entitling the Province to charge up against the Dominion a fictitious indebtedness or subsidy of fifty dollars per head of its population, the terms of Union provided that "the railways under contract and in course of construction for the Government of the Island" should become the property of Canada. For the better carrying out of this provision, it was agreed that the cost of the railway should be borne by the federal government and the amount so paid should be regarded as a debt against the Island and as an offset to the subsidy which the Dominion was obligated to pay. When the road attained completion, therefore, in the fall of 1874, it was turned over to the Dominion officials. These speedily discovered that the Provincial Railway was—to use their own expression—"not of a faultless character." The Prime Minister later described it as "perhaps the worst built road ever seen in America,"[16] for which condition of affairs he blamed the Island Government. Exception was taken to the location of the railway which had been determined "independent of any question of directness of route or of grade."[17] The rolling stock was unfitted for the work it was called upon to perform and the engines were of inadequate power. The roadbed was insufficiently ballasted and could not be drained properly, while the masonry was of a poor quality.

In addition to all these defects, the fencing along the line was of a most inferior description. In December, 1871, the island ministers—although in the words of one of their number they all "had then no experience of wire fences"[18]—directed that a system of iron wire fencing should be substituted for the post and board fence which the railway contractors had first been instructed to erect. No sooner had the wire fence been completed, however, than it proved "totally unsuited for the purposes for which it was designed." Equally ineffective against cattle, horses, sheep and hogs, it was carried all over the island by the live stock which ventured to cross the track. At length in 1875, its replacement was decided upon by the Dominion authorities after one of their engineers had reported that "nothing short of an entire change in its character will be effective, a change that will entail an expenditure of not less than from $300 to $400 per mile of railway."[19] The ill-advised action of the local government in insisting on this untried kind of fencing proved therefore a very costly blunder.

Expenses Greatly Exceed Earnings

When the building of the railway was first undertaken in 1871, the government predicted that its yearly gross earnings upon the completion of the main line would be $200,000. Instead of any figures like this being attained, however, the total earnings of both the main line and branches for the first fiscal year 1875-1876[20] amounted only to $118,060.90. Both passenger and freight traffic turned out to be disappointingly small. If the gross earnings fell far short of anticipations, the expenses on the other hand ex-

[9]Chapter 13, Laws of 1872.
[10]Sec. 9, Chapter 13, Laws of 1872.
[11]Prime Minister Mackenzie—Canadian Hansard, 1878, p. 2432.
[12]Prince Edward Island House of Assembly Debates, 1872, p. 192.
[13]Prince Edward Island Journals, 1875, Appendix N.
[14]Hon. Mr. Davies—Prince Edward Island House of Assembly Debates, 1873, p. 113.
[15]Mr. Palmer—Quoted in Prince Edward Island House of Assembly Debates, 1872, at page 220.
[16]Hon. Alexander Mackenzie, Canadian Hansard, 1880, p. 1709.
[17]See Dominion Sessional Papers, 1877, No. 6 at pp. 64 and 127, for this and the following strictures.
[18]Hon. Mr. Brackin—Canadian Hansard, 1880, p. 1711.
[19]Mr. F. Shanly—Dom. Sess. Papers, 1876, No. 66, p. 3.
[20]The railway was first opened for traffic on May 12, 1875.

ceeded all estimates and totalled no less than $214,930.43, or the equivalent of 182 per cent of the gross earnings.

This unusually high ratio of operating expenses, which has remained a feature of the railway down to the present time, was the natural outcome of the faulty construction of the railway by the local politicians who had it in charge. As we have seen, their primary object was to build a cheap railway and one not to exceed $16,200 per mile. This necessitated the laying out of a crooked line with steep curves of short radii. The fact was overlooked apparently that a road of this character must be necessarily expensive to operate and that—even if its first cost had been greater—a good and substantial railway would have been the truest economy in the long run. It is well known that the sharper the curves on a railway,[21] the greater will be the resistance offered to the impelling power with a consequent higher consumption of fuel by a locomotive in overcoming such resistence. Aside from causing an increased amount of wear and tear on rails and flanges and enhancing maintenance outlays, short and frequent curves prevent further any great rate of speed being attained.

Again, in locating the Prince Edward Island Railway, the idea was to furnish as many places as possible with a railway connection even though it resulted in increasing the length of the line. That there is an economy in straightness of route was lost sight of. Where a railway possesses a mileage of needless length, not only do passengers and freight have to be transported over the unnecessary distance for all time to come, but the additional cost in fuel, wages, wear and tear of rolling stock and for the maintenance of the permanent way as compared with a direct line must be taken into consideration. If the Provincial authorities had only taken the following doctrine to heart, the Island railway would have been much less of a losing proposition during the last forty years: "A line ought not to diverge from the direct course between its extremities, and thus increase its distance for the sake of a trade of a small town, for whose benefit the time and fare of all the passengers and freight on the whole line would thus be taxed. It would be preferable to make a branch line to the town."[22]

While the operating expenses were thus unusually high, low rates were charged for the meager traffic which passed over the line. In order to compete successfully with the small coasting vessels which frequented the numerous harbors along the coast and which had hitherto carried on the trade of the island, the railway freight rates were necessarily kept at a low figure. Instead of trying to bring up the earnings of the road by charging comparatively stiff rates for passenger traffic where no competition was to be feared, however, the railway officials were not long in reducing the scale of passenger fares put into force at the opening of the line. This resulted in a decline in passenger receipts, which was mainly ascribable to "the lowering of fares by the introduction of 2nd-class tickets and the issue of return tickets at reduced fares to all stations, both flag and regular, which without increasing the number of passengers materially lessened the amount of revenue."[23]

Unbroken Series of Deficits

Just as at the outset, the Prince Edward Island Railway has been noted throughout its career for high operating costs and scanty earnings. As the road from the time it was first opened has never paid expenses, the federal government has had to make good its unbroken series of deficits which in the forty years 1875-1915 reached a total of $2,453,494.20.[24] At the end of the same period, the railway's capital account had grown to $9,490,899.71, all of which has been furnished by the Dominion taxpayers without their ever receiving a cent of return.

Since the road built and operated under Government direction has not merely proven an unproductive investment from the start but has been a losing proposition as well, it was a fortunate thing for the local taxpayers that the Dominion government was saddled with the upkeep of this incubus of a railway as one of the terms of the Island's entering Confederation. This undeniable truth was succinctly stated by an Island statesman in the following words: "If the railway were not a burden upon our resources as at first contemplated by its projectors, it would be a curse to the country. It is lucky for the country that the Dominion government has agreed to run the road and bear the expense of maintaining it."[25]

[21]The rule reads the resistance due to curvature is in inverse proportion to the radius of the curve.
[22]W. M. Gillespie—Roads and Railroads, p. 270.
[23]Report of Railway Sup. McKechnie—Dom. Sess. Papers, 1878, No. 7, App. p. 122.
[24]Dom. Sess. Papers, 1916, No. 20, p. 50.
[25]Hon. Mr. Davies—Prince Edward Island House of Assembly Debates, 1876, page 14.

Photo from Underwood & Underwood

Hauling Freight on Electric Railways

The Southern Pacific has electrified much of its mileage in Southern California and electric locomotives are used on these lines for hauling freight.

Transport Bill Passed by House of Commons

Will Place Nearly All Transportation Facilities in United Kingdom Under Control of One Man

By Robert E. Thayer
European Editor of the *Railway Age*

London, July 12, 1919.

On July 10, the British Transport Bill, which aims to put in the hands of a single man, the control of all transport facilities in England including railways, light railways, tramways, canals, waterways, inland navigation, roads, bridges, ferrys, harbors, docks and piers, was passed by the House of Commons without substantial modification from the original draft as presented late in February. This bill was strongly backed by the government, which made every effort to put it through. Bonar Law, the home secretary, stated that the sole purpose of the bill is to help re-establish the industry of the country after the war, by means of the best and most comprehensive system of transportation.

While the bill was in Standing Committee the government was disposed to push it through as it stood, but with the signing of peace the only bond which has held the coalition cabinet so firmly has been removed and the government has found it desirable to be more conciliatory. Thus when 24 representatives of the important docks and harbors brought pressure to bear on the government to remove them from the direct jurisdiction of the transport minister, the government felt it necessary to grant their demands, with the proviso that the transport minister may require the owners of docks to make improvements or alterations in the method of working, as may be prescribed for the co-ordination of transport facilities, and that they may appeal in case they feel such orders are injurious to them to the Lord Chief Justice of England.

A change was also made with regard to the control of highways. The authority of the transport minister was somewhat restricted by the adoption of a Road Committee, which shall consist of not less than ten members, five of whom are to be representative of highway authorities and five of the users of road traffic, all of which are to be appointed by the transport minister, after consultation with such authorities.

These two amendments were insisted upon by the representatives of the respective interests, both for the purpose of limiting the possibilities of nationalization as much as possible, and because they have a feeling, on account of the personnel of the transport ministry, that its administration will favor the railways more than any other transport system. In fact statements were made that the railway men backed the transport bill for the purpose of enabling them to get back into shape.

The bill does not yet seem to satisfy the people here that it is not leading directly to the nationalization of England's transport facilities. The matter received the greatest consideration during the recent discussion in the House. Attempts were made to introduce amendments to the bill, to the effect that during the two years the government retained control of the transport facilities, no steps would be taken which would lead towards nationalization. This was done for the purpose of making the government state definitely that it was not seeking this end. The government strongly fought any such amendment with a statement that it was impossible to state whether the question of nationalization would or would not be affected by the bill, but it could be said that the government would not use the powers given it by the bill either for or against nationalization. Sir Eric Geddes said that the question of nationalization was as open as ever it was, and that the government was requesting the control of the transport facilities for two years for the purpose of determining upon the best policy to follow in the future. In fact he said that the situation required either the passage of the bill or nationalization. In this he was sustained by Bonar Law, the home secretary. However, it is rather difficult to imagine how a successful two years of operation of roads by the government would not present a most strong case for nationalization. There can be no question but that the government thinks it can operate the transport facilities of the country successfully for otherwise it would not attempt it.

One curious thing in the whole procedure is the lack of any concerted action by the railways against the bill. It is difficult to find a railroad man that is in favor of nationalization. They all do, however, realize the difficulties they will have to contend with due to present poor physical condition of the roads, and the greatly increased cost of operation. It has been estimated that the cost of operating the roads for the year ending March 31, 1920, will be about $500,000,000 more than in the year 1913, of which $300,000,000 will have to be borne by the state, the balance being made up by increased revenue, this increase being divided somewhat as follows: War wages and other concessions, $280,000,000; the eight hour day and other new concessions recently granted or still under discussion, $90,000,000, and extra cost of materials and coal, $130,000,000. It is believed that the possibility of increasing freight rates (they have not been increased throughout the war although passenger fares were increased 50 per cent) under private management would be much more difficult than under government control, and it is hard to see how the increase in expenses can be met in any other way. The minister designate, however, aims to decrease expenses by eliminating competition in traffic, the common use of equipment (about one-half the freight cars or 700,000 are privately owned), judicious electrification, improved loading, larger freight cars and standardization of cars and locomotives.

The bill provides that the rates established by the government can be held in effect by the roads 18 months after the expiration of the two year control, provided, of course, roads are turned back to their private owners. This also attracts railway men to the bill. The railway stockholders are also well satisfied for they at least will receive their dividends and in event of nationalization they are well protected by existing laws. Thus many of those on the railroad side feel that the transport bill is the easiest way out of the difficulty. In this case the responsibility of rehabilitation and improvement of service, which is so badly needed here, is placed directly on the state. Furthermore, the railways will be strongly represented in the personnel of the transport ministry, for Sir Eric Geddes is a railway man and five of the seven principal assistants to serve under him are professional railway officers.

The attitude of the Labor Party in the House also gives the impression that it believes the bill will ultimately result in nationalization. Labor takes the stand that "the exigencies of the war has made the nationalization of railways, mines and all the key industries of the land inevitable," and believes that the government could not trust private enterprise, without central control, to develop transport in such a way

as to meet the problems of today. It will act with the government on this bill when it works towards nationalization. The policy of the labor leaders is to sit tight, and only fight when the supreme control over transport facilities is menaced. This was well illustrated by their opposition to the amendment introduced which removed the direct control of docks and harbors from the jurisdiction of the transport minister. Labor fought this amendment hard, for it operated against its desire for supreme government control and nationalization. Labor members in the House characterized this action of the government as a "humiliating climb down."

There has been but little concerted action taken against the bill, although fears are expressed everywhere of the fact that it leads to nationalization. At a recent meeting of the Association of British Chambers of Commerce, however, the President of the Association stated that while the above mentioned modifications took some of the sting out of the measure, they did not remove the danger of the bill towards the principle of nationalization, and the adoption of this principle would mean the death blow to individual enterprises.

The newspapers have been quite strong in their condemnation of the bill. The *London Times,* in an editorial published July 3, stated "That their criticism of the bill is based on two main convictions, first, that the bill is not practical, and that its chief result will be eventually to create a vast and costly bureaucracy which, in its turn, may bring about chaos. The second is, that this is a bill framed not to meet the situation, but to fit the ambitions of a single man whose qualifications are questionable, to say the least." The bill does, without question, place a vast amount of power in the hands of one man, and if he be not well qualified to handle the work, great damage can be done. Furthermore, the bill seems to be framed to meet ideas of the minister designate, and the discussion of it in the House has brought forth many promises or statements of confidence from Sir Eric Geddes, which has done much to smooth over many apprehensions. But the fact remains, that after this bill becomes a law, it is so broad in its powers, much damage could be done, if through any reason whatsoever Sir Eric, with his verbal promises and thorough confidence with the House, should be replaced by another man.

The *London Post,* in commenting on the "open mind" of the government regarding nationalization, says: "Surely ministers must hold some opinion on the subject; some among the members of the government at least must believe either that the nationalization of industry is a good thing for the country or a bad thing for the country. But Sir Eric Geddes says they have no views of any sort. In that case they are unfit for their office. No government is justified in keeping silence in respect of a question which is arousing the greatest apprehension throughout the country." In fact there are many who believe that the bill is entirely a failure, because it has not squarely faced the issue of nationalization.

While two months ago, the feeling prevailed that it was only a matter of time before the transport bill would become a law, there was a feeling along towards the last, in some quarters, that there was still much work to be done before it is adopted by Parliament. The question of nationalization is not all settled, and there is a subconscious feeling that if this bill becomes a law, nationalization would be the natural result two years hence.

The bill passed the House of Commons on July 10 and is now to be considered by the House of Lords.

The Telegraph Companies of the United States, according to a report from the Bureau of Census, covering data gathered in 1917, operate 241,012 miles of pole line, comprising 1,888,793 miles of wire. They sent 151,725,228 messages and employed 47,227 persons.

Pennsylvania Women's Uniforms

THE PENNSYLVANIA RAILROAD, Eastern Lines, has adopted, and prescribed for use by its female employees, three uniform suits of clothes, one for each of the three different general classes of women employees. The "work uniform," indicated by "A" in the illustration, is a one-piece dark blue dress with white collar and silver "PRR" buttons, and a dark blue straw sailor hat. This is to be worn by messengers, janitresses, station attendants, maids, stewardesses, gang leaders, elevator attendants, crossing watchwomen and cup tenders (women who go through occupied trains in stations picking up papers, etc.)

The first three uniforms will be supplied to employees at half price and renewals at full price. The first hat will be furnished free of charge, while renewals will have to be paid for at full price.

The "womanalls" (B) are made of khaki. The complete uniform calls for a cap or a hat to match. They are to be worn by lamp room attendants, store room attendants, tool room attendants, crane operators, hammer operators, helpers of all kinds, laborers, machinists, machine hands, oilers, painters, shop hands, sweepers, turntable operators, car cleaners and

Pennsylvania Railroad Uniforms

A—Work Uniform. B—"Womanalls." C—Norfolk Suit.

car repairwomen. The first three of these uniforms, including a hat or cap, will be furnished to employees at half price and renewals at full price.

The uniform for those women employees who regularly have intercourse with the public (C) consists of a dark blue serge Norfolk jacket suit with regulation shirt waist, dark blue silk tie and dark blue straw sailor hat. This is to be worn by Bureau of Information attendants, matrons, elevator operators, gatewomen, baggage room attendants, messengers, Pullman space distributors, ticket sellers and ushers. The Norfolk suit will be supplied to employees at a discount of 15 per cent. The first hat will be furnished free and the first five shirt waists will be furnished at half price. Renewals of hats and shirt waists will be at full price.

For summer use, messengers and ushers will be given their choice between the dark blue one-piece dress or the serge Norfolk suit. In order to have uniformity, however, throughout a division or department, or at division headquarters, this choice will have to be determined by the majority of employees of such division or department.

Mechanical Stoking of Locomotives an Economy*

Factors Determining Necessity of Applying Stokers; Operating Results Secured by Stoker Firing

By W. S. Bartholomew
President, Locomotive Stoker Company

THE FIRING OF MODERN LOCOMOTIVES by mechanical means could properly be separated into four distinct subjects: First, the stokers themselves; second, the locomotives to which they are applied; third, the particular reasons which lead up to any given application, and fourth, the results which were achieved by such application. I assume that you are familiar with all of the stokers which are now being applied to locomotives and shall begin with the second subject.

All locomotives do not require stokers. Locomotives that can be hand-fired to maximum capacity through sustained periods do not require stokers. Locomotives which are of such size as to come within the specifications of those which are regularly being equipped with stokers, but which are not operated beyond the limits of hand-firing, do not need stokers. These statements must lead to the conclusion that only locomotives which are of such size as to bring them regularly beyond the limits of hand-firing, or locomotives of smaller size but which are regularly operated beyond the limits of hand-firing, require stokers. This must mean that we do not need stokers to do a hand-firing job and that the stoker job cannot be done by hand. This means also that stoker-firing and hand-firing are not directly comparable. Up to the present time, no locomotives have been equipped with stokers which do not need them.

Locomotives Which Require Stokers

These statements must bring up immediately the question as to whether such a definite line can be drawn between locomotives which do not need stokers and those to which they could be applied to advantage. To show you that a definite line can be drawn as to locomotives which can be hand-fired through sustained periods and those which cannot, my own convictions are that no locomotive really requires a stoker that does not weigh approximately 200,000-lb. on drivers, have a calculated tractive power of 50,000-lb or over, a grate area of 60 sq. ft. or over, and a coal consumption through sustained periods of 4,000 lbs. or more per hour.

The commercial application of Mechanical Stokers to locomotives really began in 1910. One of the first important stoker applications was made to five very large locomotives which were designed and built originally to be equipped with stokers. This is especially significant in that, in the main practically all stoker applications have been made to date to locomotives without requiring any general modification in the conventional locomotive design. This application was made on a Chicago, Burlington & Quincy M-2 Santa Fe type locomotive which included in its original specifications such details of design as would permit the application of the Barnum under-feed stoker.

The particular point of interest about this locomotive is that in designing such a locomotive it was realized that to put it in service with a tractive effort of about 72,500 lb., a weight on drivers of over 300,000 lb., and with a grate area of 88 sq. ft. would call for a coal consumption beyond the possibilities of hand-firing.

Five of these locomotives were built in the year 1911 and equipped with stokers, which later proved inadequate in capacity for the requirements and were removed, and the locomotives were put in service in such districts as would permit them to be hand-fired. It was found, however, that they could be hand-fired only by reducing the grate area about 25 per cent by blocking off with fire-brick. These circumstances plainly indicate that on such a locomotive a differential is immediately established between hand-firing, and stoker-firing of at least 25 per cent in capacity. A very gratifying development of this particular situation has been that other stokers were later applied to these locomotives with such success that 60 more have been purchased.

The decision reached by the Burlington as to necessity for a stoker on a Santa Fe type locomotive of this size has practically set the pattern for all such locomotives of this type built. During the past five years over 95 per cent of all Santa Fe type locomotives built for coal-burning service have been equipped with mechanical stokers.

Stokers Increase Capacity of Locomotives

Another very early important stoker installation beginning in 1912 was made by the Norfolk & Western on a large number of Mallet locomotives. This installation probably represents the most marked increase in revenue tons per train that has been accomplished by any stoker installation made so far. To make a concrete illustration the tonnage rating for the 12-wheel locomotives in service on the Norfolk & Western between Portsmouth, Ohio, and Columbus, which were standard for that division before the advent of the Mallet locomotives was 3,000 tons per train for one Class M-2 12-wheel locomotive, or 6,000 tons for a double-header, whereas when the Mallets were tried out and rated on that division it was found that one of these locomotives could haul 6,000 tons between those two points in practically the same time that one of the smaller locomotives could haul 3,000 tons or two of them could haul 6,000 tons.

It was also discovered that the coal consumption of one of the Mallets was approximately one and one-half times one of the 12-wheelers, which, with twice the tonnage, would make an immediate saving of 25 per cent in coal consumption for any given number of total gross tons per mile.

There is current gossip to the effect that the application of stokers to locomotives means more coal consumption, which, of course, it does from one point of view, as one of the main purposes of the stoker is to make it possible to burn more coal per locomotive mile or per locomotive hour than would be possible by hand-firing. The benefits, however, from such increased coal consumption are such as to make the proposition attractive from every point of view as "movement of tons per day" over any given piece of track is the most important consideration in railroad operation. You only need to refer to the annual reports of the Norfolk and Western for the past five or six years to see what has been accomplished in this direction through the use of larger locomotives equipped with stokers.

The stoker fired H-2 and H-4 Mallet locomotives on the Chesapeake & Ohio have accomplished very similar results in increased tons per train and the use of over 300 such Mallets in freight service is a further tribute to the value of the mechanical stoker in the assistance it renders in putting

*Abstract of a paper presented before the Western Railway Club.

into service such locomotives which regularly are operated with a coal consumption beyond the limits of hand-firing.

It is not a question of the pounds of water evaporated per pound of coal altogether, although these particular locomotives show an evaporation, stoker-fired, that comes well within the limits of anything that is regularly accomplished on smaller hand-fired locomotives which are operated anywhere near maximum capacity.

Early Installation of Stokers

About the time these Mallets were put in service on the Chesapeake and Ohio 50 heavy Mikados with a tractive effort of approximately 60,000 lbs. were purchased and have now been successfully stoker-fired for over six years. There has been established a differential of 25 per cent between hand-fired and stoker-fired tonnage rating on the division where these locomotives are operated. The rating between Russell, Kentucky, and Silver Grove, is 6,000 tons stoker-fired and 4,800 tons hand-fired.

Another very early and important stoker installation was made by the Virginian on somewhat larger Mallet locomotives. These early stoker installations had to do with coal traffic, which, of course, is a low-grade commodity from a freight revenue point of view and the earnings are in more direct relation to the tons per train than is the case with other traffic. The operation of these locomotives in the coal traffic on the Virginian has been so successful that special track, special cars, special coal-handling devices at the docks and still larger locomotives have been built to make it possible to increase the gross tons per train still further.

The specifications for the stokers for the Virginian 2-10-10-2 Mallets called for an ultimate coal-delivering capacity of 15,000 lb. per hour as a possibility, and in actual service it is not unusual to have a coal consumption of five tons every 60 min.

The locomotives referred to thus far have all had a calculated tractive effort of more than 60,000 lb. However, a Baltimore & Ohio Mikado which has a calculated tractive effort of only 54,000 lb. represents the largest installation of mechanical stokers to any one type of locomotives up to the present time. The Baltimore & Ohio has over 400 of one design stoker-fired and this locomotive really established the point where the Railroad Administration began the application of stokers to the standard locomotives.

This locomotive not only represents a very important early stoker application as to number of locomotives equipped, there having been 50 of these locomotives equipped as early as 1911, but it also represents definitely the point at which we believe the application of stokers should begin to both new and old locomotives.

Stokers Prove Advantageous on Small Locomotives

The reason which led the Baltimore & Ohio to apply stokers to such a large number of these locomotives as early as 1911 had largely to do with the fact that the bridges, track, and sidings on the Baltimore & Ohio were such that a locomotive with a heavier axle load than 55,000 lb. could not be operated at many points on the Baltimore & Ohio system. The traffic conditions, however, especially between Cumberland, Md., and Martinsburg, W. Va., which is the throat of the system between the Lines East and Lines West, were such as to require a maximum tonnage movement for long periods of the year to avoid congestion.

At the time the first 50 of these locomotives were put in service on the Cumberland Division 48 maximum tonnage eastbound drag freight trains were operated daily. It will be immediately appreciated that both time and maximum tonnage per train were of immense importance under such stress of traffic conditions. Immediately upon putting into service the stoker-fired Mikados referred to on this division, where a large number of duplicate locomotives were already in operation hand-fired, the operating department began to load down the stoker-fired locomotives with heavier tonnage than the hand-fired until within six months after they were put in operation more than 500 tons per train were regularly added to the stoker-fired locomotives over and above the tonnage given to the same locomotives hand-fired.

The Baltimore & Ohio at this time owned 160 of these locomotives without stokers and 50 stoker-fired. Since then they have purchased over 300 of these locomotives equipped with stokers which are now in daily service over all parts of the system.

To haul the traffic under the conditions just outlined between Cumberland, Maryland, and Martinsburg, W. Va., an average coal consumption per hour of 6,500 lb. was not unusual for the entire running time between division points, which will readily explain why the stokers have been so successful on the Baltimore & Ohio even on this comparatively small power. When the United States Railroad Administration came to place orders for a large number of locomotives, which included over 600 of this particular type and size, they were also equipped with mechanical stokers

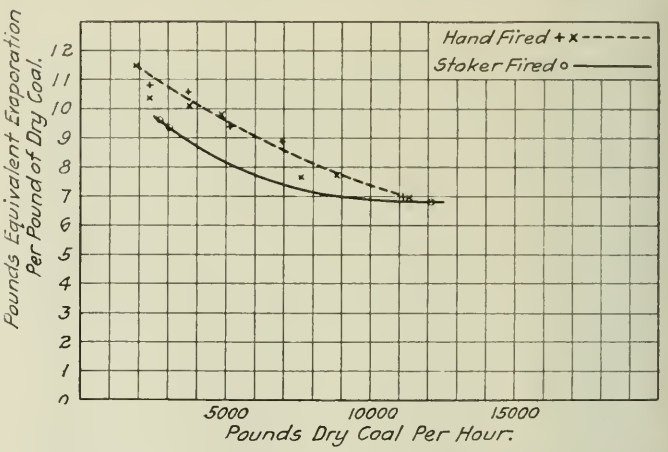


Fig. 1—Comparative Evaporation, Hand and Stoker Firing

which made it possible to use them in such service as I have just described.

The Pennsylvania has a Decapod type locomotive which weighs over 300,000 lb. on drivers; carries 250 lb. steam pressure and has a calculated tractive effort of nearly 90,000 lb. It is of special interest to know that this locomotive was originally designed to be hand-fired and the first one constructed was put in service without a stoker for the reason that it was intended to operate these locomotives only within the limits of coal consumption which could be fired by hand through sustained periods. Over 100 of these locomotives have been built to date and not only the first one which was originally put into service hand-fired, but all of the others have been equipped with mechanical stokers.

Comparative Fuel Economy of Hand and Stoker Firing

The reason which led up to this application was entirely one of capacity rather than what is ordinarily referred to as economy. The first locomotive originally hand-fired was equipped with a mechanical stoker, and extensive comparative tests made to determine the relative economy of stoker-firing and hand-firing. The chart shown in Fig. 1 indicates the result secured, and confirms the statement that a stoker is not needed to do a job which can be done by hand, nor can the stoker job be done by hand-firing.

It will be noted that within the limits of hand-firing, namely, below 5,000 lb. of coal consumption per hour, there was a slight difference in economy shown in favor of hand-firing. It will be further noted, however, that when the rate of fir-

ing in the different tests was increased to where the stoker became a necessity that no difference in economy in favor of hand-firing occurred, and, as a matter of fact, while the hand-firing was of the most expert nature, the capacity was not reached by hand that was easily obtained with the stoker.

A most interesting situation was developed in connection with putting these locomotives into service under actual operating conditions, which was fully to be expected from the re- the hand-fired run was made, the traffic was exceptionally heavy and one manifest and one drag freight train were immediately behind the hand-fired train on the 13-mile grade which would not have been the case had that particular trip been stoker-fired and the 31 min. less time consumed on the hill.

Fuel Economy Sacrificed for Increased Capacity

There has been much discussion in connection with the application of mechanical stokers to locomotives as to the comparative economy between stoker-firing and hand-firing, and I wish to refer again to my earlier statement that stoker- sults shown in this graphic chart. One of these locomotives was put in service with its rated tonnage on a certain division and hand-fired, the coal consumption noted, and other records made of the performance. Very shortly thereafer another test was made with the same locomotive over the same division with similar tonnage, all conditions being duplicated as far as possible except that the locomotive was stoker-fired instead of hand-fired. The coal consumption, the water evaporated and the horse-power hours developed over the division were almost identical in each instance.

The significant fact in connection with the comparative tests, however, is that it required 11 hrs. to develop the necessary horsepower-hours to take the train over the division hand-fired, whereas, practically the same horsepower-hours were developed and the train taken over the division in 7 hrs. when stoker-fired. In other words, taking a maximum hand-firing capacity of approximately 5,000 lb. per hr. as a gage of the limit of hand-firing, this would mean that by firing 8,000 lb. per hr. into the fire-box of the same locomotive with the stoker the same number of horsepower-hours could be developed in 7 hrs. that it took 11 hrs. to do by hand.

From the traffic point of view I believe there would be no argument if there were no other considerations than this marked difference in time saved by developing more horsepower with the stoker on this very large locomotive than was possible to do by hand even with the same measure of economy. One of our engineers estimated the difference in results, however, from another point of view; namely, reducing the tonnage to a point where the train could be handled over the division by hand-firing in seven hours to compare with the heavier train stoker-fired over the same division in seven hours. A very conservative estimate would indicate that on the basis of seven mills per revenue ton income per mile the locomotive would pay for itself in less than 100 trips by being stoker-fired and hauling the heavier tonnage. There has not come to my attention in all of our stoker experience a better example of the real purpose of the stoker than its application to this large lot of locomotives.

Special Service Conditions Make Stokers Necessary

In marked contrast to these large locomotives is a small Consolidation locomotive in service on the El Paso & Southwestern to 21 of which stokers have been applied and which are the smallest locomotives to receive stokers to date so far as I know. They have a tractive effort of but 47,000 lb. The considerations, however, leading up to the stoker application had nothing to do with capacity or economy. The climatic conditions in the desert country during a large part of the year which made it almost impossible to secure firemen to operate such locomotives at all was the main factor so that it was not in any sense inconsistent to apply stokers even to these small locomotives in order to operate them, although I understand the hauling capacity has been actually increased by the stoker application, which it would be very natural to expect under the circumstances.

We come now to a consideration of some of the results which have been achieved by the stoker applications that have been made in different parts of the country and on different locomotives up to this time.

The data shown in Table I. were obtained by the Atchison, Topeka & Santa Fe in tests of a Mikado locomotive having approximately 60,000 lb. tractive effort. This tabulation will serve to bring out some points with regard to coal consumption per hour as related to the hauling capacity of a locomotive of this kind when it is desired to increase the

Table I—Comparative Test Data, Hand and Stoker Firing

Test No.	Tonnage	Cars	Loads	Empties	Running time Hr. Min.	Coal used, lbs.	Evaporation Per lb. coal	1,000-ton miles	Coal per 1,000 T. M.	Coal per hour	Coal per sq. ft. gr. per hour	Average steam pressure	Hand or stoker
7	2,579	65	63	2	6:42	35,000	5.62	281.9	124.2	5,224	78.2	184.3	H
9	2,713	69	60	9	5:48	35,500	5.58	296.6	119.8	6,121	91.3	178.8	S
11	2,849	71	67	4	6:34	46,600	4.75	311.4	149.7	7,096	106.2	175.7	S
13	2,835	74	58	16	5:40	38,083	5.39	366.8	124.3	6,721	100.6	177.0	S
15	2,848	75	73	2	5:38	41,076	4.91	300.1	136.8	7,403	110.8	185.9	S
17	2,896	56	56	0	5:53	43,300	4.73	312.8	138.4	7,360	110.7	185.8	S
19	2,872	71	66	5	6:31	44,890	4.55	310.2	144.7	6,888	103.1	167.5	S
21	2,869	65	65	0	5:28	35,600	4.76	313.6	113.5	6,512	97.7	183.6	S
23	3,059	73	72	1	6:04	37,350	5.03	334.3	111.7	6,156	92.0	179.4	S
25	3,061	65	56	9	6:10	38,250	5.57	334.6	114.3	6,203	92.9	181.2	S
27	2,887	61	57	4	5:27	32,300	5.62	314.6	102.7	5,927	88.7	187.7	S

revenue tons per train. The significant points about this tabulation are that the coal consumption per hour is fairly representative of the difference between the maximum possibilities of hand-firing and the ordinary range of operation when stoker-fired.

It will be noted that the coal consumption per hour on hand-fired run No. 7 was 5,224 lb. per hr. or 78.2 lb. of coal per square foot of grate area per hour. This brought a coal consumption per thousand ton miles of 124.2 lb. and I believe represents maximum hand-firing possibilities. All of the ten other trips shown on this tabulation show a coal consumption of from 6,000 lb. to 7,400 lb. per hour, and taking the high and low coal consumption per thousand ton miles, the average happens to be for the ten trips almost to a fraction the same as the coal consumption per thousand ton miles for the hand-fired trip, the larger percentage of the stoker-fired trips being below the hand-fired trips in coal per one thousand ton miles. A maximum increase of nearly 500 tons per train was secured on some of the stoker-fired trips, and it will also be noted that on no stoker-fired trip was the actual running time as long as on the hand-fired trip.

Speed on Grades Increased by Stokers

At the end of one of the runs I took occasion to go into the train despatcher's office, look over his operating sheet, and make inquiries as to the time required by all of the freight trains westbound on that day to cover a 13-mile and an 8-mile 6/10 per cent grade, which grades are the limiting factor on that particular division. The result of that inquiry is shown in Table II.

Table II—Time on Ruling Grades

Engine No.	Gross tons	13-Mile grade 31.68 feet. Per mile	8-Mile grade 31.68 feet. Per mile
3211	1,800	61 min.	30 min.
3202	2,180	48 min.	27 min.
3207	1,950	63 min.	25 min.
3209	2,900	50½ min.	31 min.
3206	2,120	75 min.	32 min.
3200	1,945	46 min.	31 min.
3121	2,000	58 min.	.....
3192	2,285	82 min.	.....
3193	1,850	54 min.	.....

The 2,900 tons taken up the 13-mile grade in 50½ min. has illustrated better than any description that could otherwise be given the real purpose of the application of a stoker to a locomotive like the Mikado which hauled this train as compared with other similar locomotives hauling from 500 to 1,000 less tons in longer time up the same grade hand-fired. It is true that more coal was consumed in the 50½ min. hauling 2,900 tons in that time up the 13-mile grade than would have been the case if the locomotive had been operated at a less cut-off, less throttle and consequently less speed, but the fact remains that to get maximum tonnage over the

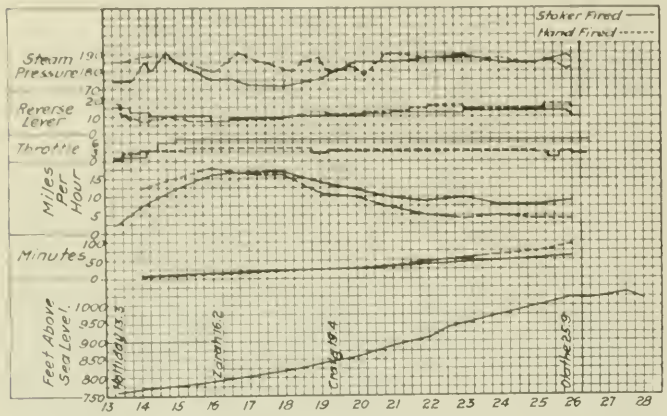


Fig. 2—Hand and Stoker-Fired Tests on 13-Mile Grade

division in the minimum amount of time requires this kind of locomotive performance. In addition to illustrating the main purpose of the stoker it also shows why it is quite often stated that from the point of view of water evaporated per pound of coal the coal consumed per locomotive mile is more when stoker-fired than might be the case when such a locomotive was hand-fired under less strenuous conditions.

In order to get a more direct comparison of the possibility of hand-firing and stoker-firing with the tonnage rating such as shown on the stoker-fired trips of the tabulation, and also

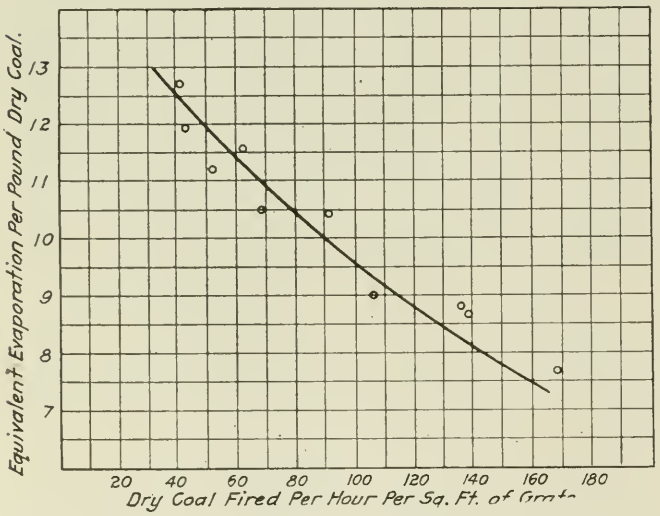


Fig. 3—Effect of Rate of Firing on Equivalent Evaporation

to compare the performance on the 13-mile grade with the 2,900-ton train, a hand-fired trip was made over the division with what might be called stoker tonnage. Fig. 2 is a graphic chart showing the comparative performance between a hand-fired and a stoker-fired trip. It will be noted that the locomotive was worked at a point stoker-fired which was not possible on the hand-fired trip, the result being that 31 min. more time was required to take the train with stoker tonnage up the 13-mile grade with hand-firing than with stoker-firing. I know of no better illustration of the real purpose of the stoker than that shown on this chart.

There are additional points of interest which cannot be plotted by curves namely, that on the particular day on which firing and hand-firing are not directly comparable. The reason for this has really nothing to do with the stokers themselves, but is due to the different points at which the locomotive is worked with hand-firing as compared with stoker-firing.

The diagram shown in Fig. 3 illustrates the rate of evaporation as related to the rate at which dry coal is fired per square foot of grate area per hour. The tests indicated on this diagram were all hand-fired so that this drop in the evaporation rate had nothing whatever to do with hand-firing as com-

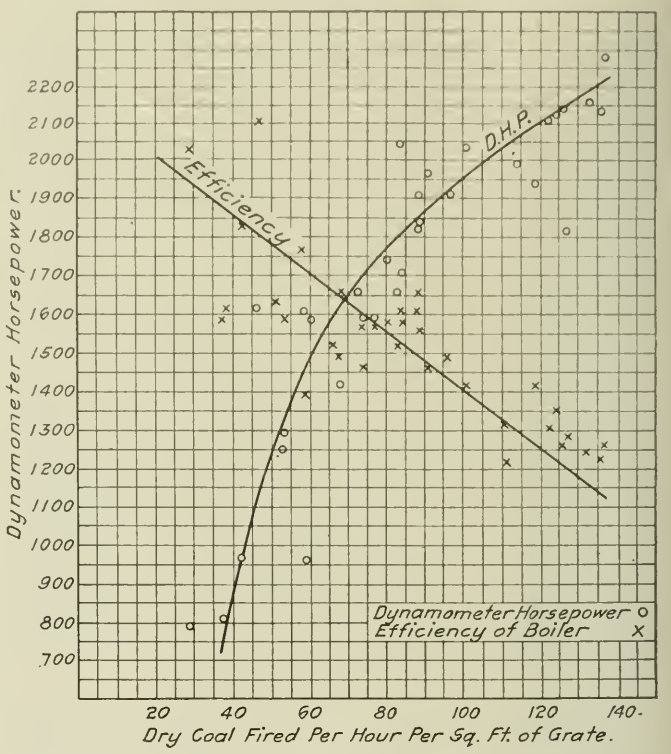


Fig. 4—Boiler Efficiency as Related to Horsepower Chart

pared with stoker-firing, but must be definitely borne in mind as usually being related to the price we must pay when we stoker-fire a locomotive to its maximum capacity; in other words, get a coal consumption rate up to the point shown on some of the tabulations.

The next diagram, Fig. 4, illustrates the point even better. The many tests plotted on this diagram were practically all hand-fired, but no better illustration could be prepared to illustrate the price we must pay for operating the modern locomotive to its maximum capacity.

There are many locomotives being operated at the point where less horsepower output is being secured in order to keep the evaporation of water per pound of coal up to a point shown in the left-hand section of this diagram, but on the other hand there are very many more locomotives being operated under the conditions shown on the right-hand section of this diagram and, of course, from the stoker manufacturers' point of view, this is really where we expect a large locomotive to be operated if equipped with a stoker.

The reason that more locomotives are operated at their highest possible horsepower output, notwithstanding the fact that this brings a decrease in so-called boiler efficiency, is, of course, because a very satisfactory return is secured on the price paid for such operation. This price is represented in

the cost of coal per locomotive mile, and the returns on the investment are represented in the reduced cost of coal per ton mile brought about by the increase in revenue tons per train hauled by the locomotive when operated at its maximum horsepower output. The curves in Fig. 5 illustrate the relation

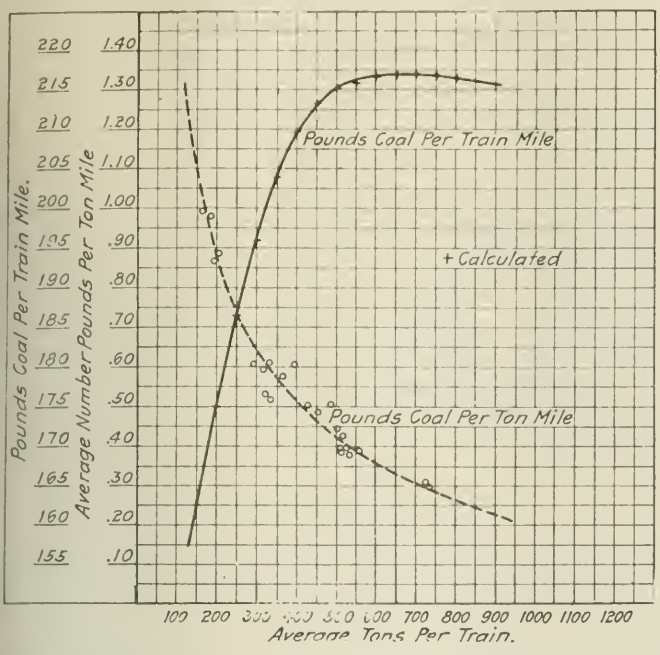


Fig. 5—Relation Between Coal per Train-Mile and Tons per Train

between the increased cost of coal per locomotive mile and the decreased cost of coal per ton in the heavier train so hauled.

This decrease in cost per ton mile is not altogether confined to coal alone as the increased revenue tons per train made possible by the maximum horsepower output of the locomo-

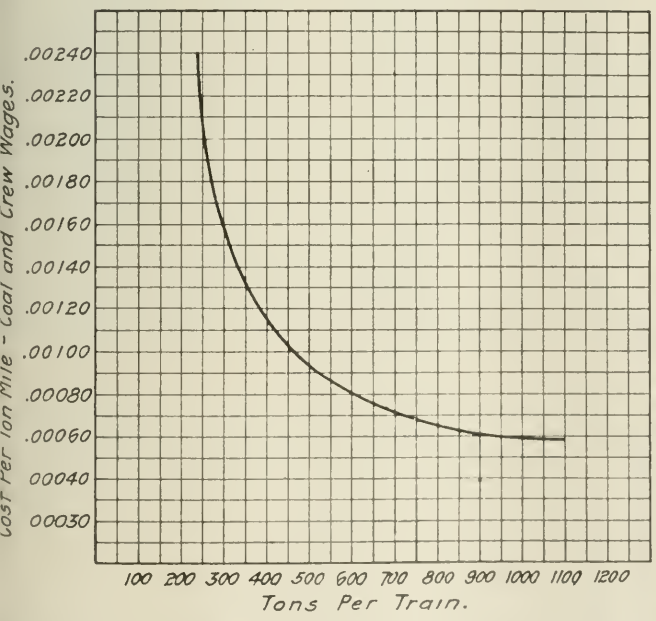


Fig. 6—Cost of Coal and Crew Wages as Related to Tons per Train

ve is directly related to crew wages as well. Fig. 6 illustrates the decrease in the cost per ton mile of both coal and rew wages combined, and further illustrates why it is desirable to operate modern freight locomotives up to their maximum capacity even at an increased cost of coal per locomotive mile.

I have said nothing so far in this paper about the stoker doing the manual work of the fireman or relieving him from the suffering incident to the heat of the fire-box due to opening the fire door when hand-firing, as it has been my endeavor to illustrate the returns which are being secured on the large investment which has been made in mechanical stokers for locomotives during the past six or eight years. It goes without saying, however, that there are many other advantages in the application of stokers to locomotives. One of these is, of course, the relief of the firemen, making the position of locomotive fireman more attractive and, therefore, making it possible not only more readily to secure men for this work, but also to select those men who are particularly qualified later to become locomotive engineers rather than to consider only their physical stamina for the more arduous work of hand-firing.

I have tried to be very frank in my statements and have in no sense endeavored to have you reach a conclusion that it is not necessary to pay a certain price for the use of the stokers on locomotives such as have been equipped with them. On the other hand, it is very plain that whatever the price that it is necessary to pay it brings a most satisfactory return from every point of view. Objections can be raised against the stokers, of course, just as objections can be raised to many of the other modern labor-saving and capacity-increasing devices and features which have been added to locomotives in recent years to enable us to travel the avenues of economy which have brought such large returns in present-day railroad operation. The mark which we are aiming at in the application of mechanical stokers to locomotives is mainly one of capacity; and in the sense that the word economy is ordinarily used, we must conclude that the kind of locomotive capacity which I have pointed out, namely, maximum horsepower output, must take precedence over economy for large modern locomotives.

It is significant that the cost of coal is after all a comparatively small part of the total operating expenses, and as the economies that occur from any increase in revenue tons per train mile have a much larger influence upon the net annual earnings of any given railroad company than does any variation either up or down of the cost of total coal used per annum by that railroad. It follows that what must be accomplished first and above all other things is to increase the revenue tons per train mile.

Photo from Underwood & Underwood, N. Y.

American Soldier Students at the University of Birmingham, England, Waiting for Their Train

Doings of the United States Railroad Administration

WASHINGTON, D. C.

To satisfy the curiosity of Senator Newberry, who recently had a resolution passed by the Senate calling on the Railroad Administration for complete information regarding the issuance of passes good on all lines under federal control, which the Senator thought also covered free dining car and sleeping car service, Director General Hines has reported to the Senate that all-line railroad passes have been issued by the Railroad Administration to 4,114 persons during the period of federal control, of which 119 have been cancelled in the regular order of business, leaving 3,995 outstanding on July 1, 1919. Also all-line Pullman passes have been issued to 2,418 persons, of which 515 have been cancelled, leaving 1,903 outstanding on July 1. In view of the detailed nature of the information requested, Mr. Hines says the facts cannot be presented immediately but pending a complete report he submitted general facts to the Senate. His letter says:

No passes are issued for free dining-car service.

In issuing passes good on railroads under federal operation and good for sleeping-car and parlor-car accommodations, the Railroad Administration has been guided by the established practices which have been adopted under private control in conformity with the provisions adopted by Congress in the Interstate Commerce Act and in amendments thereto, governing the matter of free passes.

Under private control, it was the general practice for the principal railroad officers to have annual passes on their own railroads and in addition to obtain exchange passes from practically all other railroads in the country, so far as they might be applied for. The result was that each of these general railroad officers had a large number of annual passes covering most of the important mileage in the country. In addition, the chief managing officers very frequently had annual Pullman passes good on all Pullman lines in the United States. The officers who had annual passes for themselves on the railroads generally also had annual railroad and Pullman passes for the dependent members of their families, or could and did obtain trip passes as a matter of course upon request.

The general policy of the Railroad Administration was to take these established practices as its standard and on that basis to give passes good on all lines only on account of representatives of the Central Administration and on account of such railroad officers as had customarily had available to them annual passes good on practically all mileage under federal control.

Annual passes good over all lines have been issued broadly to the following classes of persons:

Officials of the Central Administration which, of course, has jurisdiction over all lines.

The seven regional directors and the principal members of their staffs.

The federal managers of the various railroads and other officials who under private control had at their disposal passes on any line desired, such officers under private control having generally speaking, held exchange passes over practically all railroads in the United States, or over all such railroads as might be included in their request for passes.

The chief executives of the railroad corporations, (including the chief officers of the Association of Railroad Executives and the Secretary of the American Railroad Association), such chief executives having had under private control passes over all railroads, or over such railroads as they might include in the requests therefor.

Dependent members of the families of the foregoing persons.

The chief officers of the American Short Line Association, Western Railroad Association, Railway Accounting Officers' Association, Association of Transportation and Car Accounting Officers, and Association of Western Railroads.

Nearly 98 per cent of the all-line passes issued by the Railroad Administration, are restricted so as not to be good on certain specified limited trains.

Pullman passes, good on all lines, have been issued, broadly, to many member of the same classes mentioned above.

Passenger Traffic in April

The number of passengers carried one mile during the month of April was 3,472,502,638, according to the monthly report of the Operating Statistics Section. This is an increase of 3 per cent as compared with April, 1918. The Ohio-Indiana district and the Southern region show decreases. For the four months ended April 30 the increase in passenger traffic was 5.9 per cent, all regions showing an increase except the Ohio-Indiana district of the Eastern region. The figures follow:

Railroad	Average miles operated	Month of April				Four Months Ended April 30			
		1919	1918	Increase or decrease	Per cent	1919	1918	Increase or decrease	Per cent
Total, New England District	8,116	300,648,425	283,140,522	17,507,903	6.2	1,124,259,418	1,044,850,176	79,409,242	7.6
Total, Central District	22,396	504,917,014	451,520,758	53,396,256	11.8	1,900,954,218	1,695,859,150	205,095,068	12.1
Total, Ohio-Indiana District	6,941	68,996,520	75,993,474	d 6,996,954	d 9.2	271,356,206	275,177,878	d 3,821,672	d 1.4
Total, Eastern Region	37,453	874,561,959	810,654,754	63,907,205	7.9	3,296,569,842	3,015,887,204	280,682,638	9.3
Total, Allegheny Region	19,814	735,876,794	708,894,259	26,982,525	3.9	2,786,274,669	2,546,410,591	239,864,072	9.4
Total, Pocahontas Region	5,094	70,989,203	65,055,711	5,933,492	9.1	300,996,101	247,858,043	53,138,058	21.4
Total, Southern Region	38,192	483,425,122	518,065,083	d 34,639,951	d 6.7	1,988,599,805	1,979,917,731	8,582,074	0.4
Total, Northwestern Region	46,719	383,761,516	362,499,239	21,262,277	5.9	1,516,482,812	1,415,795,728	100,687,084	7.1
Total, Central Western Region	51,919	636,180,783	618,351,885	17,828,898	2.9	2,470,040,938	2,403,750,651	66,290,287	2.8
Total, Southwestern Region	31,664	287,707,261	287,494,517	212,744	0.1	1,161,912,812	1,152,769,963	9,142,849	0.8
Grand total, all regions	230,855	3,472,502,638	3,371,015,458	101,487,180	3.0	13,520,876,973	12,762,389,911	758,487,062	5.9

Contracts Executed

The Railroad Administration has executed co-operative short line contracts with the Wabash, Chester & Western and the Willamette Valley & Coast.

Delays Are Dangerous.—More than six months have elapsed since the president passed the railroad question over to Congress for solution. How near is Congress to a solution? Plans for restoring the roads to their owners are so numerous that few persons can remember the salient differences between them. Congress is unlikely to be in a mood to deal with railroad legislation until the peace treaty is disposed of, and autumn may have come before the railroads will be tackled in earnest. The prospect of very high operating expenses seems to have slackened the demand from railroad owners that government operation be terminated immediately. One member of the Interstate Commerce Commission holds that rates should be kept where they are and the railroad deficit loaded onto the federal treasury. If the deficit is to be wiped out, freight rates must go up very soon.—*Springfield Republican.*

Equipment Standardization in Belgium and France

Vast Amount of Equipment Destroyed During War—Changes of Design to Be Made in Replacements

By Robert E. Thayer,
European Editor of the *Railway Age*

PARIS, June 21, 1919.

ON ACCOUNT OF THE GREAT AMOUNT of damage done to the cars and locomotives in the northern part of France and throughout Belgium by the Germans during the war, and also because of the fact that the maintenance of equipment in both of these countries had to be seriously neglected, there is a very large amount of rehabilitation work to be done. Large quantities of new equipment must be built eventually, and vast quantities of equipment must be repaired. The situation thus lends itself admirably to a certain amount of standardization which is being considered in both of these countries.

The work in Belgium has not developed to the extent that it has in France, but the conditions in Belgium are such that until the disposition of the German equipment running on Belgian rails under the terms of the Armistice is known, no definite plans will be formulated. The Belgians, in addition to their varied stock of power, have had to cope with the added inconvenience of some 40 to 45 designs of German locomotives and innumerable designs of German cars. This has accentuated the need of equipment of more unoform design. It is the desire of the State railways there eventually to return the German equipment and receive indemnities with which to buy new equipment. If this is granted—it is doubtful if it will be—some plan of standardization will be formulated as a vast amount of equipment will have to be built to replace the equipment destroyed during the war.

Standardization Plans in France

In France, standardization has been thought of for some time. Last year, M. Claveille, Minister of Public Works and Transports, asked the locomotive builders of France to consider the situation, and seven preliminary designs of locomotives were evolved, but nothing has been done with them. At the present time, however, four of the important French railways, namely, the Paris-Lyons-Mediterranean, the Paris-Orleans, the Midi, and the State railways, have formed a committee for the consideration of standard equipment. Two designs of locomotives are being considered, one of the Pacific type for passenger service, which will have driving wheels of about 78-in. in diameter, and a Mikado locomotive for fast freight and heavy grade passenger service, having driving wheels of about 65-in. in diameter. It is very interesting to note that these locomotives will be of the two cylinder, simple, superheater type. With the improvements in the design of this type of locomotive, it is now generally conceded in France that the economies obtained from the compound locomotives as compared with a good design of two cylinder, simple locomotive using superheated steam, do not warrant the increased first cost, the increase in the cost of maintenance and the added complication of the compound locomotives. Furthermore these standard engines will have a lower factor of adhesion than is customarily used in America. The design will probably not give a factor any higher than 3.5.

The traffic conditions in France are such that a high speed locomotive is needed both in passenger and freight service. The Pacifics will be designed to operate at a speed of about 74 m.p.h. and to work on grades of 0.5 and 0.6 per cent. The Mikado locomotives are to be built for speeds of about 56 m.p.h. and for grades of from one to 1.2 per cent. The axle load of these locomotives will be limited to about 41,000-lb. as that is the limit required by the Minister of Public Works and Transports of France. This limit is set on account of the fact that many of the bridges in France are too weak to carry a higher wheel load, and as a general rule there are two less ties used per rail than in America.

The adoption of these two standard types of locomotives does not mean that other locomotives will not be built. The committee has taken a very sane view of the matter, and is preparing designs to meet conditions common to all of the four roads in question. It is expected that other locomotives will be designed and built by any of the four roads to meet any special conditions they may have. However, as many details as possible will be the same as those used on the standard designs.

There are five standard designs of cars to be built; two types of box cars, with and without screw brakes; two types of coal cars, with and without screw brakes, and flat cars with no screw brakes. The question of power brakes is under consideration. It is the desire of progressive engineers in France to have continuously braked freight trains, but whether this will be permitted with the excessive amount of slack between the cars of the present day French freight train with its present type of coupling, remains to be seen.

Several engineers have expressed a strong desire to use automatic couplers, but with the present screw type of coupler generally used in France, the introduction of the automatic coupler would entail numerous difficulties, and until some design of automatic coupler is made which will readily interchange with the screw type of coupling now used, but little will be done in this respect.

The work on standard passenger cars has not progressed to the same extent as in the freight cars. They will, however, be of all-steel construction. This type of construction is not new to French railways. The Paris-Orleans has built nothing but steel passenger equipment for years, and, in fact, some of our first steel equipment was patterned after the Paris-Orleans designs.

Need of New Equipment in France

The equipment situation in France at the present time is such that they need new locomotives and passenger cars. The locomotive situation was helped out to a certain extent by 2,700 locomotives received from Germany under the terms of the Armistice, and by the U. S. A. Pershing locomotives. There is a need for more locomotives, however, and 1,118 locomotives, which are to be built to existing designs, have been ordered by M. Claveille, Minister of Public Works and Transports, for all French railways. These are supposed to be delivered by the end of 1920, but whether they will or not is a very serious question.

With the German freight cars and the American freight cars, if all of the former are to remain in France, the freight car situation is not bad.

It is interesting to note here that both the orders for locomotives and passenger equipment were placed with French concerns regardless of the fact that better prices and better deliveries could be obtained elsewhere. This has been the policy of the government in practically all of its rehabilitation work and it has been done to give business to the French concerns and employment to French labor.

Railway Developments in Foreign Countries

Swiss Railways Extend Electrification—Railroad Concessions in Mexico to Be Limited in Future

Proposed New Railroad Between Ibague and Ambalema, Colombia

Counsel C. E. Guyant, Barranquilla, reports that the important firm of Pedro A. Lopez & Co., of Bogota, has just signed a contract with the Department of Tolima for the construction of a railroad between Ibague, the capital of the Department, and Ambalema, on the Magdalena River, to connect at its river terminus with the La Dorado Railway and at the other end with the new Girardot-Ibague line, which is a link in the projected Pacific Railway. The importance of the newly contracted line is that it will do away with the necessity for using the upper Magdalena River as a link in the route to Bogota, and will provide an all-rail route from La Dorado (head of navigation on the lower Magdalena) to the capital. It will also give the Department of Tolima direct connection with the main river traffic.

By the terms of the contract (dated May 22, 1919), work must be begun within three months and be completed within four years. Construction materials and rolling stock will most probably be purchased in the United States.

German Destruction of French Locomotive Works

Belgian correspondents call attention, says the Railway Gazette, London, to the damage done by Germans to the famous locomotive works of the Compagnie Fives-Lille. Equipment to the value of $10,000,000 has been removed or destroyed. One item in this list of destroyed apparatus includes 750 electric motors. The Germans employed highly efficient methods of demolition. For example, they introduced the use of massive blocks of iron as battering rams to demolish the machinery that they had not the opportunity to remove. These blocks they swung by chains from overhead travelling carriages, then drove them against the machinery marked for destruction. An alternative method was to hoist the machines themselves as high as possible, then let them crash down on the cement floor. The invaders sometimes coveted the steel construction sheds in which the equipment was housed. Three of these sheds, for instance, were more than 600 ft. long and 120 ft. wide, and yet the wreckers dismembered these sheds, packed them with care, and sent them on their way toward the Rhine. These facts and figures may serve to give some conception of the vast amount of new equipment that will be needed before the factories in the Lille district can be put on a productive basis again.

Government Construction Instead of Concessions in Mexico

Applications filed by American and other foreign investment interests for concessions for the construction of electric and steam railroads and various other kind of industrial enterprises are now pending with the Department of Communications and Public Works of the Mexican government. It is indicated by the attitude of the Carranza administration toward outside capital that these applications may all be rejected. The government has already adopted the policy of not granting any new concessions for the construction of additional lines of steam railroads. It has announced its intention of doing on its own account whatever railroad building may be deemed necessary, adding such lines to the National Railways of Mexico. Recently application was filed with the Department of Communications and Public Works for a concession to construct an electric interurban railway through the oil fields of the Gulf coast region, connecting Tampico and Tuxpam. The proposed line would be about 120 miles long. No action has as yet been taken upon this application. American oil interests are back of the project.

It is announced by the Department of Communications and Public Works of the Mexican government that it has just granted a concession and awarded the contract for the construction of a railroad between Toluca and Zitacuaro, state of Michoacan, about 82 miles. Employment will be given to several hundred native laborers in the building of the road. It will traverse a region that is rich in agricultural resources. At Toluca the line will connect with the National Railways of Mexico.

As a means of affording a transportation outlet for a large tract of virgin timber land and to bring about the agricultural development of the intervening country the Mexican government is constructing a railroad from Saltillo into the mountains, traversing a rich valley region for part of the distance. The new line will be about forty miles long. The timber tract which it will penetrate is owned by E. E. Shaw of the City of Mexico and associates. They plan to build a large lumber mill and to operate the industry on a large scale when the railroad is finished. James F. Martin & Company of Saltillo have the contract from the government to construct the railroad.

The Swiss Railways Extend Electrification

The introduction of electric traction on the lines of the Swiss Federal Railways has, on account of the acute shortage of coal occasioned by the war, received the foremost attention of the authorities and has now emerged as a very practical economic question.

The principal arteries of the Swiss railway system are government owned. The elctrification of thse lines is simplified by the large amount of unused water power which the country possesses. According to an official survey, verified in 1914, including the improvement and water level control of lakes, the water power of Switzerland is capable of producing an energy equal to 2,173,000 h. p. If old plants were replaced by new ones it is even estimated that the total water power could be raised to as much as 8,000,000 h.p. On January 1, 1914, the electric power already in use in Switzerland amounted to 887,000 h.p.

The Swiss Confederation owns some 1800 miles of the entire railway system of the country which covers 3216 miles. Of the 1416 miles owned by private companies 622 miles are already electrical, but only an insignificant percentage of the government railroads is at present operated by electricity.

The first important federal standard-gage road to be chosen for electrification was the Gothard Railway, one of the important international highways. The electrification of the 68-mile section Erstfeld-Bellinzona was approved in 1913 and it is expected that it will be opened this fall. This section, with 28 per cent of its length consisting of tunnels and a grade of 2.5 to 2.7 per cent for 25 miles, was chosen for an experiment because of its enormous traffic with Italy, which caused large consumption of coal with resulting smoke in the tunnels.

The sections Bellinzona-Chiasso and Erstfeld-Lucerne are expected to follow in 1921 and the consulting experts have

found that the big power stations at Amsteg and Ritom, the first yielding 26,000 h.p. and the latter 32,000 h.p., will also suffice for these lines, even if the traffic should increase some 60 or 70 per cent. Another series of plants yielding 70,000 h.p. is planned for eastern and central Switzerland.

The cost of electrification of the Erstfeld-Bellinzona line is estimated at $8,000,000. The cost of electrifying the entire federal railway system is estimated roughly at $200,000,000.

In 1918 the electrification of the following railways using steam traction was decided upon and work on them commenced at once: the sections of the Federal Railroad Sion-Brigue and Berne-Thun; the section Hasle-Langnau of the Emmenthal Railroad and the section Bevers-Filisur of the Rhaetian Railroads.

The Sion-Brigue section which is to be electrified will be a continuation of the electrically operated Simplon tunnel which was opened for traffic in 1906, with its northern exit at Brigue.

The electrified Berne-Thun line, connecting with the electric Berne-Lötschberg-Simplon railway, which latter was inaugurated in 1913, was opened for traffic last May. It now provides excellent and frequent train connections between the Swiss capital, the Bernese Oberland resorts and—in connection with the Lötschberg line—the Valais and Northern Italy.

The new locomotives which are now being used by the Swiss Federal Railroads on the Berne-Thun section, besides those of the Berne-Lötschberg-Simplon line, are each equipped with four single phase-alternate current motors, each of 450 h.p. The electric parts were furnished by Brown-Boveri & Co., Baden, and the mechanical parts by the Swiss Locomotive & Machine Company of Winterthur, Switzerland.

The electrification works on the Bevers-Filisur line were completed by middle of last April and since April 16 steam locomotives have been replaced by electric locomotives, the current being supplied by the power station of Bevers, which furnishes the necessary energy for the Engadine lines which were electrified in 1913.

Exports of Railway Track Material in May

The exports of rails in May, amounting to 76,134 tons of a value of $4,902,970 were considerably greater than those of April but not as large as in February. The exports of railway spikes, amounting to $437,392 and those of frogs, switches, etc., were however, considerably in excess of those of any previous month so far this year. Of the rails, large shipments were made to Japan, France, China, Belgium and British South Africa. Over half the spikes and switches, frogs, etc., were consigned to France.

The figures in detail as compiled by the Division of Statistics of the Bureau of Foreign and Domestic Commerce are as follows:

Countries	Railway spikes		Rails of steel		Switches, frogs, splice bars, etc.
	Pounds	Dollars	Tons	Dollars	Dollars
Belgium	354,270	16,931	7,932	463,571	24,219
France	3,519,804	290,972	14,874	890,227	1,094,016
Italy	.....	.....	713	64,170	.....
Norway	.....	.....	25	1,900	313
Spain	.....	.....	495	44,550	.....
Sweden	.....	.....	.....	.....	2,730
England	.....	.....	1,174	64,105	1,886
Scotland	.....	.....	176	12,637	919
British Honduras	.....	.....	.....	.....	58
Canada	15,648	543	3,056	104,466	21,656
Costa Rica	25,600	1,266	.....	.....	405
Guatemala	10,000	500	.....	.....	4,857
Honduras	7,000	308	.....	.....	1,922
Nicaragua	27,000	1,491	6	445	3,270
Panama	.....	.....	.....	.....	495
Salvador	45,000	1,755	.....	.....	.....
Mexico	32,500	1,895	1,249	50,004	21,746
Newfoundland and Labrador	56,000	2,251	.....	.....	.....
Jamaica	46,000	2,357	363	20,878	3,746
Trinidad and Tobago	.....	.....	.....	.....	78
Cuba	264,100	9,542	633	38,958	45,519
French West Indies	.....	.....	.....	.....	21
Dominican Republic	5,000	308	.....	.....	264
Argentina	.....	.....	.....	.....	6,386
Bolivia	.....	.....	37	2,320	74
Brazil	310,120	17,426	756	52,780	3,269
Chile	176,100	6,865	199	13,495	20,963
Colombia	60,800	2,880	915	56,407	868
Ecuador	2,000	101	115	6,469	.....
Peru	.....	.....	480	37,795	35,038
China	398,700	14,750	11,179	744,852	34,443
Japanese China	.....	.....	744	57,435	4,682
British India	.....	.....	576	32,056	4,701
Straits Settlements	1,760	157	.....	.....	.....
Dutch East Indies	272,016	12,744	3,981	243,196	17,086
Hongkong	.....	.....	13	926	.....
Japan	806,575	39,251	14,224	1,095,667	107,595
Russia in Asia	92,634	4,387	1,906	109,676	1,186
Siam	98,400	8,150	.....	.....	.....
Australia	.....	.....	.....	.....	120
New Zealand	.....	.....	99	5,932	458
French Oceania	.....	.....	38	3,738	607
Philippine Islands	15,600	549	581	37,375	5,864
Belgian Kongo	.....	.....	448	28,050	11,841
British South Africa	.....	.....	8,177	550,981	390,721
French Africa	200	13	100	6,000	6,000
Portuguese Africa	.....	.....	870	61,918	1,604
Total	6,642,827	437,392	76,134	4,902,970	1,881,626

Railroads as a Buying Element

IN SUPPORT OF THE DOCTRINE that "Railway Purchases Measure General Business Prosperity," E. B. Leigh, president of the Chicago Railway Equipment Company, Chicago, has compiled a series of graphic illustrations showing the value represented by the railways of the United States as compared with that of all manufacturing industries generally. The graphics themselves were prepared as a supplement to a recent address by Mr. Leigh on the general subject of railway purchases and business prosperity before the National Industrial Conference Board. However, they are practically complete in themselves and serve to bring into clearer relief the importance of the railways as the largest single buying element in the country.

In the largest circle (Fig. 1), Mr. Leigh compares the

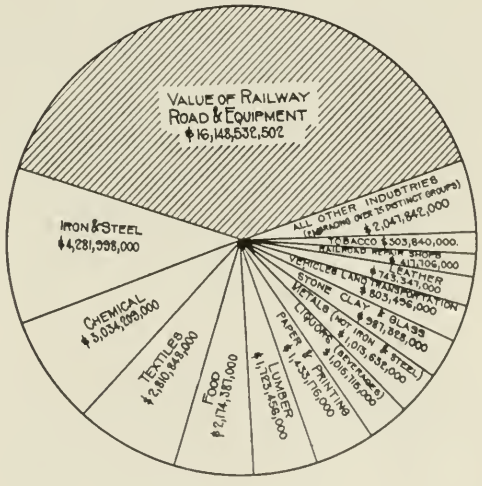


Fig.1

Value of Railway Road and Equipment Compared with Total Invested Capital

value of railway road and equipment, estimated at $16,148,532,502, with the capital of all other manufacturing industries which total approximately $22,790,980,000. The latter division of the circle is in turn subdivided into the 13 leading industries with their respective total capital and the total capital of another division composed of over 75 other industries grouped together.

In Fig. 2 of the accompanying reproduction, the value of railway cars and locomotives, $4,137,318,000, is compared with the total value of the manufacturing machinery,

tools and implements of all other industries, which is $6,091,451,274.

Again in Fig. 3 the value of railway cars and locomotives only, $4,137,318,000, is compared with the total value of all farm machinery, implements and tools, $1,368,224,548. This comparison is perhaps the most striking of the series of graphics prepared by Mr. Leigh in that the shaded area of the circle representing the value of railway cars and locomotives fills practically three-fourths of the total area of the circle.

This graphic method of illustrating the comparative value of railway road and equipment to that of other industries has been further enhanced by the preparation by Mr. Leigh of a series of charts showing similar comparisons by geographical divisions of the United States. These show that in

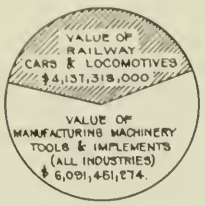


Fig. 2

Fig. 3

Value of Cars and Locomotives Compared with Manufacturing and Farm Machinery

the New England division railway road and equipment, valued at $501,391,191, almost equals the value of manufacturing machinery, tools and implements of all industries, valued at $766,480,256, exclusive of farm implements and machinery, which are valued at $53,648,227. Railway road and equipment in the South Atlantic states is shown to be valued at $1,976,695,855 as compared with manufacturing machinery, tools and implements, valued at $545,733,504 and farm implements and machinery at $107,212,399. In the New England, Middle Atlantic and North Central States the railway road and equipment exceeds in value that of manufacturing machinery, tools and implements by $1,000,000,000, while in all the other states together railway road and equipment exceeds the value of manufacturing machinery, tools and implements by over $10,000,000,000.

The figures for the graphs have all been taken from the United States Census reports of 1912-1914, the latest official compilations which give comparable data.

I. C. C. Serves Tentative Valuations

The Interstate Commerce Commission on July 23 announced its tentative valuation of the property of five small railroads, the Wrightsville & Tennille, the Missouri Southern, the Alabama Central, the Tooele Valley and the St. John & Ophir. Any protests which interested parties desire to make must be filed with the commission within 30 days.

The Wrightsville & Tennille, located in Georgia, owns 120.26 miles of track. Its book investment in road and equipment is stated as $1,039,902, after some adjustment. The original cost, other than land, the report says, cannot be ascertained. The cost of reproduction new and cost of reproduction less depreciation of all common carrier property other than land, owned and used by the carrier, are reported as $1,563,556 and $1,180,617, respectively. The original cost of land is given as $17,999 and its present value as $243,383. The valuation is as of June 30, 1915.

The Missouri Southern owns 70.3 miles of tracks, in Missouri. Its investment in road and equipment as stated in the books is $802,483, but the account is reported to be not reliable. The original cost is not reported. The cost of reproduction new, exclusive of land, is given as $920,912, and less depreciation as $770,945. The cost of lands is given as $24,345 so far as ascertainable, and the present value as $25,168. The report is as of June 30, 1914.

The Alabama Central, with a mileage of 8.79, is given a cost of reproduction new of $85,428 and, less depreciation, of $68,482. The book investment in road and equipment is $96,000. The carrier lands are given a present value of $1,099. The report is as of June 30, 1915.

The Tooele Valley has 7.9 miles, in Utah. Its book investment is given as $346,224. The report finds that this represents the original cost as found on the records. The cost of reproduction new of property wholly owned is given as $255,216, and, less depreciation, as $206,207. The cost of lands owned by the carrier and used solely for common carrier purposes was $5,071. The cost of some additional land is given as $1,000. The present value of land is given as $8,976. The report is as of June 30, 1915.

The St. John & Ophir, with 8.4 miles, in Utah, has a book cost of $139,161. This the report finds to be the original cost to date as nearly as it can be given. The cost of reproduction new is given as $127,414, and less depreciation as $110,103, and the lands are given an original cost of $858 and a present value of $663. The report is as of June 30, 1915.

Photo from Underwood & Underwood

Hauling Freight on Electric Railways

Farmers delivering wheat at a station on the Spokane & Inland Empire in eastern Washington.

Some Comments on the Railroad Problem

Strong and Weak Roads—Consolidation, Pooling, Net Earnings and Government Guarantee Undesirable

By Robert S. Lovett
President, Union Pacific System

I

In the discussion of the railroad problem now before Congress, it seems safe to assume that the following propositions are too clear to require or admit of argument:

1. That it is necessary for Congress to enact, at the earliest date practicable, legislation required to develop and continue to provide the railroad facilities which the country must have.

2. That the country has definitely made up its judgment against the ownership and operation of the railroads by the government.

3. That public opinion overwhelmingly favors the continuance, by private ownership, of competition in service and facilities furnished by railroad carriers.

It will be assumed, therefore, that these propositions are established, and they will not be discussed.

The Strong and the Weak Companies

Most of the discussion recently has centered about, and given great prominence to, the supposed difficulty presented by the case of the strong and the weak companies operating railroads in competition.

Now, many of the weak roads are weak because they serve territories which, for various reasons, afford but little traffic—sparsely settled, poor in agricultural or other production, etc.—but which nevertheless are giving the service which the traffic justifies.

I presume no one expects service substantially out of proportion to the traffic.

Some of the weak roads are weak because they are in competitive territory. Their traffic is competitive, and they are not able to get sufficient traffic away from rivals to become prosperous. These roads are not so vital to the community because the competing roads afford the transportation required.

Other roads are weak as a result of mistakes in policy, unsound financing, or bad management; and many because building, in the first instance, never was justified by the traffic obtainable.

All weak roads, however, are put in the same category in the discussion seeking relief for them, regardless of the cause of their condition or the public necessity for more service than they are now performing.

Furthermore, in the discussion little attention has been paid to the fact that the business of the country is not handled by the so-called weak roads. That is generally the reason why they remain weak.

But under the government policy of inflexible or declining transportation rates for a number of years, during which wages and other operating costs have been rising, the strong roads have found difficulty in getting capital to provide the additional main tracks, terminals, equipment and other facilities for handling the growing traffic.

One of the methods suggested for overcoming the difficulty arising from existence of strong and weak roads in competitive territory is by the consolidation of all railroads into a few systems.

The outstanding necessity confronting Congress and the task before it, as I understand, is to enact legislation that will restore the confidence of investors and establish the credit of the carriers, so that the money necessary to provide and keep up the railroad facilities of the country may be obtained.

The advocates of consolidation, however, fail to point out how their plan will accomplish this object.

For example, it is not apparent how the credit of the New York Central, or the Pennsylvania, or the Chicago Northwestern, or the Burlington, or the Union Pacific, or the Atlantic Coast Line would be improved by merging them with their poor and unprofitable neighbors and rivals.

Instead of improving the credit of the weak road the only effect of the project, as it appears to me, would be to impair the credit of the strong road.

The inevitable effect would be to reduce the average of the credit of all the railroads.

Credit of the Strong Roads None Too Good

The credit of the strongest of these roads has not been any too good during the last ten years.

Their credit needs support even more than the weak roads, because they have greater responsibility and greater burdens to bear.

They must provide facilities for the increased traffic they serve, which inevitably goes to them in times of stress.

Such credit as they now have is due to their ability to pay dividends. Falling rates and mounting expenses and the policy of state and national regulations increasingly menaced the stability of dividends, and thus weakened the credit of the strong roads.

* * *

It seems to be assumed that the strong roads have been earning, in excess of what they are legally entitled to earn, an amount sufficient to make up for the inadequate earnings of the weak roads, and that when the properties are consolidated and the earnings of the group thus pooled, the average will provide credit for all.

But this is a fallacy which can be demonstrated at the proper time. In any event, the earnings represent a value which must be paid for by the consolidated corporation when it acquires the properties.

Congress undoubtedly can acquire any or all the railroads of the United States for the government. It may also create corporations with power to acquire them, and consequently it may create several corporations to acquire all the roads in a prescribed territory, or certain specified railroads.

But Congress has no right to compel one corporation to consolidate with another.

It may give one the right to acquire the property of the other by condemnation, but it must pay for it, and (here is the difficulty) pay for it in cash.

Congress has no power to compel the stockholder of the railroads to be absorbed, to accept in exchange the stock of one of the dozen or more companies which are to absorb. When these absorbing companies acquire the railroads assigned to them, they must pay the value in cash to all who demand cash.

Whether this will be few or many, no one knows. It is

certain that many will demand cash; and then it must be provided if the transaction is to be accomplished.

The "underwriting" of a fabulous amount must be provided. Since no one will know in advance how many will demand cash instead of new securities, the underwriting must be for the entire amount.

Will Congress appropriate the billions necessary? Have we bankers enough to provide the money except through a series of years? And what will happen to the financial welfare of the country in the meantime, and what will the money cost?

I may add, though perhaps not relevant to the main point I am discussing, that my judgment is against the consolidation of all the railroads of the country into a few companies, say from ten to thirty, because I believe the companies would be too large and unwieldy for efficient and economical management.

Suggested Consolidations Too Big

I believe that railroad executives generally will agree that railroad systems may be made too big—that there are limits beyond which a railroad system should not, in the interest of economy and efficiency, be extended by consolidation with or acquisition of other lines. I am very confident that this is true.

More important still, consolidation should not be arbitrary. Each should be for a definite purpose and, where the government regulates, for a definite public benefit.

I am entirely in accord with the policy of removing some of the restrictions and permitting consolidations, subject always to approval, after hearing, by the Interstate Commerce Commission.

I believe that the absorption of some of the weak lines by the strong lines, upon fair terms, should be promoted. But competition in service and facilities should not only be preserved, but should be extended, and no consolidation should be permitted which in substantial degree eliminates such competition.

I believe that the existing railroad systems should be taken as a basis, and such consolidation as is desirable should be built up on that basis. This would avoid the insuperable financial difficulty already mentioned, and the disorganization of existing relations, and the disturbance of the billions of securities already outstanding.

The Pooling of Net Earnings

Another and much advertised and discussed method for solving the problem presented by the existence of financially strong and weak lines in the same locality is, in substance, that the Interstate Commerce Commission shall divide the railroads of the country into territorial or traffic groups and take the "Property Investment" account or book value of all the railroads in each group, and establish rates for that group sufficient to yield say six per cent., or some other specified return, on such investment or book value of each group.

Undoubtedly this would result in a much higher yield than the average, for the efficient roads, and much lower than the average for the inefficient, just as has always been the case in the past.

But it is proposed, as a part of this plan, that the most efficient roads shall be limited to the average, and their earnings in excess of the average, shall be set aside for the benefit, in some form, of the unprofitable roads that earn less.

The method of distributing the fund between the different roads varies with the different suggestions, but all contemplate that the law shall limit the earnings of the prosperous roads and increase the earnings of the poor roads.

The advocates of the plan may argue that they do not intend to take any value away from the strong roads except those whose earnings are "excessive," but that the earnings of the weak roads will be provided by increasing rates under an adjustment that will give all the increase to the weak roads.

But many of the roads are already earning in excess of six per cent., the average rate suggested; and obviously the plan proposes to take this excess from the stockholders of the roads earning it for the benefit of the security holders of the weaker roads.

However disguised and in spite of all the refinement of draughtsmanship and legal expression, the substantial object sought is to take, directly or indirectly, from the stockholders of the prosperous roads net earnings of their properties and give the same to the security holders of the weak roads.

Let us consider first who is to suffer and who is to benefit by this arrangement.

The stocks of the prosperous roads—that is, dividend payers—are widely scattered. They afford the only income, and literally the only means of subsistence, of hundreds of thousands of people in this country. They are thus held because they pay dividends.

The poor, who require a return from their savings and who must have some income, cannot and generally do not buy railroad stocks that have not paid dividends.

Who Would Benefit By This Plan

The stocks of the inefficient roads most generally, I believe, are held by small groups, very often by syndicates that accumulated them for speculation, or got them in some reorganization and are holding them with the hope that something will turn up that will let them out without loss, or give them a speculative profit.

Some of the schemes that have been proposed will afford this longed for opportunity to many a weary speculator in inferior railroad securities, but will be very discouraging to the multitude, including a great many women, who have invested their small means in high-class railroad stocks for an income on which to live.

But, I submit that Congress is without power to take the net earnings belonging to the stockholders of one railroad company for the benefit of the security holders of another railroad company.

The Plan Violates the Constitutional Guaranty

The regulation of the business and operations of the carriers and of the rates they shall charge is one thing: the seizure and appropriation of the net revenue of the carrier, realized under rates which the government prescribes, is a very different thing. One is within the power of Congress and the agencies that it creates; the other is the giving of one company's and one stockholder's property to another company and other stockholders against constitutional guaranty and without due process of law.

Those Who Are Most Vitally Concerned

It may seem old fashioned now to plead the Constitution against any action that is convenient and expedient, and especially to invoke it for the protection of property rights.

But I venture to urge its consideration in this behalf, not for the benefit of any rich railroad company, but for the hundreds of thousands of stockholders who look to dividends upon the stock of conservatively managed and prosperous railroads as their only means of support.

And it will not be a sufficient answer to the argument to say that it emanates from one who happens to be connected with a prosperous railroad company.

A Railroad Is Worth What It Will Earn

Now a railroad is worth what it will earn; and the average of its earnings during a series of average years ought

to be a fair guide under the conditions existing at the time.

If this is not taken, then there can be no hard and fast rule, and all the circumstances, some of which were enumerated by the Supreme Court in Smyth v. Ames (169 U. S. 466) must be taken into account.

A hard and fast rule would be convenient, but any that deprives the owner of the value of his property as reflected by its net earnings, is unjust and ought not to be adopted.

But the earnings of the property depend in large measure upon the rates the owner is allowed to charge, and it is suggested that these rates in turn may be fixed by the government; and that is true. Let us apply this to the present situation.

The securities of the good roads were bought and sold at high levels of prices, and the securities of the inferior roads were bought and sold at lower levels; and thus they are held by investors today.

The prices of these securities are the evidence of the popular judgment of the relative value of these railroads, and are the best evidence of such value. These values were based upon the earnings of the railroads under the rates they were allowed by law to charge.

As a matter of common sense, as well as plain justice, what better evidence of the value of these railroads, and of one railroad as compared with another, is possible?

How can the government, consistently with fair dealing, question the value of the railroads as demonstrated through many years by rates established by or under the regulation of its own agencies?

It is upon such considerations as these, and the values established under earnings from rates prescribed or sanctioned by law for years, that rates must be based, and not upon book value, reproduction cost, or any other mere theory. It is the practical situation and existing status that should be dealt with.

Why venture into new fields for rate-making and seek to disturb and unsettle not merely the value of the securities involved, but the business and commerce of the country, which have become adjusted to and in fact made, the present system of rates?

Why not continue the present adjustment of rates, and make such increases as necessary to meet the increased cost of recent years and provide a return on the new capital that has been put into properties in such enormous amounts, and which must be provided for the future, leaving the Interstate Commerce Commission free to reconsider and review rates from time to time, so as to adjust the revenue to the changing expense of operation, the rise and fall of wages and prices, and the expenditure of new capital?

A Guaranty By the Government

Many financiers and railroad men believe that a guaranty of dividends or some definite return on the money invested in railroads is necessary in order to re-establish faith in the railroad securities now constituting such an important part of our financial structure, and induce the investment of the additional capital necessary to provide the railroad facilities which are required.

This leads to the consideration of the question of a guaranty by the government.

Undoubtedly the guaranty by the government of a reasonable return upon the full value of railroad property would be satisfactory to those who consider the problem only from the standpoint of the investor.

But that is impracticable, because it is not believed that the government, as a permanent policy, would guarantee the railroad owners a fair return upon the full value of their property and leave the management in their hands, taking all of the risk and none of the profits: whereas, if the government should take the excess above the guaranty, then it would cease to be a guaranty, and all incentive to competition and economy by the private management would be eliminated. I fancy that the people would prefer to come directly to government ownership, unpopular though it is.

It has been urged, however, that a small return—something less than the full value—should be guaranteed in order to furnish the company financial credit, while still leaving the incentive to competition and economy. I am afraid that plan would not accomplish the object.

The guaranty of a return of two or three or four per cent. upon the value of a railroad might be comforting to the first mortgage bondholders, or the holders of other bonds now outstanding, who would have the first claim upon the fund. But how would it help the corporation to raise more money, which is the object desired?

Of what benefit would a government guaranty of two or three or even four per cent. upon the value of the Pennsylvania, or the New York Central, or the Baltimore & Ohio or the Rock Island Railroad, or most other railroads, be to those companies?

How would it assist them in raising money, since the guaranty would not be sufficient to pay the interest on bonds already outstanding and secured by prior liens?

It would make doubly secure what is already abundantly secured. But it would afford no collateral for new issues nor secure new loans. On the contrary, I believe it would be distinctly detrimental to the company in securing new money, because of the inevitable tendency that such guaranty would have to prompt government officials to interfere and endeavor to shape the policy of the company to extreme conservatism, in order to guard against the possibility of the government being called upon to meet the guaranty.

Moreover, as time passed, the public would be more and more inclined to regard the amount of the guaranty as the measure of the return to which the railroad company was entitled, and in every rate hearing the government guaranty would be dwelt upon by those opposing increases or seeking reductions in rates as the government's judgment of what the company was entitled to earn.

(*To Be Continued.*)

Cummins Bill Delayed

THE HOUSE COMMITTEE is displaying no alacrity to report favorably the Cummins bill, passed by the Senate, to restore the Interstate Commerce Commission's former authority over rate-making during the remaining period of federal control and the arguments made before the committee by Commissioner Clark and Director General Hines made such an impression on the committee that it is reported there is a good chance of its being killed in committee. Hearings on the bill were concluded on June 27 but the committee has not yet reached an agreement on it and its time is now being taken up with the hearings on the general railroad question. Commissioner Clark did not oppose the bill but indicated plainly that the commission was not asking for it and did not believe it necessary. Mr. Hines treated the matter as being of no great importance but declared that it would be wrong policy to divide the responsibility for rates at this time.

Senator Cummins was so anxious to get the bill through that he had it passed without any hearings and so hurriedly that both Mr. Hines and Mr. Clark told the committee it would have to be redrafted to make it mean what it was intended to mean.

The Senate sub-committee appointed to draft a tentative railroad bill has held several sessions giving preliminary consideration to the subject and it is understood that it has now reached the point of beginning to frame a bill along the lines of Senator Cummins' ideas of a guaranty. Some hearings are to be held later.

General News Department

A bill to appropriate $17,000,000 additional for the construction of the government railroad in Alaska has been introduced in the Senate by Senator New.

About half a mile of copper wire, part of a telegraph line of the Western Union Company on the New York Central, in Tonawanda, N. Y., was cut down and carried off by thieves one night last week.

An intoxicated man boarded a locomotive in the Baltimore & Ohio yards at Pittsburgh, Pa., on June 28 and opened the throttle. The engine headed out on one of the lead tracks where it collided with another engine, doing considerable damage. The man was arrested and later sentenced to a term of 90 days in the county work house.

Major Mark S. Watson, who served through the war as assistant chief of the press section of the general staff at American army headquarters in France, has been appointed special assistant on the staff of Thomas De Witt Cuyler, chairman of the Association of Railway Executives. Major Watson has recently been in England making a study of the financial and legislative problems that have grown out of the war control of the English railway lines.

Vacations for railroad clerks have not been entirely cut off. According to general order No. 27, as interpreted several weeks ago, clerks were not allowed the time-honored two weeks' vacation except they were willing to have their pay suspended; but, according to the Nashville Banner, a new interpretation, No. 16, has been made known to clerks in that city and it is to the effect that wherever vacations have been given in former years the prevailing practice will be continued. In most of the large offices clerks receive two weeks off with pay.

Three hundred railroad shopmen, delegates from local unions said to aggregate 28,000 members, held a three-day conference at Atlanta, Ga., last week to formulate plans for asking the Railroad Administration for increases in pay and shorter working hours. The Brotherhood of Railway Clerks on the Southern Railway has laid before the Railroad Administration a proposed new contract, calling for 20 per cent higher wages, a working week of 44 hours, and a provision allowing time and on-half for all overtime beyond ten hours a day. The minimum pay of clerks at present is $87.50 a month.

Representatives of the coal operators, as part of their propaganda to induce the early buying of coal, are already complaining of an impending car shortage and are urging the Railroad Administration to take more active steps to put cars in repair. The directors of the National Coal Association in resolutions recently adopted, declare serious car shortages exist, and that there is an abnormally large number of cars out of service awaiting repairs. George H. Cushing, managing director of the American Wholesale Coal Association, testified at Washington on July 18 before a House committee that there are many idle coal cars in all parts of the country which should be repaired.

The Brotherhood of Locomotive Firemen and Enginemen closed its 36-day triennial convention at Denver, Colo., on July 15. Among the most important resolutions passed were those favoring the municipal market system for reducing the high cost of living, recommending the establishment of a labor party and press in the United States, federal control of the railroads, raising insurance of the order to $4,500, approving standard wages for railroad men employed in France, endorsing the League of Nations, favoring new immigration laws excluding foreigners for a term of years, asking the President to use his influence to release Eugene V. Debs and Thomas J. Mooney, and seeking better working conditions for brotherhood members. Among the men of national prominence who addressed the convention were Director General Walker D. Hines and Governor Henry J. Allen, of Kansas.

On July 21 the City Council of Chicago by a vote of 66 to 2 adopted the enabling ordinance for a new passenger terminal, to be built by the Illinois Central at Chicago. This great project, which is estimated to involve an expenditure on the part of the railroad of over $88,000,000, was described in the *Railway Age* of July 11, page 51. One of the important features of the plan is provision for electrification of the suburban service of the road within seven years, other branches of the service to be transformed to electrical operation in subsequent periods. Following the placing of the mayor's signature on this ordinance it must be submitted to the United States War Department for ratification with respect to lake front developments, which contemplate an outer harbor and an extensive park system.

Air Mail Declared a Success—Rate Reduced

The postmaster general has fixed the rate of postage on mail carried by aeroplanes at two cents an ounce, the regular postage rate for first-class matter, placing the air mail service on the same footing as other means of transportation. He says that the experiments of the past year have demonstrated possibilities beyond expectations. By the use of the Liberty engines now available from the War Department, 10,000 letters a day for San Francisco and other points on the Pacific Coast which fail to connect with the westbound 8:40 p. m. train out of New York are being advanced 24 hours daily to their points of destination. Mail from New York that did not catch the 5:15 p. m. train for the West is now being delivered in Chicago in the afternoon instead of the second morning. Arrangements are being made to place on the New York-Washington route the three fastest aeroplanes in the air mail service, each having a capacity of 18,000 letters and a maximum speed in calm weather of 132 miles an hour.

The following statement says, further: "The great saving of time now effected over the fastest railroad train between New York and Chicago will enable the department to make a saving in car space of more than twice the cost of the operation of an air mail service on that route."

Master Blacksmiths' Convention

The International Railroad Master Blacksmiths' Association has announced the following papers which are to be presented at the convention to be held at the Hotel Sherman, Chicago, August 19-21. Repairs to Locomotive Frames, P. Lavender (N. & W.), chairman; Drop Forging and Its Possibilities, J. D. Boyle (Anderson Drop Forge Company), chairman; Heat Treatment of Iron and Steel, Purposes and Results, Geo. Hutton (N. Y. C.), chairman; Why Railroads Should Adopt Specific Standard Safety Appliances to Comply with U. S. Standards, J. E. Dugan (U. P.), chairman; Making and Repairing Springs, J. W. Russell (Penn.), chairman; Up-to-Date Smith Shop, G. Fraser (A., T. & S. F.), chairman; Scrap Reclaiming by Use of the Oxy-Acetylene and Electric Cutting and Welding Process and Other Methods, Walter Constance (St. L.-S. F.), chairman; the Treatment and Results of Carbon, High Speed and Other Alloy Tool and Tool Steels for Tools, J. H. De Arment (Penn.), chairman; A Modern Hammer and Hydraulic Forge Shop, R. F. Scott (P. & R.), chairman. The officers of the association are: President, W. C. Scofield (I. C.), chairman executive committee, W. J. Mayer (M. C.); first vice-president, J. Carruthers (D. M. & N.); second vice-president, G. P. White (M. K. & T.); secretary, A. L. Woodworth (B. & O.); assistant secretary, C. W. Schafer (C. of Ga.).

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF MAY, 1919

Name of road.	Average mileage operated during period.	Operating revenues			Maintenance of		Operating expenses				Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
		Freight.	Passenger.	Total (inc. misc.)	Way and structures.	Equipment.	Traffic.	Transportation.	General.	Total.					
Fort Worth & Rio Grande	235	$65,592	$43,726	$117,529	$23,755	$17,553	$1,763	$58,061	$6,328	$107,462	91.43	$10,068	$2,983	$7,084	$11,045
Galveston, Harrisburg & San Ant.	138	1,189,643	448,738	1,724,307	239,551	366,753	17,399	662,387	56,163	1,356,978	78.69	367,329	55,641	311,469	—138,295
Galveston Wharf	13	.....	.....	62,184	36,547	—124	24	23,300	1,876	69,922	112.44	—7,738	12,300	—20,038	—45,418
Georgia R. R.	328	325,850	104,672	463,403	50,573	82,834	6,820	243,606	15,487	399,489	86.21	63,914	5,950	57,927	—80,613
Georgia, Southern & Fla.	402	224,208	74,238	325,235	76,702	94,019	6,194	156,740	12,786	347,043	106.70	—21,808	13,550	—35,275	—77,608
Georgia & Florida	348	45,794	16,845	67,034	33,969	23,921	1,755	55,305	5,716	120,966	180.45	—53,932	4,200	—58,180	—36,964
Grand Trunk Western	1,001	1,438,849	308,075	1,884,693	221,081	354,642	21,122	754,858	48,998	1,403,511	74.46	481,182	51,396	429,763	338,819
Grand Rapids & Indiana	569	441,687	140,875	638,728	110,260	142,485	10,851	310,065	20,858	595,778	93.27	42,950	25,951	16,986	—49,180
Great Northern	8,252	6,300,636	1,410,054	8,474,020	2,288,449	1,234,280	63,247	3,379,708	144,798	7,209,073	85.07	1,264,947	552,837	711,276	438,609
Gulf & Ship Island	307	141,441	45,319	204,974	63,772	46,811	4,106	85,061	9,704	209,913	102.41	—4,939	11,558	—16,529	—75,762
Gulf, Colorado & Santa Fe	1,937	1,055,519	407,723	1,548,262	389,514	337,198	17,620	719,598	58,731	1,521,825	98.29	26,437	71,168	—44,994	—279,049
Grand Trunk Lines in New England	172	154,546	30,345	236,617	128,533	37,280	2,872	193,757	11,123	401,402	169.64	—164,784	11,509	—176,284	—136,558
Gulf, Mobile & Northern	424	197,438	43,833	251,791	59,629	53,361	5,299	100,621	8,854	227,764	90.45	24,028	11,642	12,200	—47,381
Hocking Valley	350	955,142	91,171	1,122,764	90,216	305,988	5,544	365,020	21,119	787,795	70.17	334,969	57,067	277,902	4,438
Houston & Texas Central	847	495,023	216,804	750,930	128,146	151,715	6,698	331,291	20,219	637,577	84.90	113,353	36,197	77,086	—89,379
Houston, East & West Texas	190	142,372	40,449	191,842	40,693	22,512	897	94,779	4,074	162,956	84.91	28,886	6,609	22,203	—15,866
Illinois Central	4,787	6,491,316	1,909,414	9,001,861	1,464,619	2,130,039	70 534	3,533,341	206,768	7,438,492	82.63	1,563,369	371,003	1,191,404	—44,399
Indiana Harbor Belt	116	.....	.....	496,169	82,931	101,908	1,634	352,711	19,072	558,256	112.51	—62,086	9,954	—72,041	—78,952
International & Great Northern	1,159	934,061	243,520	1,245,946	275,662	301,330	14,858	611,500	42,533	1,252,212	100.50	—6,266	30,000	—36,531	—219,417
Kanawha & Michigan	176	384,234	54,110	449,836	60,369	130,441	1,956	143,590	12,158	348,514	77.47	101,322	17,885	83,433	—106,068
Kansas City, Mex. & Orient	272	94,290	16,353	115,634	49,483	34,166	1,278	62,966	7,181	155,014	134.05	—39,380	6,269	—45,649	—11,089
Kansas City, Mexico & Orient of Texas.	465	66,824	12,754	84,710	34,844	28,121	1,666	55,746	7,728	128,040	151.15	—43,330	5,000	—48,330	—32,368
Kansas City Southern	774	960,968	171,851	1,238,016	208,157	269,555	18,479	493,485	42,820	1,030,932	83.27	207,084	61,250	145,612	—225,622
Kansas City Terminal	27	.....	.....	106,678	18,001	24,374	.....	50,467	1,446	95,319	89.35	11,358	20,500	—8,838	—32,197
Lake Erie & Western	902	635,120	72,726	742,298	137,958	263,947	12,582	338,810	23,754	777,017	104.67	—34,719	28,500	—63,286	—176,949
Lake Superior & Ishpeming R. R.	54	101,078	173	111,768	24,355	17,308	191	18,456	2,674	62,984	56.35	48,784	5,183	43,601	—19,883
Lehigh & Hudson River	96	200,709	3,652	212,545	27,582	39,065	1,559	87,366	5,026	160,629	75.57	51,916	5,400	46,516	11,425
Lehigh & New England	234	233,850	1,496	345,415	46,414	58,405	3,222	115,675	9,555	233,271	67.53	112,144	8,610	163,534	—7,553
Lehigh Valley	1,435	4,142,357	613,211	5,291,552	852,685	1,330,974	39,218	2,595,444	113,611	4,950,356	76.74	341,196	146,725	194,328	—1,210,148
Long Island R. R.	398	514,329	1,628,229	2,328,055	274,555	361,520	12,229	996,255	48,151	1,705,768	73.27	622,287	85,804	536,345	—156,861
Los Angeles & Salt Lake	1,168	994,087	517,572	1,395,316	271,326	345,906	22,845	492,621	30,286	1,200,548	86.04	194,768	67,235	127,237	—110,692
Louisiana Ry. & Navigation	349	209,114	32,324	267,456	96,483	48,439	3,780	114,064	8,342	271,108	101.36	—3,652	14,000	—17,668	—52,510
Louisiana & Arkansas	302	142,479	33,753	181,365	32,498	61,905	1,154	77,597	6,268	182,162	100.43	—797	11,204	—12,002	—33,841
Louisiana Western	207	260,479	104,220	381,793	74,525	66,826	4,355	122,090	10,432	280,225	73.39	101,568	9,069	92,479	—78,399
Louisville & Nashville	5,613	6,014,630	1,963,441	8,411,506	1,365,613	2,199,515	115,637	3,581,875	180,282	7,369,972	88.31	941,533	260,771	679,754	—810,712
Louisville, Henderson & St. L.	199	200,800	68,541	279,689	44,295	42,136	4,276	118,606	7,342	216,650	77.46	63,039	4,000	58,987	6,437
Maine Central	1,216	835,627	381,182	1,304,251	293,055	260,623	11,119	698,805	34,274	1,299,087	99.60	5,164	75,623	—70,467	—250,060
Maryland, Delaware & Va.	82	71,169	28,949	102,870	13,216	22,303	782	76,921	2,101	115,323	112.11	—12,453	1,733	—14,186	17,424
Michigan Central	1,861	3,946,168	1,697,921	6,166,490	853,697	1,148,306	67,346	2,615,110	111,856	4,862,968	78.86	1,303,522	150,000	1,152,872	—307,473
Midland Valley	388	226,682	79,310	314,634	70,658	47,966	2,326	109,498	11,378	241,795	76.84	72,831	6,876	66,037	—23,739
Mineral Range	101	19,660	350	52,468	14,186	26,642	502	35,313	983	77,693	148.07	—25,224	3,300	—28 524	—31,636
Minneapolis & St. Louis	1,646	790,472	206,719	1,050,360	162,828	266,522	11,460	495,553	29,605	966,568	92.03	83,792	50,301	33,249	76,294
Minn., St. Paul & Sault Ste. Marie	4,243	2,528,172	574,061	3,313,120	661,659	697,302	28,291	1,388,644	72,240	2,870,647	86.64	442,473	186,418	255,779	609,021
Minnesota & International	194	68,985	20,986	95,099	33,986	17,250	474	49,826	3,442	104,977	110.38	—9,878	5,890	—15,778	—14,738
Mississippi Central	164	56,639	29,011	88,553	25,777	31,666	1,013	35,275	5,607	99,337	112.17	—10,784	3,325	—14,109	21,106
Missouri & North Arkansas	305	70,155	32,113	109,489	55,503	34,943	1,990	60,529	11,331	164,298	150.05	—54,809	6,242	—61,310	—49,899
Missouri, Kansas & Texas R. R.	1,713	1,942,721	612,302	2,702,458	411,163	909,523	29,005	936,648	76,095	2,376,286	87.97	332,171	89,512	242,240	144,717
Missouri, Oklahoma & Gulf	332	81,482	16,891	104,053	54,332	57,756	1,894	68,860	7,243	190,346	182.91	—86,283	8 510	—94,857	48,634
Missouri Pacific	7,100	5,077,729	1,629,740	7,194,940	1,406,258	1,625,704	87,282	2,943,137	201,932	6,310,478	87.70	884,463	266 393	614,459	—480,173
Missouri, Kansas & Texas Ry. of Texas.	1,796	1,338,518	598,291	2,018,971	480,464	377,875	30,764	1,019,877	76,548	2,003,858	99.25	78,113	47,828	29,779	31,888
Montour R. R.	54	119,924	1,299	123,947	41,644	63,176	1,277	26,974	6,965	140 037	112.98	—16,090	2,286	—18,376	—23,094
Mobile & Ohio	907	1,004,963	172,848	1,241,280	231,288	382,314	22,847	604,196	40,663	1,281,222	103.22	—39,942	55,174	—95,136	—232,155
Monongahela Ry.	108	253,461	20,418	276,451	83,721	41,645	530	85,116	7,527	218,538	79.05	57,913	5,000	52,913	—81,805
Monongahela Connecting	6	.....	.....	73,051	11,663	34,058	511	38,117	7 866	92,214	126.23	—19,162	2,566	—21,928	—67,760
Morgan's Louisiana & Texas R. R.	400	444,640	166,798	654,506	110,048	124,420	8,256	275,104	20,750	540,495	82.58	114,011	31,034	82,871	—114,195
Nashville, Chatt. & St. L.	1,247	1,063,719	419,918	1,584,851	229,513	490,845	33,789	691,170	42,529	1,494,842	94.32	90,009	50,000	39,106	—239,754
Nevada Northern	168	125,446	8,941	139,562	23,470	24,028	775	35,365	4,109	87.850	62.94	51,712	18,323	33,388	—38,834
New Orleans & N. E.	399	353,264	130,822	545,555	85.866	143,445	7,351	234,303	16,387	491,315	90.06	54,239	28,357	25,648	—110,451
New Orleans Great Northern	284	113,665	42,258	164,011	41,563	47,688	2,076	77,244	8,126	176,941	107.88	—12,930	9,000	—22,024	—81,435
New Orleans, Texas & Mex.	191	145,407	33,851	185,421	45,723	32,122	3,564	60,444	5,186	148,967	80.33	36,451	10,000	26,443	—14,322
New York Central	6,075	14,777,299	6,277,502	24,005,604	3,595,646	5,146,005	248,086	16,403,045	631,347	20,433,037	85.11	3,572,567	1,140,370	2,430,994	—1,899,486
New York, Chicago & St. L.	574	1,715,367	200,726	1,962,284	250,072	337,093	28,086	876,379	51,495	1,546,995	78.83	415,289	55,000	360,285	—62,454
New York, N. H. & Hart.	1,965	3,950,641	3,571,437	8,507,620	1,371,108	1,654,286	41,451	3,977,834	249,460	7,436,679	87.41	1,070,942	268.000	800,854	919,942
New York, Ont. & Western	569	617,336	178,933	950,005	131,557	183,909	8,079	398,709	21,741	743,996	78.31	206.010	27,000	179,010	133,620
New York, Phila. & Norfolk	121	471,500	98,329	607,544	55,025	164,244	7,269	350,154	11,328	585,114	96.31	22,430	17,100	5,329	—180,356
New York, Susq. & Western	135	227,156	53,831	335,664	9,215	50,114	3,096	200,010	8,490	270,878	80.69	64.785	37,111	27 635	—59 357
Newburgh & South Shore	7	.....	.....	151,318	21,256	29,908	.....	65,264	3,761	120,130	79.37	31,218	8,388	22,831	—11,270
Norfolk Southern	907	336,010	137,935	501,723	90,004	86,810	5,155	270,704	22,027	479,649	95.48	22,674	20,000	2,654	—25,672
Norfolk & Western	2,688	4,789,216	837,097	5,925,050	953,249	1,702,527	35,798	2,193,347	113,579	5,008,988	84.53	916,062	260,000	655,862	—1,102,813
Northern Alabama	112	58,090	13,408	73,566	5,426	8,329	1,545	51,436	2,671	68,804	93.52	4,762	3,400	1,362	—34,467

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF MAY, 1919—CONTINUED

Name of road.	Average mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
Northern Pacific	6,567	$5,551,963	$1,457,973	$7,574,797	$2,025,868	$1,565,558	$58,229	$2,916,539	$185,399	$6,825,324	90.11	$749,473	$599,987	$147,388	—$1,214,358
Northwestern Pacific	507	269,344	215,338	545,247	93,704	69,084	4,386	208,750	12,473	388,922	71.32	156,325	22,090	134,413	—31,579
Oregon Short Line	2,347	2,174,567	559,837	2,926,556	606,546	459,527	17,092	836,081	85,051	2,063,351	70.50	863,205	177,961	685,131	—327,873
Oregon-Wash. R. R. & Nav.	2,670	1,494,457	530,307	2,172,879	472,609	326,652	27,121	829,884	98,788	1,770,214	81.46	402,666	113,614	288,404	—308,593
Panhandle & Santa Fe	772	330,317	88,958	438,965	97,444	176,349	2,977	212,675	13,937	503,145	114.62	—64,179	15,604	—79,841	—160,702
Pennsylvania R. R Western Lines	1,754	6,422,680	1,874,595	8,887,423	1,307,756	2,259,126	80,792	3,587,850	183,689	7,482,176	84.19	1,405,247	309,202	1,095,893	—186,734
Pennsylvania R. R. East	5,361	20,204,206	8,432,415	31,043,388	4,424,508	9,064,320	224,415	12,937,338	729,402	27,951,757	90.03	3,091,631	910,791	2,179,994	—3,838,916
Perkiomen	41	80,106	8,319	91,391	7,527	8,120	13	46,169	286	62,138	67.99	29,254	1,800	27,454	10,335
Pittsburgh & W. Va.	63	79,707	9,691	107,987	74,916	37,896	1,104	48,889	5,069	177,203	164.10	—69,216	11,426	—80,642	—79,921
Pere Marquette	2,232	2,137,003	460,039	2,811,977	400,358	570,487	29,310	1,090,245	79,691	2,177,786	77.44	634,191	50,394	583,781	—115,667
Phila. & Reading	1,126	4,736,466	943,054	6,003,319	632,459	1,669,474	38,396	2,728,344	129,995	5,215,956	86.88	787,362	143,228	643,987	—1,243,426
Pitts. & Lake Erie	224	1,371,898	203,883	1,936,664	504,485	709,335	12,704	760,143	44,866	2,032,568	104.95	—97,904	75,500	—173,632	—1,155,321
Peoria & Pekin Union	19	36,588	3,888	105,701	19,584	51,622	881	64,139	4,999	141,224	133.61	—35,523	9,500	—45,023	—43,034
Phila., Bethlehem & N. England	71	.....	.....	57,114	6,189	19,436	346	36,823	922	63,708	111.54	—6,595	1,050	—7,645	—19,092
Pitts. & Shawmut	103	95,594	4,013	103,704	37,870	36,025	2,240	34,779	3,304	115,890	111.75	—12,186	970	—13,156	—17,017
Pitts., Cin., Chicago & St. Louis	2,383	4,620,889	1,842,886	7,135,402	1,003,342	2,311,024	92,453	3,465,458	173,676	7,119,365	99.77	16,037	246,021	—230,151	1,381,834
Pitts., Shawmut & Northern	204	67,754	5,354	76,470	25,930	54,542	929	33,295	10,522	125,220	163.75	—48,750	1,831	—50,581	—14,610
Port Reading	21	154,675	.....	232,284	14,476	9,749	18	87,029	363	111,633	48.05	120,651	9,000	111,651	53,748
Rich., Fred. & Pot.	81	364,963	245,683	676,805	42,162	85,913	4,188	192,645	13,164	348,719	51.52	328,086	11,810	316,257	28,692
Quincy, Omaha & Kansas City	255	50,145	25,526	81,912	37,239	8,785	367	41,496	1,186	88,928	108.56	—7,016	3,003	—10,019	—567
Rutland R. R.	415	233,987	97,193	406,007	78,281	97,202	5,480	189,793	11,038	382,999	94.33	23,007	19,204	3,803	—54,392
St. Joseph & Grand Island	258	152,191	36,368	200,955	44,452	29,711	1,787	113,298	11,853	201,101	100.07	—146	8,811	—8,957	—21,997
St. Louis, Brownsville & Mex.	548	2,980,680	1,274,089	451,038	80,070	82,188	5,194	123,986	13,224	304,661	67.53	146,377	10,000	136,247	63,521
St. Louis, Merchants Bridge Terminal	9	.....	443	225,921	64,199	35,204	745	157,046	5,428	262,622	116.24	—36,702	8,000	—44,702	—78,859
St. Louis-San Francisco	4,761	3,916,024	1,619,259	5,850,156	652,628	1,156,263	48,891	2,524,160	185,840	4,561,384	77.97	1,288,771	239,567	1,047,748	—20,654
St. Louis, San Francisco & Texas	134	81,710	12,852	100,933	20,933	14,331	2,145	62,764	5,374	105,292	104.31	—4,359	1,629	—5,987	—7,144
St. L. Southwestern	939	873,003	154,623	1,074,574	112,834	228,150	16,261	322,321	36,103	719,414	66.94	355,160	51,428	303,329	8,114
St. Louis Southwestern Ry. of Texas	814	368,781	104,520	504,228	114,138	166,284	8,457	266,705	22,354	577,780	114.58	—73,053	21,000	—94,087	—52,862
San Anto. & Aransas Pass	732	229,743	84,746	335,135	91,968	104,544	5,980	224,525	16,798	443,803	132.43	—108,668	15,000	—122,991	—46,244
Seaboard Air Lines	3,563	2,037,216	1,011,654	3,326,504	474,229	745,225	57,596	1,858,943	112,626	3,269,144	98.27	57,310	135,000	—78,019	—697,671
St. Louis Transfer	6	.....	.....	77,554	20,012	8,339	193	34,706	2,020	65,270	84.16	12,284	100	12,184	—9,984
South Buffalo	11	26,255	.....	52,399	2,289	14,699	346	40,596	1,426	59,355	113.27	—6,956	2,550	9,506	—91,260
Southern Pac. Steamship Lines	.....	663,937	56,226	764,829	6,967	140,143	11,707	601,111	35,604	795,532	104.01	—30,703	10,841	—41,545	—149,388
Southern Ry.	6,982	6,322,448	2,862,487	9,968,538	2,102,493	2,022,075	143,175	4,382,651	285,039	9,005,100	90.33	963,438	322,319	636,432	—2,501,127
Southern Ry. in Mississippi	278	89,979	41,254	140,486	26,934	8,414	2,830	78,419	4,071	120,668	85.89	19,818	9,000	10,818	7,289
Southern Pacific	7,049	8,781,097	3,384,241	13,114,867	2,468,745	2,582,269	111,869	4,951,448	279,189	10,688,933	81.51	2,425,934	596,656	1,825,711	—1,067,958
Spokane International Ry.	156	71,482	15,934	89,540	18,720	6,651	1,664	28,823	4,335	59,670	66.64	29,870	4,012	25,858	—12,225
Spokane, Portland & Seattle	554	375,229	126,350	541,022	92,847	85,620	5,379	213,515	19,820	419,677	77.57	121,345	59,200	62,069	—194,989
Staten Island Rapid Transit	23	91,337	85,502	202,501	36,651	29,515	834	103,825	8,704	179,529	88.65	22,972	9,000	13,972	—31,945
Tennessee Central	292	128,088	39,791	178,737	53,679	34,807	2,705	117,165	6,644	214,014	119.73	—35,276	5,135	—40,429	—108,023
Terminal R. R. Assn. of St. L.	36	.....	3,412	305,888	85,506	52,014	747	127,940	5,412	274,564	89.75	31,324	28,250	3,074	—78,908
Texarkana & Ft. Smith	87	78,819	15,144	103,681	17,636	10,494	3,178	50,387	3,158	84,729	81.72	18,952	6,458	12,486	25,735
Texas & New Orleans	469	444,999	155,936	661,365	128,520	182,715	4,492	243,884	14,620	607,599	91.87	53,765	23,436	31,242	—146,210
Texas & Pacific	1,946	2,142,398	751,071	3,037,133	340,969	574,351	21,629	1,242,416	68,203	2,270,053	74.74	767,080	84,971	681,281	186,999
Toledo & Ohio Central	435	716,514	62,081	817,142	153,187	214,924	5,628	347,551	16,278	740,314	90.59	76,828	31,055	45,772	—95,296
Toledo, Peoria & Western	247	56,492	50,630	114,829	26,441	25,910	2,107	70,377	5,377	130,207	113.39	—15,377	8,500	—23,877	—13,862
Toledo, St. L. & Western	454	528,382	37,857	596,806	114,299	111,136	4,877	280,187	11,886	521,726	87.41	75,080	26,000	49,080	—190,446
Trinity & Brazos Valley	368	74,537	17,277	96,245	31,152	41,204	2,175	62,159	7,441	144,130	149.75	—47,884	5,715	—53,598	—21,472
Ulster & Delaware	128	66,645	5,333	89,645	15,899	17,357	297	322,176	8,421	603,859	85.51	102,247	6,429	95,818	2,882
Union R. R.	35	.....	.....	706,105	85,440	187,525	1,179	63,576	3,145	101,621	113.35	—11,976	4,800	—16,776	—20,983
Union Pacific	3,614	5,989,845	1,874,252	8,422,271	1,372,884	1,532,172	58,584	2,331,569	225,835	5,702,911	67.71	2,719,361	275,322	2,443,372	—456,254
Utah Ry.	98	22,561	637	73,778	10,410	14,779	170	15,885	2,031	43,275	58.65	30,503	4,088	26,415	—20,923
Vicksburg, Shreveport & Pacific	171	146,929	73,174	235,370	45,266	61,657	2,484	102,610	7,850	222,377	94.47	12,993	9,242	3,738	—42,478
Virginian Ry.	523	885,993	52,669	1,051,220	138,199	198,362	5,110	318,641	17,145	679,912	64.67	371,308	35,700	335,608	30,495
Wabash	2,519	3,103,336	887,161	4,272,004	637,546	720,163	51,214	2,092,664	123,084	3,652,001	85.48	620,002	108,887	511,158	—154,213
Washington Southern	35	130,010	193,831	396,570	30,890	46,295	2,756	107,250	6,841	198,737	50.11	197,833	6,520	191,304	38,645
Western Ry. of Alabama	133	124,909	99,511	237,804	29,965	37,763	2,749	80,996	6,451	161,482	67.91	76,323	7,500	68,823	5,473
West Jersey & Seashore	361	270,709	541,033	870,298	193,892	157,078	7,475	447,128	21,900	832,768	85.68	37,530	49,888	—12,401	—113,162
Wheeling & Lake Erie	511	1,112,447	51,593	1,270,654	217,961	213,171	5,623	483,131	23,218	946,406	74.48	324,428	54,100	269,975	—2,141
Wichita Falls & N. W.	328	118,059	34,603	163,654	41,998	19,766	828	78,950	6,585	148,126	90.51	15,528	9,256	6,272	40,915
Western Md.	707	1,095,656	85,204	1,259,341	293,319	358,386	17,290	423,748	42,713	1,147,632	91.12	111,708	43,200	68,508	—117,733
Western Pac.	1,011	844,414	150,449	1,030,598	259,013	180,733	15,802	310,219	22,670	808,670	78.47	222,358	48,231	174,100	—58,591
Yazoo & Miss.	1,381	1,479,589	391,926	1,961,897	309,431	368,318	16,919	736,677	45,250	1,477,151	75.29	484,746	—2,764	487,484	166,545

REVENUES AND EXPENSES OF RAILWAYS

FIVE MONTHS OF CALENDAR YEAR 1919

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses					Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
					Maintenance of									
		Freight.	Passenger.	Total (inc. misc.)	Way and structures.	Equipment.	Traffic.	Transportation.	General.	Total.					
Alabama & Vicksburg	141	$741.533	$294,360	$1,104,582	$187,422	$289,107	$8,774	$482,610	$42,151	$1,017,411	92.10	$87,170	$53,871	$33,208	—$161,045
Alabama Great Southern	312	2,979,520	871,860	4,075,880	499,340	1,138,985	66,031	1,704,289	88,600	3,515,051	86.24	560,829	122,891	437,689	—383,404
Ann Arbor	301	1,250,610	262,279	1,598,714	325,808	276,035	24,693	756,729	58,173	1,441,633	90.17	157,081	76,300	80,520	55,437
Arizona Eastern	377	1,219,917	230,830	1,561,281	423,635	250,341	9,093	515,631	30,034	1,248,784	79.98	312,497	81,410	230,976	—454,999
Atchison, Topeka & Santa Fe	8,635	44,624,389	16,975,488	64,737,466	9,780,402	15,554,346	685,633	24,429,753	1,299,696	51,593,801	79.69	13,143,665	2,692,438	10,435,945	—6,349,822
Atlanta & West Point	93	562,094	465,189	1,135,118	133,439	207,313	14,384	417,370	31,136	812,649	71.59	322,468	42,500	279,933	16,636
Atlanta, Birmingham & Atlantic	639	1,530,471	349,745	2,001,199	595,961	683,427	33,562	1,212,930	62,620	2,588,950	129.37	—586,760	80,000	—667,700	—624,778
Atlantic City	177	711,903	726,043	1,530,937	226,879	217,824	5,791	806,679	4,518	1,262,154	82.44	268,783	60,000	208,783	139,463
Atlantic Coast Line	4,846	17,722,618	8,529,507	27,955,311	3,924,380	5,780,499	293,630	12,107,816	557,616	22,825,599	81.65	5,129,713	1,030,000	4,092,153	—1,967,418
Baltimore & Ohio Chicago Terminal	91	.....	—18	621,190	173,153	225,492	5,291	624,462	51,109	1,102,404	177.46	—481,214	143,380	—624,628	—175,269
Baltimore & Ohio	5,151	46,649,979	12,750,380	64,526,635	10,764,941	22,374,229	771,544	31,563,103	1,966,690	67,946,218	105.29	—3,419,583	1,832,204	—5,258,344	—4,128,299
Baltimore, Chesapeake & Atlantic	87	346,033	152,860	516,785	60,475	105,543	4,755	339,348	17,359	527,481	102.06	—10,696	15,800	—26,496	—3,245
Bangor & Aroostook	632	1,769,296	368,550	2,238,329	436,999	553,283	19,449	901,618	65,818	2,003,169	89.49	235,160	105,000	129,820	—173,953
Beaumont, Sour Lake & Western	118	386,212	113,261	523,470	129,810	96,806	8,657	231,500	25,312	492,085	94.00	31,385	13,500	17,828	—250,992
Belt Ry. Co. of Chicago	311	.....	.....	1,268,808	115,944	259,760	1,786	884,702	39,397	1,301,589	102.58	—32,781	78,218	—110,999	—164,333
Bessemer & Lake Erie	217	4,018,252	166,312	4,319,664	436,536	1,551,640	52,739	1,592,366	98,560	3,691,162	85.45	628,502	72,500	555,916	221,852
Bingham & Garfield	37	473,938	11,599	508,500	168,072	197,257	6,968	150,115	22,501	552,751	108.70	—44,251	—34,830	—79,081	—643,372
Birmingham Southern	29	192,158	.....	266,091	18,611	34,865	3,414	116,268	15,991	189,149	71.08	76,942	13,174	63,769	38,629
Boston & Maine	2,258	14,987,296	8,097,460	25,925,473	3,614,568	5,549,649	188,418	15,261,237	864,153	25,642,046	98.91	283,427	869,466	—586,336	—1,464,401
Buffalo & Susquehanna R. R. Corp.	296	760,465	35,976	828,251	194,244	409,315	8,845	305,509	37,759	956,672	115.51	—127,420	16,250	—143,670	—214,930
Buffalo, Rochester & Pittsburgh	589	4,637,461	605,950	5,437,515	881,889	1,981,085	72,870	2,815,438	166,724	5,927,672	109.01	—490,157	135,000	—625,599	—891,575
Canadian Pacific Lines in Maine	233	1,072,542	298,689	1,435,196	192,523	342,157	15,067	958,539	18,645	1,524,930	106.25	—89,734	55,000	—144,734	19,105
Carolina, Clinchfield & Ohio	282	2,086,052	150,569	2,277,127	413,912	628,697	22,736	735,627	65,166	1,865,786	81.93	411,340	81,500	329,828	—127,323
Central New England	301	2,329,809	119,447	2,574,376	595,860	533,555	12,845	1,288,155	75,454	2,511,270	97.54	63,106	80,000	—17,075	—342,489
Central of Georgia	1,918	5,087,546	2,418,164	8,374,459	1,648,293	1,839,930	166,713	3,695,120	292,219	7,634,541	91.16	739,917	282,437	455,498	—1,675,565
Central R. R. of New Jersey	685	12,301,127	2,981,135	16,641,812	2,100,034	4,618,994	107,303	8,315,817	414,249	15,639,083	93.97	1,002,729	787,323	215,251	—1,443,411
Central Vermont	411	1,183,062	317,025	1,645,304	214 850	460,580	24,110	1,111,544	72,056	1,884,392	114.53	—239,089	69,600	—308,808	—152,527
Charleston & Western Carolina	342	970,454	275,886	1,298,391	222,335	235,139	19,619	598,950	31,929	1,107,971	85.33	190,419	42,500	147,919	—99,433
Chesapeake & Ohio	2,498	20,612,912	5,898,616	28,066,218	4,363,956	6,353,570	182,930	11,028,787	564.596	22,657,705	80.72	5,408,513	854,841	4,550,600	—746,267
Chicago & Alton	1,050	1,918,170	2,406,121	9,892,886	1,639,560	2,690,866	130,564	4,396,228	245,155	9,152,964	92.52	739,923	283,057	456,023	—267,135
Chicago & Eastern Illinois	1,131	6,922,604	1,890,893	9,507,014	1,508.971	3,729,586	114.102	4,386,440	238,919	10,007,178	105.26	—500,164	397,592	—899,563	—1,339,621
Chicago & Erie	269	3,369,418	447,126	4,144,043	422,704	763,899	54,188	2,193,175	141.803	3,590,755	86.64	553,288	156,252	396,962	634,034
Chicago & North Western	8,090	33,129,171	12,694,636	50,069,947	7,660,290	11,293 508	257,947	24,738,274	1,216,155	45,685,505	91.24	4,384,442	2,375,000	2,005,562	—436,840
Chicago, Burlington & Quincy	9,372	39,568,545	12,530,833	56,265,550	8,697,034	11.218,701	439,156	23,068,836	1,573,372	45,589,883	81.02	10,675,666	2,198.323	8,458,842	—821,258
Chicago Great Western	1,496	5.174,568	2,267,451	8,026,633	1,401,983	2,018 758	131,358	3,768,684	222,332	7,606.725	94.76	419,908	288.040	131,173	—554,660
Chicago, Indianapolis & Louisville	657	3,057,413	1,071,000	4,522,882	536,216	1,095,733	64,817	1,941,612	127.222	3,808,703	84.21	714.179	170,992	542,961	243,113
Chicago Junction	12	.....	.....	1.378,651	389,251	251,160	497	1,137,178	38,452	1,816,538	131.77	—437,887	12,102	—449,989	—402,958
Chicago, Milwaukee & St. Paul	10,647	40.094,761	11,257,355	56,209,942	7,366,920	16,717,251	449.837	27,256,396	1,541,935	53,513,984	95.21	2,695,959	2,660,858	22,120	—1,227,693
Chicago, Peoria & St. Louis	247	478,401	117,897	636,852	191,494	315.013	13,387	395,709	46,192	961,790	151.02	—324,938	36,966	—361,918	—292,406
Chicago, Rock Island & Gulf	474	1,332,997	397,446	1.829,342	334,355	370,646	35,048	859,783	58.235	1.660.108	90.74	169,234	65,774	103,170	—437,616
Chicago, Rock Island & Pacific	7.592	26,744,373	11,135,047	40,295,542	7,094,764	10,048,789	484,117	18,477,044	1,010,663	37,286,895	92.53	3,008,648	1,741,533	1,264,324	—3,709,365
Chicago, St. Paul, Minn. & Omaha	1,749	6,836,082	2,779,109	10,354,732	1,271,656	1,959,613	101,513	5,068.759	294,860	8,773,605	84.73	1,581,127	514,927	1,064,327	202,279
Chicago, Terre Haute & Southeastern	374	1,413,872	106,550	1,555,467	260,502	744,026	17,393	606,128	42,599	1,679,070	107.94	—124,603	72,500	—196,120	—189,299
Cincinnati, Ind. & Western	321	773,327	247,236	1,132,959	231,353	345,328	22,669	640,983	63,858	1,306.557	115.32	—173.599	51,216	—224,814	—338,968
Cin., Lebanon & Northern	76	293,965	31,805	394,930	79,678	89,864	6,511	246,730	4,213	426,995	108.11	—32,065	21,443	—53.508	3,403
Cincinnati, New Orleans & Texas Pacific	337	5,066,313	1,514,941	6,922,737	809.964	2,216,193	112,544	2,474,365	164,235	5,820,116	84.07	1,102,621	195,715	903,315	—77,312
Cincinnati Northern	251	1.052,084	84,010	1,163,731	205,812	270,147	11,494	400,914	24.388	912.754	78.43	250,977	41.500	209,325	135.345
Cleveland, Cincinnati, Chic. & St. Louis	2,395	18.041,019	6,181,639	26,264,270	3,726,466	5,523,846	377,123	10,937,988	541,636	21,306,247	81.12	4,958,023	925,000	4,028,860	—692,890
Colorado & Southern	1,100	4,069,460	833,648	5,171,407	728,559	1,219,679	41,821	1,994,116	182,808	4,196,432	81.14	974,975	235,000	737,700	—443,911
Colorado & Wyoming	41	122,194	6,112	473,523	45,988	89,311	455	219,231	19,309	374,294	79.04	99,228	30,000	79,228	—29,919
Cumberland Valley	163	1,714,382	322,505	2,182,354	454,100	504,913	33,134	931,453	56,175	1,983,909	90.91	198,445	46,533	151,660	—465,019
Delaware & Hudson	875	11,227.037	1,083,829	13,063,947	1,817,896	3.871.555	90,471	6,169,268	538,010	12,651,716	96.84	412,231	300,000	106,238	1,312,044
Delaware, Lackawanna & Western	955	20,359,284	4,616,192	27,931,940	2,494,115	5.910,576	196,874	12,527,281	556,502	21,965.380	78.63	5,966,560	1,538,868	4,424,629	—882,057
Denver & Rio Grande	2,622	8,744,928	2,138,642	11,529,156	1,715,103	3,333.784	92,453	4,176,484	339,313	9,833.628	85.29	1,695,527	500,000	1,193,410	—1,204,433
Denver & Salt Lake	255	744,716	121,086	898,580	313.694	444.784	4,670	600,697	25,146	1,388,990	154.57	—490,410	45,000	—535,448	—203,235
Detroit & Mackinac	381	407.276	145 023	583.464	103,328	187,821	20,444	325,117	72,104	708,815	121.48	—125,351	33,762	—159,113	—172,995
Detroit & Toledo Shore Line	61	887,740	.....	910,836	71.949	71.004	2,765	257,639	13,111	415,880	45 65	494,956	52,996	441,953	87,420
Detroit, Toledo & Ironton	457	1,290,067	57.010	1.446.986	415,843	539,414	13,780	735,678	64.669	1,769,385	122.28	—322,399	42 932	—365,525	—32,693
Duluth & Iron Range	292	1,794,364	112,863	2.052,671	329,927	414,548	2.353	754,249	70.062	1,571.129	76.53	481,542	104.103	377,007	363,199
Duluth, Missabe & Northern	410	4,674,368	209,214	5,090.222	639,447	651,667	11,039	1,152,711	84,426	2,545.959	50.01	2 544,264	261,548	2.282,615	1,888,441
Duluth, South Shore & Atlantic	599	1,193,158	424,459	1,719 330	325.699	336,045	30,710	945,529	48,520	1,708,049	99.34	11,281	95,003	—83.757	—38,996
Duluth, Winnipeg & Pacific	178	685,432	120,013	835.128	124.532	162,174	11,473	385,320	40.958	730,090	87.42	105.038	43,341	61.695	17,881
East St. Louis Connecting	3	.....	.....	462,505	66,927	154,894	1,457	301,856	16,633	541,758	117.13	—79,253	13,111	—92,364	38,178
Elgin, Joliet & Eastern	826	7,543,512	37	8,791.618	762,746	2,143,729	32,381	3,322,093	128,202	6,388,713	72.66	2,402,905	264,647	2,138,258	1,065,288
El Paso & S. W	1.027	4,100.658	869,537	5,233,846	632,131	987,315	47,508	1,439,829	125.641	3,267,145	62.42	1.966 761	284,354	1,681,952	—845,149
Erie R. R	1,989	25,996,652	5,099,174	34,300,425	3,922,434	12,140,236	303,688	18,128,114	1,016,950	35,707,747	104 10	—1,407,323	1,242,672	—2,657,998	—352,414
Florida East Coast	764	2,548 099	1,602,089	4,656.586	760,474	831,913	41,137	2,187.513	92,558	3,969,443	85 24	687,143	180,269	506,613	—1,353,798
Fonda, Johnstown & Gloversville	88	143.068	310,999	471,488	48,713	44,677	2,655	189,279	24,139	309,464	65.63	162,025	24,500	137,525	—8,291
Fort Smith & Western	253	432,924	120,199	594,450	118,055	146,466	18,173	225,879	31,013	541,321	91.06	53,129	25,000	27,475	—6,063
Fort Worth & Denver City	454	2,858,963	1,105,137	4,146,492	463,148	823,006	23,968	1,556,989	125,232	3,005,117	72.47	1,141,376	96,250	1,044,367	359,743

REVENUES AND EXPENSES OF RAILWAYS

FIVE MONTHS OF CALENDAR YEAR 1919—CONTINUED

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses						Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
					Maintenance of										
		Freight.	Passenger.	Total (inc. misc.)	Way and structures.	Equipment.	Traffic.	Transportation.	General.	Total.					
Fort Worth & Rio Grande	235	$279,925	$223,567	$541,183	$148,209	$123,639	$4,194	$335,931	$33,081	$645,055	119.19	—$103,872	$15,503	—$119,698	—$141,762
Galveston, Harrisburgh & San Ant.	1,381	5,685,526	2,187,692	8,291,691	1,268,023	1,801,275	91,003	3,311,977	265,766	6,808,025	82.11	1,483,666	264,463	1,216 823	—1,241,924
Galveston Wharf	13	.....	.....	326,384	99,783	2,605	122	127,595	7,541	275.337	84.35	51,046	59,800	—8,754	—122,274
Georgia R. R.	328	1,632,702	742,911	2,557,018	275,058	408.027	35,166	1,196,451	82,095	1,997,653	78.12	559,365	30,751	528,56	—153,530
Georgia, Southern & Florida	402	1,163,988	503,655	1,821,663	332,781	448,842	30,448	852,823	50,962	1,697,658	93.19	124,004	67,950	55,965	—155,689
Georgia & Florida	348	287,820	89,666	401,312	142,124	94,290	10.027	253,847	27,759	528,046	131.57	—126,734	21,018	—148,527	—128,283
Grand Rapids & Ind.	569	1,965,256	664,450	2,878,092	566,819	688,493	50,914	1,518,236	112,620	2,883,212	100.17	—5,119	128,691	—133,751	—273,997
Grand Trunk Western Lines	1,001	6,334,677	1,282,967	8,277,348	1,000,595	1,651,823	71,336	4,010,859	221,365	6,978,366	84.31	1,298,982	251,997	1,043 639	1,536,612
Great Northern	8,253	28,136,405	6,757,532	38,340,911	7,931,904	7,701,112	276,375	17,172,065	760,519	34,316,225	89.51	4,024,586	2,232,939	1,788,834	2,051,430
Gulf & Ship Island	307	638,079	205,327	926,659	287,840	216,476	18,334	388,084	43,501	956,138	103.18	—29,479	51,453	—81,013	—313,799
Gulf, Colorado & Santa Fe	1,933	5,019,426	1,905,560	7,326,799	1,619,826	1,315,175	68,447	3,254,441	242,151	6,488,163	88.55	848,636	355,838	479,469	—1,347,277
Grand Trunk Lines in New England	172	1,269,993	161,098	1,767,589	491,845	222,652	14,001	1,132,607	62,769	2,209,984	125.03	—442,395	57,580	—499,895	—202,838
Gulf, Mobile & Northern	424	765,107	200,256	1,020,224	224,463	281.068	25,295	496,302	48,136	1,075,502	105.41	—55,278	54,288	—109,812	—3 3,166
Hocking Valley	350	2,679.877	441,225	3,339,333	502,021	1,392,631	29,899	1,341,862	104,647	3,369,550	100.19	—30,216	285,333	—319,714	—538,591
Houston & Texas Central	847	2,233,310	939,925	3,363,467	661,897	671,572	37,779	1,511,397	96,430	2,977,183	88.51	386,284	172,292	212,661	—631,143
Houston, East & West Texas	190	678,174	199,704	919,945	172,369	118,504	4,288	432,873	21.144	749,174	81.43	170,766	31,243	139,034	—73,672
Illinois Central	4,787	29,412,673	4,441,082	41,774,656	7,493,644	11,245,028	368,400	18,221,444	1,130,652	38,628,087	92.47	3,146,569	2,002,906	1,136,556	—4,8 7,691
Indiana Harbor Belt	116	.....	.....	2,469,285	430,410	583,403	8,693	1,621,426	85,433	2,729,366	110.51	—260,080	—50,670	—310,153	35,128
International & Great Northern	1,159	3,967,925	1,184,117	5,506,511	1,385.748	1,537,014	65,910	2,902,128	195,263	6,114,826	111.04	—608,309	150,000	—759,096	—1,835,088
Kanasha & Michigan	176	1,197,385	289,635	1,546,550	238,200	596,663	11,671	621,146	62,210	1,529,891	98.92	16,658	89,425	—72,770	—434,482
Kansas City, Mex. & Orient	272	366,133	77,551	465,685	190,633	196,439	5,973	283,311	36,528	712,682	153.03	—246,997	31,301	278,318	—125.34
Kansas City, Mexico & Orient of Texas.	465	321,508	57,938	404,419	164,796	197,266	6,303	302,228	36,444	707,037	174.82	—302,617	24,906	—327,526	—274,431
Kansas City Southern	774	4,547,486	896,042	5,896,427	1,079,282	1,356,913	91,425	2,451,348	218,683	5,181,085	87.86	715,342	334,929	378,643	—1,442,860
Kansas City Terminal	26	.....	.....	517,334	68,302	131,934	.....	264,597	6,800	478.005	92.39	39,330	100,750	—61,471	—78,136
Lake Erie & Western	902	3,215,214	305,197	3,682,051	611.937	1,224,669	59,073	1,696,398	118,617	3,706,273	100.66	—24,221	134,000	—158,765	—575,415
Lake Superior & Ishpeming	34	123,135	1,271	138,645	89,746	93,765	985	36,589	12.695	253,779	183.04	—115,133	15,466	130,599	—51,603
Lehigh & Hudson River	96	914,419	19,421	971,862	115,026	239,455	7,913	442,307	28,141	830.843	85.48	141,019	24,900	116,101	247
Lehigh & New England	228	1,191,899	8,192	1,283,849	209,439	293,138	12,894	499,206	45,865	1,060,303	82.58	223,546	43,051	180,495	—37,426
Lehigh Valley	1.435	18,943,067	2,503,378	23,840,381	3,290,043	6,714,330	196,941	11,926,629	525,036	22,133,270	95.35	1,107,111	733,625	373,168	—653,355
Long Island R. R.	398	2,198,646	5,811,440	8,888,688	1,330,504	1,475,823	54,901	4,669,144	233,757	7,836,361	88.16	1,052,326	446,268	603,932	—600,226
Los Angeles & Salt Lake	1,168	4,929,619	1,635,392	6,939,406	1,231,226	1,467,938	86,606	2,300,042	148,689	5,401,350	77.83	1,538,056	329,521	1,207,784	245,755
Louisiana Ry. & Navigation	549	1,148,864	176,603	1,403,373	396,086	258,983	19,057	759,588	38,469	1,471,982	104.83	—68,609	70,000	—138,740	—398,915
Louisiana & Arkansas	302	662,855	173,863	869,449	194,357	214,466	17,589	395,927	30,852	853,190	98.12	16,259	56,824	—40,595	—215,553
Louisiana Western	207	1,001,974	543,056	1,511,025	223,087	298,824	19,989	477,113	54,221	1,083,286	67.24	527,739	46,934	480,804	—318,881
Louisville & Nash	5,013	29,760,336	10,043,772	42,018,009	6,857,603	10,721,152	539,773	17,490,440	932,375	36,665,689	87.26	5,352,320	1,261,824	4,085,873	3,172,755
Louisville, Henderson & St. L.	199	852,497	297,105	1,194,085	256,538	168.531	32,594	485,188	36,697	979,549	82.03	214,536	20,000	194,124	—52,831
Maine Central	1,216	4,498,763	1,759,820	6,716,995	1,168,625	1,612,818	52,325	4,072,760	183,970	7,093,531	105.61	—376,534	378,116	—754,685	—549,688
Maryland, Delaware & Va.	82	308,119	131,129	451,204	46,157	87,529	2,638	331,802	10,246	478,373	106.02	—27,170	8,665	—35,835	—8,597
Michigan Central	1,861	19,185,542	7,141,692	28,687,754	4,164,373	5,803,385	336,990	11,637,992	532,317	22,810,928	79.51	5,876,826	790,000	5,084,208	169,233
Midland Valley	387	1,101.878	385,225	1,550,247	324,378	277.082	11,713	580,647	61.385	1,255,206	80.96	295,041	34,814	259,761	—122,121
Mineral Range	101	362,998	2,337	376,039	51,647	115,928	2,243	209,250	4,998	384,190	102.16	—8,152	16,500	—24,652	—21,159
Minn. & International	195	318,652	115,852	456,275	103,648	78,206	2,574	250,838	17,695	452,961	99.27	3,313	23,834	—20,534	—67,563
Minneapolis & St. L.	1,646	3,570,826	1,050,417	4,861,099	945,777	1,336,912	52,207	2,587,667	147,721	5,061,803	104.13	—200,703	259,246	—461,944	—735,833
Minneapolis, St. P. & Sault Ste. Marie.	4,243	11,658,057	2,839,441	15,444,450	2,329,783	3,632.206	121.345	6,947,516	354,977	13,452,757	87.10	1,991,693	937,201	1,053,768	1,042,456
Mississippi Central	164	254,088	128,353	398,227	99.611	151,118	6,181	173,588	27,763	458,260	115.08	—60,033	16,625	—76,665	—186,042
Missouri & North Arkansas	565	380,047	172,804	590,677	331,586	195.681	9,465	301,711	41,116	878,896	148.79	—288,219	32,144	—320,988	—323,333
Missouri, Kansas & Texas Ry.	1,714	9,035,137	3,086,632	12,805,946	2,595,284	3,940,093	116,770	4,695,004	383,342	11.768,920	91 90	1,037,026	450,936	585,936	—1,050,854
Missouri, Oklahoma & Gulf	332	387,301	84,996	503,113	240.279	237,351	8,594	353,560	34,307	855,164	169.97	—352,051	42,516	—395,049	—75,471
Missouri Pacific	7,108	24,466,571	7,816,980	34,666,489	7,144,122	8,376,797	402,610	15,325,881	1,006,197	32,418,218	93.51	2,248,271	1,331,965	903,588	—6,019 951
Missouri, Kansas & Texas Ry. of Texas.	1,796	5,722,427	2,929,418	9,339,396	1,969,090	1,784,426	99,611	4,930.854	363,212	9,226,570	98.79	112,825	242,726	—132,395	—350,688
Montour R. R.	54	414,065	8,056	445,599	128,689	265,940	6,274	128,156	32,098	562,589	126.32	—116,989	11,458	—128,448	—69,242
Mobile & Ohio	995	4,761,000	887,748	5,976,955	1,059,503	2,125,044	115,710	2,895,998	193,748	6,396,317	107.01	—419,362	267,847	—687,703	—1,087,124
Monongahela	108	1,176.684	100,214	1,299,849	339,472	181,135	4,221	457,542	33,141	995,512	76.58	304,337	25,000	279,317	—30,751
Monongahela Connecting	6	.....	.....	734,184	117,490	275,423	2,562	399,975	35,395	830,844	113.16	—96,660	12,144	—108,804	—227,986
Morgan's Lou. & Texas R. R.	400	1,956,730	847.865	2,983,410	463,312	659,104	36,860	1,369,547	101,247	2,641 993	88.55	341,418	154,293	186,147	—981,881
Nash., Chatt. & St. L.	1,247	4,912,683	2,143,099	7,601,028	1,494,240	2,115,449	162,109	3,486,932	221,153	7,533,487	99.11	67,540	250,000	—183,939	—1,591,708
Nevada Northern	168	594,441	52,639	674,797	90,398	115,875	4,775	196,918	22,670	430,685	63.82	244 112	91,616	152,496	—287,564
New Orleans & Northeastern	398	1,686,031	563,601	2,541,088	374,946	659,368	39,074	1,275,987	71,611	2,447,023	96.29	94,064	141,785	—48,160	—670,937
New Orleans Great Northern	284	629,065	200,025	881,778	196,995	208,041	11,364	379,203	39,543	837,363	94.96	44,415	50,330	—6 348	—219,703
New Orleans, Texas & Mex.	191	532,953	157,504	744,174	187,630	181,007	12,717	256,014	28,724	676,143	90 85	68,030	50,000	17 984	—316,352
New York Central	6,075	71,608,459	30,526,940	115,472,783	15,859,057	25,743,985	1,054,158	53,080,021	3,064,965	100,617,450	87.13	14,855,333	5,465,576	9,384,731	—2,729,110
New York, Chicago & St. L.	573	8,925,942	853,280	10,037,945	1,240,583	1,867,286	130,159	4,073,198	260,704	7,587,823	75 59	2 450,121	275,000	2,174,752	1,250,854
New York, N. H. & Hart.	1,965	17,260,287	16,855,493	38.570,274	5,393,004	8,553,096	201,795	20,344,962	1,523,827	36,554,311	94.77	2,015,963	1,340,000	666,666	—3,734,058
New York, Ont. & Western	569	2,415,121	590,648	3,662,273	558,314	1,071,898	41,232	1,864,044	117,722	3,653,210	99.75	9,063	125,800	—116,705	—383,755
New York, Phila. & Norfolk	121	2,254,004	589,905	3,061,405	268,621	670,003	41,519	1,488,762	56,383	2,612.583	85 33	448,822	85,821	363,000	104,149
Northern Alabama	112	401,579	64,120	479,446	109,476	33,816	6,664	317,319	9,184	476,326	99.34	3,119	17 000	—13 881	—158 512
New York, Susq. & Western	135	1,036,158	263,096	1,522,285	140,800	248,760	10,036	1,015,794	41,117	1,456,675	95.69	68,610	140,521	—72,021	—177,674
Newburgh & South Shore	7	.....	.....	704,797	92,264	138,765	.....	320 650	18,023	569,701	80.83	135,096	39,249	95,847	113,147
Norfolk Southern	907	1,690,889	657,186	2,519,960	533,499	551,996	37,486	1,279,051	103,043	2,508,066	99.52	11,894	99,872	—88,111	—386,799
Northern Pacific	6,566	27,807,864	7,150,578	37,524,437	6,646,595	7,051,815	305,211	14,597,764	937,995	29,902,909	79.68	7,621,528	2,800,522	4,814,184	—1,981,096

Traffic News

A trainload of peanut oil is the latest novelty in the freight ransportation field. It is a shipment which, according to a ress despatch, has started from Seattle, Wash., for Cincinati, Ohio, consigned to the Proctor & Gamble Company, or use in making soap. This oil, 240,000 gallons, came from ie Orient, and is to be followed by further shipments. Shipoads of bean oil and other like commodities are being rought across the Pacific.

The Shipping Brewers' Traffic Committee (Chicago) has sked the Omaha (Neb.) District Freight Traffic Committee or favorable freight rates on non-alcoholic beverages. The rewers say that considerable numbers of their trade are oing to make non-alcoholic beverages, so as to utilize their lants; and their products should make new freight; for the ransportation of these drinks in the past has been largely a ocal proposition. They expect that the quality of their oods, and their advertising, will create a wide demand.

The War Trade Board Section of the Department of State nnounces that export freight may now be consigned "to rder" under special export license R.A.C.-77 and R.A.C.-42. ollectors of customs have been advised that it is no longer ecessary for them to obtain the name of the actual conguee in the country of destination. Exporters desiring to onsign to order shipments which do not fall within the rms of the above mentioned special export licenses may pply to the War Trade Board Section for individual export censes.

The strike of marine firemen and other seamen in New ork harbor continues, with no definite information from ny source as to prospects of settlement. Coastwise freight affic is the main interest affected, but the railroads and the ans-Atlantic steamships suffer because of the congestion the harbor and of the large number of tugs out of service. xport freight is moved only under special permits, as for long time past, and congestion of freight at the railroad rminals is prevented by withholding these permits in all ases where the tying up of vessels makes such action ecessary.

The Board of Railway Commissioners, of Canada, has isued a favorable judgment on the application of the express ompanies of Canada for authority to make considerable inreases in rates for the transportation of merchandise, first nd second classes. Express rates in Western Canada and British Columbia are now considerably higher than in astern Canada; the difference under the new tariff will be uch smaller. Where there is no wagon service at either nd of the route the charge must be 30 cents per 100 lb. less an the ordinary tariff, and where there is wagon service one end of the route but not the other, the difference must 15 cents.

A report on the export freight situation shows that as of ly 9 at North Atlantic ports there were 11,426,714 bushels grain in the elevators. There had been received during e week ended July 9 in the elevators 4,193,350 bushels, nd there had been cleared during same week 3,538,852 ushels, an excess of receipts over deliveries of 654,498 ushels. As to gulf ports, on July 8 there were 4,067,620 ushels of grain in elevators distributed between New Orans and Galveston, the elevators at Port Arthur and Texas ty being empty. On July 9 there were 5,737 carloads of xport food on hand at North Atlantic ports (exclusive of ulk grain) compared with 5,907 carloads on July 2, a decrease of 170 cars.

The threatened heavy loss of live stock brought about by vere drought conditions in Montana, Wyoming and North akota has caused the Railroad Administration to authorize special reduced rates effective immediately, both for the transportation of feed into the affected area, and for the shipment of live stock to other feeding grounds and to market. The rate concessions consist of the application of half the regular charges on shipments of all classes of stock feed into this area and a material reduction in the rates on cattle and sheep moving to outside grazing points and to be returned next spring when grass is again available. It is believed that this plan will result in saving much of the live stock in the area affected and will also permit restocking the ranges next spring.

While the movement of both freight and passenger traffic for the week ended July 14 generally showed some improvement over the week previous, according to a report made to the Director General, there was still a marked falling off in freight business compared with the same period in 1918. Despite the restrictions placed by the Railroad Administration against unnecessary travel due to the movement of returning soldiers from abroad, reports from the Allegheny region show that for the period July 3 to July 6, inclusive, 111,500 passengers were carried between Philadelphia and the seashore resorts, an increase of 112 per cent over the same period last year. While the commercial situation in the Southern region shows an improvement, freight loading for the week of July 14 showed a decrease of 9,171 cars under the corresponding period of 1918. In the Northwestern region the loading of iron ore showed a decrease of 7,000 cars compared with last year. Coal loading, likewise, fell off in this region.

New York Traffic Club

The Traffic Club of New York, 1,200 members, has sent to Congressman Esch, chairman of the House committee on interstate and foreign commerce, a statement of the transportation principles favored by the club. Government ownership is to be declared against the public interest. Remedial legislation is needed at this session of Congress; it should insure early return of railroads to their owners, provide uniform regulation in essentials, insure adequate revenue to provide for the equitable treatment of questions of wages and to attract capital for needed development. Government regulation should be reasonable and should encourage and protect the railroads. Private initiative should be fostered and preserved.

The committee of the club, in its letter, endorses House bill 4378 as regards empowering a governmental agency to require the unified use of transportation facilities, when necessary to cope with a shortage of cars or other emergency, but some of the proposed extensions of governmental authority are not approved; they will not foster private initiative and responsibility. The committee questions the propriety of the grant of unlimited authority to prescribe divisions between carriers; and to require a common carrier to extend its line or lines; the unlimited authority to compel the joint use of freight terminals; the substitution of an indefinite period of time for which the commission may order rates to continue in force in lieu of the period of not exceeding two years which is now provided by the law; and the prohibition against any person holding the position of officer or director of more than one carrier.

The committee believes that carriers should be allowed to agree upon common rates and on the adjustment of train schedules, subject to approval by the commission. The commission should be authorized and required to deal with petitions for correction of inequalities between intrastate and interstate rates. Section 14 should provide for insuring carriers adequate revenue to furnish safe and efficient service and to attract new capital where necessary. Rates in effect when federal control terminates should be continued until thereafter changed by lawful action. Controversies about railroad employees' wages should be taken to a governmental tribunal, upon which the Interstate Commerce Commission should be represented. Application of the long-and-short-haul law should continue to be left in the discretion of the Interstate Commerce Commission.

Equipment and Supplies

Locomotive Deliveries Week Ending July 5

New locomotives were shipped to railroads under federal control during the week ended July 5, as follows:

Works	Road	Number	Type
American	Vgn.	5	USRA Mallet
		5	
Baldwin	U. P.	1	Santa Fe
	B. & O.	4	USRA Pacific
	T. & P.	1	Santa Fe
	P. L. W.	1	Mallet
	Erie	5	USRA Pacific
	C. & O.	1	USRA Mount.
	B. & L. E.	5	USRA Santa Fe
	S. P.	1	Santa Fe
	P. & R.	1	Mallet
		20	
	Total	25	

Locomotive Deliveries, Week Ending July 12

The following new locomotives were shipped to railroads under federal control during the week ended July 12:

Works	Road	Number	Type
American	C. & N. W.	6	USRA 6-w. Sw.
	Virginian	3	USRA Mallet
		9	
Baldwin	A. T. & S. F.	4	Pacific
	A. T. & S. F.	3	Santa Fe
	B. & O.	1	USRA Pac.
	Col. & Sou.	2	USRA Santa Fe
	Erie	1	USRA Pac.
	Ga. R. R.	2	USRA 8-w. Sw.
	N. & W.	1	Mallet
	Penn. Lines	1	Mallet
	Sou. Pac.	1	Santa Fe
		16	
	Total	25	

Freight Cars

The Union Shipbuilding Company, Baltimore, Md., is inquiring for one flat car.

Belasco & Company, New York, is inquiring for 100 to 200 steel dump cars for export to Europe.

The Lehigh Valley Coal Company, Wilkes-Barre, Pa., has ordered 100 mine cars from the American Car & Foundry Co., Chicago.

The Shawmut Mining Company, St. Marys, Pa., has ordered 200 wooden mine cars from the American Car & Foundry Co., Chicago.

The Champion Fibre Company, Canton N. C., has ordered one 50-ton steel hopper car from the American Car & Foundry Co., Chicago.

Miscellaneous

The Canadian National Railways is calling for tenders for 6,500,000 ties, of which 3,525,000 are for use on the Western Lines, 1,400,000 for the Eastern Lines, 1,375,000 for the Central Lines, and 200,000 for the Halifax & South Western (Nova Scotia). These ties are for delivery between October 1, 1919, and October 1, 1920.

Spoil from the Subway.—Over 7,500 pairs of pick-wielding arms deserted America yesterday; each man carried away from $2,500 to $4,000. These arms belong to Italian laborers; and most of this money has been dug out of subways, mines, and railroad rights-of-way. These men sailed on three Italian steamships, and, so far as could be learned, none of them had any intention of returning.—New York *Globe*, July 16.

Supply Trade News

The **Chicago Pneumatic Tool Company**, Chicago, has removed its Minneapolis (Minn.) office from the Metropolitan Bank building to Fifth avenue and Fifth street south.

The **Falls Rivet Company**, Kent, Ohio, has been authorized by the stockholders to draw up plans for the construction of a new building at Kent. It is probable that work on the new structure will not begin before early spring.

The **Chicago Pneumatic Tool Company**, Chicago, announces the appointment of **N. S. Thulin** as special railroad representative on the staff of S. C. Sprague, manager of western railroad sales, with headquarters at the company's office in Chicago.

Kenneth R. Hare has been appointed district manager for the **Transportation Engineering Corporation**, New York, with headquarters at Chicago, in charge of the territory in the middle west, including Chicago, St. Louis and other important railroad centers.

Robert S. Hammond, formerly sales agent of the American Steel Foundries, Chicago, has been appointed Pittsburgh, (Pa.), representative of the **Whiting Foundry Equipment Company**, Harvey, Ill., with office in the Fulton building, succeeding **F. J. Page**.

Samuel F. Joor, who for the past year has been assistant chief engineer of the Semet-Solvay Company, Syracuse, N. Y. and formerly a consulting engineer with offices in Chicago has been appointed sales engineer for the **American Steam Conveyor Corporation**, Chicago.

J. J. Brown, vice-president and general manager of the **Wheeler Condenser & Engineering Company**, Carteret, N. J., has been elected president, succeeding **Charles W. Wheeler**, who died recently. **H. S. Brown** of Boston has been elected vice-president. Mr. H. S. Brown has been associated with the Power Specialty Company, New York, for the past 15 years, the greater part of this time as New England manager, and during the war he took an active part in government war work, with headquarters at Washington and Philadelphia. He is also president of the Brown-Ferries Company, Philadelphia.

Pratt & Lambert, Inc., Buffalo, N. Y., announces that its New York office at 185 Madison avenue, will be moved about November 1 to a new site in Long Island City, where a modern warehouse of brick construction, 200 ft. by 100 ft., consisting of two stories and basement, is now being built, not far from the Bridge Plaza, and **Donald L. Clement**, former railway representative, who has recently returned from overseas service, will be assistant resident manager of the New York office. In order to increase the production at the main factory, Buffalo, a four-story brick building 95 ft. by 45 ft., to be devoted to grinding, is to be put in service on October 1. At Bridgeburg, Ont., a four-story brick building, 85 ft. by 45 ft., is being erected in addition to new chimneys, double the size of the old, thinning buildings, filter buildings and other equipment which will triple the manufacturing capacity of the present factory.

Oscar Otto, general superintendent of the South Philadelphia Machine Works of the **Westinghouse Electric & Manufacturing Company**, died on June 30, as a result of injuries received in an automobile accident near Westgrove, Pa. He was born in Manitowoc, Wis., on January 2, 1859, and after finishing his apprenticeship course as a machinist in the Manitowoc shops of the Chicago & North Western, served during several years at various places in Wisconsin. He then entered the service of the Northern Pacific, at Tacoma, Wash., going from there to the Oregon Short Line, at Salt Lake City, Utah. In 1898 he returned to the service

of the Chicago & North Western as superintendent, at the Chicago shops. Prior to accepting a position as general superintendent of the Westinghouse Machine Works, at East Pittsburgh, Pa., in June, 1909, he was connected with the Chicago & North Western as general superintendent of its Chicago shops. When the Westinghouse Company opened its new plant at Essington, Pa., Mr. Otto supervised the installation of the machinery, and later in February, 1918, he was transferred to the new works, where he remained until his death.

Trade Publications

HEATERS AND BURNERS.—The Macleod Company, Cincinnati, Ohio, has issued Buckeye catalogue B, illustrating, listing and describing the weed burners, ground thawers, flare light, sand blast and cement blast gun, heating torches, incinerators, etc., manufactured by that company.

THE CLARK TRUCTRACTOR.—The Clark Tructractor Company, Chicago, has issued a 16-page booklet describing a three-wheeled industrial truck operated by a gasoline engine of the automobile type. Illustrations and explanations are also given of the application of this burden-carrying and tractor truck to various industrial purposes, both interior and exterior. Several photographs show the special mobility of this machine obtained through the use of only three wheels.

REINFORCED CONCRETE PRODUCTS.—The Massey Concrete Products Corporation, Chicago, has issued a general catalog in the form of a prospectus on the concrete pipes, slabs, piles, poles, posts, battery wells, buildings, etc., manufactured by this company. The booklet is well illustrated with photographs, drawings and tables. This general catalog is a forerunner of a series of supplements containing more detailed information about the individual products. The first two of these, on railway culvert pipe and on pipe for highway culverts and sewers, will be ready for distribution in the near future.

Reid in The National Republican

Taking the Count

Financial and Construction

Railway Financial News

OAKLAND, ANTIOCH & EASTERN.—The Oakland, Antioch & Eastern, the Oakland & Antioch and the San Ramon Valley are to be sold to a corporation to be formed for the purpose of operating the three lines as one system. Permission for the sale and amalgamation has been granted by the Railroad Commission of California. Stocks and bonds necessary to finance the reorganization are to be issued. Approximately 82 per cent of the security holders of the three roads have approved the plans for this reorganization. The new company is to have an authorized stock issue of $5,500,000, divided into $4,000,000 of common and $1,500,000 of preferred stock. It is also to have an authorized bond issue of $3,000,000. Creditors who have a first and direct lien on the property are to be paid in cash. This indebtedness, according to exhibits filed in the reorganization proceedings, will total $271,354.

Railway Construction

CANADIAN NATIONAL RAILWAYS.—Contracts have recently been let as follows: Grading for one additional main line track between Truro, N. S., and Belmont, about 7.57 miles, to the Bate, McMahon Company, Ltd., Ottawa; grading for one additional main line track between Springhill Junction and Maccan, about 9.13 miles, to A. Wheaton & Dominion Construction Company, Ltd., Halifax; grading for double track at Moncton on about 3.35 miles to A. Wheaton & Dominion Construction Company, Ltd.; grading for double track diversion from mile 108.21 to mile 112.91, between Ste. Rosalie and Charlotte, about 4.7 miles, to Walters, Doheny & Co., Montreal, and for the substructure for the bridge over Tantramar river, mile 85.6, Truro subdivision, consisting of two 250 ft. double track spans.

MORRISTOWN, SNEEDVILLE & KYLE FORD ELECTRIC.—Organized to build an electric line from Kyle Ford, Tenn., west, via Sneedville, to Briar Creek, thence south, via Luther, Treadway and Mooresburg, to Morristown, about 40 miles. There will be nine steel bridges on the line, also 17 trestles with an average length of 300 feet and two sub-stations. The promoters expect to develop a traffic in farm produce, lumber and ore. George L. Berry is president, Pressmens' Home, and J. N. Adams, engineer in chief, Charleston, Tenn.

NORTHERN PACIFIC.—A contract for the construction of a new passenger station at Brainard, Minn., to replace the one destroyed by fire, has been left to McManis & Tarnoski, St. Paul, Minn. The building will be 40 ft. by 162 ft., two stories high and basement, with a 40 ft. by 30 ft. covered platform at each end. It will be of concrete and brick, with Ludowici green tile roof, and tiled floors with oak finish on the first floor and birch and maple on the second floor. The first floor will contain a general waiting room, women's room, smoking room and baggage and express room; the second floor will be occupied by the officers of the Minnesota and International and the local Northern Pacific officers. The total cost, including track changes, will be about $100,000. Work was started the last week in June.

Losses of gasoline during transit, are estimated by one prominent producer and shipper of gasoline to amount to eight per cent., considering only that shipped in tank cars. During 1918, about 3,500,000,000 gallons of gasoline were produced in the United States and much of it was shipped more than once. A loss of one per cent, at 20 cents a gallon, means a loss to the shippers and to the nation of $7,000,000. The railroad loss and damage figures recently published, are large, but the shippers' probable wastage through leakage and evaporation during transit is larger.

Railway Officers

Railroad Administration

Central Administration

H. P. Dougherty has been appointed assistant director of the Division of Labor.

J. W. Clark has been appointed manager of the Fire Loss and Prevention Section, succeeding **Charles N. Rambo.**

R. C. Mitchell, chief special agent of the Missouri Pacific, has been appointed chief of the secret service and police section of the Division of Operation, succeeding **W. J. Flynn,** who has resigned.

Operating

F. R. Bartles, superintendent of the Rocky Mountain division of the Northern Pacific, with headquarters at Missoula, Mont., who was granted leave of absence in September, 1918, to enter military service, has resumed the duties of superintendent; **W. C. Showalter,** division superintendent, with office at Missoula, has been transferred to the Montana division, with headquarters at Livingston, vice **T. F. Lowry,** who has been transferred to the St. Paul division with headquarters at Minneapolis, Minn., and **J. H. Johnson,** acting superintendent of the St. Paul division, with headquarters at Minneapolis, has resumed the duties of assistant to the general superintendent, with office at St. Paul.

David Kirk Orr, whose appointment as superintendent of the Monongahela Railroad, with headquarters at Brownsville, Pa., has already been announced in these columns, was born on November 24, 1865, in Allegheny City, Pa. He was educated in the Allegheny High School, the Western University of Pennsylvania and Geneva College, receiving the degree of A. B. from the latter institution in 1889. He began railway work on June 10, 1889, with the Norfolk & Western as a topographer's assistant, remaining in that position until September, 1890, when he went to the Pittsburgh & Lake Erie as transitman. He later served as assistant engineer on that road. In August, 1903, he went to the Monongahela Railroad as engineer, and subsequently served consecutively as chief engineer, assistant engineer and assistant chief engineer until his recent appointment as superintendent of the same road as above noted.

Lieutenant-Colonel G. E. Votaw has received his discharge from the army and resumed his duties as superintendent of the Portland division on the Spokane, Portland & Seattle with headquarters at Portland, Ore. He entered military service on April 1, 1918, as a captain in the railway transportation corps. On May 5 of the same year he arrived in France where he served as superintendent of the American service on the Paris & Orleans between Saumur and Gievres with headquarters at St. Pierre Des Corps. On Aug.ust 13 of the same year he was transferred to the American terminal at Is-Sur-Tille, serving there as terminal and division superintendent and commanding officer of the 58th regiment, transportation corps, until January 15, 1919. From that date until May 10, he acted in the capacity of general superintendent of the 13th Grand division in the Zone of Advance with headquarters at Commercy. Captain Votaw was commissioned major in the transportation corps on February 15, 1919, and a few months later was promoted to lieutenant-colonel.

Traffic

M. J. Ormond, assistant manager of the lighterage and foreign freight department of the Lehigh Valley, has been appointed foreign freight agent, with headquarters at New York.

Engineering and Rolling Stock

Bernard Blum whose promotion to engineer of maintenance of way of the Northern Pacific lines, east of Paradise, Mont., with headquarters at St. Paul, Minn., was announced in the *Railway Age* of July 11 (page 84), was born at Chicago, on February 12, 1883. He received his education at the Massachusetts Institute of Technology, graduating in 1904. He entered the railway service in 1905 with the Chicago Junction where he remained until March, 1907, at which time he joined the construction department of the Northern Pacific as an assistant engineer in Montana. In December, 1909, he was promoted to assistant division engineer at Livingston, Mont., and in October of the following year he became roadmaster at Duluth, Minn. Later he was promoted to assistant district engineer with headquarters at St. Paul, Minn., which position he held until January 1, 1917, when he was promoted to district engineer, of the lines east of Mandan, N. D., with headquarters at St. Paul, in which capacity he served until his recent promotion to engineer maintenance of way.

B. Blum

Obituary

John W. Evans, superintendent of the St. Lawrence division of the New York Central, with headquarters at Watertown, N. Y., died on July 23, in the city hospital at Watertown, following a stroke of apoplexy. He was born in 1864, at Remsen, N. Y., and in 1884 began railway work with the Utica & Black River, now a part of the New York Central. He later served as despatcher and chief despatcher on the same road until December, 1895, and subsequently served on the Choctaw, Oklahoma & Gulf, and the Atlanta & West Point. In November, 1900, he returned to the New York Central and was appointed train despatcher. He was promoted successively to assistant trainmaster, trainmaster and assistant superintendent; and since April, 1911, had been superintendent.

Kansas and Its Opportunities is the subject of a comprehensive booklet which has been issued by the agricultural section of the United States Railroad Administration. It sets forth in a striking manner the wonderful agricultural opportunities of the Sunflower State. Governor Henry J. Allen, in an indorsement of this publication, tells of the state's leadership in agriculture, her inestimable wealth of underground treasures of coal, salt, lead, zinc, oil and gas, and invites everybody to come and share in the large prosperity that comes through the development of the state's resources. The total area of Kansas amounts to 82,158 square miles, or 52,531,200 acres. Belgium is only one-seventh the size of Kansas, and the states of Pennsylvania and Indiana, or Maine and Ohio united, or all New England, with Delaware and Maryland for company, could find resting room on her ample bosom. Kansas, last autumn, sowed wheat on an area of 11,000,000 acres. Her wheat acreage alone exceeds, by 2,805,280 acres, the entire area of the Kingdom of Holland. Twenty-one specialists of the staff of the Kansas State Agricultural College have written articles for the booklet.

EDITORIAL

Railway Age

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It is unnecessary to mention the fact that the present is a time of great changes. The railroads are entering the period of reconstruction and plans for their future needs and development must be made by those upon whom this responsibility falls. In this work roads having automatic signals already installed are in a more favorable position to meet any traffic conditions that may arise than roads not so equipped. Because of this fact proposed budgets for future work should include estimates for signals on such parts of the systems as are congested or where numerous train delays are occurring under other forms of operation. Before deciding to build a second track on stretches of heavy traffic single track lines not operated by automatic block signals it will be well worth while to study the existing conditions to determine whether the relocation of passing sidings, coal and water stations and the installation of automatic signals will not increase the traffic capacity to such an extent that double tracking may be deferred for a number of years or perhaps indefinitely. Too much stress cannot be placed upon the importance of signals as a means of promoting safety to operation; but certainly too little stress has been placed in the past upon their value as means increasing track capacity and promoting economy.

Prepare for Increase in Traffic

The figures showing the exports of railway supplies compiled by the Division of Statistics of the Bureau of Foreign and Domestic Commerce indicate that the hopes of those who are interested in exports of these commodities are beginning to be realized. The exports of locomotives in May valued at $4,040,551, as briefly noted in last week's issue, were nearly double those of April and considerably in excess of any previous month this year. The exports of passenger and freight cars valued at $960,616 and $6,268,078, respectively, were several times in excess of those of previous months. The exports of car wheels and axles valued at $769,733 were less than in April but above those for March. The exports of railroad spikes were considerably in excess of those of any previous months this year while in the case of frogs, switches, etc., the total exports of $1,881,626 were about 75 per cent greater than those of April, the best previous month. Rails exported valued at $4,902,970 were not as great as in February, but they were considerably in excess of the figures for any other month. The figures quoted, to be sure, are to an extent only history. What counts is the business recently placed or in sight; but it is probable that the figures for May will be sustained and possibly exceeded in the following months. Japan has continued her buying of steel for railway purposes. Last week the Equipment and Supplies Column of this paper reported orders for 23 locomotives divided between four countries, Chile, Argentina, the Dutch East Indies and Formosa, in addition to orders for 432 freight cars for Peru, Colombia and Cuba, and what is more important, Rumania has been ready to place an order for locomotives, depending upon financial arrangements, and Poland is seeking to place in this country orders for a considerable quantity of railway supplies, also depending upon financial arrangements. The fact that the orders placed or pending are from widespread markets, and that some of them are of considerable quantity tends to confirm one's opinion that it is justifiable to feel even more optimistic than ever about export trade in railway supplies.

Our Export Trade

The article on concrete roadbed construction which appears on another page of this issue will be found of interest to all railway officers concerned with the present high cost of track maintenance. The report covers a rather comprehensive variety of special track designs which have been subjected to service of greater or less severity over a period of several years in widely separated parts of this country. Most of these designs were undertaken as a result of special conditions not encountered under the ordinary circumstances of railway building. It is a fact, however, that they have been carrying heavy traffic with low maintenance expenditures, although conclusive figures as to the relative cost of the ordinary track construction and any of the special forms described are still to be presented. After a century of railway development most of the tracks the world over now conform to a single standard of construction comprising three primary features, namely, the rails, the wooden cross ties and a flexible support permitting of more or less ready adjustment to compensate for the disturbances of traffic. Imperfect as this construction may be, it is simple of installation, repair and renewal and any device designed to supersede this established construction must show a definite economic advantage. But the track in the form we now understand it is far from perfect and the cost to maintain it when contemplated in terms of the enormous mileage now in use is very large, consequently there is every inducement for the exercise of inventive genius and outlay for experimental construction from which a pronounced improvement may ultimately be evolved.

Improving the Railway Track Structure

In all probability electrification in foreign countries will advance more rapidly in the next few years than it will here in the United States. There is a crying need for coal in a dozen European and South American countries and the price of railroad coal has jumped to figures varying from $20 to $46 a ton. One of the elements in the electrification question is train mile costs and these prices for coal have made consideration of this element necessary. There are no such prices now in the United States but with present day shipping facilities much American coal can be exported to foreign ports. Agents from the United States are now investigating conditions in many foreign ports concerning prices of coal, its market, port facilities for handling it, facilities for shipping coal to inland markets, etc. Furthermore, American producers are sending letters to foreign consumers explaining what they have to offer and requesting that they be favored with a trial order. The following is an extract from one of these letters:

"Gentlemen:—We are owners, miners and shippers of the very best grades of coal mined in the United States of America. Our produc-

Another Reason

tion consists of the famous 'New River,' 'Pocahontas,' 'Tug River Pocahontas,' and the high volatile, low sulphur gas coals known all over the world as the standard grades of quality. In addition to our own guarantee, all shipments pass the United States Government inspection at the loading piers."

In the past the principal reasons demanding the adoption of electric operation in the United States have been terminal and trunk line congestion. It was considered cheaper to electrify than to lay additional tracks and to expand existing terminals. Now another possible reason has appeared on the horizon. No railroad can be electrified over night; and before much progress can be made with foreign electrifications it is possible that the price of coal in the United States will be increased to a point at which consideration of electrification will be more necessary than it is at the present time.

The Transportation Conference Plan

THE PLAN for railroad legislation submitted to Congress by the National Transportation Conference called by the Chamber of Commerce of the United States was outlined in the *Railway Age* for last week (July 25, page 143). This plan is especially interesting and significant because it is the product of careful deliberation and thorough discussions carried on for several weeks by an unofficial body of men which included manufacturers, farmers, bankers, labor leaders, college professors and railway officers. The two outstanding features of the plan illustrate strikingly the way in which are running the minds of most men who have thoroughly informed themselves regarding the railway situation and the problems it presents. These two outstanding features are the proposal for the creation of a National Transportation Board and the scheme suggested for assuring to the railways an average annual return of at least 6 per cent upon a proper valuation.

The feeling long has been growing among students of railroad regulation that the Interstate Commerce Commission has been given too much work and also has been given functions and duties which are inconsistent. The Association of Railway Executives proposed that this condition should be remedied by the creation of a Department of Transportation with a Secretary of Transportation at its head to which should be delegated all the administrative work of regulation. The railway executives have since substituted a proposal that a Transportation Board of three members be created. This board would be an administrative body and would have not only the duty of enforcing regulatory railway laws, but also of keeping constantly informed as to the general transportation situation and adopting or recommending to Congress and the Interstate Commerce Commission action needed to promote in the public interest the improvement and development of the country's transportation system. The Transportation Conference also reached the conclusion that a Transportation Board should be created to which should be delegated the purely administrative functions now performed by the Commission and such additional administrative functions as legislation may provide for.

A very strong argument may be made for the creation of a Transportation Board. In Great Britain before the war the judicial function of regulating rates was performed by the Railway and Canal Commission, while all the administrative part of railway regulation was done by the Board of Trade, a government department which has a cabinet minister at its head. The distinction between administrative and judicial functions is clear. Furthermore, it is very difficult for any man or body to perform them both at the same time and perform them both well. The Interstate Commerce Commission was originally created, as in a sense, an administrative body, but the principal duty it was given was the quasi judicial one of regulating rates. The principal administrative work it has done has been to enforce against the railways regulatory laws, such as those regarding rebating and safety appliances. It has long been pointed out that it is impossible for the Commission to perform such duties as these without tending to acquire a bias against the railroads which would influence it in the performance of its quasi judicial function of regulating rates.

Furthermore, there is one most important administrative function of regulation which neither the Interstate Commerce Commission nor any other governmental officer or body has performed. This is the function of studying the transportation situation and basing on the results of this study measures to promote the prosperity and development of the transportation industry of the country. A Transportation Board should be created not merely to perform the administrative functions now performed by the Commission, but above all to work for the improvement of our transportation situation in the same way that the Department of Agriculture works to promote agriculture, the Department of Commerce to further the interests of commerce and the Department of Labor to improve the condition of labor.

In one very important respect the functions of the Transportation Board, as proposed by the Transportation Conference, would differ from them as proposed by the Association of Railway Executives. The Association of Railway Executives would have the Transportation Board certify to the Interstate Commerce Commission on behalf of the public the amount of revenues which, in the public interest, the railways of each territory should be allowed to earn from year to year, and would have the Commission required to so fix the rates as to provide these revenues unless good cause were shown for not doing so. While the Association of Railway

The feeling long has been growing among students of railmust be made sufficient to enable the railways adequately to develop their facilities, it is opposed to legislation which would require that the railways must be allowed to earn a minimum average of 6 per cent or any other specified average. The Transportation Conference, on the other hand, advocates a plan which, in effect, would require the Interstate Commerce Commission to so fix the rates of the railways in each large territorial group as to enable the railways of that group to earn a minimum average of 6 per cent per annum upon the fair value of their properties. Any excess over 6 per cent earned by an individual road would be placed by that road in a special contingent fund of its own until its contingent fund became equal to 6 per cent of its valuation. After that one-third of its excess over 6 per cent would be paid into its own contingent fund and two-thirds in a general railroad contingent fund. These contingent funds would be drawn upon by the railways in lean years to make up for deficiencies in their earnings.

Both of these plans are, in effect, declarations that those who have drawn them up fear that if the country returns to a system of regulation under which the Interstate Commerce Commission would have the same discretion in regulating rates it had in the past the Commission will not let the roads earn adequate returns. Unfortunately, this apprehension is well founded. It is supported both by the record made by the Commission in the years from 1906 to 1917 and by recent utterances of members of the Commission. Even Commissioner Clark, who has long been recognized as one of the ablest, sanest and fairest men on the Commission, indicated by his testimony before the House Committee on Interstate Commerce last week that he believed any harm that had been done to the credit of the railroads under the old system of regulation was due not to the Interstate Commerce Commission but occurred because "railroad executives and financial interests kept on saying in season and out of season since 1910 that they had no credit." There is no ground for hope that the Interstate Commerce Commission with its present

personnel, if given practically unlimited discretion, as is proposed in the Esch-Pomerene bill, to determine what the railroads should be allowed to earn, would in the exercise of that discretion let them earn enough to enable the roads to prosper and adequately develop their facilities. This is the universal opinion among railway financiers and railway officers, and it is justified. This being the situation, if the railways are to be returned to private operation it is imperative that the determination of the amount which they are to be allowed to earn shall not be left entirely in the hands of the Interstate Commerce Commission. The Association of Railway Executives has proposed one plan for dealing with the situation and the National Transportation Conference another. The adoption of either proposal would result in an improvement in our system of regulation.

Labor and Efficiency of Production

One of the most interesting and significant resolutions adopted by the American Federation of Labor at its recent annual meeting at Atlantic City relates to the importance of scientific research as a means of promoting the economic welfare of labor. It is a recognition by organized labor of the fact that increased efficiency of production is essential to the improvement of the condition of labor itself which ought not to be allowed to pass without notice being taken of it and its true significance being emphasized.

The resolution sets forth that "Scientific research and the technical application of the results of research from a fundamental basis upon which the development of our industries—manufacturing, agriculture, mining, and others—must rest." It adds that "The increased productivity of industry resulting from scientific research is a most potent factor in the ever increasing struggle of the workers to raise their standards of living; and the importance of this factor must steadily increase, since there is a limit beyond which the average standard of living of the whole population cannot progress by the usual methods of readjustment, which limit can only be raised by research and the utilization of the results of research in industry." Therefore, the American Federation of Labor resolved "That a broad program of scientific and technical research is of major importance to the national welfare and should be fostered in every way by the federal government, and that the activities of the government itself in such research work should be adequately and generously supported in order that the work may be greatly strengthened and extended."

The broadening vision regarding the fundamental economics of industry which this resolution indicates that organized labor is getting doubtless is due largely to developments of recent years. Heretofore, organized labor has acted mainly, and indeed almost entirely, upon the assumption that all that has been needed to enable labor to better its condition has been to increase its money wages and secure reductions in the hours a day, and improvements in the conditions under which it has worked. Never did labor obtain such large increases in its money wages and such large concessions of other kinds as within the last four years. But every advance in its money wages has been preceded by, or has resulted in, an increase in prices and in the cost of living. The increase in the cost of living has largely, and in many cases wholly, offset the advances in money wages. Therefore, with money wages much higher than they ever were before, many working men find themselves unable to rent any better homes, to buy any more or better food, to buy any more or better clothes, or to provide any more comforts and luxuries for themselves and their families than they were able to before. "The usual methods of readjustment" referred to in the resolution quoted doubtless are these methods which have resulted in advances in wages and then advances in prices to offset the increased cost of production due to the advances in wages, and then in advances in wages to offset the increase in the cost of living, and so on ad infinitum.

The *real* wages of labor consist not of the money it is paid, but of the homes the workers are able to provide, and the food and clothing, the comforts and luxuries they are able to buy with the money that they are paid. Experience is teaching the workers that it does not benefit them to get the amount that they are paid increased if at the same time prices generally are also correspondingly increased, and in consequence they are rendered unable to buy any more with their money than they were able to buy before. It is bringing home to them the lesson, as this resolution shows, that the only way in which *real,* as distinguished from *money,* wages can be increased, is by increasing the efficiency of production. Organized labor has proceeded upon the assumption that a very large part of what is produced is taken and consumed by the capitalists, and that if it could get a big part of what goes to the capitalists its condition would be sufficiently improved. But much the larger part of all that is produced goes to labor already and only a comparatively small part to capital; and so, even if labor should get a much larger part, or even all, of the present total product of industry, the increase in the real wages of the average worker would be very small.

The only way permanently and substantially to increase the *real* wages of labor is to increase the total amount of useful things produced. The only way in which this can be done, especially if increased production is to go hand in hand with reductions in the hours of work of labor, is by increasing the efficiency of production. One of the most important means of increasing the productivity of industry is the one to which the American Federation of Labor refers in this resolution, namely, "Scientific research and the technical application of the results of research." Scientific research and the technical application of the results of research have been the means which have created all the labor-saving machinery in the world, from the spinning jenny to the Mallet locomotive.

While, however, organized labor is right in urging government support of scientific and technical research, it would be a great mistake to rely too much upon government activities for their promotion. All of the great developments along these lines in the past have been the result of the exercise of the inventive genius of private individuals, and of the practical application of their inventions in industry by private capital. Therefore, labor, for its own welfare, should oppose any measures, governmental or otherwise, which would restrict the exercise of private initiative and enterprise.

There is another very important point connected with this matter which labor should not overlook. The most improved machinery and methods which scientific research and inventive genius can devise and capital can provide would be valueless if intelligent workers were not available to use them, or if the workers available should refuse to make good use of them. On the other hand, the more intelligence and energy labor exerts in the use of the methods and machinery developed by scientific research and inventive genius and applied practically to the purposes of industry by business men, the more efficient industry will be and the larger will be the product of industrial operations in proportion to the number of persons employed in industry and to the total population. The larger the product of industry is, in proportion to the number of persons employed, the lower, on any given scale of money wages, will be the cost of production; and the lower the cost of production, the lower

will be the prices which the workers will have to pay for the things produced and the more of them they will be able to buy with any given amount of money wages. In other words, efficiency of production is dependent, not only upon scientific research, but also upon capable management and efficient labor; and greater efficiency in production is the only thing which will ever make it possible to have high money wages and low prices at the same time. If the total production of the industries of the United States should be doubled today without any change in money wages, it would almost immediately become possible for labor, with its present money wages, to buy twice as much of the things it wants—in other words, to provide itself with twice as many comforts and luxuries—as it can now.

While, therefore, organized labor is advocating scientific research as a means of increasing production and thereby improving the condition of labor, it should also be doing all it can to encourage greater efficiency in industrial management and greater efficiency in the work done by labor itself. The result would be an increase in the total amount of things produced; and labor, organized as it is, can rely upon itself to get as large a part of the increased amount of things produced as it is able to get of the smaller amount of things produced now. Unfortunately, organized labor has been very slow to recognize the fact that no substantial and permanent improvement can be made in the condition of labor under the present or any other industrial system except by increasing the efficiency of production, and that increased efficiency in production is largely dependent upon the intelligence and energy of the work done by labor itself. When labor recognizes these facts and acts accordingly increases in the cost of living will cease to follow every advance in wages; and they never will until then under any industrial system.

Improving the Conditions of Track Circuit Operation

PERHAPS NO SINGLE INVENTION in connection with block signals has done more to promote safety and facilitate the movement of traffic in the railway transportation field than the track circuit for the control of automatic block signals, crossing bells and other railway signal appliances. This invention, simple in itself, was first designed 47 years ago by William Robinson of Brooklyn, N. Y. Since that time a great deal has been done to develop apparatus for track circuit use and to further improve the methods of application; yet there seems to be a feeling among some signalmen that the use of the track circuit has not yet reached the point where it can be considered as absolutely reliable and as great an ecoonomic success as it is possible to make it. Some of the conditions which affect the operation of the track circuit are the bonding; the track insulation; the treatment of ties; the ballast; the drainage; the clearance between the rails and the ballast, and foreign current. If any one or more of these does not follow the best practice in providing proper conditions for track circuit operation there is a chance of a failure which may result in at least a portion of the signal system functioning improperly and may even cause delays to traffic or possibly trouble of a most serious nature. An efficient working system of signals is certainly desirable. It is therefore important to have the parts that enter into it operate under conditions that are the most favorable to successful service.

Track circuits form a part of such a system and apparently they require the greatest amount of attention. They therefore need the care of experienced men to keep them in working order. Yet a greater number of inexperienced men are employed in the maintenance of the various parts of the railroad that affect track circuit operation than any other part of the signal system. For instance, section laborers who know little regarding the operation of track and signal circuits are employed to look after the insulated rail joints, insulated switches, ballast, drainage and sometimes bonding, all of which, as pointed out before, influence the operation of the track circuit. It is a significant fact that the track standards on many roads now require not less than one inch clearance between the base of the rail and the ballast, such a clearance being also exceedingly desirable for the proper working of a track circuit. Yet in many cases, it is a difficult matter to get the track forces to maintain their own standards, which would ultimately mean a better working track circuit. Dirty track and ballast have been the cause of many track circuit failures, as, for example, around coal chutes. Wet track naturally creates another very bad track circuit condition, and where it is possible to get drainage for track circuits that otherwise would be wet it is important to do so. The installation of insulated joints is another feature which requires special care, for if they are not properly installed conditions may develop which may result in foreign current or other trouble of no less serious a nature.

It is impossible to get the best results from track circuits unless all the conditions under which they are operated are kept good; and to keep all the conditions good requires the co-operation of all departments concerned with the operation and maintenance of signaling apparatus and tracks.

Should Engineers Be Paid Overtime?

THE TECHNICAL MEN employed by the engineering and maintenance of way departments were for some reason overlooked in the drafting of the supplements to Wage Order No. 27. While nearly all other classes of employees were identified specifically in these supplemental orders, the engineers were not mentioned. Some railroads have corrected this omission by the promulgation of special wage advances for the technical men in their employ. Others have made broad interpretations of certain clauses in the supplements so as to include the engineers in their provisions. As a result there has been no uniformity of action and on some roads engineers with years of experience and responsibility have found themselves in the new and somewhat humiliating position of receiving extra pay for overtime while suffering deductions for lost time. However, this question is one of deeper significance than the mere personal feelings of the men involved and, like the broad question of adequate compensation, should be accorded thorough study.

The question of overtime may be approached from three different angles: (1) justice to the men, (2) its effect on their work, i. e., the psychology of the problem, (3) the practicability of determining the extra compensation on an hourly overtime basis. Another factor not to be overlooked concerns the precedents already established by the Board of Wages and Working Conditions for other classes of men.

The simplest case is that of the draftsman, computor, engineer, accountant or other offce man employed each day at a fixed office with definite hours of service. There would seem to be little question as to the justice of the payment of overtime or the allowance of equivalent time off for any work required of these men outside of the regular office hours. Men so employed are expected to produce results from hour to hour and should be rewarded if additional work is required of them. The same holds true of the field engineer engaged on some massive project requiring his presence at a fixed point. Regular hours of work may readily be instituted for these men although the diversified character of the em-

ployment, the time lost in walking about, the delays incident o working operations, storms, etc., tend to disrupt the daily chedule and it is admitted that the case is not as clear as vith the office man. Nevertheless, the same logic applies n both cases.

Turning now to the man who must put in considerable ime on trains or in waiting for trains, we find that he is sually paid on a monthly basis with the tacit understanding hat the company may have his services for 24 hours each lay, although allowing him a certain amount of time for neals and rest. In most cases, this does not involve as much ardship as may be supposed. The "maintenance" survey arty may be away from Monday morning until Saturday vening with most of the nights spent on trains, yet the time ctually occupied in effective work may not average over six ours daily. To the young, unmarried man this system may nvolve no particular inconvenience. He usually manages to ave as good a time as he would at headquarters and, what nterests him still more, his expenses are being paid while he s away. With the married man the case is different, for he as more inducement to be at home, and he feels it a hardship o be away for a whole week at a time, or what is really arder, to get in each night at 9 or 10 o'clock and leave at an arly hour in the morning.

There is some precedent for paying overtime to engineer arties for time elapsed in traveling, in the rulings on car epairers, pump repairmen, etc. On the other hand, there is distinct parallel between the engineer employed in field ervice on a railroad and the local traveling salesman, especially in the case of the "engineer in charge." By this is neant any man who is master of his own and his assistants' me in the execution of certain assigned work away from eadquarters. He is held responsible for the amount of work e completes, but may arrange his time largely as he pleases. t may, therefore, be argued that inasmuch as the salesman paid for results rather than time employed, the engineer ho is also held responsible for results should be paid on the me basis.

This raises the question of the moral influence of overtime ayment on the man who is responsible for his own working ours. At present no factor, with the possible exception of ne expense account, enters into the arrangement of his hedules for the most expeditious completion of his work. nder the overtime system, it is suggested that he would rofit by staying out on the line until the last train, or by so rranging his time as to be away from headquarters as much s possible. This inference at best seems rather farfetched the case of a man with any degree of responsibility, certainly with the man who has a home. The question of the racticability of applying the overtime system is also important, not only from the standpoint of the clerical labor nvolved, but of the moral influence arising from the fact nat in a large majority of cases each man would be required o make out his own time with small possibility of any accurate check by a disinterested party.

To summarize, it would seem to be to the best interest of ne man who is master of his own time or that of others and ho is held responsible for results that he should receive a alary sufficient for him not to expect overtime compensation. n the other hand, a man in the office or field not away om home who is required *by others* to spend more than the gular stated hours at his employment should receive additional pay for the extra hours worked as his salary is based n his routine employment. In the case of a man traveling n an expense account, it would not seem desirable to pay an ourly overtime. If justice demands that recognition should e given unusually severe conditions of employment, it ould be preferable to do this by proper adjustment of the onthly salary.

Attempting to Discredit Railway Officers

In a recent issue of this paper was published a sample of the Plumb plan propaganda which is being distributed in the interest of the scheme to have the government buy the railroads for the benefit of their employees. We have since come into possession of another type of the propaganda being conducted by some of the railroad labor leaders which, while ostensibly directed at the present form of government control, seems to be intended to discredit railroad officers generally.

Charges that the railroads under federal control are "eating up their earnings" by carrying on the payrolls large numbers of officers "who perform no service whatever" are made by W. G. Lee, president of the Brotherhood of Railroad Trainmen, in a letter to Senator Atlee Pomerene, of Ohio, some portions of which have appeared in Ohio newspapers. Mr. Lee attempts to transfer from the employees' payroll to that of the officers the onus of responsibility for the large deficits being incurred, and says he is in receipt of information "indicating that from 30 to 60 per cent more operating officers are carried on the payrolls today than under private control." He encloses some "reliable information" regarding the officers on the Chicago Great Western as an example, as an aid to the Senator in determining why a deficit "of about $275,000,000" is shown for the first five months of this year. Mr. Lee's information will not be especially convincing to those who have examined the statement compiled by the Railroad Administration and published in the *Railway Age* of April 25, comparing the payroll for January, 1919, with that for December, 1917, which shows an increase in the number of officers from 18,588 to 19,325, or less than 4 per cent, with an increase in compensation for the month from $4,892,945 to $5,497,718, or about 12 per cent, whereas the total number of employees, including officers, had increased from 1,703,748 to 1,848,774, or 8.5 per cent, while the total compensation increased from $153,039,988 to $230,800,589, or 50 per cent. The number of general officers had decreased from 7,451 to 6,851 and the number of division officers had increased from 11,136 to 12,474, and while the increase in the officers' payroll was at the rate of $7,248,000 a year (on the rough basis of multiplying the figures by 12) the total payroll increase was at the rate of $932,000,000 a year.

Mr. Lee, however, is "not surprised that some of the roads failed to earn their guaranteed returns" if the same method was used on other roads as was used on the Chicago Great Western, on which he says many positions were created that were never heard of before on this property. To prove it he lists a federal manager, two assistants, a general superintendent of transportation, a "protector of property," and a "conservor of fuel," and adds that under private control the general manager and his chief clerk "performed all the duties that the above officials are ordinarily supposed to perform."

The Pocket List of Railroad Officials does not list one of the assistant federal managers nor the "protector of property." It does name a supervisor of fuel. But the Pocket List for the last quarter of 1917 lists a president, an assistant to the president, a vice-president and two assistants, a general manager, and an inspector of transportation who were performing the duties now handled by the first four of the six men mentioned by Mr. Lee, although, of course, some of them had other duties. After President Felton went to Washington as director general of military railways, W. L. Park was given leave of absence from the Illinois Central

and appointed first vice-president of the Chicago Great Western. The traffic vice-president and two assistants who were in the 1917 list no longer appear, but their places seem to have been taken by an assistant to the federal manager, who then held the office of assistant general freight agent.

Mr. Lee also mentions five division superintendents, and one assistant superintendent, which is the same number of such officers as was shown in the 1917 list, or one for each 250 miles of line. He also mentions six trainmasters, six road foremen of engines and four traveling firemen. The Pocket List for 1917 showed only three trainmasters and now shows only five. It only shows five road foremen, while it did not list these officials in 1917. Mr. Lee rather objects to the traveling firemen, saying they represent a new position and that they have no new firemen to instruct, "just draw down the salary."

We have understood that some results along the line of fuel conservation have been obtained from the employment of fuel supervisors, road foremen and traveling firemen, even when their instruction was lavished on experienced firemen. We also appreciate that Mr. Lee would like to believe that the employees with the assistance of their labor organizations could run the railroads without officers, but we do not understand that the labor organizations are run that way, and we have also heard of some of their officers having had their salaries raised of late.

Mr. Lee also says that at East Stockton, Ill., there are only two switch engines, but two general yardmasters each drawing $250 a month. He also mentions a number of officers formerly concerned with traffic solicitation, who he says are not performing any service now except that "occasionally one will ride a troop train and make about the same report as the conductor has to make" and that others "ride sleepers at night and spot on the train crews." Former freight solicitors, he says, are "now holding down a desk with nothing to do but watch the eight hours pass away." We are not fully informed as to what all the former traffic solicitors are now doing, but we believe the men who have accompanied the troop trains have been found necessary to do several things that have contributed toward the successful handling of the troop movement which would not have been performed by the conductor and we understand that some at least of the former traffic men have been found rather useful in performing functions not completely provided for in the operating department.

Mr. Lee also informs the Senator that "if the government wants to find many men holding positions, paying large salaries, created since the government took over the roads, and men carried on the payrolls in general freight and passenger departments who perform no service whatever, they can find them if they will only investigate." He wishes it understood that he is not of the opinion that the Chicago Great Western is operated more expensively than a majority of other railroads, because he is "certain a similar or worse condition can be found by the most casual observor on numerous other properties."

The fact that he has selected this road as an example may or may not be due to the fact that W. L. Park, the federal manager, was a member of the board of arbitration on the wage demands of the engineers and firemen in 1915 that rendered a decision that has been bitterly assailed by the brotherhoods ever since. Mr. Lee will have little difficulty in proving that Mr. McAdoo failed to demonstrate any saving in overhead costs by his reorganization of the railroads, but his camouflage is too thin to hang any large part of a deficit running into hundreds of millions on any increase in officers' payrolls.

Letters to the Editor

Valuation ad Absurdum

Chicago, Ill.

To the Editor:

The following interesting and instructive details of the actual cost of driving spikes have been worked out by the valuation department of one of the large railroads. The first question to be solved being track spikes; what they are —their use, etc. A conference was held by the valuation engineer, two assistant valuation engineers and an engineer of unusual ability acting as the advisory board. The conference lasted from April 1 to June 15 and many interesting points regarding track spikes, their life and habits, were brought out. The cost of working up data for this inquiry was as follows:

Valuation Engineer, 2½ months at $350	$875.00
2 Assis't Val. Engineers, 2½ months at $250, 5 months at $250	1,250.00
1 Special engineer, 2½ months at $275	687.50
1 Engineer of cost, 2½ months at $245	612.50
1 Pilot engineer, 2½ months at $200	500.00
1 Accountant, 2½ months at $175	437.50
1 Clerk, 2½ months at $150	375.00
1 Clerk, 2½ months at $125	312.50
1 Clerk, 2½ months at $100	250.00
1 Stenographer, 2½ months at $100	250.00
+ 5 per cent, Stationery, printing, etc	277.50
	$5,827.50

The momentous question of what a track spike is, having been decided, the next step was to investigate the cost of driving track spikes. One hundred and seventy-six railroads were written to, asking for details of the methods and cost of driving; the railroads in turn kindly took the matter up with 1,760 roadmasters, asking each roadmaster to obtain the opinion of 5 section foremen.

The detailed expense of this section of the inquiry is given below:

176 Valuation engineers, ½ day each, 3.5 months at $350	$1,225.00
1,760 Roadmasters, ½ day each, 35.2 months at $200	7,040.00
3,800 Section foremen, 1 hour each, 8,800 hours at 45 cents.	3,960.00
Clerical Help Compiling Figures	
4 Clerks, 1 month at $125	500.00
2 Stenographers, 1 month each, at $100	200.00
+ 5 per cent for stationery, printing, etc	696.25
	$13,621.25

Upon the advisory board looking over the figures it was decided after a lengthy discussion that it would be most interesting to have a practical demonstration showing the actual cost of driving a track spike. Invitations were accepted by 50 valuation engineers to be present at the demonstration. Mike O'Reilly was the section hand chosen to drive the spike and the official time was 10 seconds at 40 cents per hour or 1/10 of a cent.

Figuring the average mileage for the valuation engineers as 800, we have

40,000 Miles at 3 cents	$1,200
Time, 2 days each, 100 days, 2 months	700
Expenses $10 per man	500
	$2,400

Therefore it cost $21,849 to ascertain that it cost 1/10 of a cent to drive a track spike.

"A Liar Who Figures."

The American Institute of Mining Engineers expects its Chicago meeting, September 22-26, to be one of the most interesting in its history. Over 150 papers have been submitted to the committee. By a special train leaving Chicago September 25, the members and guests will go to La Salle, Ill., to visit the coal mines, cement works and zinc smelters.

The Reconstruction Program for French Railways

The Minister of Public Works and Transports Outlines Work That Will Cost About $1,000,000,000

By Robert E. Thayer,
European Editor of the *Railway Age*

Part I

ONE OF THE LARGEST PROBLEMS the French government had to face after the cessation of hostilities on November 11, 1918, was the reconstruction of the railways in the war zone, the completion of improvements that were started in 1914 but which were not completed on account of the war, and the development of new lines made necessary by the increased traffic and changed geographical conditions.

Destruction of the Station at Beuvaigue

This work is under the jurisdiction of M. Claveille, minister of public works and transports, who in an endeavor to get the work started promptly has eliminated as much of the red tape common to governmental operations as possible. On the day following the armistice he asked the chief engineer of his organization to obtain reports from the services of the liberated regions showing the work necessary for repairing the damages caused to lines of communication of all kinds. He also asked for a list of work started before the war. He also asked for a list of the projects of equal importance which had been approved but not passed upon; and of the projects not yet approved, but sufficiently advanced to be submitted promptly to the Administration, wherever these projects were really of great utility. At the same time, the engineers were requested to get in touch with the contractors for the immediate resumption of the work they had been executing. Where the work had not yet been assigned, the engineers were asked to make arrangements to allot it to private enterprises, contractors, or have it done under state supervision as seemed best.

Destruction at Condien on the Aisne

Destruction of the Station at Lassigny. In the Foreground is Shown the Remains of a Water Tank and at the Left Is What Remains of the Station. The Brick Structure at the Right of the Water Tank Was a Signal Tower

The cost of the reconstruction work is to be borne by the

government of France under a law which was passed by the Chamber of Deputies in the latter part of 1917. This includes only the cost of putting the lines back into as good condition as they were before the war, and any expenses for improvements are to be submitted for proper action in each particular case.

Reconstruction in the War Zone

The railroads of France are classified under two heads, viz.: Principal railroads; railroads of local interest. The principal railroads are those such as the Nord, Est, Paris-Orleans, Midi, State, Paris-Lyons-Mediterranean, and Cein-

ture. The railroads of local interest are narrow gage lines operated with steam locomotives, and correspond somewhat to the electric interurban lines in the United States. They serve local communities and act as feeders to the principal railroads without competing with them for traffic.

Principal Railroads

The brunt of the damage to the principal French railways caused by the war was borne by the Nord and Est railways, the lines of which extended throughout the war zone. The damage sustained by these lines was appalling. On the Nord it can be said, in a general way, that all railway material, including everything that goes to make up a railway, included between the line of the extreme German front of 1918 back to the frontier, was destroyed in a systematic manner. The vastness of this area is well illustrated by the accompanying official maps which show the extreme German advance, the advance line of 1918, the line existing at the signing of the armistice and the Belgian frontier.

The Germans blew up all the bridges and constructions, big and small, using very heavily charged mines which, in most cases, not only destroyed the vaults or metal flooring of the bridges, but also the piers and abutments to their very foundations. They blew up all the switches and even destroyed the running track along distances of tens of kilometers consecutively, either by blowing up every other joint thus making the rails unserviceable, or by tearing away the rail from the ties by using metal plows* attached to locomotives. This latter method played such havoc with the track that there was nothing left but to completely clear away the

*These plows consisted of a large triangle yoke of heavy steel, one leg of which was placed under the rails.

wreckage and entirely replace the rail and ties. It should be added that the destruction continued for several weeks after the armistice through the use of delayed mines. In the stations of the invaded region, the electric equipment, furniture, tools and supplies of all kinds were destroyed or entirely removed by the enemy.

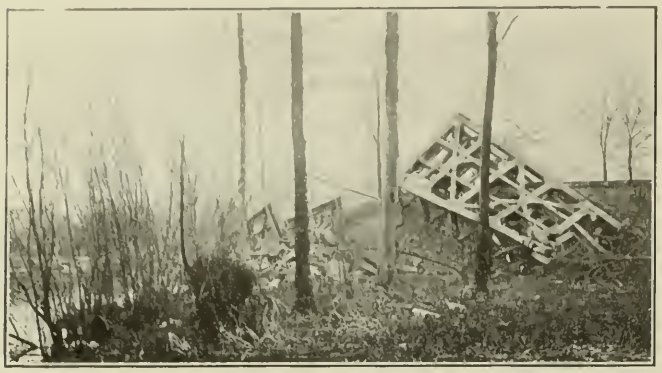
On the Est there was the same destruction. All the part of the railroad between the line of the extreme advance of the enemy in July, 1918, and the line held on the day the armistice was signed, was destroyed in battle or by systematic devastation. On the line from Rheims to Laon, between Rheims and Guignicourt, the embankment was completely torn to pieces on account of the fact that it was used for shelters, trenches and barbed wire entanglements. The same was the case with the line from Paris to Strassburg beyond Emberménil, and elsewhere. Part of the line from Bazancourt to Challerange marked the battle front for four years, and it was completely torn up. In other places mines left craters 30 to 60 ft. in diameter. Almost everywhere bridges and other constructions were entirely or partly destroyed by the enemy. Even in the region evacuated after the armistice, some of the most important bridges were destroyed by the Germans, whole piers and abutments being blown completely out of the water, leaving openings more than 60 ft. wide.

Eight tunnels were also entirely blocked up. Four of these near Liart will require a very long time to clear out on account of the unfavorable character of the material through which the tunnel was bored. Two others, one near Perthes, and the other at Manre, near Challerange, although in the chalk, were so completely blown up that the earth has sunk down through the whole thickness from the surface to the vault. At Perthes 2,472,000 cu. ft. of debris had already been removed in March, 1919, without yet reaching the parts of the vault still in place. At Manre it is believed that between 6,000,000 and 7,000,000 cu. ft. of soil will have to be removed before the tunnel can be opened.

The tracks in some places were completely removd by the enemy, notably along a distance of 18.6 miles on the Rheims-Laon line, 12.4 miles on the Rheims-Challerange line, and 12.4 miles on the Bazancourt-Sedan line. Everywhere else the destruction was carried out systematically, generally by

blowing up every other rail joint, and occasionally by cutting the middle of each rail. The destruction of the track by using plows, seen so frequently on the Nord, was only employed on the Est along one stretch 2.5 miles long, between Armagne and Charleville. The switches were almost completely destroyed or removed in all the stations of the region, and all apparatus rendered useless.

The water pipes also were almost completely destroyed in all places where they were not underground. The metal or reinforced concrete tanks were also pulled down by knocking out their foundations from under them. The water



A Somme Bridge. This Damage Was Done by Dynamite. The Force of the Explosion Was so Great That the End of the Bridge Resting on the Left Bank of the River Was Thrown Completely Across the River and Is Shown Upside Down at the Right of the Illustration

cranes are gone. The stations are either destroyed or so damaged that they cannot be used without making important repairs, and the same is often true of the office buildings.

The signal poles have been removed from the whole region, the enemy having used them for his cross-country lines, destroying them when he retired. The signal interlocking

An Airplane View of a Detour Built to Pass Around Two Bridges Destroyed by Explosion

The illustrations accompanying this article, which are reproduced from official French photographs, give an excellent idea of the damage done and some of the reconstruction work done by the military forces during the war.

In the reconstruction of these devastated portions of the railway advantage is being taken of the circumstances to make improvements correcting faults existing in the lines before the war which will better serve the region through which

The following figures will give an idea of the damages caused to the Nord and Est railroads:

	Miles
Length of track destroyed or damaged (Being one-third of the total length operated on the two roads in 1913.)	1,803
Length of single track lines out of service	3,480
Bridges destroyed	1,510
Tunnels destroyed	12
Buildings destroyed	590

The Rail of a Single Track Line Damaged by Breaking the Middle of Every Rail

apparatus has been so damaged or changed that they will almost all have to be reconstructed, even in the region liberated after the armistice. The telegraph and telephone lines, which in many cases had been increased in number by the enemy, have been completely wrecked. The poles are usually still standing, but all the copper wires have been replaced by iron. Everywhere the furniture in the stations, the machinery in the terminals, the cranes and track-scales have been removed or destroyed.

the railroad passes. That is; stations are being more logically located, grade crossings are eliminated where possible and in some cases the position of the line is altered and grades are changed. Often the reasons which prevented these improvements being made before no longer exist now.

The reconstruction of these lines is being done in two stages. The first stage was the laying of a continuous track by the

French and Allied engineer troops in order to re-establish communications. The second stage is the actual reconstruction of the lines which is done by the maintenance of the way department of the railroads and by contractors.

During the war the engineer troops followed up the infantry advances very closely and did excellent work. The

Damage Caused by Blowing Up a Tunnel Between Soissons and Laon. The Force of the Explosion Was so Great That It Will Be Noticed the Earthwork Above the Tunnel Has Settled Down in the Vaults

figures below are given to show the vast amount of material ordered for these engineer troops during the years 1917 and 1918:

Nature of Orders	1917	1918
ool equipment	$180,000	$222,000
otal equipment for work yards	256,000	596,000
lachinery and construction equipment	108,000	574,000
iaterial for construction and repairing of lines	1,590,000	2,646,000
Totals	$2,136,000	$4,038,000

Note—the metal bridges are of the Henry type, 98, 115, 131 and 164 eet long, and also of the Marcille and B. S. Types.

By Removal of Tracks Throughout France Where not Absolutely Needed—

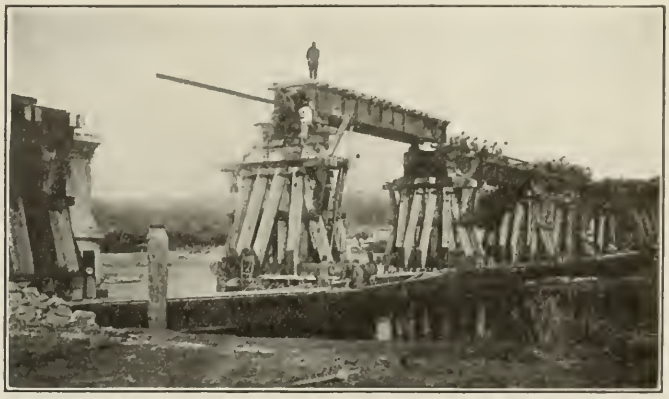
From Principal Railroads	930
From Railroads of Local Interest	308
The American Army ceded to the French Government 7,200 metric tons of 80-lb. rail on stock at Marseilles, making	56
Total amount of rail	5,097

SWITCHES

Ordered in France (1915 to 1919)	14,481
Ordered in America (1917)	500
Ordered in America (end 1918) (and not delivered)	2,500
By removal of rail not needed elsewhere	700
Total number of switches	18,181

TIES

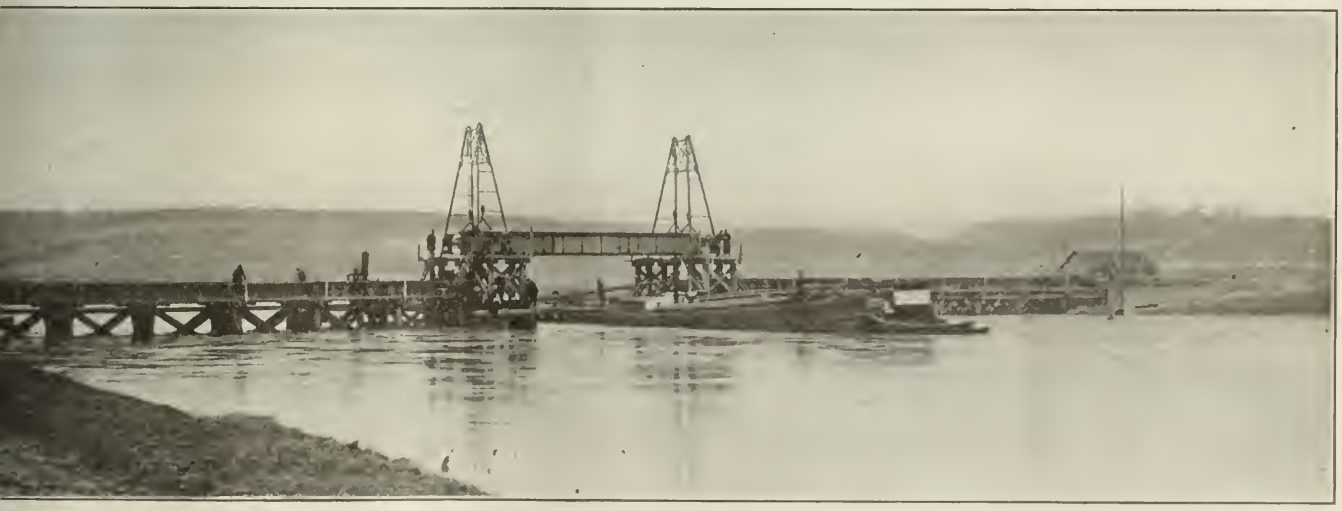
Obtained from existing stocks, production and foreign purchases	7,055,000
By removal of 1,239 miles of track, where not absolutely needed at rate of 1,456 ties to the mile	1,795,000
Total	8,850,000



An Example of the Type of Construction Used in Rebuilding Damaged Bridges

The length of the lines occupied by the enemy or reached by his fire in 1918, and evacuated before the armistice, was 1,803 miles. By February 1, 1919, a continuous track had been reconstructed along 1,339 miles of this distance or 75 per cent of its length. The rest of these lines will require very important work on account of the bridges, tunnels, etc. On the Nord the British have done the reconstruction work of about 50 per cent of the lines rebuilt. On the Est the American army has restored 62 miles of single track line. Elsewhere the reconstruction has been done by the French army, which has executed about two-thirds of the total work done.

For the final reconstruction work, by March 1, 1919, 190



An Improvised Lift Bridge That Was Destroyed by Bombardment

The following listed quantities of rail and track material were obtained during the war, by orders or otherwise, as indicated:

RAILS

	Miles
Ordered in France During 1917 and 1918—	
Isoergues, Pompey, Neuves-Maisons	280
Ordered in America, end of 1915 to end of 1918	3,523
(On February 20, 1919, there still remained 863 miles of this rail to be delivered.)	

projects had been approved by the Ministry of Public Works, 132 for the Nord and 58 for the Est. The contractors doing the work were employing about 30,000 laborers at the end of March, not counting the soldiers and the prisoners. Everything is being done to push the work as methodically and rapidly as possible.

The cost of the reconstruction of the lines and buildings alone on the Nord and Est will reach 250 million dollars, and there will be an expense of 180 million dollars more for rolling stock, furniture, machinery, supplies, and neglected upkeep.

Railroads of Local Interest

The operation of the railroads of local interest was completely stopped in the territory occupied by the enemy and also near the line of fire. Sometimes the Germans used these lines for shipments, but everywhere they prevented the civilian population from using them. Often the enemy relocated these lines and changed their gage. Near the trenches he removed the rail and ties to use them as sheathing or props. In a general way the railroads of local interest and the tramways suffered greatly from the occupation, and in retreating the enemy destroyed the greater part of the lines in the region included between the extreme front and the line which he held at the time of signing the armistice.

About 982 miles of these lines were completely destroyed or damaged, that is to say, 60 per cent of the total length of the lines situated in the invaded region. The probable amount of material damage done to the lines in question amounts to at least 83 million dollars, but this figure comes very far from representing the total damage caused to the railroads of local interest and to the tramways.

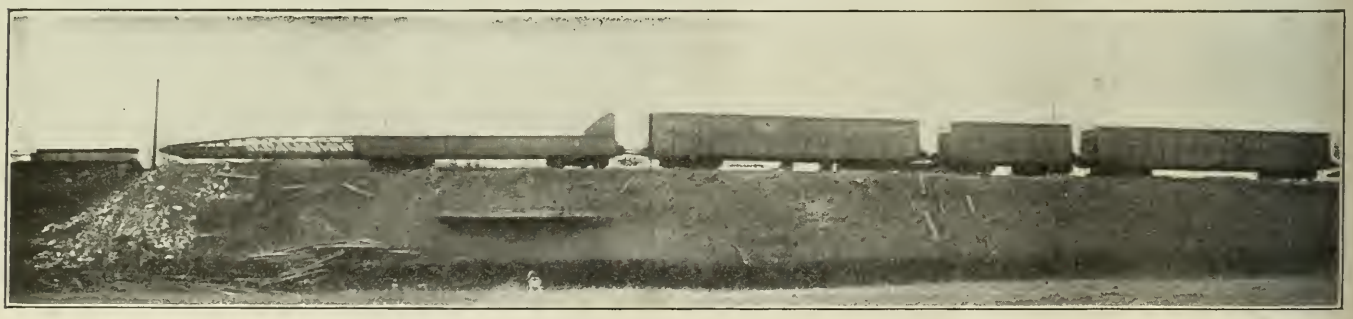
The first work of repairing the lines had been begun when the German offensive put a stop to it, but it was taken up again as early as the month of October, 1918. This rebuilding of the lines is being done: (1) By the corporations which own them; (2) by the geographical department of France interested, where the corporations only operate the lines; or (3) by the Service of Bridges and Highways acting at the request of the department or the corporations, or on its own initiative. At the present time contracts have been approved, or are being prepared, in all the interested districts, and important projects are already under way. The biggest ones concern the reconstruction of the lines, from Albert to Doullens, from Albert to Montdidier, from Albert to Ham and to Péronne in the Somme Department, from Château-Thierry to Mareuil-sur-Ourcq and from Soissons to Oulchy-Breny in the Aisne; from Dormans to Rheims and to Fismes, and from Rheims to Ambonney, in the Marne; and from Toul to Thiaucourt in the Department of Meurthe-and-Moselle.

The supply of track material, signals, etc., and of rolling stock needed for the reconstruction of tracks of the railroads of local interest and the tramways will be obtained as follows:

1. By drawing on the resources which the Administration of the Ministry of Public Works has on hand, and on the material obtained by recuperation as well as that abandoned by the enemy.
2. By orders placed with French industries for the rest to complete the amount which is needed to restore the railroads. Up to the present time an order for 20,000 metric tons of 52 lb. rail has been placed with French rolling mills.

An office called the Ordering Office has been created for purchases in the open market. This office has authority to pass on contracts and proceed with all acquisitions of stationary equipment and rolling stock in accordance with the general instructions given it by the Minister to whom the contracts are submitted for approval.

A Closer View of the Lifting Apparatus for the Lift Bridge Shown in Fig. 9



The B. S. Type of Bridge Construction Ready for Assembling at the Scene of Operations. It Will Be Noted That the Spans Are Mounted on Trucks, Having Been Hauled to the Bridge Position from the Erecting Plant

Some Comments on the Railroad Problem*

Congress Should Establish a Rule of Rate-Making—There Should Be Compulsory-Federal Incorporation

By Robert S. Lovett
President Union Pacific

Part II

WITHOUT GOVERNMENT OWNERSHIP or operation, the only reliance for railroad revenue to support railroad credit must be upon the *adoption by Congress of a sound railroad policy* involving absolute justice to railroad capital, and requiring specifically and plainly that the rates to be fixed shall be sufficient to enable the carriers to provide safe and adequate service, to protect existing values, and to attract the new capital necessary in the public interest.

To that end Congress should, among other things, specifically provide that the level of rates must properly reflect the cost of wages, materials and all other expenses incident to maintenance and operation, and a reasonable return upon the new capital invested.

It is for congress to say whether the railroads of the nation shall be publicly or privately owned, and whether they shall be prosperous and efficient or poor and inefficient, for Congress has the law-making, which includes the rate-making power.

True, Congress cannot make a confiscatory rate. That would be unconstitutional, and a judicial question would arise.

The rates which Congress makes—directly or indirectly through a commission or other agency—must be "reasonable." From this I anticipate the usual question: "What is a reasonable rate?"

It is whatever rate Congress may fix; provided it is not so low as to be confiscatory of the carrier's property, nor so high as to confiscate the shipper's property by preventing it from moving. Between those limits any rate the Government fixes is "reasonable" in a legal sense.

R. S. Lovett

Congress Itself Should Declare A National Railroad Policy

The time has arrived for Congress itself to declare by law a national railroad policy, and not leave it to the Interstate Commerce Commissioners or other subordinate officers or agencies to say whether the policy of the national government is to impoverish the railroads to please certain shippers, or to improve and extend railroad facilities for the country by making compensatory rates, or to pursue one policy at one season and the other policy at another.

Congress should itself provide the rule of rate-making and require the commission or other rate-making agency to take into account the increase in taxation, in rates of wages, in cost of materials and other operating costs, and the new capital invested in the property, as well as the value of the property as previously demonstrated.

Our railroad transportation system, which is essentially national, should be rescued from the irresponsible and conflicting state agencies, and brought under uniform control and regulation in the national interest, except as to strictly local matters.

The national agencies necessary for the administration and supervision of the railroads should be created.

It is not enough to create them with *authority* to act, but they must be sufficient in number and character to *act*, for it is worse than idle to confer jurisdiction and authority, as upon the Interstate Commerce Commission, to perform a task which in magnitude is utterly beyond its power to perform.

Among the agencies that should be created is one responsible for the *sufficiency of the transportation facilities* required by the people in general.

Since the creation of the Interstate Commerce Commission, the only concern of the government, as reflected by legislation and commission action, has been to keep down the revenues, prevent discrimination, and generally chastise railroad management.

No sense of responsibility for providing the requisite railroad facilities has been manifested on behalf of the government.

That task has been left to private enterprise, handicapped by the governmental policy of suspicion and repression.

The Interstate Commerce Commission utterly failed to see and meet by rates the demand for increased transportation which was constantly growing until the collapse came.

It is hopeless to put upon the Interstate Commerce Commission the responsibility resting upon the government to see that the railroad transportation facilities essential to the welfare of the country are provided and as needed, and at the same time regulate all the railroad rates and hear and determine all the complaints.

They are entirely separate and distinct functions: one

*Part one of this article, which was prepared for distribution by Robert S. Lovett to Congressmen and others interested, was published in the July 25 *Railway Age*, page 173.

is the executive function of looking after the transportation service, its character and sufficiency, and deciding what is needed, and what amount is necessary to provide it; the other is the legislative function of fixing the rates and the semi-judicial function of determining rate controversies.

The Interstate Commerce Commission is not equipped for the former, and has shown its lack of appreciation of the necessity for and the means of providing and assuring more transportation facilities.

It is not sufficient, therefore, to relegate railroad capital only to the agency that has failed so signally in the past. But *it will be necessary*, if private management is to succeed, *for the government to perform the governmental duty of seeing that the requisite transportation facilities and service are provided*, and to that end create an agency to determine the necessity and the cost, and to advise the measures necessary to provide the capital which the government itself does not propose to furnish.

If Congress will enact the necessary laws giving railroad capital a business chance, I believe that capital will take a business risk, and the money required to provide the requisite railroad facilities for the future will be forthcoming.

But railroad investors and owners will not take all the risks and forego the profits of the business.

Why should they? There are too many other opportunities for profitable investment all over the world, and more now and for many years to come than ever before.

If, as many propose, the return upon railroad capital is to be limited at best to a low fixed return, even by the most successful and best managed roads, with no hope of anything more for good management, inherent earning capacity and other considerations ordinarily influencing values, while all misfortunes are to be borne by the investors, the necessary capital will not be obtained.

The hope of profit should not be foreclosed. If it is the policy of the government to limit the return at best to six per cent or some other low fixed rate, then that return will have to be guaranteed to attract the investor. Only the prospect of profit justices risk in financial affairs.

Under rates prescribed by the government, or with its approval, and applying to all alike, why should profit be denied a stockholder of the wisely built, well managed railroad any more than to the owners of bank stock, or steel stock, or brewery stock, or any other stock?

But it is said that the latter are engaged in private business.

Very well. Who is more deserving of encouragement, liberal treatment and appreciation—he whose money provides the railroad facilities which the public convenience and interest require and conducts his business so well that he can make a profit out of it at rates which the government itself fixes; or the man in private business (in some lines, the more private the better for it) with no public interest involved, and only his own selfish interest to serve?

It is about time that we were introducing common sense into some of our theories about railroad capital.

No money except that devoted purely to benevolence is employed more in the public interest or is entitled to more encouragement or fairer treatment and consideration than that which is invested in the development and upbuilding of our railroad facilities.

It is "affected with a public interest" in more senses than that which subjects it to reasonable regulation by the Government, though too often these are overlooked.

It serves the public; it provides transportation facilities and conveniences for the public; and promotes the public interest in vital ways.

If by good management it can be made productive to its owner in competition with others, in the character of service and facilities supplied at rates fixed by the government, there is no reason in morals, and there should be none in law, why the owner should not be as much entitled to enjoy the profit as the owner of money invested in private, and often much less worthy, enterprises.

The Choice Before the Nation

I believe firmly that *the choice of this country with respect to its railroad transportation ultimately* is between

(1) Inadequate and impoverished railroad transportation facilities, or

(2) Government ownership of the railroads, or

(3) A guaranty by the government of a reasonable return upon railroad capital, or

(4) Rates that will be reasonable under all the circumstances determined by a government agency that will consider the needs of the traffic and the needs of the carrier, with the right to each carrier to keep whatever profit it can make out of such rates so established, by good management, good service, economy, wise investment, and success in competing for business.

Compulsory Federal Incorporation

But it is not merely a just rule of rate-making enjoined upon the commission by law, but relief from the disabilities imposed by conflicting and impracticable state regulation, and a comprehensive and unified system of national regulation that are necessary to re-establish the credit of the railroads and provide the facilities that the country needs; and it is plain, as a whole, recommended by the Committee of Railroad Executives, which is urged.

Among the most important of the needs of the situation is the compulsory federal incorporation of railroad carriers.

So long as Congress confined itself to restrictive legislation of railroads as *common carriers*, it was not material whether they were federal or state corporations, or indeed corporations at all.

The working and operation of the physical properties and their relations as carriers to the public were the only matters of concern, and their corporate functions were not substantially affected.

If only restrictive and oppressive legislation were intended now, federal incorporation would not be necessary.

But the time seems to have arrived for a comprehensive legislative plan for developing and sustaining necessary railroad transportation, or, in other words, for *constructive legislation.*

The very first feature of the problem is the credit of the railroads—the means by which this is to be established and maintained in order that the requisite capital may be secured.

This involves at once the most important corporate function; the power to raise money and issue stock and bonds.

The power to borrow money and the power to issue and sell stock and bonds are, of course, corporate powers.

It is elementary law that a corporation derives its corporate powers from the government that creates it and can exercise none not conferred—especially none prohibited—by that government.

May Congress authorize a state railroad corporation engaged in interstate commerce to borrow money and issue securities in excess of the amount or in a different manner from that authorized by the state that created it?

I believe that by a carefully worded statute it can. Then is it necessary to federalize all state railroad corporations in order to enable Congress to regulate their financial operations and the issue and sale of securities by them?

That in my opinion will depend very much on the action of the several states.

The corporations now are the creatures of the states incorporating them. The states gave them their lives and conferred all their powers, and the states may take away their

lives and abolish their powers so long as they are permitted to remain as mere creatures of the states.

Many states have reserved the power to repeal railroad and other charters granted under their laws. Suppose the state repeals the charter of the railroad company?

It would not even be necessary for the state to give a reason for its repeal. The corporation would be at an end. There would be no congressional act for incorporation to which the railroad could turn.

How would the government meet such a situation and carry out the national policy by utilizing the existing state corporations?

I assume that Congress would not undertake to compel the corporations to issue and sell stock or bonds.

The most it could do would be to give them the right to issue and sell such securities, a right which the state could by coercion prevent the corporation from exercising, just as in so many instances the states have coerced railroad companies into making interstate rates in accordance with the wishes of state commissions.

Congress would not, I assume, seek by law to compel federal corporations to issue securities, but being federal corporations they would be protected against coercion of the state authorities.

This is no mere imaginary danger. A bill was introduced (but I do not know whether it was enacted) in one of the state legislatures, providing for the forfeiture of the charter of any railroad corporation of that state that obeyed orders of the Interstate Commerce Commission in conflict with orders of the state railroad commission; and there are scores and even hundreds of instances where state commissions have coerced railroad companies into making interstate rates in accordance with the wishes of the state commissions.

Difficulties of Leases and Consolidations

What is true with respect to the issue of securities is equally applicable to the consolidation, lease, sale or other combination of railroads.

Then is it not necessary in a nation-wide transportation system, and is it not obviously in the interest of all concerned—the investor, the shipper and the citizen generally—that all railroad corporations throughout the United States should have the same corporate powers and restrictions with respect to their financial powers, and the same duties and obligations to the public, so that every investor will know precisely what every railroad corporation may and may not lawfully do in issuing and selling securities, and that every shipper and traveler may know the duty and obligation of every railroad company to him, whether in Maine or California, in Michigan or Texas.

No stockholder of a railroad engaged in interstate commerce ever had any right to withdraw such instrumentality of interstate commerce from business whenever the method of regulation did not suit him.

If Congress chooses to make the corporation owning a railroad a federal instead of a state corporation, it is merely exercising its right to determine the means and agencies for the better regulation of such commerce; and a stockholder has no more right to object when Congress chooses cars of certain specified designs, and equipped with certain appliances, instead of those selected by the owners of the railroad.

And I urge that in considering the power of Congress to require the federal incorporation of all railroad companies, the mistake should not be made of considering only the commerce clause.

The "war power" of Congress under the Constitution—the power to "declare war," to "provide for the common defense," to "raise and support armies," to "provide and maintain a navy," to "repel invasion," to "organize, arm and discipline the militia," etc., etc.—is ample without any other.

The limits of that power have never been explored, even during the recent world war.

It was in the exercise of that power that all the railroads of the country—twenty billions worth of property—were taken over without first making compensation and without question. *Northern Pacific R. Co.* vs. *North Dakota* (decided by Supreme Court, June 2, 1919). If Congress deems it advisable (it need not find it *necessary,* mind you), in times of peace to provide for the national defense by converting all state railroad corporations, with infinitely varied powers from and responsibilities to forty-eight different states, into national corporations, with uniform powers and responsibilities, subject directly to the national government, no court will hold that Congress was not exercising discretion vested in it by the above mentioned war powers of the Constitution even without any support from or reference to the commerce clause.

The power seems ample under any of these provisions; and the power to deal with the subject existing, the means of exercise and the agencies to be employed are, of course matters exclusively within the discretion of Congress.

Then, too, there is the constitutional power with reference to post roads, which may well be invoked.

The Reasonableness of Federal Action

What rights would be impaired or taken away by requiring the incorporation under an act of Congress conferring all powers essential to the ownership, use and enjoyment of the property now owned?

Only the right to be a state railroad corporation and to corporate powers held by such corporation, which might be greater or less than those conferred by Congress.

But would not the federal corporate powers be compensation for the state powers that ceased to exist?

However that may be, the conclusive answer to any complaint is that every state railroad corporation engaged in interstate commerce was created, and every shareholder acquired his stock, with the unavoidable knowledge that Congress had power under the Federal Constitution to regulate interstate and foreign commerce and all the instrumentalities thereof; that it had power to raise and equip armies and to provide for the national defense; that such powers were in no wise lost or impaired by failure or delay in the exercise of them; and that the time, the means, the agencies and the methods of the exercise of such powers rest in the unrestricted discretion of Congress.

This was the *effect* of the decision in the Anthracite Coal Cases (*United States* v. *Delaware & Hudson,* 213 U. S. 366).

By converting existing state corporations into federal corporations, Congress would not take away the property of the corporation or of the stockholders.

It would not affect the title of the property at all. The stock certificates would represent the same relative interest in the same property, and bonds and notes would represent the same debts.

It would no more change the title of the property or the rights of stockholders and creditors than does an act of the legislature that changes the name and amends the charter of a corporation created by it.

The United States is not a government *foreign* to these corporations and their stockholders, but they and all their properties are much more subject to it and to the will of Congress than they are to their states.

With respect to existing corporations, Congress should require them to reincorporate by filing with the designated department of the government articles of reincorporation, which should contain the statements and declarations Congress may prescribe; and thereupon they should become

federal corporations instead of state corporations, and possess the powers which Congress, by the act for reincorporation declares such corporations shall possess.

The obligations to creditors and all other private rights and relations should continue as before, and the stock and the certificates representing it should remain as before until transfers are made in the usual manner; and, of course, the certificates would, in form as well as in fact, represent stock of the reincorporated company.

Some one has discovered in this suggestion a scheme for for validating invalid stock.

Such would not, and certainly need not, be the effect, for it could be provided in the act that such reincorporation should not, as between the corporation and its stockholders and creditors, create any new rights or obligations or validate anything already invalid.

In short, on a given day to be specified in the Act of Congress, all railroad corporations of the United States would cease to be state corporations and would become federal corporations with the powers set forth in the Act of Congress; and would thereafter be bound, with respect to all corporate powers and action, by the terms of such act, rather than by the various state statutes and special charters.

Exclusive Federal Regulation of Securities

The necessity for the exclusive Federal regulation of the issue of railroad securities seems to be generally recognized, yet it is so vital to railroad credit, and to the success of any system of regulation which may be adopted, that it must not be overlooked.

Time is of vital importance in transactions involving the sale of corporate securities.

Bankers (and that includes the syndicates composed of numerous financial houses and institutions throughout the country whose co-operation the originally contracting banker invariably enlists with whom he shares his margin of profit) are almost indispensable in floating large issues; but bankers never buy such securities to keep—only to sell. If they bought to keep, their capacity to buy would soon be exhausted.

Their function is precisely that of the ordinary merchant, except that they count on making quicker sales, and therefore work on a smaller margin of profits than the ordinary merchant makes on his merchandise.

When bankers make an offer for an issue of bonds or stock they base their price upon current financial conditions and quotations, expecting to make a quick turnover.

If they are required to wait for the delivery of the securities they reduce the price to cover the risks of financial changes in the meantime, and the seller gets less for his securities.

If the period of waiting is long or indefinite and the transaction is a large one, bankers sometimes will not buy at all—particularly if the financial world has any menacing features.

But in any case, the longer the delay the lower the price, because of the greater risk.

If a railroad company is compelled to go to half a dozen state railroad commissions for permission to make an issue of stock or bonds, and to encounter delays running from weeks to months on account of numerous bearings before different commissions, and in meeting their conflicting policies and views, before it can deliver the securities, it will be impossible to have the issue underwritten, or if underwritten at all the cost will be excessive.

But worse still, the chances are that differences between the commissions will arise, or that the inexperience and perhaps the financial theories of some of the many commissioners may require changes that will upset the plan entirely.

Indeed, some states, in effect, deny railroad companies the right to borrow money for any kind of improvement at all.

As attorney, and afterward as president of the Southern Pacific I had to do and was quite familiar with the working of the Texas law regulating railroad stock and bonds, from the time of its enactment in 1893 until the termination of my connection with the Southern Pacific in 1913.

Without reference to branches and other subordinate lines, the Southern Pacific Sunset Route, made up of steamers from New York to New Orleans and Galveston, thence by rail to Los Angeles, San Francisco, and Portland, runs through the State of Texas for 936 miles from the Texas-Louisiana boundary to the Rio Grande River at El Paso, with a line diverging from this at Houston and extending to Galveston.

Yet under the stock and bond law of 1893, as administered by the Texas Railroad Commission, not a dollar of bonds or a share of stock has been issued against or on account of this line for the necessary betterments and additions of this great transcontinental line of railroad in Texas since the Texas statute was enacted in 1893 to this day.

The Gulf Line of the Santa Fe, extending from a connection with the main system in Oklahoma, thence through Texas to the Gulf, is in the same situation.

Not a bond or share of stock has been issued in over 20 years for the improvement of that great outlet for interstate and foreign commerce from the Northwest.

The money needed for the improvement of the Texas lines of the Southern Pacific and Santa Fe systems, when forthcoming at all, has been furnished by the parent systems by direct loan, without security, from their treasuries outside of the State and by foregoing dividends of the Texas companies from time to time to which they were fairly entitled.

Much of the lines mentioned—more than half of the Southern Pacific from the Louisiana boundary and the Gulf to the New Mexico boundary—is unproductive and would not pay operating expenses except for the through business.

No argument should be needed to show that the transcontinental lines of railroad extending from New Orleans on the Mississippi River and Galveston on the Gulf to the Pacific Ocean, and the lines from the grain fields of Oklahoma, Kansas, Missouri, Nebraska, Iowa, etc., to the Gulf —particularly those under the same stock ownership and operated as a single line—ought to be regulated, in their financial operations at least, by the Government that regulates interstate and foreign commerce.

Considering now the method or character of regulation to be prescribed by Congress to govern the issue and sale of railroad securities:

It is all important that it be made flexible and practically workable.

The issue of railroad securities does not call for the exercise of a judicial function, but it is a business matter; and whether the necessity exists and the conditions are favorable are not judicial questions, but are business questions.

Yet all the state commissions, in practice, deal with this purely business question as if it were a matter for judicial inquiry and determination, and employ the elaborate procedure and machinery appropriate only to judicial proceedings.

The result, of course, is delay—delay for pleadings, delay for process, delay for witnesses, for hearings and arguments; and delay sometimes for writing elaborate opinions which are to become precedents. This is intolerable under financial distress, and in the frequent and quick changes in financial conditions and markets. Moreover, it is wholly unnecessary.

What the People Really Seek Through Regulation

What the Government and the people wish to prevent is the issue of stock, bonds or other railroad securities for im-

proper or unnecessary purposes and without adequate consideration—"watered" or otherwise fraudulent securities.

This accomplished, the Government and the people are interested in encouraging and expediting the issue and sale of the railroad securities necessary to procure the money required to provide the transportation facilities which the people must have.

They are interested in having the money procured in the shortest time and with the least waste and loss through the working of cumbersome government machinery, and at the best rates obtainable by the corporation.

Hence the machinery provided should be as simple as possible to accomplish these objects, and especially should it be unencumbered by judicial forms and methods of procedure.

It is purely and only an executive function—determining whether the purposes are within the corporate powers and otherwise lawful, whether the terms of the issue are consistent with the public interest, and what if any special provisions should be made to assure the application of the money to the purposes authorized.

The circumstances of the cases vary greatly—with the financial strength and credit of the different companies and the extent and character as well as the purposes of the proposed issue, and in other respects.

What is needed is a governmental agent or agency with the ability and authority to take hold of each case and deal with it in a businesslike way and without regard to forms or methods of procedure.

Exclusive Federal Regulation of Rates

Argument in support of the power of Congress to regulate intrastate as well as interstate freight and passenger rates seems unnecessary.

It is notorious that many of the state commissions grossly discriminate in favor of their own citizens in the matter of both passenger and freight rates, and in favor of merchants, manufacturers and producers in their own states against citizens of other states.

Indeed it is not too much to say that the present interstate and foreign rates on traffic of immense volume and importance from very large sections of the country have been practically dictated by state commissions.

This policy and practice of coercion to a greater or less degree may be exercised by any, and probably is exercised by many, of the state commissions in the interest of the communities that elected them, as against the citizens and communities of other states.

But discrimination is not the only feature of the system. It is the evasion of the obligation of all the traffic to bear as equitably as possible a just share of the burden of transportation, which is a matter of national concern.

If the national commission holds that a three-cent fare is necessary to make passenger traffic bear a proper share of the railroad transportation expenses, no state should be allowed to escape its just portion by a two-cent rate.

When the national commission finds that a certain amount of revenue is necessary to provide and maintain the transportation facilities which the nation requires, no state commission should be allowed to relieve its shippers from their share of the burden.

And more important still, *when the national commission establishes or recognizes a rate adjustment affecting, as such adjustments always do, a large territory, many states, and varied interests, no state commission should have authority to disturb it.*

Important Functions of the State Commissions

I do not advocate the abolition of the state commissions. There are many important functions for them to perform.

There are not only public utilities of various kinds, such as street railways, interurban railways, electric light and power companies, water companies, etc., which they ordinarily regulate, but the ordinary police powers of the states with respect to the railroads, not involved in the matter of rates and through service, could be left to them; and they could perform a most important duty to the people of their states and to the national authorities by observing the working operation of the railroads and the effect of the rates in their respective states, and bringing before the federal authorities just causes of complaint for rectification.

And, of course, I am not suggesting that the Interstate Commerce Commission may itself regulate directly all the railroad rates of the United States.

A number of subordinate commissions in different districts or regions will be necessary in any event if we are to overcome insufferable delay, whether jurisdiction is limited to interstate or is extended to include intrastate rates.

But this appertains more particularly to the question of administrative machinery.

Organization is as essential in railroad transportation as engines and cars.

We have organizations by companies and by systems, but there must be for the government the organization necessary to govern and manage these companies and systems in their relations with each other and with the public, and so to co-ordinate them as to have them supply the nation with the transportation needed, as it is needed, and at reasonable rates. That is the problem of the Government.

We already have laws prescribing what is right and prohibiting what is wrong in most railroad activities.

These laws operate upon the railroad companies and their officers, severally and individually.

But they no more dispense with proper organizations acting for the government than the signing of a charter for a company dispenses with the necessity for an organization to manage and conduct its business.

I realize that this is a somewhat primary statement of principles, but I wish to be sure that the point is made clear.

Government Department of Transportation

It must be apparent that these duties relating to the quality and character of the service rendered by the railroads, to the application of safety appliances and the maintenance of the same, to the condition of engines and other equipment, and to the investigation, detection and prosecution of violations of the law, and regulations with respect to accident reports, etc., etc., could be very much more promptly and effectively handled in an executive department of the government than by a semi-judicial tribunal that can act only in conference.

But the greatest advantage would be the time it would give the commission for the performance of its more important duties of passing upon rates and determining questions which only such a body can properly determine, and also in relieving that commission of the petty prosecuting activities which tend to unfit its members for their more important duties.

A department of transportation should be created to take over and perform the executive and administrative functions devolving upon the Interstate Commerce Commission under existing laws, and any created by additional statutes.

I believe that the head of the department of transportation should be a member of the cabinet.

As I was the first railroad executive, so far as I know, to suggest that a cabinet member be put at the head of a department of transportation, and as I believe very strongly in the wisdom of it, I shall state briefly my reasons, which go further than merely relieveing the commission of its executive duties.

It soon becomes obvious to any one who has opportunity to observe that executive and administrative functions can-

not be efficiently exercised by boards, commissions or committees.

There was demonstration of this in Washington during the recent war. The larger the board or commission, the more cumbersome or difficult becomes the task; and the abler and stronger as executives the individuals are, the more likely that the board or commission will become a debating society, making but little progress with the work, unless, of course, they avoid conflicts by leaving the work to subordinates.

Recent experience has demonstrated the necessity for a national government officer to meet emergencies resulting from exceptional congestion in traffic or through blockades of transportation, by quickly mobilizing the transportation resources, and by the arbitrary diversion, if need be, of traffic from lines which cannot handle it to lines which can, and by other instant and heroic methods.

How can the Interstate Commerce Commission, or any similar body, exercise promptly and adequately this extraordinarily important and difficult executive power which requires immediate and varied action from day to day to be of any value?

They could make orders and appoint some subordinate, who, when appointed, could be directed only by other orders or general rules, since the commission cannot act except through quorums.

A power so vast should be committed to no commission employee, and to no officer of less rank than a cabinet member, who is a part of the Administration and is in direct touch with the President and can change his orders instantly to meet changing conditions.

I have already indicated in my discussion of the issue of railroad securities the importance of prompt and business-like government action with respect to that very important matter.

Then in the matter of service, a cabinet officer by calling in railroad executives, and through informal discussions, could bring about changes in train service, schedules, and other things desired by the public, which if taken up with the elaborate formality and procedure inevitable in cases of a commission or similar body, would not be accomplished for weeks, and possibly months.

In other words, a single executive representing the government in all these important matters of service could get instant touch with the railroad executives, and secure action with respect to these matters of such vital importance to the public very much quicker than would be possible by the slow moving procedure of any board or commission.

The secretary would not be hemmed about by any judicial conceptions, but could "talk across the table" to the railroad executives about what was needed and what action should be taken.

If his wishes were not complied with, he could bring the matter before the Interstate Commerce Commission by formal complaint; but in nine cases out of ten his demands for service and facilities, if at all reasonable, would be met.

But a stronger reason still why a cabinet member should be at the head of the transportation department is that the railroad business is unrepresented in the Government—is without any "friend at court."

It is, I understand, the largest single industry in the United States next to agriculture, and certainly there is none more vital to the very life of the nation, and yet in the President's cabinet nor anywhere in the vast machine constituting the government of the United States is there a department or bureau or agency or officer of any kind or description whose duty it is to look after its interest, to defend it, to speak for it, or to say a word for justice in its behalf.

The Interstate Commerce Commission was conceived in hostility to it.

The Interstate Commerce Act was designed to repress and regulate and punish it.

Running throughout the Interstate Commerce Act and all other statutes on the books of Congress relating to the railroads is an unmistakable spirit and purpose to curb and repress, unrelieved by a single helpful constructive encouraging provision which I can now recall.

Mind you, I am not saying that this restrictive and repressive legislation and the creation of the commission as a stern administrator of the law rather than a helpful agency was not necessary. Quite the contrary. Most of the things prohibited were wrong.

But I do say that *the policy of hostility and repression was carried too far, and the time has come for a change.*

I do not mean change by repealing any of the laws or abandoning what has been done, but a change by adding to the repressive and restrictive laws helpful and constructive laws and administrative agencies capable of more expeditious action.

Transportation Business Should No Longer Be Ignored by Government

The transportation interests of the country should no longer be ignored in the organization of the government's business and left to what I may term the penal authorities.

Along with—

The Secretary of Treasury, who looks after the banking and financial interests of the country;

The Secretary of War and the Secretary of the Navy, who look after national defense;

The Secretary of Agriculture, who looks with solicitude after agricultural interests;

The Secretary of Labor, who looks after the interests of the laborers;

The Secretary of Commerce, who looks after the commercial and industrial welfare of the nation;

The Secretary of Interior, who sees to the development of multitudes of internal projects of public interest; and

The Postmaster General, who provides the communication for the people,

—there should be—

A Secretary of Transportation, who should see that the nation has the transportation without which none of these others would be possible or of value, and who should have the same solicitude for the development and success of this essential business and industry that the others show for the interests they represent.

This paper is confined to consideration of permanent plans without reference to temporary measures for dealing with the transitory condition.

JUSTICE FOR THE RAILROADS.—Capital enough, ability enough and courage enough, says Judge Lovett, stand ready to rehabilitate American railroads, provided Congress can be persuaded to assert national authority over a problem that is essentially national. Radical reforms affecting incorporation, mergers, securities and rate-making are plainly indicated as necessary, but first of all the principle of nationality must be accepted. Forty-nine separate sovereignties blighted individual initiative and destroyed credit, so that financial disaster on an appalling scale was invited. To go back to the old plan of divided control would be inexcusable. The creation of a Department of Transportation would be a step in the right direction but it would be unavailing unless accompanied by the widest use of national power for the supervision, development and protection of one of the greatest of our industries. This is a legislative task that ought not to be beyond the capacity of a Congress instructed in peace and in war by the startling experiences of the last three years.—*New York World.*

Unification of the Puget Sound Terminals

Plans Conceived Under Railroad Administration and Instituted on the Pacific Coast Effect Savings

EARLY IN 1918 plans were formulated by operating officers of the Railroad Administration on the Pacific Coast for the unification of the terminals on Puget Sound at Everett, Wash., Tacoma and Seattle. These plans were later developed and about September 1, were put in operation at Everett and Seattle. At Tacoma the original plans were not carried out in full because of the withdrawal of several of the roads entering that terminal.

The results of this change in terminal operation are just becoming apparent. Because of the necessity for making the entire change at once, instead of gradually converting one unit at a time, the first 60 days of the operation of the unified terminals was anything but a success. However, as conditions have become more settled the advantage has become more marked and at the present time a vast improvement has been effected.

Consolidation at Everett and Tacoma

Everett, 35 miles north of Seattle, is the point at which the Great Northern reaches Puget Sound from the East. It is also the center of a large lumber manufacturing territory. The Northern Pacific has a line from Seattle through Everett paralleling the Great Northern in a general way to Vancouver, B. C., in conjunction with a Canadian Pacific connection from the International border. The Chicago, Milwaukee & St. Paul has a branch line terminating at Everett and connecting with its main line at Cedar Falls, about 40 miles east of Seattle. Everett, therefore, has three railroads, each of which had a completely operated and distinct terminal and all competing for the lumber business, and the small local traffic.

Because the Great Northern had the best facilities, such as terminal tracks, roundhouse and offices, the Chicago, Milwaukee & St. Paul and the Northern Pacific terminal forces were eliminated and all tracks were considered as one for operating purposes. The Great Northern agent was made joint agent for the three lines. The yard crews were placed under the general yardmaster and the yardmen and enginemen agreed to continue their existing schedules and separate seniority, and work with the unified terminal on the basis that after one Chicago, Milwaukee & St. Paul crew was employed, the remainder of the yard crews would be 75 per cent Great Northern and 25 per cent Northern Pacific. Each company agreed to pay its own men.

In addition to unifying the terminals, a large volume of eastbound business was detoured. That moving via the Northern Pacific was held at Everett and routed east over the Great Northern to Spokane instead of hauling it south about 70 miles to Auburn to go east from there. This was also true of eastbound business routed via the Chicago, Milwaukee & St. Paul, which road was handling between 150 to 200 eastbound loads per week by barge from Bellingham to Seattle. This practice was discontinued and the business routed east by rail from Bellingham via the Great Northern.

At Tacoma, the Great Northern withdrew, the Oregon & Washington and the Northern Pacific consolidated into a joint agency and the Chicago, Milwaukee & St. Paul continued as before, except that it closed its passenger station and coach yards and used the Union station. Considerable difficult freight switching was removed by permitting either the Chicago, Milwaukee & St. Paul or the unified organization to do all of it in certain sections.

A regular interchange of business continued between the Chicago, Milwaukee & St. Paul and the Northern Pacific. All cars arriving and departing on Oregon & Washington trains are interchanged with the Northern Pacific, thereby doing away with all car records for the Oregon & Washington. This plan was also adopted at Everett by interchanging all Northern Pacific and St. Paul business in and out with the Great Northern. An agreement with the yardmen similar to that at Everett was entered into at Tacoma.

Consolidation at Seattle

The terminal facilities at Seattle were consolidated and unified about September 1, 1918, in an effort to co-ordinate the work of six separate and complete railroad terminal organizations, namely, the King Street Terminal Company, handling the Northern Pacific and the Great Northern passenger trains and coach cleaning yards, the Northern Pacific freight yards, the Great Northern freight yards, the Chicago, Milwaukee & St. Paul freight and passenger yards, the Oregon & Washington Railroad & Navigation Company freight and passenger yards and the Pacific Coast Railroad freight and passenger yards and stations. Previous to this unification, the Chicago, Milwaukee & St. Paul used the Oregon & Washington passenger station as a terminal. Certain tracks, yards and terminal facilities were owned by each one of the six corporations enumerated above, each one of them reaching certain docks, warehouses and manufacturing industries exclusively. There were as a result, certain special agreements permitting one of these lines to use the property of another to reach certain locations and there were also joint or common use switching tracks which in some cases only one company could operate while in others two or three were privileged to use. When it is considered that the Seattle terminals in general extend north and south for a distance of 18 miles with the Northern Pacific, the Chicago, Milwaukee & St. Paul, the Oregon & Washington and the Pacific Coast lines entering at the south end and the Great Northern at the north end, the extent of the confusion created by this system of separate and exclusive ownership of certain lines and the complexity of the agreements and trackage rights between these corporations can readily be seen. Important industries and docks are located along this entire stretch, making it doubly important for each one of the six corporations to reach all of this territory. The operation of the old system caused a great deal of dissatisfaction and, because of the competition between these roads, it often was the case that four roads would have locomotive and crews endeavoring to serve the same dock at the same time.

Each of these organizations maintained two interchange or transfer movements with each other each 24 hours, which were conducted with the usual formality and red tape. Cars were rejected because of their being in bad order, improperly carded, or listed, received too early or too late or other lawful excuse which served to delay the other fellow's business. The old inefficient method of letter writing, tracing for cars not returned, excuses for failure to deliver to consignee promptly and a divided responsibility to the public, based upon the exact time a car or cars were actually interchanged for further handling was the result of this system. It was to eliminate this inefficiency and congestion that the unification plan was adopted and put into operation.

After approximately six months' work an organization was

perfected and methods were improvised for the operation of this part of the unified Puget Sound terminals. The organization which is at the present time handling this terminal work is composed of a terminal superintendent, a trainmaster, and three district general yardmasters. The terminal superintendent has complete charge of all freight switching matters for the four lines. Under his direction is an organization which handles all car and demurrage records and has supervision over switching orders. Maintenance and mechanical and accounting matters are handled separately for each line by their regular division officers. The terminal trainmaster serves in a capacity similar to a terminal general yardmaster, having the authority of an assistant superintendent. It is his duty to promote harmony between the three district general yardmasters, between the several railroads and the terminal organization and also between the employer's organizations and the terminal organization. Each of the three general yardmasters has full charge of a district which has been formed regardless of ownership or use, and these men are in turn provided with assistant yardmasters and a clerical organization with which to supervise all switching operations.

The entire Seattle terminal was made into one organization and divided into two parts—freight and passenger. The freight terminals in turn were subdivided into three districts without regard to original ownership. The coach cleaning and passenger car repairing formerly done in the Chicago, Milwaukee & St. Paul and the Oregon & Washington yards was diverted to the King Street Terminal Company, thereby releasing much trackage for freight operation and confining all passenger work of this kind into one section of the terminal. This step also eliminated the many interchange movements and the attendant red tape.

Under the old system there was considerable duplication of effort in the mechanical departments of the several companies which was eliminated by unification.

The Oregon & Washington engine terminals were formerly located in the extreme south end of this terminal district, the Great Northern at the extreme north end and the other three at different locations near the center. Each railroad housed and cared for its switch engines at its own plant. This plan has been entirely eliminated and, because of the fact that the ownership of yard engines and engine terminals has been disregarded, all repair tracks except one in each district have been closed, thereby consolidating the repair work and eliminating all delays. Still another advantage occurred from this consolidation, namely the distributing of switch engines with respect to size, wheel base, fuel and water capacity, etc.

Unified car and demurrage records are now kept by the organization under the superintendent of freight terminals; this office also acts as a clearance house for the five lines for all intra-terminal switching revenue orders. Full records of all trains arriving, departing or transferred from one district to another and a complete check of the district, are compiled by each district yard office and copies of these records are kept in the superintendent's office for book entry and proper filling. The complete interchange of all freight cars is also made between the railroads bringing them in or taking them out and the terminal. Junction cards are made and mailed to all car owners, showing all of their cars delivered to the lines taking them out of the terminal. This does away with all terminal interchange of cars, inspection and subsequent rejection on account of bad order at interchange points, together with the usual expense and records.

Relations with Brotherhoods

A special agreement with the Brotherhoods was worked out providing for the unified operation of the terminals upon a percentage basis which in turn was to govern seniority of positions. The brotherhoods on each railroad retain their own seniority lists and working schedules and further agree to have crews assigned within the unified terminals on the basis of the Northern Pacific, 45 per cent, the Great Northern, 24 per cent, the Chicago, Milwaukee & St. Paul, 16 per cent and the Oregon & Washington, 15 per cent. Under this arrangement the total engine hours worked by crews of each line for each month will bear the same percentage to the whole. With this arrangement the crews were assigned to best advantage and were enabled to do work anywhere upon the property of any railroad without violation of contracts or property lines.

Division of the Terminal

The south end of the Seattle terminal, formerly the receiving and outbound yard of the Oregon & Washington, includes at the present time a well-equipped roundhouse and shop and small car repair yard. In addition there are a storage yard for Chicago, Milwaukee & St. Paul cars and several commercial tracks operated by the Northern Pacific. This entire layout is under the jurisdiction of one general yardmaster and is the receiving yard for all Oregon & Washington, Chicago, Milwaukee & St. Paul and Northern Pacific freight trains and for Great Northern transfers which are properly classified and delivered to the several units into which each of the three divisions is divided.

The central district of this terminal is the largest of the three and formerly included the receiving and outbound yards of the Northern Pacific and the Chicago, Milwaukee & St. Paul as well as the industrial center of the city. Both the Northern Pacific and the Chicago, Milwaukee & St. Paul formerly had separate yards, roundhouses and repair tracks as well as a yard organization in this district. However, under the unified plan this whole layout is handled by one general yardmaster. The Chicago, Milwaukee & St. Paul yard repair tracks have been closed, allowing the use of these tracks for a classification yard for short pier loads. The entire layout is now the outbound yard for the Oregon & Washington, the Northern Pacific and the Chicago, Milwaukee & St. Paul lines as well as the classification yard for industrial engines working in this district.

The third district, the north end of the Seattle terminal, was formerly the receiving and outbound yard of the Great Northern and includes two of the largest docks in the terminal, one of which was operated jointly with the Northern Pacific. Both of these roads had separate organizations and a great deal of the work in this district was duplicated Under the new plan the entire layout was placed under one district yardmaster and it is now the receiving and outbound yard for the Great Northern as well as for detour business moving by way of the Great Northern for delivery to the Northern Pacific at Everett.

These changes have resulted in the increased use of cars, and in the elimination of terminal mileage by direct movement and immediate placement of the most convenient and suitable car. The present method provides direct movement from receiving yards to industries, piers or team tracks and, when compared with the old plan whereby a car first went to an interchange track, at least 36 hours has been saved on arriving loads and 24 hours on departing loads.

At certain periods, and under many conditions, Seatttle terminals always were, and always will be, congested, because the business of the city and port have outgrown the present facilities which were never designed to care for the present volume of business; however, the unification of terminals has increased the capacity of the facilities at least 100 per cent—and a 75 per cent greater increase would be obtainable if the entire terminal was converted into one corporation or association. Many serious difficulties, due to congested terminals, are now being eliminated.

Railroad Hearings Before House Committee

Additional Plans Submitted by N. L. Amster and E. J. Rich—Presentation of Transportation Conference Plan Completed

Two additional plans for dealing with the railroad problem after the return of the properties to private ownership, both of which were submitted to the Senate Committee at its hearings earlier in the year, were presented before the House committee on interstate and foreign commerce at its hearings this week, following the completion of the testimony of the witnesses representing the National Transportation Conference called by the Chamber of Commerce of the United States. The first of the additional plans was presented by Nathan L. Amster, president of the Citizens' National Railway League, who proposes the formation of a national railroad corporation to acquire the railroads and to be managed by a board of nine directors to be appointed by the President, representing business and farming interests, the security holders, the employees and the government. Mr. Amster was followed by E. J. Rich, representing a number of New England commercial organizations, including the Associated Industries of Massachusetts, who presented what is called "The New England Plan."

The presentation of the plan of the National Transportation Conference, which was described in last week's issue, was completed on Friday, July 25, and the hearing was adjourned until Tuesday, although the committee held a meeting to pass on bills on Monday.

Following the statements of H. A. Wheeler and W. W. Salmon, published in last week's issue, Emory R. Johnson, professor of transportation and commerce at the University of Pennsylvania, outlined on July 24 the proposed powers and duties of the federal transportation board provided for in the conference plan, and on July 25, W. N. Doak, vice-president of the Brotherhood of Railroad Trainmen, discussed the proposed method for dealing with labor questions. Paul M. Warburg also discussed "The Re-establishment of Railroad Credit."

Judging from the attitude expressed by members of the committee in their questions of the witnesses, it can hardly be said that the committee was favorably impressed by the conference plan. Chairman Esch was naturally more interested in the plan contemplated by his own bill, although he does not claim that it completely covers the situation and he expects additions or amendments, and both he and several other members of the committee appeared strongly opposed to the idea of federal incorporation, which the Chamber of Commerce witnesses admitted was practically an essential to the successful working out of their plan. Moreover, several members of the committee persisted in regarding the proposed rate-making rule of the conference plan as a guarantee by the government of a 6 per cent return, although the witnesses repeatedly explained that the plan does not provide for a guarantee and that it neither assures a road as much as 6 per cent nor reduces its return to 6 per cent. Representative Sims, who asked the most questions, but who not infrequently does not understand what the witness is saying and has some difficulty in getting the witnesses to comprehend what he is talking about when he asks a question, persisted in referring to the plan as one for a 6 per cent guarantee, and he finally said that if no one had anything better to offer "we had better get back to the old idea that rates must be just, reasonable and non-discriminatory." The Chamber of Commerce witnesses did not always satisfy the committee with their answers. Mr. Wheeler referred many questions to other witnesses. Judge Smith had to leave the city and promised to return for questioning. Mr. Warburg completed his statement just before adjournment and was not questioned and so most of the questions were reserved for Mr. Salmon and Professor Johnson.

Mr. Salmon's statement, of which some extracts were published last week, was devoted mainly to explaining by charts and tables how the application of the plan would work out as to different roads, showing what contributions the roads earning more than 6 per cent would make to the contingent funds and what the roads would receive from the funds if they failed to earn 6 per cent. Mr. Sims asked if the Interstate Commerce Commission would not be violating a law if it failed to make rates produce an average of 6 per cent. Mr. Salmon replied that it was only to fix rates "designed" to produce 6 per cent. He doubted if there would be any legal obligation on the commission, although he thought there would be a moral obligation, to make rates high enough in one year to make up a deficiency in the previous year, and he pointed out that the contingent fund was designed to act as a "shock absorber" in case for any reason the rates failed to produce the designed return. He also pointed out that even in a year when the returns of the roads in any district fell below 6 per cent some roads would continue to earn enough to contribute something to the contingent fund. For example, he said, the Queen & Crescent in the test period earned 9.13 on its property investment, whereas the average for the roads in the Southern district was 5.36 per cent. Therefore the Queen & Crescent would contribute to the contingent fund one half of its earnings in excess of 6 per cent.

Chairman Esch asked if the commission would be expected to make up by high rates in a succeeding year for a deficiency caused by a drought or a flood. Mr. Salmon replied that the commission would probably feel in such a case that no change in rates was necessary and that the contingent fund would take care of the situation temporarily. In reply to a question as to what would happen if the plan failed to produce the desired results, Mr. Salmon said he thought that would be a failure of government regulation, not a failure of the plan. Mr. Sims asked why there should be a guarantee of an arbitrary percentage of income. Mr. Salmon replied that it was not a guarantee, but that 6 per cent had been selected because the yield of the railroads during the test period, about 5.2 per cent, was demonstrably not enough to attract investors to the railroad field and the conference thought that nothing less than the jump from 5.2 to 6 per cent would accomplish the purpose. The conference, he said, holds no brief for the investor, but 6 per cent represents its idea as to what would be necessary to make railroad investment more attractive to the investor than it has been. Mr. Sims made the point that if railroad investment is made attractive it would have a depressing effect on other industry, by subtracting from the capital available for other industries. Mr. Salmon said that would not necessarily follow, that the idea was to seek to establish some parity between the credit of the railroads and other industries. He said it was not necessary to give an equal assurance of a return to other industries because their returns are not limited by regulation. He also pointed out that the assurance of a return could not be considered to amount to a guarantee because the most prosperous road under it may be reduced to the condition of a deficit through bad management and that the investor was not entirely protected from the necessity of taking chances. He also said

that the total increase in net return over that of the test period which would be necessary to make the plan a success could be provided at an average cost to each citizen of the United States of only 2½ cents a week.

Representative Denison asked if the requirement that a prosperous railroad pay a part of its net income into the contingent fund would not make it impossible for that road to make additions and betterments out of income. Mr. Salmon thought the share which a prosperous road would retain would provide for some such investments. Mr. Denison also wanted to know whether the Interstate Commerce Commission would be required to initiate rates. The witness said that the plan only went so far as to say that in its final determination of rates the commission should try to make them produce 6 per cent.

Re-Establishment of Railroad Credit

By Paul M. Warburg

Mr. Warburg said in part:

The National Transportation Conference was guided by the fundamental thought that transportation should pay its own "board"; i. e., that the yield of transportation rates should be sufficient to pay for the transportation cost, including a reasonable return on the value of the properties devoted to the public service. If by paying higher prices for all necessaries of life the consumer bore the cost of increased wages involved in the cost of production of these articles, there is no reason why, quite arbitrarily, in the case of freight charges the principle of cost should be abandoned. There appeared no reason why this cost of transportation, forming a fraction only of the total cost of things, should be furnished at a loss, to be made good by taxation levied indiscriminately from all instead of having the transportation paid for by those directly served.

The problem of raising through taxation the gigantic sums required by the country, for interest charges and other matters affecting the national welfare, is perplexing enough in itself, and I believe the conference made no mistake in assuming that the public interest would best be served by not unnecessarily increasing the burden of taxation by arbitrarily adding to it deficiencies caused by transportation to be furnished below cost.

In the opinion of the conference, it is the object of remedial legislation to establish conditions under which the carriers as groups are certain to receive a return sufficient to cover the cost of operation, including a reasonable adequate return on the fair value of their properties; while on the other hand, such legislation must safeguard the public's interests in assuring adequate service at charges which are not excessive. Transportation must be furnished at the lowest possible price, but under conditions generous enough to preserve a healthy spirit of competition and enterprise imperative for the further development of the country.

The conference understands that it is the purpose of the Interstate Commerce Commission in the near future to define what principles it will apply in establishing the value of a railroad as a whole. It is believed that such definition will provide that a consideration of the average earning power of a railroad, for a given period of years, should be given at least the same weight as the physical value, and that the commission's definition will take into account such other elements as may be proper in determining fair value, leaving room for adjustments in individual exceptional cases.

The report of the conference assumes that a definition on these lines will be given in the near future by the Interstate Commerce Commission, or that, failing that, a proper direction will be laid down in the law.

For the purpose of discussing the final stage of the plan the conference assumed that the value of the railroads will be satisfactorily determined under due consideration of these various factors, and that a "final valuation" will have been established.

It has been the consensus of opinion of members of the conference that if private capital is to enter freely upon the venture of further developing the railroads, and if railroad credit is to be re-established on a solid basis of genuine confidence, that 6 per cent on the final valuation plus a modest share in earnings in excess of this percentage would constitute the minimum required. The chances for profitable investments in other industries are so much more attractive that the offer of a lower return would be certain to defeat the very objects to be accomplished by remedial legislation.

In formulating this plan the conference was guided by the thought that in order to attract capital for the future development of our transportation system it was neither desirable nor necessary to erect a structure of speculative investments, but rather to lay so strong a foundation for railroad securities that they would prove attractive to the investor on account of their solidity rather than on account of their speculative possibilities.

The plan does not propose to give railroad security holders much more than they get today; the increase in return necessary to balance the very delicately poised scales, when measured in dollars, is comparatively insignificant. The benefits of the plan would result primarily from the better organic structure of the whole system and from the greater confidence that it would inspire.

Through the contemplative consolidations the inequalities of distribution of earnings and profits are removed and the rate-making problem is simplified, greater clarity and a definite assurance are provided as to what once and for all shall be the return to which as a matter of acknowledged right private capital shall be entitled; and, finally, the machinery of the contingent funds is designed to give such solid stability to railroad credit that private capital may be expected to be satisfied with the prospect of an assured though not over-generous return—but one that promises to be free from the vicissitudes and uncertainties of the past.

The realization of the power of practically unrestricted regulation vested in the government naturally engendered the thought that private capital could not possibly be expected to venture freely into the field of railroading unless it were assured that this power of regulation could not be wielded in a manner to reduce the return beyond a reasonable limit.

This consideration led to the demand, by some of the most prominent students of the question, for a guarantee of a minimum return to be granted by the very government that exercises the power of regulation and of determining the return. Serious fears are, however, entertained by others lest the granting of such a guarantee might lead to incompetence on the part of individual railroads, while on the other hand it is apprehended that the incurring of a direct liability on the part of the government ultimately might lead to direct government operation, a result abhorred by the vast majority of the people.

It appears to be the general desire of the country to see the government withdraw from active business as fast and as far as possible, and the conference plan proceeds on this hypothesis. It avoids direct guarantees given to any individual railroad. It recommends a rate-making structure producing no less than 6 per cent upon the aggregate final valuation of all the railroads of a traffic section. It assures the railroads against failure on the part of the rate-making body to produce the minimum 6 per cent yield to be prescribed by the statute; but it leaves the railroads free to compete within this assured statutory minimum return for a section. Conceivably one railroad might secure a return of 6½ per cent on its valuation, while the other might secure

5½ per cent. It is left to the energy, ability and spirit of enterprise of each railroad to secure its maximum share of the aggregate assured for all. The statute would protect the carriers as a group, not as individual corporations, and this, it is believed, is one of the strongest features of the plan.

We must contemplate the project, however, in its completed form, and this would show us in each section a small number of competing consolidated railroads; the weak sisters having been merged with some of the so-called strong companies. In these circumstances a 6 per cent rate structure for a traffic section is not likely to leave discrepancies between competing companies as marked as in the past. It would seem likely that most of the consolidated railroads would come reasonably near earning their full share of the minimum.

In the case of conservatively managed and strong railroads the final valuation no doubt will in some cases produce a value in excess of the present capitalization; in others the final valuation may prove to be much lower than the capitalization—indeed, it may wipe out the entire stock and possibly some of the bonds. The latter companies, it is to be assumed, will be merged with the stronger companies by an exchange of securities on a basis to be approved by the proposed Federal Transportation Board, and presumably on a basis approximating the relation established by the valuations, or they might first adjust their capital and obligations by a process of reorganization. It is imperative that the mergers result in establishing consolidated companies whose stock will sell substantially above par, because any future plan of rehabilitating railroad credit under private ownership and private operation will fail unless the plan establishes for the railroad stocks of the future values well above par and sufficiently attractive to enable the railroads to finance themselves through sales of their stocks on such scale as is necessary to preserve a proper proportion between their outstanding bonded indebtedness and capital stock. The strongest railroad would naturally furnish the best backbone for a new consolidated system.

P. M. Warburg

In hoping that the plan as proposed will furnish a foundation strong enough to sustain the future credit of the railroads, the Transportation Conference places great faith upon the effect to be produced by the two contingent funds.

The company's own contingent fund to be maintained by each railroad is devised for the purpose of protecting the carriers against adverse circumstances unexpectedly affecting an individual company.

The general contingent fund, on the other hand, which is to accumulate to an amount of $750,000,000, is designed to make good a deficiency arising in any year when the rates fixed by the Interstate Commerce Commission do not produce a minimum return of 6 per cent on the aggregate final valuation of the railroads composing a traffic section.

To illustrate, if the aggregate valuation of railroads of a section amounted to $7,000,000,000, and if the earnings available for distribution for interest and dividends during any one year amounted to only 5 per cent, or $350,000,000, instead of the statutory minimum of 6 per cent, or $420,000,000, the deficiency of $70,000,000 would be taken out of the general contingent fund and would be distributed amongst the railroads of the section on a pro-rata basis of their gross earnings—the underlying thought being that, if the rates had been fixed in accordance with the statutory rule, each railroad would have earned so much more on its gross business. A company having earned, including such contribution received from the general contingent fund, in excess of 6 per cent on its valuation, would be permitted to retain one-third of the excess, the other two-thirds going back into the general contingent fund. Or in case it had not yet completed its own contingent fund, one-half of the excess over 6 per cent would go into its own contingent fund and one-half into the general contingent fund, in the same manner as if these earnings had originally been made through rates aggregating the statutory minimum of $420,000,000.

The plan thus provides for two shock absorbers; one against adverse circumstances affecting individual roads, and the other against miscalculations on the part of the rate-fixing body, or against unexpected emergencies bringing about such reduction in tonnage or such extraordinary conditions of operation as would render impossible a prompt readjustment through increases in rates.

The weakness of the situation in the past was due to the fact that the Interstate Commerce Commission could neither know the true value of the railroad properties nor what constituted an adequate return, and thus was put in the predicament that if it granted adequate rates to weak roads it would be overfeeding the strong ones. It was not surprising that this lack of clarity with regard to the rate-making basis had a very unfavorable effect on the public mind. The shipper was ready to believe at all times that he was the victim of extortionate rates due to excessive capitalization and over-generous return to the railroads. The obscurity as to values and reasonable returns thereon stood in the way of the clear recognition of a just course, and, in the long run, created a hostile attitude toward the railroads which resulted disastrously to railroad credit.

Under the plan recommended the rate-making body would not need to fear that adequate rates would place the strong roads in a condition of excessive or unjustifiable affluence. When once the valuations are definitely determined there cannot be any reasonable objection to industrial enterprises earning a minimum of 6 per cent and a third of moderate earnings in excess of that limit. That is less than would be required to satisfy any other industrial venture. The rate-making body could thus act with greater independence, knowing that two-thirds of the excess would go into a general contingent fund, designed to protect the general situation. The Interstate Commerce Commission, moreover, would soon realize that the general contingent fund would prove an invaluable protection for the rate-making body itself, and that

it would be wisdom on their part to build it up as promptly as possible.

When once the contingent fund reaches the amount of $750,000,000 (which, on the basis of the tabulations made for the Transportation Conference, may be assumed to take place in less than 15 years) it is proposed that contributions to the fund bringing its total above that limit could be used either for providing additional transportation facilities for the benefit of the country (be they equipment or permanent improvements) or for amoritizing the cost of the railroads. The latter process could be carried out by a pro-rata purchase of obligations of the various railroads and by a corresponding reduction in their property investment accounts. To the extent that in this manner the property investment accounts would be written down, transportation charges would be correspondingly decreased. Liberal earnings would thus strengthen railroad credit and at the same time redound to the advantage of the whole country.

While the contingent funds when completed will thus render an invaluable service in safeguarding railroad credit, the plan would show a fatal weakness in that it would not provide against the emergency of the most critical years, being those immediately ahead of us. During that period the contingent funds would as yet be practically non-existent. For this reason the Conference, very reluctantly, has reached the conclusion that it is imperative to recommend to Congress the establishment of a railroad reserve fund of $500,000,000, to be placed in the hands of the transportation board. From this fund it is contemplated such sums are to be advanced to the general contingent fund as may be necessary to make up deficiencies in case rates fixed by the Interstate Commerce Commission fail to produce in any one year, during the first 10 years after the enactment of the proposed legislation, the statutory minimum yield of 6 per cent on the aggregate valuations of a traffic section and in case the funds in the general contingent fund are insufficient to make up the shortage. Such payments from the federal reserve fund would, however, be treated as advances only; they would be paid back with interest from railroad contributions as soon as the general contingent fund had accumulated and remained at an amount of $500,000,000. It is obvious that without such federal reserve fund railroad credit could not be re-established to a degree sufficient to permit a generous development of the railroads as required in the best interest of the country.

It is very important to bear in mind that this fund may be drawn upon only in case rates determined by the Interstate Commerce Commission should not yield the statutory minimum of 6 per cent return for a traffic section, and that it is therefore, entirely within the power of the commission, unless some unforeseen events occur, to protect the situation and to avoid the necessity of payments from this reserve fund into the general contingent fund. But even if such payments should be made, they would be certain to be repaid, because the plan provides that when the railroad consolidations are completed a minimum of 5 per cent of the annual net earnings of all the railroads (that is, on the contemplated basis of annual net earnings of approximately one billion dollars, $50,000,000 per year) shall be paid into the general contingent fund in any year when the carriers receive the statutory minimum of 6 per cent. There cannot, therefore, be any doubt as to advances being repaid in the end. For the period of transition, however, this federal reserve fund would form the keystone, without which the main strength and benefits of the plan would be lost.

An appropriation of $500,000,000, even in the form of an absolutely safe loan to be repaid to the United States with interest, is not likely, at first blush, to meet with a very cordial reception on the part of Congress. But it would appear an almost paltry commitment as against the amounts involved in present guarantees and advances. And if through the plan here proposed the present perplexities could permanently be solved, it would appear anything but an excessive demand. Indeed, it may be doubted whether the amount of $500,000,000 may really be sufficient.

Perhaps I should say a further word of explanation concerning the stipulation of compulsory contributions pro-rata to net earnings on the part of all railroads to the general contingent fund. This proviso is contemplated to go into effect only after the mergers approved by the transportation board are completed. The underlying thought is that as long as there are weak and strong roads the contributions into the fund may be expected to be forthcoming from the excess earnings of the strong roads. When once the mergers are completed and the weak roads are absorbed by the strong roads, there will be a greater equalization of earnings and, conceivably at least, if all consolidated railroads earn their 6 per cent (and the rate-making body fixes rates providing no more than the statutory minimum) there would not be any excess earnings from which contributions into the general contingent fund could be made.

It is thought that when that time comes it would not be any hardship for these large consolidated companies to pay into the general contingent fund their pro-rata share (to the extent that excess earnings have not provided it) so as to make the total contribution into the fund 5 per cent of the aggregate net earnings of a section, *i. e.*, at present approximately $50,000,000 per annum.

Under the conference plan the total increase which would go to the railroads by the adoption of a 6 per cent rate-making basis is figured to amount to about $137,000,000, and of this it has been calculated that about $51,000,000 would go into the contingent fund from excess earnings of the railroads as at present constituted, so that the total increase retained by the railroads would only amount to approximately $86,000,000 per annum, on the basis of the present standard return.

The transportation conference has not left unconsidered the puzzling question of whether or not in the long run a return of 6 per cent on the final valuation might prove to be too high or too low.

It has been suggested that it would be a mistake for Congress to determine a fixed basis of return and that it should be left flexible. Were the question left open, it is to be feared, however, that the uncertainty of the past might continue to prevail and credit might not be re-established. A definite assurance seems to be necessary so that the stockholder and the bondholder will know for a certainty what their position will be in the future. It has been suggested that the law might contain a provision whereby within given periods of, let us say, 10 or 15 years, upon the certification of the Federal Reserve Board as to the relative changes of values of securities and of money, a revision might be made by the transportation board of what should constitute an adequate return; the decisive element being that no adjustments should be made which would bring the average of then existing railroad stock so nearly down to par that financing through further issue of stocks would thereby become jeopardized.

While it is possible to insert a clause of this nature, and while much is to be said in its favor, it was the feeling of the conference that a provision of this character would be very difficult to formulate and might add to the complexity of the problem; that credit would be more solidly established by providing a definite basis of rate making, leaving it to the future, in case of need, to take care of itself. It was thought that any fear that the arrangement might turn out to be too favorable for the railroads might be disregarded, inasumch as after all it was within the power of the Interstate Commerce Commission ultimately to keep the return pretty close to 6 per cent on the actual value of the properties less the 5 per cent going into the general contingent fund, *i. e.*, a net return of 5.70 per cent. If, on the other hand, the return should prove too moderate to attract new capital, the Interstate Commerce Commission could meet the situation by

greater liberality in rate making, or Congress might step in and make the necessary adjustment.

It was also discussed whether any future saving in interest on the funded debt should redound to the advantage of the country at large or the owners of the railroads. In other words, if owing to the better credit of the railroads they should be able to place their new bonded indebtedness, or to refinance maturing obligations, on a lower interest basis than 6 per cent, should the benefit of such saving accrue to the stockholder?

While if such a course were desired the statutory rate could be so fixed as to yield 6 per cent on the aggregate final valuation of the railroad properties less their funded and floating debts, and the net yield available for the railroads in that case would have to provide only for the dividends and not for the interest charges, such change seemed unwise to the conference for the following reasons:

According to the statement of the Interstate Commerce Commission for the year 1916, the interest paid (leaving aside amortization or discount written off and charged to profit and loss account) was about $474,000,000 on about $11,000,000,000 of outstanding funded debt, that is at the rate of approximately 4.30 per cent, and on this present basis the amount available for dividends amounted to only $342,000,000 on outstanding stock of $8,250,000,000, or less than 4¼ per cent on the amount outstanding and approximately 6½ per cent on the dividend-paying stocks, which amount to about 60 per cent of all the outstanding stock, according to the statement of the Interstate Commerce Commission.

These results were secured in a year when the return on the total railroad property investment account was 5.90 per cent, the highest on record, which almost equals the proposed future statutory rate-making basis of 6 per cent, and is in excess of this return, if we take into account the contribution to the general contingent fund, which would reduce the 6 per cent return to 5.70 per cent net.

Under present conditions it is doubtful whether a substantial number of railroads could sell large amounts of bonds on an interest basis netting less than 6 per cent; many, indeed, have recently financed on a very much higher basis. It is to be assumed that, if ever, it will take many years before maturing railroad bonds could be renewed on a basis better than the present average charge of 4.30 per cent. In other words, as bonds mature and as more bonds are issued, the position of the stockholder is likely to depreciate rather than improve. Inasmuch, however, as the present condition of earnings and values of stocks and bonds is such as to have brought railroad development to a standstill, it is clear that it would be fatal to cut down the very limited opportunities that have been preserved for the stockholder under the present plan. It is felt that it is the minimum below which no attempt should be made to cut his chances. Indeed, the plan may already have gone too far in this respect. As has been stated before, if stocks of the consolidated railways do not sell above par railroad development will come to a stop. And hope for success in present circumstances is predicated upon the thought that in each section there will be found some companies the final valuations of which will exceed their capitalization, so that the percentage return on their outstanding stock may be in excess of the percentage return on the valuation. Against stocks and bonds of such companies the securities of the weak sisters would be exchanged on the basis of their respective valuations, and strength accumulated in the past will thus be used to benefit and protect the future.

The alternative would be a direct government guarantee of railroad securities, which, if extended over $18,000,000,000 of stocks and bonds, would tend most dangerously to depreciate our government credit. It is doubted whether under present circumstances a 5 per cent government bond offered on so large a scale would sell at better than par, particularly if it were subject to full taxation and if every year—for additions, betterments and improvements—an additional amount approximating $1,000,000,000 were issued.

The government could not today refund the outstanding obligations of the railroads without paying a substantially higher interest charge than the carriers pay today on the outstanding debt. If the government guaranteed a certain minimum return on the stock of the new federal corporations of, let us say, 4½ per cent, the rate-making body would have to provide an adequate margin above that in order to preserve the incentive of competition, and so as to safeguard the liability incurred by the government. In other words, if the government guaranteed 4½ per cent the Interstate Commerce Commission would have to try to establish rates providing 6 per cent in order to protect the government against all hazards. The saving to the country would, therefore, be unimportant, while the loss in the government's credit would make itself felt all along the line.

It is barely possible that if consolidations should not materialize on the basis of voluntary action on the part of the railroads involved, it may prove necessary to have the transportation board itself organize new holding companies, with power to acquire by condemnation proceedings the railroads to be merged into a consolidated concern, and that in order to make these mergers possible such new federal holding company would have to issue a stock endowed with a government guarantee. Let us hope, however, that such eventuality may be avoided.

The plan has the distinct advantage that within a reasonable number of years it will free the government from any financial liability and will take it out of actual business, while on the other hand plans contemplating individual railroad guarantees are considered by many as likely to lead the government into direct and permanent railroad operation.

Interval During which Consolidations Are Being Effected and Commission Is Completing Valuations

It is obvious that ample time must be given to devise and perfect the contemplated consolidations and that a *modus vivendi* must be found for the operation of the railroads during the interval. As the Federal Reserve Act provided for an organization committee which was charged with the duty to divide the country into no less than 8 and no more than 12 districts, so our plan provides for a transportation board that shall approve or determine the number of consolidated systems and their groupings.

It shall give the railroads an opportunity, and all possible assistance, to carry them into effect. If the mergers cannot be perfected by voluntary agreement, the board, after five years, shall have power to complete them by compulsory proceedings. The board shall also have power to sustain railroad credit pending this period of consolidation.

But how are rates to be fixed and profits to be divided during the interval when valuations are not yet completed and not available to serve as a basis for rate making and division of excess earnings? It is conceded that any basis during this period will have to be somewhat arbitrary and cannot be entirely satisfactory. But the report appears to have established a method as fair and equitable to all as possible in the circumstances. As a general basis for rate making it is proposed to use the aggregate property investment accounts of the railroads of each traffic section, as at present carried by the Interstate Commerce Commission. While it is admitted that these property accounts, taken individually, in some cases are too high and in others too low, it is generally assumed that considered as a unit they may be accepted as furnishing a fairly accurate basis to be used as a temporary yard-stick.

When dealing with individual roads, however, the often highly arbitrary investment account cannot be safely accepted as a basis for determining excess profits. The report,

therefore, recommends that for the purpose of ascertaining excess income the valuation of any individual railroad system, pending the completion of the final valuation, shall be that proportion of the aggregate property investment accounts of all the railroads of the traffic section in which it is located which its average annual railway operating income (computed for the period and in the manner prescribed by the federal control act of March 21, 1918) bears to the aggregate annual railway operating income of all the railroads of such traffic section, computed in the same manner.

It has been figured if the law as proposed went into effect, that on a basis of one-third to the railroads and two-thirds to the general fund (after the individual contingent fund had been filled) the result would be approximately as follows (in million dollars):

Section	Present standard return	Increase to 6 per cent on aggregate investment accounts	Increase	Retained by railroads after turning over two-thirds to gen. ctg. fund	Increase to railroads	Turned into general ctg. fund
Eastern	354	408	54	390	36	18
Southern	139	156	17	149	10	7
Western	402	468	66	442	40	26
	895	1,032	137	981	86	51

To these figures there would have to be added the return of 6 per cent on additional investments (since June, 1917) not compensated for by the present standard return, and there would have to be such adjustments as the transportation board would make.

In this manner a capitalization of earnings has been substituted for the highly arbitrary basis of individual property investment accounts. The only use of that account is made in this plan by providing that where the temporary earning valuation is higher than the existing property investment account, that account is to be used as the basis for determining excess income.

It is believed that the provisions of the plan will afford railroads during the ensuing years of the interval a sufficient strengthening of their credit to enable most of them to carry on their financial and physical operations until the mergers are completed.

Where immediate financial assistance by the government is required the report recommends that provision be made to enable the transportation board, directly or indirectly, through the War Finance Corporation, to extend temporary support to particular systems.

I cannot help feeling that in the public mind a mistaken emphasis generally is being placed both upon the effect of cost of transportation upon the cost of living, and also upon the part played by the cost of capital as a factor contributing to the cost of transportation.

If, quite arbitrarily, we assume that the cost of things produced per year in the United States amounted to something like $60,000,000,000 or $70,000,000,000, the total cost of transportation would amount to only 5 per cent of the cost of all things produced. An increase of 20 per cent in the cost of transportation would, therefore, represent an item of no more than approximately 1 per cent of the cost of things in general, even though in the case of certain articles transportation constitutes a much larger share of the cost of production. I cannot follow the theory propounded by some that the cost of living would be raised to an extent equaling four times the amount directly involved in the increased cost of transportation. If the price of coal rises due to increased wages both in mining and transporting, why should one increase in wages have a different effect than the other?

It would be well for us, however, to bear in mind that in a period during which the index prices for commodities show an increase of 200 per cent, the rates charged for the transportation of passengers, according to recent statements, increased only 40 per cent and of freight only 20 per cent, or, as it has been cogently expressed, "a ton of any given commodity will at present purchase more transportation than it could at any previous time."

Finally, when we remember that the annual increase in return contemplated in our plan equals about one-tenth of the increase in wages authorized by the railroads since the beginning of the war, we cannot escape the conclusion that the adequate return to be allowed to the investor plays only a comparatively unimportant part in the whole situation.

May I venture to remind you, moreover that it would be a misfortune if remedial legislation were passed which did not go to the root of the evil—legislation of a palliative character, or that was but temporary patchwork, and would leave unsolved a question certain to grow increasingly difficult.

Functions of the Federal Transportation Board

By Emory R. Johnson

The functions of the proposed transportation board were outlined by Professor Johnson in part as follows:

The regulation of railroads by the federal government will be more comprehensive and detailed in the future than it has been in the past. When private operation is resumed, the government's relation to the railroads will be much more than corrective in aim, it will be co-operative. Regulation must become increasingly constructive—positive rather than negative in purpose and method.

The people are looking forward to an even better railroad service than they have enjoyed in the past. They believe it will be possible for all railroads to render a service as excellent as that which has been performed by the strongest and most efficient systems. To make this possible, however, the number of railroad systems must be reduced by the grouping and consolidation of existing roads in accordance with plans approved by public authority. Competition is not to be abandoned, but it is no longer to be a struggle of weak roads to maintain themselves alongside their strong and jealous neighbors; it is to become the service rivalry of a limited number of vigorous systems of approximately equal strength.

The strong railroad systems formed by the grouping of existing railroads ought not to be owned and operated by corporations subject to the authority of the several states. These powerful corporations must in the public interest be brought under the jurisdiction of the United States. It is believed by the transportation conference that this seemingly difficult task can readily be accomplished by the enactment and enforcement of a federal railroad incorporation act similar in principle to the national bank act by means of which state banks are converted into federal institutions.

The capital expenditures and the security issues of the consolidated railroad companies of the future are certain to be regulated by the United States government. The agency that performs this task will render the country a great service. In passing upon capital expenditures of the railroads, public authority will sit in judgment upon the wisdom or unwisdom of proposed railroad improvements or extensions and will in effect determine the lines of development of the American railway system as a whole. Through the exercise of this authority it will be possible for the government to bring about gradually the unification and the economic development of railroad terminal facilities and services, to prevent the unnecessary construction of new lines, to require the physical connection of railroads and, if Congress so wills, the connection and joint use of railroads and waterways.

Through its regulation of rates and fares the government has already come to determine the revenues of the railroads. In the future, in larger measure than in the past, the expenses of the railroads will depend upon the requirements made by the regulatory authorities of the government. It is obvious that Congress and the administrative agencies it creates must assume responsibility for the adoption and en-

forcement of measures that will not only assure the financial stability of the railroads, but will also enable the companies to acquire and maintain such credit as will enable them to secure from the investing public the funds required for the adequate development of the country's railroad transportation system. Unless the private railroads under government regulation can thus secure capital from private investors, government ownership must necessarily follow.

Broadly speaking, there are three tasks of major importance that must be accomplished to bring about the permanent solution of the railroad problem and to insure the success of government regulation of railroads. The existing railway systems, many in number, and of varying degrees of weakness and strength, must be brought together into an appropriate number of vigorous competing systems; the corporations which control these large systems must owe their allegiance to the federal government and observe its requirements as to expenditures, capitalization and corporate practices; and laws must be enacted and enforced that will assure to the railroads adequate revenue, financial strength and harmonious relations with their employees and with the public. These tasks can not be accomplished unless Congress provides appropriate and effective machinery for giving effect to legislative policy. Railroad regulation is an executive problem. Its success depends upon the creation of an administrative agency with responsibilities and powers commensurate with the magnitude of the work to be done and vested with that freedom of initiative and action that will cause it to organize and to function as an effective executive body.

The plan developed by the National Transportation Conference calls for the establishment of an administrative agency of large powers and heavy responsibilities. The conference does not favor placing those powers and responsibilities in the hands of a cabinet officer. The members of the President's cabinet hold office for a comparatively few years. They are inevitably selected in large part because of the prominent place they occupy in the counsels and activities of the political party in power. They are political appointees and their administration of the railroads would almost certainly be political. The adequate development and the technical efficiency of the railroads and other agencies of transportation are of such vital consequence to the people of the United States that it would be a public misfortune to allow political methods and party politics to control or even largely to influence the regulation of transportation agencies.

The conference has, moreover, after very careful consideration of the subject, reached the conclusion that it would be unwise to require the Interstate Commerce Commission to exercise the administrative functions that must be performed to insure the success of railroad regulations.

The conference recommends that a Federal Transportation Board be established. It should be an executive board, of at least five members, and should be charged with the responsibility both of administering the act which Congress shall adopt for the regulation of railroads and of bringing about the co-ordinated development of a national system of rail, water and highway transportation. The proposed board should not be entrusted with the regulation of rates—that should be left with the Interstate Commerce Commission; nor should the proposed board be concerned with the construction of waterways and highways, which work should be done by appropriate agencies especially created by Congress. The following specific duties should be performed by the Federal Transportation Board:

1. The Board should determine and announce the grouping or consolidation of railroads deemed to be in the public interest. An opportunity and incentive should be given existing railroad companies to effect the desired consolidations upon their own initiative; but if the desired mergers are not thus accomplished by the railroads within a reasonable time, the transportation board should have the power to carry out the plans authorized by Congress for merging all railroads engaged in interstate commerce into a limited number of strong systems so located that each important traffic district of the United States shall be served by more than one system.

2. The board should have the authority to require, if compulsion is found to be necessary, the railroad companies, as a condition precedent to the formation of consolidated railroad systems, to become federal corporations, either by the organization of new companies under federal charters or by changing from state to federal corporations in the manner suggested by the transportation conference.

3. The transportation board should be given authority to pass upon the public necessity for the expenditure of capital (in excess of a minimum amount stipulated by statute) by all carriers by rail engaged in interstate commerce.

4. The board should administer the general railroad contingent fund or funds which must be built up and maintained as a means of strengthening and stabilizing railroad credit. Instead of the fixed guarantee by the government, the conference favors a statutory rule of rate making that will yield the railroads, as a whole, a fair return upon the value of their property devoted to the public service; and, in order that railroad credit may really be put upon a sound basis without imposing unreasonably high rates upon the public, the conference recommends that railroads be required to turn over the larger part of their excess profits into contingent funds which shall act as financial shock absorbers.

5. The transportation board should act as a referee in cases of disagreement resulting in a deadlock of any of the boards which it is proposed shall be entrusted with the adjustment of wages, hours of employment and other conditions of the service of railroad employees. It is the hope of the conference that the disputes between the railroad companies and their employees, which have in the past on more than one occasion threatened to paralyze the industries of the country, may be avoided in the future by continuing the method of adjusting wages, hours of labor and conditions of service that was adopted in 1917, and has been continued and developed by the Railroad Administration.

6. The conference recommends that each of the corporations owning and operating the proposed consolidated railroad systems shall organize with directorates of 12 members, "one of whom shall be a representative of the employees of the system, and nominated for that position by such employees, and three of whom shall be selected by the Federal Transportation Board to represent the principal interests involved in the territory served by such system." The directors thus selected are to make regular and special reports to the transportation board in accordance with the rules laid down by that board.

7. The transportation board should be authorized and required to inquire into the practices of railroad management and to propose measures for preventing abuses therein. Because of the incompleteness of past regulation of railroads, the financial and other practices of those irresponsible and unscrupulous men who unfortunately are to be found in limited number in practically every line of business, have brought ruin upon some American railroad systems and have injured the security of all railroad companies in the mind of the investing public. It should be the aim of the transportation board to promote the legal and moral responsibility of railroad directorates and railroad executive officers with a view to protecting the funds that have been invested by the public and to make railroad securities safe and attractive investments for the accumulating wealth of the nation.

8. The plan provides that "It shall be the general duty of the board to promote the development of a national system of rail, water and highway transportation." The United States, as a result of the initiative of its business men, has an ex-

cellent system of railroads. Highway development, although long neglected, is now proceeding rapidly and motor transportation is being organized on a large scale. The country is supplied with numerous waterways capable of large traffic uses when systematically developed and properly co-ordinated with the railroads. What is now needed is a transportation board vested with the power, and charged with the duty, of bringing the railroads, the waterways and the highways together into a national transportation system. The railroads and waterways must be connected at river, lake and ocean terminals, through routes must be established, through rates provided, and opportunities afforded shippers to despatch their goods on through bills of lading by such a combination of rail, water and highway carriers as will be most efficient and economical. This integration of the different parts of the national transportation system can be brought about only by creating some single agency with authority over the use of railroads, waterways and highways.

In creating the Federal Transportation Board it will be desirable to provide against conflict of jurisdiction between that board, the Interstate Commerce Commission and the Shipping Board. It would not be desirable to create a board that will encroach upon the work now performed by the Interstate Commerce Commission or that will interfere with the activities of the Shipping Board. What is needed is a board that will supplement and co-ordinate the activities of the Interstate Commerce Commission, the Shipping Board and certain other agencies of the government. The mind of the Interstate Commerce Commission is now, and should continue to be, upon the regulation of railroad rates and the determination of the value of railroad property. The Shipping Board is temporarily devoting itself mainly to the construction of vessels, but when war conditions end it will seek to apply to the business of ocean transportation the general principles of regulation that have been applied to railroads with such modifications as are made necessary by the differences between ocean and rail transportation.

The necessity for a Federal Transportation Board may be clearly indicated by a reference to the present regulation of terminal facilities and services. The Interstate Commerce Commission has certain authority over railroad terminals and the Shipping Board has limited powers over persons engaged in the performance of terminal services at ocean ports but neither body has adequate power at the terminals where water and rail carriers come together. There is no authority that can unify terminal operations, that can bring about the physical connection and the traffic articulation of rail and water carriers.

There is no authority having the responsibility of formulating plans for the systematic development of transportation facilities by rail and by water. We shall always have a disconnected and uneconomical system of transportation in the United States until we create a board whose mind shall be upon the whole transportation problem.

The board entrusted with the duties that have been briefly enumerated should be composed of men of the highest character and attainments. Their responsibilities will equal, if not exceed, those of the Federal Reserve Board, whose creation at a critical period in the history of the United States has proved to be of incalculable benefit. The proposed Transportation Board will have an opportunity to perform an even greater service. Its duty will be to guide and facilitate the development of a truly national system of transportation.

Chairman Esch asked the witness if he realized that there was a deep-seated prejudice against the creation of additional governmental boards. Professor Johnson said he realized it, but thought that in this case it was justified because the main work of the commission is semi-judicial in character and it could hardly function as an efficient executive body without interfering to some extent with the best results in its rate-making functions.

Bi-Partisan Labor Boards

By W. N. Doak

W. N. Doak, vice-president of the Brotherhood of Railroad Trainmen and member of the Railroad Administration's Board of Adjustment No. 1, told the committee that he was in favor of the Plumb plan of government ownership of the railroads and therefore was not committed to the conference plan as a whole, but he had been asked to discuss the section of the plan proposing a method for adjusting labor controversies which had been adopted by the conference largely on his suggestion. The conference favors the adjustment of wages, hours of labor and other conditions of service of railroad employees by boards consisting of equal numbers of representatives of employees and officers of the railroads, with appeal in case of disagreement to the federal transportation board as referee. Mr. Doak explained the origin of the plan of bi-partisan labor boards which was adopted by the Railroad Administration. On the same day that the Supreme Court upheld the Adamson law in 1917 the railroad managers and the brotherhoods reached an agreement and in connection with its application to 1600 different schedules it was decided to appoint a Commission of Eight, consisting of four representatives of the managers and four of the brotherhoods, whose duty it would be to apply the principles of the agreement and the law to the different schedules and settle all controversies. This commission was in existence for about a year and had before it between 30,000 and 40,000 disputes, but it was able to reach unanimous decisions except in a very few cases. At the time that the idea of compulsory arbitration was being seriously considered the brotherhoods advocated the bi-partisan plan instead and after the organization of the Railroad Administration it was decided to create a new board to take the place of the Commission of Eight, but organized along the same lines. Railway Board of Adjustment No. 1 was created by an agreement entered into between the regional directors and the executives of the brotherhoods approved by the director general in General Order No. 13, and was organized with four representatives of the managers on one side and four representatives of the brotherhoods on the other. From its organization in April, 1918, up to July 24, 1919, it had handled about 1100 disputes involving nearly every form of imaginable disagreement as to discipline and schedules without a dissenting opinion and in practically all cases with a unanimous decision of the board. Later Board of Adjustment No. 2 was created to deal similarly with the shopmen, and Board of Adjustment No. 3 to deal with other classes of employees. In General Order No. 27 the director general also provided for the creation of a wage board composed of three representatives of the employers and three of the employees to investigate wage questions and make recommendations for the decision of the director general, but the boards of adjustment were given the power of final decision except in the case of a deadlock, when the director general has to act as a referee. In cases involving an interpretation of wage orders they also make recommendations to the director general, but it has never been necessary to call upon him to act as referee. He said that the members of the board continue their connections with their organizations and are paid by them, while the office expenses, etc., are paid by the Railroad Administration, and this connection with their organizations, he thought, made it possible for them to get information and to keep in touch with the situation in a way that would be impossible for a purely governmental board. The plan had been entirely successful, Mr. Doak said, and in his opinion a similar plan could be worked out

with equal success under either government control, private ownership or government ownership. It has been tried out so far under both private ownership and under government control. He declared that the four representatives of the railroads have met the representatives of the brotherhoods in a most broad and liberal manner and that it was surprising how easy it was to reach conclusions after having heard the arguments. Asked who would be the referee, Mr. Doak said that the conference plan proposed that the federal transportation board would act, whereas under the Plumb plan the board of directors would act, and he assumed that under any plan there will be some kind of a board or tribunal which could act as referee because past experience shows it would have practically nothing to do. He thought practically all railroads and labor organizations would come in in such an agreement because the two boards could make it uncomfortable for any to stay out. He strongly urged that Congress should not attempt to provide for anything further than voluntary arrangements of this kind. He did not believe a purely governmental board would work or that the practical men such as now constitute the boards of adjustment would serve on a governmental board. "We are all American citizens," he said, "and you can lead us to most anything, but you cannot drive any of us," and he thought a simple declaration by Congress providing for the creation of such boards and leaving the details to be worked out by the employees and the employers would get the best results. He would not interfere with the present Board of Mediation and Conciliation, which he said has adjusted more disputes than were ever settled by legislation and which would be very useful in many cases, and he would also retain the provisions of the Newlands arbitration law.

Members of the committee were apparently very favorably impressed with Mr. Doak's suggestions, and Chairman Esch asked him to draft a section for the bill to carry out his ideas and to provide who should be the referee. Mr. Esch said that his own bill has made no provision for settling labor disputes, but he recognized that the matter was an important one and said the committee was very receptive to suggestions along that line because it is anxious to have some satisfactory plan suggested. Mr. Doak said he thought it did not make much difference what tribunal is stated as the referee, but when Mr. Esch suggested the Secretary of Labor he was inclined to think that was not desirable because the railroad men have never been under the Department of Labor or had much to do with it. In reply to a suggestion that the President might appoint a referee, Mr. Doak said that whoever is appointed should be permanent rather than appointed for each occasion because he would gain experience. Mr. Esch asked whether the success of the bi-partisan plan under the Railroad Administration had been due in any degree to the fact that the representatives of the railroads realized that they were under federal control and the roads were guaranteed a return. Mr. Doak replied that he thought the railroad managers would be equally broad-minded even without the government guarantee. He said that 65 per cent of the cases his board has passed on had originated prior to government control and in a very large number of cases employees had been reinstated and been awarded back pay which would have to be paid by the corporations and he had never seen any difference in the attitude of the managers toward paying out corporation money or paying out government money.

Representative Sims said that under the conference plan neither side would have any interest in holding down wages because it would be the duty of the commission to make rates high enough to pay them in any event. To this Mr. Doak replied that when the organizations had gone to the Railroad Administration for increases in wages it had encountered the same railroad men who had always opposed them and that they were able to present as strong arguments for their side as before, but that when practical men representing the two sides got together they were able to reach an agreement. If the judgment of six or eight practical men from both sides cannot be taken, he said, he feared that a satisfactory decision could not be obtained from the Interstate Commerce Commission or any body "that knows nothing about wages."

Mr. Doak urged strongly that the power of appointment of members of the board should not be given to the President or made in any way dependent upon Congress, because it should be removed absolutely from the field of politics. If Congress had anything to do with it, he said, every time a man got an adverse decision he would insist on his Congressman demanding a Congressional investigation.

Most of the discussion related to the kind of disputes arising out of interpretations of schedules and discipline that are passed upon by the boards of adjustment rather than to the question of passing on large increases in wages amounting to hundreds of millions of dollars. Mr. Doak was not asked whether the wage questions which are passed on by the Board of Wages and Working Conditions only in the form of recommendations to the director general, who must decide whether he can spend the money, are handled with complete success, nor did he refer to the question of time and a half for overtime in train service which was referred by the director general to Board No. 1, which rendered conflicting reports, putting the decision back up to the director general.

Representative Stiness pointed out that wage schedules provide differentials between classes of employees, but asked how they provide for discrimination between a good man and a bad man. "The only way is to tie a can to the bad man," said Mr. Doak, "and that is done quite frequently." Mr. Stiness also pointed out that stabilizing wages does not seem to prevent the men from asking for another increase within a short time. Mr. Doak said that was because wages never had been made high enough and that under the former plan they remained unadjusted for years until the grievances had accumulated sufficiently to cause a crisis, whereas a wage board that would be constantly sitting and adjusting wage questions from time to time instead of waiting until they accumulate into a big controversy, would produce more satisfactory results.

"The fact is," he said, "we have had too much publicity. The people got unduly alarmed in 1916 because they were afraid they would wake up some morning and not find their milk. They might not have had any milk on the morning of September 4, 1916, but they would have had it by noon because the question as to who was bluffing would have been determined inside of four hours."

Mr. Doak insisted that the increase in freight rates made necessary by the increase in wages was in no way responsible for the increased cost of living. He said he knew many people who were just existing even on what are now called high wages and he did not see how any family could live on less than $150 a month. He said he sympathized greatly with the director general in his difficult problem of handling both wages and rates. Mr. Stiness referred to a statement circulated by the American Federation of Labor that the law of supply and demand could be repealed by legislation and asked if Mr. Doak agreed with that idea. Mr. Doak said that he would require at least half a day to answer the question, but that he sometimes thought it would be better to let the law of supply and demand alone. He said during the war it seemed as if something ought to be done and Congress reduced the price of wheat and of flour, but he never saw any cheap bread resulting from it. He declared that wages have never been anything like as high as they ought to have been and that in the case of railroad men their working life is so short that they ought to be able to accumulate enough

to provide for the years when they can no longer work. Mr. Doak argued strongly against the idea of compulsory arbitration. It might be possible to prohibit an organized strike, he said, but it would be impossible to prevent men from quitting work individually.

The Amster Plan

When the hearing was resumed on Tuesday, Nathan L. Amster, president of the Citizens' National Railway League, outlined and strongly argued for his plan for having the equity of the railroad stockholders acquired at a valuation fixed by a valuation commission, taking into consideration original cost, replacement cost and earning power, and taken over and operated by a corporation whose board of directors should be elected by the various interests, giving the security holders only one-third of the membership. He proposed that the bonds should not be disturbed, unless they represented more than the value of the property, and that the new corporation should issue stock in exchange for the stock of the railroad companies. The Interstate Commerce Commission would be required to make rates sufficient to pay 6 per cent on the stock, or 4½ or 5 per cent if it should be decided to have the government guarantee it, and any excess over 6 per cent should be divided under a plan which would provide for profit sharing with labor or a reduction of capitalization and rates. Mr. Amster declared that the railroads are the most democratically owned industry in the country, saying that more than one-third of the population has its savings invested directly or indirectly in railroads, that it is the only industry that has every individual and every other industry as its client, and that it is second only to agriculture in the percentage of its product which is represented by labor. He declared that 80 per cent of the railroad service is represented by labor. Mr. Amster also said that any deficit resulting from railroad operations is merely a subsidy paid by the people as a whole to the industries that do not pay their fair share of freight rates. He said his plan would give to railroad security owners a square deal which they have not had for years and that they will not put any more money into the railroad until they get it. He described his plan as a middle course between government ownership and "taking off the lid," to leave the investor to take his chances of loss or of large gains. This plan, he said, is no longer possible.

The New England Plan

E. J. Rich testified on Wednesday, saying in part:

No railroad plan can meet the necessities of the public which does not provide for the establishment of the credit of substantially all important railroads. In the past credit has been established only through surplus earnings. The old plan has failed because of the unwillingness of the Interstate Commerce Commission to establish a basis of rates which will give adequate earnings to the weaker lines. This attitude of the commisison has a large measure of justification because a basis of rates which would give adequate earnings to the weaker lines would give unnecessarily high profits to the stronger lines. So long as there is competition, and consequently strong lines and weak lines, the credit of the weak lines must be established in some other way than through earnings and rates.

The main features of the plan are as follows:

1. Any railroad finding itself unable to issue its capital stock at par may apply to the government for the guaranty of its loans necessary to raise money for the physical improvement of the property. The government, through some agency—perhaps the Interstate Commerce Commission—shall then appoint two public directors, who shall have equal votes with other directors, except on the question of the necessity for improvements to be financed by these loans, and in reference to those their decision will be final.

2. Prior to the great war investigation showed that a railroad in order to put out its stock at par must show earnings of substantially 9 per cent applicable to the stock. It is proposed that when a railroad earns more than 9 per cent it shall divide the surplus above this amount with the government.

For the years 1915, 1916 and 1917, the average annual aggregate deficits of those railroads having deficits—that is, insufficient income to pay operating expenses and fixed charges—amounted to $22,000,000. The annual average share of the surplus which the government would receive under this plan amounted to $52,000,000.

3. Congress should give a mandate to the Interstate Commerce Commission that the margin of safety of the government share of the surplus over the deficits which it would be obliged to meet should not fall below a stipulated sum, say $25,000,000; and if it were thought advisable a maximum sum could be given, say $50,000,000. Of course the mandate should include the words, "as near as may be." This margin of safety should be the average margin of safety over a period, say, of three years. Under this mandate no possible loss could fall upon the government.

4. The railroad seeking a government guaranty should establish a sinking fund for the retirement of the obligations at maturity. A payment into this fund of one-half of one per cent per annum would retire a 50-year bond. Therefore, no loss would fall on the government on account of failure to meet obligations at maturity.

The following are the advantages of this plan:

1. Every railroad could raise the necessary capital for improvements, and thus every community would receive proper transportation service.

2. This result is obtained at the least possible cost to the shippers, for there is no necessity to raise rates to the point necessary for the establishment of credit of all railroads through earnings.

3. The strong roads would continue to finance their own requirements, and the weak roads would be entirely free from the unwholesome domination of banking interests.

4. Competition is preserved, and with it private initiative.

5. One of the most important advantages of the plan at the present moment is that it can be put into immediate effect. If other plans are thought as the ultimate solution, such, for instance, as the consolidation of weak lines with the strong lines, or the fixing of rates so as to give a return upon the valuation of railroads as found by the Interstate Commerce Commission, the railroads are relieved from the menace of bankruptcy and become at once an effective agency of transportation. Too much stress can not be laid upon this point for the railroads are faced with disaster unless some adequate plan is put into effect at once.

6. Fictitious capitalization is not recognized in rate making. No serious charge of over capitalization has been made against the strong lines; it is the weak lines which have been subject to this criticism. No attempt is made to establish rates so as to give the weak lines credit—credit is given by the government guaranty.

The subcommittee of the Senate committee on interstate commerce, appointed to draft a tentative railroad bill, has held numerous meetings and has had before it Director General Hines, C. A. Prouty, director of the Railroad Administration Division of Accounting, and Paul M. Warburg. These men have conferred with the committee regarding various phases of the proposed legislation but not in a formal way as at a hearing and no record has been taken. John E. Oldham, of Boston, Mass., and S. Davies Warfield have conferred with the Senate sub-committee on the railroad bill.

The House is to recess on August 2 until September 9, but the railroad hearing before the committee is to continue.

Some Chapters in Canadian Government Ownership*

Temiskaming & Northern Ontario Has Never Earned Its Fixed Charges—Disfranchisement of Railway Employees

By Harold G. Villard

III

UNLIKE THE OTHER British North American colonies which first joined the dominion, Ontario has only very recently become possessed of a government owned and operated railway. With the object of having the agricultural lands lying west of Lake Temiskaming opened up for settlement, the Ontario legislature some twenty years ago chartered several private railway companies to build through this then undeveloped territory. As these corporations failed to commence construction, and as it was feared that the trade of the district would drift to Montreal in the absence of a connection with the railway system of Onario, the Liberal provincial government announced in 1901 that it would cause a survey to be made in order to ascertain the cost of building a railroad into the region in question. While the line was to be constructed with the funds of the province, which was to retain control over transportation rates, the road, it was intimated, might be leased on completion to a large railway system like the Grand Trunk.[1]

A year later when the surveys were further advanced, a bill was passed under government auspices authorizing the construction in the public interest of what has since been known as the Temiskaming & Northern Ontario Railway.[2] A board consisting of three commissioners was appointed to build the new avenue of transportation and to construct telegraph and telephone lines in connection therewith. For each mile of railway built, 20,000 acres of public lands were to be set aside and the proceeds derived from their sale used to retire any bonds issued for the construction of the road.

The first board of commissioners decided to have the railway constructed by the contract system rather than directly by its own officers. This method of construction has been followed in the main ever since. As to the kind of road to be built, "the decision of the commission, which was concurred in by the government, was that a railway should be constructed which would be creditable to the province and which would conform to the standard of a trunk line, having regard at the same time to proper economy in every direction."[3] In other words, the first section of the road between North Bay and New Liskeard was located as a colonizations road where an adherence to uniform and definite grades was not required. The cost of this first section of 112 miles complete, with a suitable equipment of rolling stock, was estimated by the commission at $29,755 per mile.[4]

Even before this first section was completed, however, the Ontario administration decided to extend the provincial railway some 140 miles further to the town of Cochrane so as to form a connection with the newly begun National Transcontinental railway planned to run through the Northern wilds of Ontario. It was determined that this extension should be built up to the standard adopted for the National Transcontinental and with ruling gradients of 0.5 per cent. north bound and 0.4 per cent. south bound. Hence, the first portion of Ontario's provincial railway is of inferior construction as compared with the second, and will require an expenditure of $2,263,000, as estimated in 1912, to make its gradients correspond with those prevailing on the second section from New Liskeard to Cochrane.

Just about the time the first section reached completion, a change of government took place. After having been in power for a third of a century, the Liberals were replaced by a Conservative ministry inclined to favor government management and control of public utilities. Although the services of all the then employees on the railway were retained, the Liberal railway commissioners felt constrained to resign and were promptly replaced by three Conservative appointees.

New Government Charges "Mismanagement"

Shortly after the new government assumed office, it announced that "the whole Temiskaming Railway has been mismanaged" by its predecessors—and that, owing to the construction of unnecessary trestle work and other unserviceable expenditures "the railway has cost far more than it should have cost." In place of the first section being completed for $30,000 a mile as originally anticipated, its cost had attained in 1907 $46,200 per mile. The causes for this greatly increased expenditure were explained by the provincial treasurer as follows:

> "The road was very poorly laid out, and the engineering was bad, and during the past three years there has been a large amount expended on the first division in order to put it into a proper state for operating. In places the rock cuts were as narrow as three to four feet from the rails. They should be at least five or six feet from the rails in order that the sway of the train may not result in striking a rock. A large expenditure has been made in clearing these rock cuts and making them safe. Further than that, the road was not properly laid out. It goes west on a grade of 1½ per cent, and east on a grade of 1¼ per cent, and the result of this is that it is impossible to take more than nineteen or twenty (freight) cars on one train."[5]

Besides making good the deficiencies in the construction of the first section, the new provincial government proceeded energetically with the construction of the remaining portion and at the close of 1908 had the entire main line in operation. On October 31, 1916, the Temiskaming & Northern Ontario railway system, including branches, comprised 344 miles and represented a capital expenditure on the part of the Province of $21,183,687.50, or at the rate of $61,412 per mile[6] This cannot be regarded as an especially low capitalization.

Road Never Has Earned Fixed Charges

While not an inexpensive line to build, the Temiskaming railway has a relatively large freight and passenger traffic. This is due to its serving the highly prosperous Cobalt mining district. Yet despite this favoring circumstance and the fact that its net earnings have been swelled almost one-fifth by the proceeds of town lot sales and by royalties on rich silver ores found along its right of way, the road has never as yet met its fixed charges. When it was completed, however, the contrary was anticipated. "The government railway seems likely to become a permanent source of revenue to the province. We shall be able to obtain annually from the net earnings of the railway a sum quite sufficient to pay

*Earlier articles in this series were published in the *Railway Age* of July 18, 1919, page 119, and July 25, page 158.

[1]See Ontario Budget Speech for 1901 of Hon. G. W. Ross at p. 31 et seq.

[2]Chapter 4 of 3, Edw. VII.

[3]T. & N. O. Railway Com. 2nd Annual Report, p. 7.

[4]Ibid, p. 8.

[5]Hon. A. J. Matheson, Ontario Budget Speech, 1908, p. 15.

the interest on the cost of the road so that it shall not be a charge on the province or otherwise."[7]

Instead of this desired state of affairs being attained, the net earnings of the road—even after including receipts from ore royalties and town lot sales—have not sufficed since its opening to pay a return of two-and-a-half per cent. on the capital invested in this government enterprise.[8] As against $510,000 derived from net earnings, the Province during the fiscal year 1916-1917 was obliged to pay out $825,000 for interest charges on the sums borrowed for the construction of the Temiskaming railway.[9]

This unsatisfactory showing is almost entirely ascribable to the fact that the provincial railway is not run on commercial lines. On May 20, 1912, and at a time when only two-thirds of the fixed charges of $625,000 per annum were being met, "all freight rates on this railway were revised and a general reduction made."[10] Concerning these new rates, the Temiskaming Commission a year later unbosomed itself as follows:

"Pulpwood, lumber and other forest products, coal, coke, stone, sand, etc., constitute this year almost 70 per cent of the entire tonnage handled. On all of this traffic the earnings are very much less than the actual operating cost of hauling the freight, and on some of it, particularly on pulpwood, the earnings are less than half the actual operating cost * * * Whereas other railways in Eastern Canada apply what is known as the standard mileage tariff to local traffic, the Temiskaming Northern Ontario Ontario Railway has adopted what is known as Schedule A, being a basis approximately 25 per cent less than standard mileage."[11]

Had this reduction in freight rates not taken place, the earnings of the Government railway since 1912—which have averaged $1,750,000 per year—might have been sufficiently increased to have met nearly all of the bond interest charged against it instead of less than two-fifths as has been actually the case. Instead of running the road on a business basis, however, and charging what a given traffic is worth, lower rates for freight have been introduced than prevail on other privately owned lines in Ontario and the provincial treasury is forced to make good the resultant difference. In other words, those living along the Temiskaming railway are favored with cheap transportation rates for their goods at the expense of the general taxpayers.

According to the officials of the Ontario government, politics play no part in the conduct of the Temiskaming railway. If the opposition party is to be believed, however, the provincial railway is merely an adjunct of the Conservative party machine. It is claimed that the patronage system with all its evils is in vogue and that only government followers are eligible for appointment to positions or are awarded contracts for supplies. Color is lent to this assertion by the fact that the government at a 1917 session of Parliament refused to permit the passage of a resolution calling "for the purchase of all supplies for the public service on a business basis regardless of the political or peronal affiliations of the vendors," and providing further "for the abolition of the patronage system and the creation of a Civil Service Commission to make appointments and promotions in the civil service by merit."[12]

Use of Road for Political Purposes

That the Ontario government is not above using the railway to advance its own political fortunes was brought out at the time when the building of the branch to Elk Lake was decided upon. Surveys for this extension of 29 miles were first made in 1909, but led to no result either then or in the following year. When, however, a parliamentary election was to be held in the Temiskaming district in December, 1911, the government caused a new reconnaissance to be made in the month of November[13] and the location of the line to be definitely determined. Just a few days previous to the election, the prime minister of Ontario sent a telegram to a supporter reading "it is true that the government has decided to build a branch line to Elk Lake." Asserting that this communication had been timed so as to decide the election in favor of the government, the opposition scored the then premier for having used the announcement of the construction of this extension as a bribe to the electorate In the words of the opposition leader:

"The people of Elk Lake had repeatedly requested the government and the commission to give them that extension Then when the contest was going sore with the government candidate in Temiskaming, a week before election came the announcement that this Elk Lake branch would be built. The Conservative agents took telegrams to this effect and showed them to the people, saying: 'Unless you elect a supporter of the government the line will not be built or will be greatly delayed.' "[14]

While stating all such strictures to be unjustified, the Ontario authorities acknowledge that there has been "some criticism of the Temiskaming & Northern Ontario management to the effect that items were being charged to capital that were legitimately chargeable to maintenance."[15] In the early history of the road, too, no proper allowance appears to have been made for depreciation of equipment. When in the fiscal year 1911-12, the operating expenses swallowed up nearly 15 per cent. more of the gross earnings than in the year previous; the commission reported that this higher expense ratio was due to a considerable extent to the fact that "since the first of the current fiscal year, there have been written off monthly charges for depreciation of the different classes of equipment and credited to appropriate depreciation accounts to provide for replacement."[16]

It is a difficult matter to determine whether these various imputations on the conduct of the Temiskaming railway are justified or not. For unlike what occurs in the dominion House of Commons, very little discussion of the government's railway methods takes place in Ontario's Provincial Parliament. Most of the information available regarding the railway is to be found in the more or less inspired statements of department heads and in optimistic official publications like the reports of the railway commission. Certain it is, however, that the construction of the Temiskaming railway was marked at the outset by grave and costly errors. Furthermore, although possessing a relatively dense traffic, it has not proven profitable. Principally on account of the practice of charging decidedly lower rates than those demanded by private lines, the road has so far failed to meet its fixed charges and has entailed additional burdens on the taxpayers. Even if it be conceded therefore that the Temiskaming system has been more efficiently conducted than other Canadian government railways, its record cannot be said in all fairness to be such as to justify much increased public confidence in the public ownership and operation of railroad facilities.

Political Influence on Dominion Government Railways

From the very advent of Confederation appointments to positions on the Dominion Government Railways have been made along party lines. This practice of naming only faithful followers of the party in power for office began under the first federal administration, which was made up of Conservatives. Indeed, no sooner had the new central government started than its official heads sought to influence the employees in the various branches of the public service to vote for government candidates. Thus, when the first provincial election after confederation took place in Nova Scotia in the fall of 1867, the Minister of Customs admitted in the House of Commons that he had requested the men belonging to his department to vote in opposition to the Lib-

[7]15th Annual Report, T. & N. O. Commission, pp. 7 and 84.
[8]Hon. A. J. Matheson, Ontario Budget Speech, 1910, p. 5.
[9]T. & N. O. R. Commission—12th Annual Rep., p. 12.
[10]Hon. T. W. McGarry—Ontario Budget Speech, Feb. 12, 1918.
[11]T. & N. O. R. Com. 12th Annual Report, p. 90.
[12]T. & N. O. R. Com. 13th Annual Report, pp. 98 and 101.
[13]See Toronto Globe of March 7, 1917.
[14]T. & N. O. R. Com. 11th Annual Report, p. 20.
[15]Hon. N. W. Powell, Toronto Globe, Feb. 9, 1912.
[16]Hon. T. B. Lucas, Ontario Budget Speech, 1914, p. 20.
[17]T. & N. O. R. Com., 12th Annual Report, p. 8.

eral provincial government then in office. As voting at elections was carried on at that time under the open-ballot system, which made it easy to ascertain how each individual voted, the federal employees found it difficult to resist the pressure brought to bear on them to support the government's side. If they failed to cast their ballots as directed, they ran the risk of dismissal. "Any man in the public service suspected of being a Liberal was made to feel that he was under a ban. If officials supported the Dominion Government they were protected, otherwise opportunity was sought to drive them out. They reduced the salary with the hope that the officer would resign, and when the government could do nothing else, they dismissed officials."[1]

As in the case of other servants of the government, railway employees were not allowed to vote as they pleased but were to use a phrase of the time "driven to the polls like sheep." "An election had been held in Colchester County with the power of the dominion government arrayed against the local government; and the public officials from the railway commissioner to the humblest officer in their employ were brought to the polls to vote—in many cases against their will."[2]

With the approval of their superiors, railway officials even became active political workers for the Conservative or administration party. "At every election since 1867, the dominion government had brought their influence to bear to break down the local government. In Hunts county, he found that the person who spoke loudest against the local government was a dominion official, the head of the railway department at Windsor, who was neglecting his duty and going about the country electioneering."[3]

Nova Scotia Disfranchises Railway Employees

Resenting this interference of dominion officials in provincial elections, the Liberal ministry had a bill passed in 1871 to secure the independence of the House of Assembly, as the lower chamber of the Nova Scotian parliament was called.[4] It provided, among other things, that no person employed within fifteen days before the day of election on the government railways could vote at a provincial election. Thus, what the Liberal politicians termed the pernicious activity of the federal authorities in local elections was rendered harmless so far as the casting of votes by dominion officials was concerned.

Nevertheless, even when these were not allowed to vote, "many of them worked at the polls in opposition to the local Liberal government year after year."[5]

Despite repeated efforts to bring about its repeal, this disenfranchising law remained on the statute book for a period of thirty years. When this discrimination against the employees of the federal government was finally removed in 1901, the Liberals were in power both at Ottawa and in Nova Scotia. As tauntingly stated by members of the Conservative opposition, they were perfectly willing to allow government employees to exercise the local franchise now that they were in a position to influence dominion officials to support the candidates of their own party.

This dragooning of government railway employees at local elections to support candidates favored by the federal administration also took place in Prince Edward Island. In the words of a local statesman:

"It may be fair for us to assume that from one-third to one-half of the railway men belong to the Liberal party and the other one-half to two-thirds to the Conservative party. Under these circumstances, what do we find at elections? We find that every man goes up and polls his vote against the Liberal party * * * In this country, where we have a system of open voting, the man who goes up and polls his vote for the Liberal party is marked out as a man upon whom, one day or another, the wrath and indignation of the dominion government will fall. Of course, it does not always happen that the man is immediately thrown out of office. That is not the way it is done. * * * The man is shuffled out of office. Some occasion arises, perhaps it may be the plea of economy, it may be the uniting of two offices into one. But something else happens. A man is charged with having openly advocated his views against the policy pursued by the present (federal) government. If they can find any instance where he has done that openly, he is discharged from the position."[6]

Government Railway the Largest Employer

As the Island possesses no manufactures of any importance and is peopled by farmers and tradesmen, the dominion government railway has always been the largest employer of labor in the province. Whenever the two leading parties were almost evenly matched—such as occurred in the local election previous to 1893 when the Liberals and Conservatives polled 9160 and 8944 votes respectively—the outcome of an electoral contest might easily depend on the way in which the railway men voted. Feeling that these employees would not be allowed to cast an untrammeled ballot and that they should not be permitted to control possibly the destinies of the Island, the Liberal provincial administration caused a law to be enacted in 1893 on the eve of a general election prohibiting dominion officials from voting at local elections. This act remained in force only for four years, however.

In 1897, when the Liberal ministry was again seeking a vote of confidence at the hands of the Island electorate, the Conservative government at Ottawa had been replaced by a Liberal administration. As only followers of the Liberal party were now eligible for appointment to positions on the government railways, the possession by dominion railway officials of the right to vote was no longer deemed "a menace to the free institutions" of the Island. The disenfranchisement law was therefore promptly repealed by the Liberal legislators, who had only a short time previously deemed it essential that all federal government employees should be precluded from voting.

Now happily a thing of the past, the disenfranchisement by the provinces of dominion railway officials is not likely to occur again. The adoption of the secret ballot in elections has made impossible a repetition of the spectacle reported in the early days of confederation at Halifax of the retainers of the federal government being marched in a body to the polls to cast their votes solidly against the provincial administration. No longer can it be said that the railway servants of the central government endangered their positions if they merely voted as their conscience dictated and in so doing cast their vote contrary to the direction of their superiors.

Yet the fact must not be lost sight of, however, that what really caused the passage of these laws restricting the right of suffrage was not so much the desire of the local politicians to gain a passing party advantage, but rather the attempt of the dominion authorities to predominate in provincial affairs by making what the Canadians termed "a political engine" of the federal railway service. Had they confined the activities of their agents to influencing the outcome of dominion elections alone, it is safe to say that the enactment of this disenfranchising legislation would never have been thought of.

Four million dollars instead of two, will be the cost of the proposed twelve-mile freight cut-off of the Philadelphia & Reading, between Sinking Spring, Pa., and Blandon, according to a revision of the estimates, recently made, to take into account present-day prices for labor and material. The engineers say that the total for bridges alone is something like $1,500,000. The bridges include one over the Schuylkill river about three miles north of Reading. No date has been fixed for the beginning of work.

[1] Hon. Mr. Fielding, Canadian Hansard, 1896, 2nd Session, p. 1510.
[2] Mr. Morrison, Nova Scotia House of Assembly Debates, 1872, p. 103.
[3] Prime Minister, ditto, p. 104.
[4] Chapter 3, Laws of 1871.
[5] Hon. Mr. Fielding.—Can. Hansard, 1896, 2nd Session, p. 1510.
[6] Mr. Bell—P. Edw. Island, House of Assembly Debates, 1893, p. 284.

Orders of the Regional Directors

RECRUITING ACTIVITIES IN STATIONS.—The Northwestern and the Eastern regional directors observing that the Railroad Administration is entirely in sympathy with the efforts of the War Department to handle recruiting work in passenger stations, advises federal managers to apportion space for this work wholly in accordance with the limiting circumstances at each station; uniform rule cannot be made.

Employees Riding on Passes.—The Central Western Regional Director advises federal managers of a complaint, received at Washington, that employees riding on passes monopolize space in sleeping cars; also that employees are making trips which are unnecessary.

I. C. C. Regulations for Protection of Lading.—The Northwestern regional director, July 18, promulgates instructions from the Division of Operation, concerning Paragraph 1894-A I. C. C. regulations for the protection of freight from fire. Goods liable to be ignited by sparks must not be placed next to cars placarded "explosives."

Surplus Capacities of Army Arsenals.—The Northwestern Regional Purchasing Committee, Bulletin 154, quotes a letter from the Ordnance Department, Washington, dated July 1, with reference to the possible utilization of surplus capacities at army arsenals for the manufacture of railroad materials. It is desirable to give the Arsenal Order Branch of the Ordnance Department an opportunity to quote prices on materials required by the railroads which they can possibly furnish.

Postponement of I. C. C. Hearing.—The Northwestern regional director in a letter to the northwestern railroads, dated July 12, gives orders similar to those issued by the regional director of the Eastern region in Circular 1500-130 (*Railway Age,* June 11, page 74).

Charges for Application of Grip Nut Locks.—Circular 226 of the Southwestern regional director quotes a letter from Frank McManamy, assistant director, of the Division of Operation, relative to an interpretation made by Section 3, Mechanical, of the American Railroad Association that grip unit nuts, which take the place of a commercial nut and a nut lock, but which, under the rule as at present interpreted must be billed either as a common nut at $.035 per lb. or as a nut lock at $.03, are patented manufactured articles and may be charged as such at the net store department cost in accordance with Rule 105.

Freight Car Distribution—Automobile Cars.—Freight Car Distribution Notice 13, canceling Freight Car Distribution Notice 6 and Supplements 1 to 8 inclusive, outlines instructions for expediting the return of automobile cars to eastern loading territory.

Grain Embargo—Primary Market.—Circular 83 of the Northwestern regional director states that, effective at a date to be determined later, permit regulations will be established for controlling grain shipments from country stations to primary markets and shipments between primary markets. The details of the plan to be used are also outlined.

War Risk Insurance Posters.—Supplement 7 to Circular 112 of the Southwestern regional director states that the Treasury Department has been given permission to display posters in railroad stations bearing the caption "Hold on to Uncle Sam's Insurance." These posters will be sent by the Treasury Department direct to the stations at which their display is desired.

Per Diem—Non-Federal Controlled Roads.—Supplement 6 to Circular 78 of the Northwestern regional director states that the question has been frequently raised as to whether "Short Line" railroads not under federal control that do not execute the standard contract with the Railroad Administration will be entitled to the per diem free time allowance of two days granted to such roads as do sign the standard contract. The director general has ruled that a non-signatory line shall be given the same advantage of free time as one which has signed the contract, provided all claims against the government are waived by appropriate document, this free time allowance to be effective retroactively from April 1, 1918.

Postponement of I. C. C. Hearings.—Supplement 1 to Circular 209 of the Southwestern regional director similar to Circular 1500-130 of the Eastern regional director (*Railway Age,* July 11, page 74).

Double and Triple Loading of Minimum Carloads.—The Southwestern regional director, by Circular 229, advises that complaints are still being received from shippers alleging neglect on the part of the carriers' agents to observe instructions; and shipments are going astray, with consequent delays and claims for loss and damage. The order states that the subject should be given attention by all concerned to remove what appears to be a prevailing impression on the part of shippers that carriers are not extending complete co-operation in this matter.

Freight Cars Damaged.—Supplement 1 to Circular 39 of the Southwestern regional director states that 12,183 cars were damaged in yards and trains on Federal controlled railroads during the week ending May 34, 1919, the cost of repairs for which is estimated at $310,764. While this is a substantial reduction compared with one year ago, and is also below the average for the entire year, still further improvements should be made, by closer supervision.

Leaky Western Pacific Cars.—Order 219 of the Southwestern regional director calls attention to claims for loss of grain by leakage from new Western Pacific cars, series 16,801 to 18,300. These cars should be repaired by seeing that there are no short floor boards, that the floors are well fitted around the posts and braces, and that the beveled grain strips are well fitted between the posts and braces and securely fastened to the floor. The side sheathing boards should be well secured by nails to the side-sill nailing timber.

Marking Cotton.—Supplement 2 to Order 182, effective August 1, canceling Paragraph 8 of Supplement 1 of Order 182 of the Southwestern regional director, in regard to square bale cotton tendered at compresses, calls for better marking. If the character and quality of the bagging is insufficient to properly carry the mark, a suitable patch must be used. This must be placed under the bands on one or both broad sides. It must be of closely woven fabric of smooth bright surface not less than 28 in. long and 22 in. wide; and on both sides of the bale there shall be stenciled in letters, not less than four inches in depth, with bright durable ink that will not run or fade, the initials or recognized trade mark of the shipper and the class mark used by the shipper.

Safety Devices on Locomotives.—Southwestern regional director in Order 221 calls attention to improved safety devices for application to locomotives on lines under Federal control.

Routing of Materials for Use of Federal Controlled Railroads.—By Order 223 of the Southwestern regional director shipments of newly purchased materials are ordered routed over the purchaser's line so as to save all charges possible over other roads, unless this plan will entail a long or circuitous haul.

Safety Appliances on Freight Cars.—Order 222 of the Southwestern regional director calls to the attention of Federal managers that at the present time there are approximately 80,000 freight cars in service which are not equipped with United States standard safety appliances as provided by the orders of the Interstate Commerce Commission; all such cars should be equipped at the first opportunity.

Express Employees' Passes.—The Southwestern regional director, by Order No. 220, announces revised regulations for issuing transportation to employees of express companies.

Results from Concrete Subgrade Construction

Descriptions of Several Designs and Information Concerning Service Under Steam Road Traffic

CONCRETE HAS COME into such wide use in almost all forms of construction that it is not surprising that it has been employed in the building of foundations for steam railway tracks. The developments of this nature were the subject of a paper presented before the annual meeting of the American Concrete Institute at Atlantic City, N. J., on June 28, by A. C. Irwin of the Portland Cement Association, Chicago. After discussing the shortcomings of

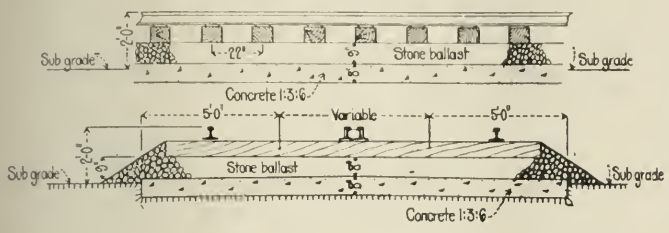


Fig. 1—Slab Construction on the Long Island

the present forms of track construction, Mr. Irwin described a number of designs of concrete subgrade construction which are now in service under steam railway tracks. The following is an abstract of that part of his paper.

Examples of concrete slabs carrying ballast in which ordinary track ties are embedded are shown in Fig. 1. This construction was placed under 49 crossings, switches and slips on sand embankments averaging 20 ft. high on the Long Island Railroad at Jamaica, N. Y., during the winter of 1912-13. Portions of the slabs were placed without al-

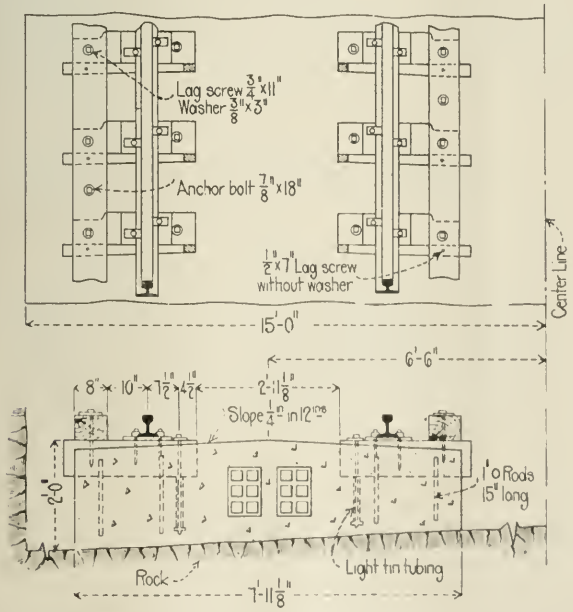


Fig. 2—Delaware, Lackawanna & Western Construction in Bergen Hill Tunnel

lowing time for the embankment to settle. The traffic over these slabs has been extremely heavy from the day they were put in, running as high as 1,300 train movements per day. After 3½ years the general manager of this road reported that there had been practically no maintenance on these tracks. He stated further that the great advantage of the slab is that the bearing surface on the natural ground is increased about three times that with the usual form of construction without taking into consideration its continuity and that an examination of these experimental slabs showed that there were no cracks, at least in the vicinity of the points of examination. It will be noted from the drawing that these slabs are not reinforced and that they are only eight inches thick. It should also be noted that they have been subjected to the pounding that occurs at crossings and frogs. There can, therefore, be no question of the practicability of concrete under main line tracks, but where so used it would seem appropriate to construct curbs at the ends of the slabs to hold the ballast from spreading, and to reinforce the slabs.

It has become very common practice to use reinforced concrete slabs to form the decks of deck girder railroad bridges. These slabs are usually about 1 ft. thick and 5 ft. long and span the distance between girders. The ballast is retained by curbs at the ends of the slabs. The testimony of railroad officers is that when the ties are once embedded they stay in place and maintenance is very greatly reduced.

In the new Bergen Hill tunnel of the Delaware, Lackawanna & Western, completed in 1909, the tracks are carried on reinforced concrete slabs, details of which are shown on Fig. 2. This construction was designed by Lincoln Bush,

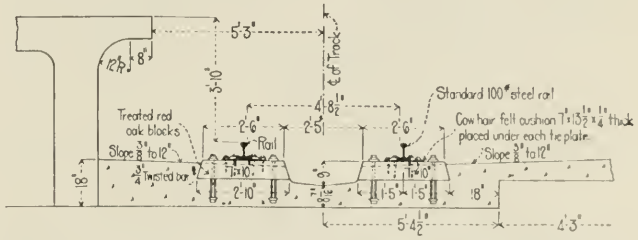


Fig. 3—Design Installed in Pennsylvania Station, New York

then chief engineer of the D. L. & W. The tie blocks are notched at the outer end to form a shoulder and are in place when the concrete is poured. A wedge is driven in between the concrete and the opposite side of the block, preventing the block from being disengaged from the shoulder under traffic. The blocks are replaced by removing the wedge, pushing the blocks lengthwise of the track so as to disengage the shoulder, and slipping them from under the rail. This work can be done by one man.

Under date of October 3, 1916, Mr. Bush said as follows in regard to this construction:

"It was completed and turned over for service in February, 1909. The roadbed in the new tunnel has stood up exceedingly well and none of the creosoted tie blocks have been renewed so far as I have learned on recent inquiry.

"My idea in getting out this design was that if railroad track could be made perfectly rigid and unyielding there would be no pounding or unusual stress in the rail. The roadbed in the new tunnel referred to has been in service under the heaviest kind of traffic since February, 1909, and has demonstrated fully that, if track is made perfectly rigid, it will stand up against the heaviest kind of traffic.

"I am convinced that, with a perfectly rigid surface, there will be no pounding and serious damage in railroad track unless some defect exists, such as flat wheels. Such conditions, however, are corrected when they do arise with the railroad rolling stock. I have felt for some time that, with

the heavy rolling stock, the best ballasted track had practically reached the limit of loading and if the heavy rail is used the support of same on tie ballasted track is not like the abutment of a bridge as ties yield, causing deflections in the rails, and it will be found that even with a heavier rail the stress may be greater in the rail than with a light and less stiff rail section which lends itself more readily to deflection."

Figure 3 shows the concrete track construction in use in the Pennsylvania station in New York City. A single-track length of 14,600 ft. of this type was laid adjacent to platforms. In general the concrete was laid on the rock of the subgrade, but where the subgrade consisted of loose rock backfilling, the concrete slab was reinforced. A length of 720 ft. of similar construction is in use in two of the East River tunnels (Nos. 1 and 2) immediately east of the Long Island shafts. These sections of track are subjected to high speed traffic.

In 1911 500 ft. of concrete track support was installed on the Campbell Avenue line of the Chicago Junction Railway where it crosses the Illinois and Michigan canal in Chicago. Details of this construction are shown by Fig. 4. This has been patented by Louis H. Evans of Chicago. This location was selected with a view to subjecting it to very heavy and continuous traffic, a majority of the stock trains going to the Chicago Stock Yards passing over this track. These trains are usually drawn by heavy locomotives at higher than usual freight train speed. A thorough examination of

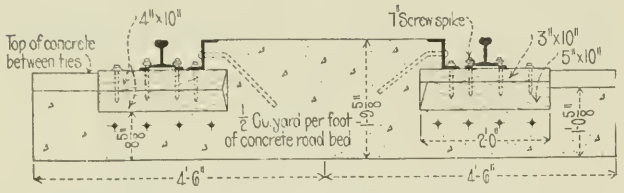


Fig. 4—Concrete Track Support on Chicago Junction Railway

the track indicates that, although transverse cracks appear in the portion of the concrete above the base of rail, these cracks do not extend down into the supporting slab. In fact, the construction seems to have suffered practically not at all from the heavy traffic which it has carried. G. W. Hegel, chief engineer of the Chicago Junction, states that there has been no maintenance on this stretch of track except to renew a few of the tie blocks. The tie blocks are spaced 34 in. centers, which spacing has been found to be practicable with this unyielding track foundation.

On the Point Defiance line of the Northern Pacific in the State of Washington, 2,000 ft. of track was constructed with a concrete slab foundation about 5 years ago. Several types were used, which consist in general of reinforced concrete slabs provided with recesses or troughs for the reception of wood blocks or stringers to carry the rails. Details of Type No. 1 are shown in Fig. 5. The short tie blocks rest on two longitudinal 3 in. by 6 in. pieces in the bottom of a trough at each side of the slab. The space between tie blocks is filled with ballast. Drainage of the troughs is provided at intervals. There is a total of 594 ft. of Type 1 construction. The slabs are cast in lengths of 16 ft. 5½ in.

Type No. 2 Fig. 6 is 6 in. wider than Type No. 1 or No. 3 and is distinguished by a curb practically equal to the height of the rail along each side. There is 594 ft. of single track of this type in service. In this type recesses are cast into the slab into which the tie blocks are placed and wedged into position. The rails are fastened in the usual way with tie plates and screw spikes. In the bottoms of the tie block recesses three inches of sand is placed to afford a cushion. On top of this sand cushion the creosoted tie block is placed and wedged at the inner end of the block. L-shaped malleable iron shims are used at the other end of the tie blocks with one leg of the "L" resting on top of and fastened to the tie block. This allows the track to be lined and gaged. These slabs are cast in widths of 32 ft. 11 in.

Type No. 3 is shown in detail in Fig. 7. The distinguishing features of this type are that the concrete is carried up 3½ in. near the inside of each rail and sloped to the center of the track for drainage, and that the rail rests directly on a continuous longitudinal stringer of 6 in. by 10 in. creosoted fir. These stringers are fastened at intervals by long lag screws driven into wood anchor blocks embedded in

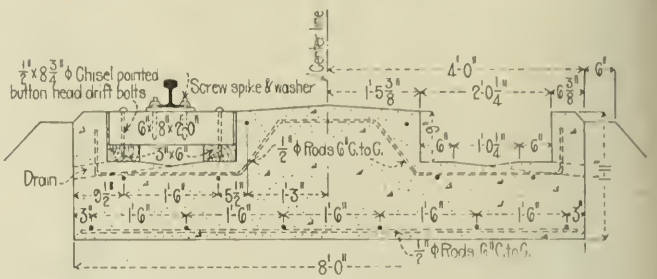


Fig. 5—Type No. 1, Installed on the Northern Pacific

the slab. The slabs have a depth of 18 in. at the center and were molded in lengths of 16 ft. 5½ in. There is a total of 810 ft. of single track of Type 3.

While neither the first cost of the concrete track foundation on the Northern Pacific nor the annual maintenance cost is available, the railroad officers say that the maintenance has been far below that of track of the ordinary type of construction on the same line. The greater part of this maintenance concerns the wooden blocks to which the rails are fastened, especially with Type No. 2.

Fig. 8 shows a suggested design for concrete track support prepared by A. D. Whipple and the writer. The form work required for this slab is of the simplest sort. The design of the slab is based on Cooper's E-60 loading with 100 per cent impact. This design does not require any radical departure from the usual type of rail fastenings; that is, a

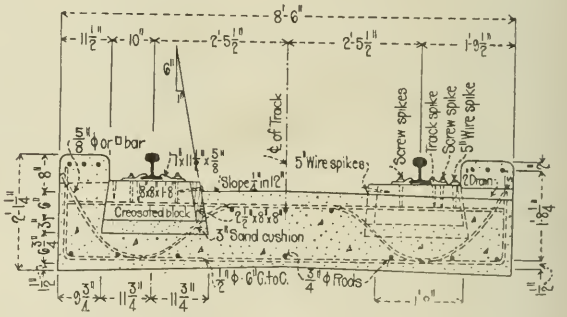


Fig. 6—Type No. 2, Installed on the Northern Pacific

rail clip is used similar to those now standard. There is, however, a great difference between this rail fastening and the usual cut or screw-spike used with wooden ties. In this concrete design a U-shaped casting is embedded in the concrete and the upstanding legs of the U are tapped to receive the threaded end of holding-down bolts which pass through the rail clips, tie plate and tie block. A positive fastening which has great strength against lifting the rail is thus secured. The use of a block of wood under the rail in this design is at once a concession to the prevalent idea that some elastic medium must always intervene between a track rail and a solid foundation and a means for easy adjustment of the rail both vertically and horizontally to provide for

whatever inequalities may exist in the top of the slab either at the time of placing or subsequent thereto. The latter is the only sufficient reason for using this tie block, and where the slab is placed on a well-compacted subgrade the rail may be anchored directly to the concrete, with possibly the intervention of a longitudinal steel plate between the rail and the concrete surface, thus affording the rail a continuous support. In the latter case drainage would be taken care of by finishing the slab to a slight pitch between the rails and furnishing openings beneath the rails at intervals.

Economic Considerations

In the final analysis, the use of concrete track construction will be governed by economic factors. Will it pay? Will the economies and advantages derived from it afford an adequate return on the cost of installing it?

Lincoln Bush, in an article published in the *Railway Age Gazette* of April 23, 1919, shows comparative tables of the cost of ballast and tie double track construction and the concrete slab. The cost of the latter from actual figures and the estimated cost of ballast and ties was carefully prepared from data known from experience to be correct. Annual maintenance and renewal costs used were similarly reliable and the result shows an earning on the extra cost of concrete slab construction of over 40 per cent per year, due to savings in maintenance and renewals.

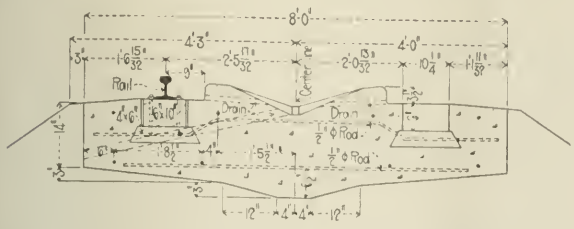


Fig. 7—Type No. 3, Installed on the Northern Pacific

A recent letter from Mr. Bush says:

"Bergen Hill tunnel track has now been in service under very heavy traffic over 10 years and has fully demonstrated all I believed it would do and is in good condition."

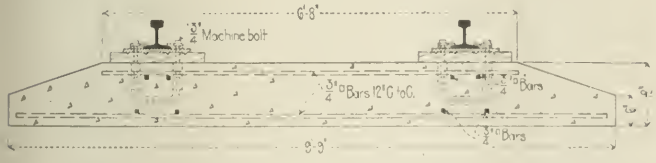


Fig. 8—Proposed Design of Concrete Subgrade Construction

L. V. Morris, chief engineer of the Long Island Railroad, said in regard to an adaptation of the design shown on Fig. 1 to main line service:

"In constructing a new line I cannot conceive that the cost would be over $2 per running foot, single track, for a slab 10 ft. wide and 8 in. thick. This would be in the neighborhood of $10,000 per mile and is a very small part of the total cost of a modern roadbed which I have in mind running anywhere from $100,000 to $200,000 per mile, single track. It seems to me that this expense is justified, particularly as it supports practically the only working part of the roadbed. This working part, namely, the track, is the most expensive to maintain and upon its condition depends largely the wear and tear of the rolling equipment."

THE FIREMEN'S BROTHERHOOD, in convention at Denver, adopted a reolution advocating the creation, in co-operation with the other three train-service brotherhoods, of a national labor party.

Commerce Members Endorse Committee Recommendations

RESULTS OF THE REFERENDUM vote on recommendations for remedial railroad legislation, drafted by the Railroad Committee of the Chamber of Commerce of the United States, indicate an overwhelming desire on the part of more than 1,100 commercial and industrial organizations, scattered throughout the 48 states, to see the railroads of the country released from federal control and returned to corporate operation as soon as Congress can enact the necessary legislation. As to some of the recommendations which involve more specific details the opinions expressed were less unanimous, but all of the recommendations were approved by a large vote.

The recommendations voted upon were drafted by the committee after it had made a most careful study of the transportation situation and are similar, in many respects, to the provisions incorporated in the plan advocated before Congress by the National Transportation Conference. They are 10 in number and were submitted to referendum for separate votes, with the following results:

1. 1,439 votes in favor. 12 opposed.

The Committee recommends adherence to the policy of corporate ownership and operation, with comprehensive regulation.

2. 1,439 in favor. 12 opposed.

The committee recommends return of roads to corporate operation as soon as remedial legislation can be enacted.

3. 1,329 in favor. 109 opposed.

The committee recommends adherence to the period of federal control as now fixed unless and until impossibility of remedial legislation in this period clearly appears.

4. 1,293½ in favor. 123½ opposed.

The committee recommends permission for consolidation in the public interest, with prior approval by government authority, in a limited number of strong competing systems.

5. 1,215 in favor. 184 opposed.

The committee recommends a requirement that railroad companies engaging in interstate commerce become federal corporations, with rights of taxation and police regulations reserved for states.

6. 1,321½ in favor. 85½ opposed.

The committee recommends exclusive federal regulation of capital expenditures and security issues of railroads engaged in interstate commerce, with provision for notice and hearing for state authorities.

7. 1,314 in favor. 114 opposed.

The committee recommends federal regulation in interstate rates affecting interstate commerce.

8. 1,206½ in favor. 208½ opposed.

The committee recommends a statutory rule providing that rates in each traffic section shall yield an adequate return to a fair value of the property as determined by public authority.

9. 850 in favor. 540 opposed.

The committee recommends payment into fund of a share of the excess earned by any railroad system under application of the above statutory rule over an equitable minimum return upon fair value of property, this fund to be used as Congress directs for strengthening general railroad credit and increasing general railroad efficiency.

10. 1,183 in favor. 242 opposed.

The committee recommends a federal transportation board to promote development of a national system of rail, water and highway transportation and articulation of all transportation facilities.

In initiating its movement to bring about a change in existing transportation regulations, the chamber called into con-

ference at Washington, more than two score prominent men associated with important interests affected by transportation needs. These included the commercial, industrial, agricultural, financial, labor, governmental, economic and social leaders, all of whom were invited without respect to affiliation with the National Chamber in order that each "important interest should have a voice in determining what should be done with the railroads."

After five meetings, each lasting two days, and more than 22 general sessions, the conference voted unanimously to urge the adoption by Congress of remedial railroad legislation drawn in fairness to the Nation, its business, commerce and other important interests and also in equity to the railroads. The conference plan was published last week.

The Committee on Railroads, after an exhaustive study of these problems, advanced its recommendations through the chamber's referendum system and by registering the vote of more than 1,100 member organizations, it has ascertained the opinion of the Nation's business on the 10 most vital proposals.

Wartime Conditions on Southern Pacific Lines in Mexico

An insight into the conditions which have existed during the last few years in those portions of Mexico which have been overrun by revolutionary forces and bandits, is afforded by information acquired recently in an inspection of the Tonichi branch of the Southern Pacific Railroad of Mexico, in the State of Sonora. Conditions are still so unsettled in this country that the trip over this line was made under the protection of an escort of 300 troops, including 50 cavalry and 250 infantry. The inspection was made in June of this year by J. D. Mathews, engineer maintenance of way of the Southern Pacific of Mexico and W. E. Schley, division engineer of the Sonora division.

This branch extends from Corral on the main line 58 miles south of Guaymas, northeast along the Yaqui river 34 miles to Tonichi. It was built between 1906 and 1909 and operation was discontinued in 1913 because of revolutionary disturbances. The inspection made last month was to determine the present condition of the line and the nature and extent of the repairs necessary to restore it to operation.

The area traversed by this line has been over-run during the last few years by roving bands of Yaqui Indians, who have committed many depredations. The present condition of Buena Vista, one of the towns midway on this branch, is typical of the devastation which has been wrought in this part of the country. Until a few years ago this was a thriving village surrounded by a considerable area of cultivated land which produced all of the food required by the inhabitants and a considerable surplus for exportation to adjacent mining camps and nearby cities. The inhabitants were Mexicans, peaceful and industrious. Today, Buena Vista is a wreck, the skeletons of its buildings still standing but with their adobe walls shorn of their protecting roofs and crumbling before the wind and rain. In the ruined residences are wrecks of stoves, cooking utensils and furniture, all destroyed and burned while the people have long since fled.

It was the danger from these roving bands of Yaqui Indians that made necessary the provision of the escort in making this inspection. This escort consisted of 300 native soldiers, including 50 cavalry and 250 infantry, in charge of Mexican officers. In proceeding over the line the escort was formed with 25 of the cavalry in advance, marching about 15 min. or about one half kilometer ahead of the infantry. The latter was followed by the railway officers with their pack animals, while the remaining 25 cavalry brought up in the rear. The entire column extended considerably over a kilometer along the road when in motion. On arriving at the camping places at mid-day or at night, the advance cavalry posted themselves on the higher points on the hills commanding a view of the camp and the surrounding territory and remained in that position until recalled after a sentry line had been established around the camp proper.

The condition of this line is instructive as indicating what may be expected on many other lines which have been laid waste during the revolutionary troubles in Mexico. The major portion of this branch was laid with Japanese oak ties during construction, although some Oregon pine ties were also installed at the time the line was built and in early renewals thereafter. The inspection showed that the Japanese oak ties had completely rotted, although a considerable proportion of the pine ties are still in condition for further service.

Because of the advance state of decay of the oak ties, the grass and incendiary fires, which have been numerous, have completely consumed these ties, leaving the rails lying on the ground, usually undamaged, although they have been kinked where brush or other fuel has added to the flames. The Oregon pine ties have not burned as readily and it was not uncommon to find considerable stretches of track which had been burned over with the rails still resting on the pine ties, while the oak ties between them had been completely consumed, the difference in action being probably due to more advanced state of decay of the oak ties.

An interesting exception to this tendency of the Japanese oak ties to decay was found within the tunnels where the ties appeared as if they had just been laid, many of them still presenting the appearance of newness. These tunnels are dry and this is probably brought about by the absence of the alternate wetting and drying.

Bridge timbers were generally found to be in better condition, few of the decks of the unburned trestles being in such a state of decay that they could not be operated over at once and all of them with minor repairs. The piling, however, was found to require considerable reinforcing, both because of the inroads of decay and because many of the piles had not been driven deeply, in the original construction and had since been uncovered, the scouring of the arroyos having left piling hanging suspended from the caps by the drift bolts.

The only buildings left standing on the line were an ore platform, two water tanks and two depots. Relatively little of the telegraph lines has been destroyed, although the larger part of the poles still standing are worm-eaten and rotten at the ground line and have been greatly weakened.

In general the tunnels are in good condition, the principal repairs necessary being the removal of small slides from the portals. About 50 per cent of the roadway signs will require renewal. The heavy growth of brush on the roadway and about bridges and telegraph poles constitutes a serious problem for it must be removed promptly if danger of further fires is to be avoided.

The trip was not without its exciting experiences. On the return which was made across country from Tonichi to La Colorado by automobile and again under military escort, it was necessary to stop to repair a tire blow out at the point in a canyon where an American and his Mexican helper had been ambushed and killed while driving a motor truck over this same route within a month, while a well-to-do Mexican and two companions were ambushed and killed a few days previous in traveling by the same automobile in which the inspection party was traveling, the steering column of the machine still carrying marks of that encounter in the form of a segment cut out of the semi circle by a brigand's bullet. In another instance, the party came upon the camping place of a party of Indians which had been abandoned only a short time before and at which the fires were still burning.

Doings of the United States Railroad Administration

The 1919 Cycle of Demands for Further Increased Wages Is Reaching a Critical Stage

WASHINGTON, D. C.

AT A MEETING of the committee on mechanical standards on August 5 consideration will be given to the question of maintenance of equipment during federal control in its relation to the expenditures for that purpose during the test period and the obligation of the Railroad Administration under its contract to return the railroads in substantially as good repair and as complete equipment as when taken over. Consideration will also be given to possible methods to prevent tampering with the angle cock in the air brake system and to the proposed standard designs for cabooses.

Freight Traffic for Six Months Shows 14.5 Per-Cent Decrease

The volume of freight traffic movement in June continued to show a marked falling off as compared with last year, according to the monthly report of the Operating Statistics Section. The net ton-miles of freight handled amounted to 31,953,366,000, a decrease of 15.2 per cent. For six months of the calendar year the net ton miles amounted to 178,083,192,000, a decrease of 14.5 per cent. In the Eastern region for June the reduction in net ton miles was 20.9 per cent.

The net ton miles per mile of road per day for June, 1919, were 4,615, as compared with 5,423 for June, 1918. Train miles were reduced 17.2 per cent. Freight car miles were reduced 13.4 per cent. The net ton miles per train mile continue to show a slight increase, from 698 to 715, or 2.4 per cent, but the net ton miles per loaded car mile show a decrease from 28.6 to 27.5, or 3.8 per cent. The net ton miles per car day decreased from 506 to 429, or 15.2 per cent. The percentage of loaded to total car miles was 67.9, as compared with 66.8 in June, 1918. The average number of freight cars on line daily is reported at 2,480,673, a decrease of 0.1 per cent, of which 8.1 per cent are reported as unserviceable, as compared with 6 per cent last year. The car miles per car day show a reduction from 26.5 to 23, or 3.2 per cent.

For the six months' period ending June 30, net ton miles fell off 14.5 per cent, train miles 16.6 per cent and total car miles 10.6 per cent. The net ton miles per train mile averaged 669, an increase of 2.6 per cent. The net ton miles per loaded car mile averaged 27.8, a decrease of 2.5 per cent, and the car miles per car day averaged 21.5, a decrease of 10 per cent. The net ton miles per car day averaged 403, a decrease of 13.9 per cent.

Standard Freight Cars Being Put in Service

Because of the favorable progress being made in working out the plan for financing the standard equipment ordered by the Railroad Administration through a national equipment corporation, and because of the growing demand for cars, the Railroad Administration has arranged to put into service at once all of the standard freight cars that have been built and that have been kept in storage on railroad tracks near the plants of the builders because of the failure of many of the railroads to accept the allocation of the cars as made by the Railroad Administration. This will put into service several thousand cars, including a large proportion of coal cars, as fast as the cars can be stencilled with the initials of the roads to which they have been allocated. The cars that have been built but not accepted have been paid for by the Railroad Administration as they have been completed, with a deduction representing the cost of stencilling and marking, and the storage has been at the expense of the Railroad Administration. It is understood that the cars are being placed in service without opposition on the part of the railroad companies, many of whom formerly protested against the allocations, largely on the ground of their inability to finance them, because the Association of Railway Executives has received assurances from roads representing 70 per cent of the equipment that they will participate in the new equipment trust plan.

Reports of scattering local car shortages are coming from various parts of the country, but while there is understood to be a very large number of surplus cars in the country as a whole the Railroad Administration is unwilling to give out the figures. On June 1 there was a surplus of about 300,000 cars, and it is believed this was considerably reduced by July 1 and still more reduced during July, but the number of freight cars reported as unserviceable for the month of June was nearly 200,000, or 8.1 per cent, although a large number were so reported merely because they were not grain tight and would require little work to put them in shape. Orders were issued late in June to increase the car repair forces that had been reduced earlier in the year in an effort to put the equipment in condition for the summer and fall traffic. About 4,000 locomotives are being held in white lead as a reserve.

Shopmen Press Wage Demands

The 1919 cycle of demands on the Railroad Administration for increased wages is reaching a critical stage. Committees representing the various shop craft unions federated under the organization of the Railway Employees' Department of the American Federation of Labor, that presented demands to the director general in January for a wage increase from 68 to 85 cents an hour for the principal classes of craftsmen, as well as increases for helpers and differentials for various classes of special work, has been in Washington all week conferring with the Railroad Administration officials and threatening strikes unless a favorable decision is forthcoming soon. The unions are also demanding the issuance of an order prescribing uniform rules and working conditions. Both propositions have been under investigation for several months by the Board of Wages and Working Conditions, which has submitted its recommendations on both to Director General Hines. The shopmen have been displaying a great deal of impatience because of the delay in passing on their demands and several local strikes have already been called but the men were persuaded to return to work. It is understood that the conferences regarding the rules and working conditions relate only to details, but that the Railroad Administration in view of the state of its finances is not disposed to do much if anything in the way of increasing wages.

Cost of Freight Train and Locomotive Service Decreasing

The total cost of freight train service, including locomotive service, continues to show a steady decrease each month as compared with preceding months, although increases as compared with last year, according to the monthly report compiled by the Operating Statistics Section. For the month of May it was 103.9 cents per 1,000 gross ton miles as compared with 112.7 in April, 119.5 in March and 126.5 in February. The cost of freight locomotive service

per locomotive mile in May was 110.3 cents, as compared with 97.8 cents in May, 1918, 115.2 cents in April, 1919, 119.2 cents in March and 120.7 cents in February. The cost of freight train service per train mile was 156.8 cents, as compared with 141 cents in May, 1918, and 162.2 cents in April, 1919, 167.5 cents in March, and 169.3 cents in February. The increase in the cost of locomotive service per locomotive mile in May this year over May last year was 12.8 per cent and the increase in the cost of train service per train mile was 11.2 per cent. All items of cost continue to show increases as compared with last year. The figures are reported by roads and by regions. The combined averages for all regions and the comparative figures for last year and for April, March and February, this year are as follows:

	May, 1919	May, 1918
Cost of locomotive service per locomotive mile	110.3	97.8
Locomotive repairs	37.9	31.3
Enginehouse expenses	9.0	6.6
Train enginemen	19.1	18.1
Locomotive fuel	40.7	38.9
Other locomotive supplies	3.5	2.8
Cost of train service per train mile	156.8	141.0
Locomotive repairs } Enginehouse expenses }	53.4	43.7
Locomotive fuel	46.3	44.9
Other locomotive supplies	3.9	3.3
Train enginemen	21.8	20.9
Trainmen	25.1	23.7
Train supplies and expenses	6.4	4.6

	May, 1919	April, 1919	March, 1919	Feb'y, 1919
Cost of train service per 1,000 gross ton miles	103.9	112.7	119.5	126.5
Locomotive repairs } Enginehouse expenses }	35.4	38.6	40.8	43.1
Locomotive fuel	30.6	34.3	37.5	40.3
Other locomotive supplies	2.6	2.9	3.1	3.4
Enginemen and trainmen	31.1	32.4	33.5	34.8
Train supplies and expenses	4.2	4.4	4.6	4.8

Contracts Executed

The Railroad Administration has executed compensation contracts with the Minneapolis, St. Paul & Sault Ste. Marie for $10,547,428, the Chesapeake Steamship Company for $102,548, and the Chicago, Terre Haute & Southeastern for $922,784, also co-operative short line contracts with the Beaver, Meade & Englewood, Garyville Northern, Palatine, Lake Zurich & Wauconda, Chicago, Harvard & Lake Geneva, and the Bristol.

Troop Movement Makes Necessary Use of Box Cars for Express

Director General Hines has authorized the following:

For a considerable period when our troops were being transported from interior points to the seaboard for movement overseas, it was deemed by the military authorities as necessary that military equipment be moved in express cars, which curtailed to a great extent the availability of express car equipment to handle the large amount of business which the express company was then being called upon to transport and this curtailment of equipment resulted in the use by the American Railway Express Company of a large number of box cars which were in no wise equipped for the proper handling of express traffic.

Now that the troops are returning the government is again requiring the use of a large number of express cars for transportation of equipment of troops to their final destination and this is again resulting in the American Railway Express Company having to use box car equipment to handle some of its business.

While the Railroad Administration and the American Railway Express Company are doing everything possible to maintain the best service under existing conditions, this withdrawal of express company equipment for military purposes is resulting in inconvenience in some parts of the country, and this condition will continue to a greater or less extent while there is need for express cars for military purposes.

Capital Expenditures Order Modified

The director-general has issued an amendment to General Order No. 12 as follows:

General Order No. 12 and supplement No. 1 thereto are hereby amended to provide that no work involving a charge to capital account in excess of $1,000 (instead of $10,000) shall be contracted for or commenced unless it be specifically authorized by the Division of Capital Expenditures; or

(a) Unless the corporation agrees to furnish the cash at the outset without calling upon the Railroad Administration in any way for the funds; or

(b) Unless the expenditure is in accordance with a definite program approved by Director, Division of Capital Expenditures, by which is meant such general authority as is covered by his letter of April 5 (Capital charges merely incidental to maintenance authorized by Director, Division of Operation) and letter of July 8 (Capital charges covering application of safety appliances designated by Director, Division of Operation.)

In cases of emergency, authority may be obtained by telegraph.

Director General Hines Confers with President

Director General Hines held his first conference with President Wilson, since the latter's return from Paris, at the White House on Wednesday. It is understood that he discussed the entire railroad situation, but no announcement was made as to any conclusions reached.

Six Months Deficit About $288,000,000

Preliminary figures showing the earnings and expenses of 183 Class I roads, operating 222,000 miles, show an improvement as compared with previous months of this year, but still show a deficit as compared with the standard return. For these roads the net operating income was about $51,000,000, which is an increase of 183 per cent as compared with June, 1918, when there was a large deficit because of the inclusion of five months' back wage increase. The average net operating income for June in the test period, however, was $82,595,000. For the first five months of this year the net operating income was $105,000,000, so that for half of the year the roads have earned approximately $156,000,000 as against $400,000,000 during six months of the test period and as against $444,000,000, which is the amount of the guaranty accrued for six months for the Class I roads. This leaves a deficit of $288,000,000. In making the comparisons with last year it is necessary to bear in mind that five months' back pay was included in the expenses for last June and that the increased rates were in effect only part of that month. The total operating revenues of the 183 roads for June was $413,000,000, an increase of 7.79 per cent as compared with June, 1918; operating expenses were $315,000,000, a decrease of 18.5 per cent; taxes were $14,000,000, a decrease of 14.7 per cent, and the net operating income, $50,990,000, represents an increase of 183 per cent.

The Pennsylvania Railroad Relief Fund is available for men absent in France. William Keller, of Altoona, a member of Company G, 110th Infantry, was employed by the road and was a member of the relief fund. He recently made application for relief benefits during the time he was in the hospital in France while in the military service and is now advised that the claim will be paid by the Fund as soon as a disability certificate is received from the government. According to this ruling all members of United States fighting forces who were members of railroad relief funds and who were temporarily disabled in the service will be entitled to such compensation as the relief fund pays members when incapacitated.

Engineers' Brotherhood Appeals to the President

WASHINGTON, D. C.

THE ADVISORY BOARD composed of the officers of the Brotherhood of Locomotive Engineers has reached the conclusion that repeated increases in wages followed by an immediate reduction in the value of the dollars in which the wages are paid because of the decreased purchasing power do not afford the solution of the cost of living problem. At a conference with President Wilson and members of his Cabinet at Washington on Wednesday they urged that the government take adequate measures "to reduce the cost of the necessaries of life to a figure that the present wages and income of the people will meet" as the only alternative to another increase in wages which they declared to be necessary under present conditions but which they felt would afford but temporary relief unless something is done to attack the problem on the side of prices.

The following statement made to the President by Warren S. Stone, grand chief of the Brotherhood of Locomotive Engineers, to which the President replied that he would give the matter serious consideration and see what could be done, was given out at the White House:

"At a meeting of this board, held in Cleveland, the matter of an increase in compensation commensurate with the condition we find because of the constantly increasing cost of living commodities was thoroughly and studiously considered. We know that a widespread spirit of unrest exists among all classes, especially among wage earners whose wages will no longer provide adequate food, shelter and raiment for themselves and families.

"We believe this situation is brought about mainly by conscienceless profiteering by the great interests who have secured control of all the necessaries of life.

"At this time we find ourselves obliged to again request an increase in wages to meet the mounting cost of living; but we feel that, should this request be granted, the relief would be but temporary should prices continue to soar.

"We believe the true remedy for the situation, and one that will result in lifting the burden under which the whole people are struggling, is for the government to take some adequate measures to reduce the cost of the necessaries of life to a figure that the present wages and income of the people will meet. Should this not be considered feasible, we will be forced to urge that those whom we represent be granted an increase in wages to meet the deterioration of the purchasing price of the dollar, be that what it may, which can be easily determined by competent authority.

"This action may be unique and it may be properly termed a pioneer movement in the history of labor organizations in seeking an audience with the Chief Executive of our Country and, in a manner, suggesting to him the convening of the members of his Cabinet, or that portion that may be quickly assembled. However, the result sought seems to us to justify the means, and should our efforts in this direction completely fail, then we will be forced to request for those whom we represent the granting of an increase in wages to enable them to live according to the American standard.

"We invite your attention to the fact that approximately 77 per cent of the locomotive engineers are American born citizens, and it may be safely stated that the remaining per cent are naturalized citizens, and they have, of course, a great interest in not only their own welfare but in the welfare of all the people, and they are not unmindful of your past efforts in behalf of the people, and they believe that they should exert every effort not only for themselves but for the country in general, as well as the administration Yet we find ourselves today earning less money than we did prior to the war. This can be demonstrated by simply taking, as an illustration, a daily wage of $5 prior to the war, which at that time was worth 500 cents, and today it is worth approximately, judging from competent authority, only $2.15.

"So, while it may be stated that we have had a substantial increase in compensation, when considering the dollar only as a medium of exchange our income has been substantially decreased when compared with pre-war prices.

"The Brotherhood of Locomotive Engineers appreciates the fact that all wages are being increased, and that constant demands are flowing to the employer and we must, of necessity, be mindful of the interests of our craft; but we do not believe that increasing the compensation, accompanied by a greater increase in the cost of commodities of life, will produce lasting benefits to our craft or to the American citizen in general.

"The unanimous opinion of the Advisory Board, our duty to the locomotive engineers and to our country as American citizens, impelled us to seek an audience with you and your Cabinet for the purpose of laying this situation before you, and we trust that you can find a way to immediately inaugurate executive action to remedy it.

"We trust that you may find it consistent to give us, in the near future, something definite as to what we may expect that will aid in guiding us as to our future actions, hoping that you appreciate the spirit that has prompted this action on our part."

The officers of the brotherhood presented similar views to Director General Hines before going to see the President. As Mr. Hines has been devoting a large share of his attention recently both to wage demands and to the cost of living of the Railroad Administration employees it is believed he received their representations with sympathy. It is said that the firemen's and the conductors' organizations agree with the views of the engineers but the Brotherhood of Railroad Trainmen does not. The latter organization still has hopes of higher wages and is now before the Board of Wages and Working Conditions asking for further increases.

Some definite action on the part of the government to counteract the tendency of the "vicious circle" of ever-increasing prices and wages is likely to be forced on the administration by the repeated demands of the employees of its various branches and the industries which furnish its supplies. During the war period the government not only raised wages itself to meet the increasing cost of living but its example and encouragement led to other increases, and the higher wages, together with "profiteering," has kept the cost of living ever on the jump. The Railroad Administration raised wages and then raised rates to meet them, but the rate increase fell short of the amount needed and now large classes of the employees are asking for still further advances which cannot be met except by still higher rates unless the deficit to be met by taxation is to be still further increased.

In each case the employees are able to point to some other branch of government activity in which higher wages are paid, and some officials at Washington have come to the conclusion that it is about time to call a halt somewhere. Director General Hines does not want to increase rates because of the influence it would have directly or indirectly on further increases in prices. The ideas expressed by the brotherhood have already become impressed on some of the President's advisers, and it is believed that some action by the Department of Justice in an effort to get at some of the causes for high prices may be forthcoming.

Cross-country flying by government aviators, as reported by the Director of Air Service, for the week ending July 5, exceeded 50,000 miles.

Railroads Handle Crowd During Chicago Car Strike

Tie-Up of Local Transportation Puts a Large Burden on the Steam Lines Entering the City

The steam roads entering Chicago were again forced to handle the bulk of the city's local transportation on Tuesday of this week when a strike of 15,000 employees of the street railway and elevated lines tied up the regular traffic channels. However, experience with a like situation for three days in June, 1915, enabled the roads to meet the increased burden placed upon them by the failure of the trolley and "L" service. The number of persons carried by the roads daily is variously estimated, but no accurate figures are available. The estimated daily traffic in 1915 was 625,000 and it is not believed that this number was exceeded this week, as a very much larger number of street vehicles, mainly motor trucks, were pressed into temporary passenger service. Owing to perfected arrangements the traffic was handled with much less congestion than in the earlier emergency. One factor that helped out the situation at the start was the failure of the public to avail themselves of the steam road facilities as rapidly as they were provided. As a consequence, the traffic did not reach its maximum until Tuesday evening or Wednesday morning, which enabled the roads to complete their arrangements in advance of the maximum load. As it was, little overcrowding was noted, while some of the roads actually provided more equipment than was necessary.

By far the largest part of the crowd was carried by the Illinois Central and the Chicago & North Western. These roads normally carry the bulk of the suburban service since their lines traverse the more highly developed residence sections of the city from which the largest part of the downtown workers are drawn. The Illinois Central, which normally handles 40,000 suburban passengers daily, carried about 200,000 each day during the strike, running 504 trains in place of a normal number of 285, while the Chicago & North Western, with an average daily suburban business of 60,000, also handled about 200,000. The Chicago, Rock Island & Pacific, a portion of whose lines also traverse a high class residence territory, and which normally handles about 25,000 people, assumed an increase of about 60 per cent during the emergency period. The Chicago, Milwaukee & St. Paul, on the other hand, which also has lines through extended portions of the residence district, conducts but a very limited suburban business. However, this road also made considerable addition to its regular service, particularly on the Evanston line, on which passenger operation had been entirely abandoned several years ago. During the morning and evening rush hour, a 10-min. service was instituted on this line as far north as Buena station, about six miles from the business center of the city, but owing to the lack of trackage space in the Union Station the downtown terminal for this service was placed at Kinzie street, within easy walking distance of the "loop."

The Chicago & Western Indiana, which normally handles only 3,000 suburban passengers, carried about 22,000 daily during the strike, with the use of about 37 trains in place of the normal number of 7. The Chicago, Burlington & Quincy, which maintains a considerable suburban service on its line as far west as Aurora, traverses a district within the city that does not afford much patronage for downtown travel. As a consequence there is only one intermediate station, Western avenue, within the city limits. During the strike the bulk of the additional traffic handled by this line was from three or four stations just outside the city limits, the residents of which usually rely largely on street car service.

In general the arrangements for additional service were provided according to plans best suited to the facilities of the several roads. The main problems involved concerned the matters of additional trains, loading and unloading, and selling and collecting tickets. In most cases the extra train service was provided by abandoning the regular suburban schedules and substituting a shuttle service under which trains ran between terminals as fast as traffic conditions permitted. This was done on the Illinois Central, the North Western and the Rock Island. The Burlington was able to handle all the traffic with one or two extra trains and the use of additional equipment on the regular trains.

In handling the passengers at terminals little difficulty was encountered in disposing of the crowds arriving at the terminals during the rush hour in the morning. The real task was the distribution of the passengers to the trains during the evening rush. This was well handled by the Chicago & North Western through the assignment of several tracks to each route, with large signs over the train gates designating the destination of the trains. Thus three tracks were assigned to trains making all station stops from Clybourn Junction to Rogers Park, two tracks for trains making all stops between Evanston and Waukegan, etc. The crowds assembled on the concourse in front of the gates for the respective trains and were passed on to the platforms as fast as the trains were ready. At the Illinois Central terminal at Randolph street, which has island platforms, passengers were passed through the station in a continuous stream and the alternate arrival and departure of trains on the two tracks adjoining each platform disposed of the crowds expeditiously.

The use of long trains with capacity crowds made it impracticable for the trainmen to collect cash fares, consequently the passengers were required to buy trip or commutation tickets before entering trains and to avoid interference with the regular through business of the ticket offices liberal use was made of temporary ticket booths for the sale of suburban tickets. At the North Western terminal eleven of these booths were erected on Madison street and Canal street outside the building. The Burlington and the Rock Island also had temporary ticket offices at the terminals, while the North Western also provided one or more of these booths at each of the outlying stations. This road largely avoided the collection of fares on incoming trains by fencing off the station platforms at the local stations and collecting or punching tickets as the passengers passed on to the platforms.

Electrification in Italy.—Recent electrification of a railway stretch in our Northwest attracted much attention but it will look small beside the Italian project—the electrification of 4,000 miles by use of Trentino waterfalls. In two of Italy's greatest manufacturing cities, Milan and Turin, there is already extensive use of water power. The available horsepower was in 1914 less than Austria-Hungary's, but territorial acquisitions have changed the balance, and Italy should now be able to develop more hydroelectric energy than any other European nation save Norway and Sweden. Even before the war she utilized more water than any other country except France and Norway. Italy was then importing nearly $40,000,000 worth of coal a year from Britain, and her chief complaint has ever since been that she could not get enough. To dig coal in England and laboriously transport it to the Po Valley while river energy there runs unused to sea typifies a kind of waste of which the world will hereafter be more impatient.—*New York Evening Post.*

General News Department

The shops of the New York, New Haven & Hartford at Valley Falls, R. I., were destroyed by fire on the night of July 26; estimated loss $130,000. The fire was started by lightning.

The Tax on ice cream, "soft drinks" and similar articles is not applicable when such things are sold on dining cars; the deputy commissioner of internal revenue holds that a dining car is not a place of business similar to a soda fountain or an ice cream parlor.

The Pennsylvania System federation of employees, composed of six crafts employed in the shops of the railroad, held their first annual convention at Columbus, Ohio, on July 14. The federation represents more than 40,000 men employed in various shops of the Pennsylvania System.

The Track Supply Association announces that 47 firms have already arranged for space at the exhibit which will be presented in connection with the convention of the Roadmasters & Maintenance of Way Association in Chicago, on September 16, 17 and 18. This is the largest number which has ever been recorded so far in advance of the convention.

Members of the Committee on Electricity of the American Railway Engineering Association made a ten-day trip of inspection over the electrified lines of the Chicago, Milwaukee & St. Paul and the Butte, Anaconda & Pacific in Montana in July. The party studied the operation of freight and passenger trains electrically, visited repair shops of the Chicago, Milwaukee & St. Paul at Deer Lodge, Mont., where electrical locomotives are maintained and went through power plants of the Montana Power Company at Great Falls, Mont., and other points.

The train despatchers and other railroad officers who last year undertook to clear up the debt ($1,810) of the defunct Train Despatchers' Association of America have succeeded—or have come near enough to success so that John F. Mackie, the former secretary, who was the single creditor, has given a receipt in full. T. P. Finan, of Needles, Cal., the secretary, informs us that in response to his appeal the sum of $1,652 has been received. This left Mr. Mackie still $158 short, but because of his pride in the memories of the association and his desire to see it die a respectable death, he waived the remainder of his claim. More than three-fourths of the money received was in the shape of checks for one dollar each.

The United States Railroad Administration through its counsel has advised the Attorney General of North Dakota that it will comply immediately with the eight-hour law of that state as applied to women and minors, will put in effect lower freight rates and will comply with the full-crew law as the result of three mandamus actions instituted by the Attorney General against the Director General of Railroads. The eight-hour regulation has been the law since July 1. The railroad Administration, which employs between 2,000 and 3,000 women and girls in its shops and express, freight and passenger offices, had failed to comply with these laws. The writ of mandamus has been dismissed.

The use of steel crossties, instead of wood, so as to conserve our timber, is urged in a resolution which is now before Congress. The House Committee on Interstate and Foreign Commerce held a hearing on it last week. It was introduced by Representative Dyer of Missouri, and calls for an investigation by the Interstate Commerce Commission on the advisability of using steel. E. H. Clapp of the Forestry Service of the Department of Agriculture, testified that the country's timber consumption was now at the rate of three times the production; something must be done to restore a balance between production and consumption. H. T. Douglas, chief engineer of the Chicago & Alton, gave testimony regarding the tire requirements of the railroads and a letter from W. G. Bierd, federal manager of the Chicago & Alton, was presented, in which Mr. Bierd declared that steel ties have progressed beyond the experimental stage.

Prompt diversion of non-perishable freight to another road is one of the measures which has been adopted by the United States Railroad Administration in Kentucky and Tennessee to deal with a strike of enginemen. A congestion of freight on the Cincinnati, New Orleans & Texas Pacific due to this cause, was relieved by the issuance of an order to the effect that shipments from Cincinnati for Danville, Ky., and beyond, should be moved over the Louisville & Nashville, and delivered back to the Southern (C. N. O. & T. P.) at Knoxville. Shipments for Birmingham, Ala., and beyond were ordered to be sent through by the Louisville & Nashville. Northbound freight was diverted in the same manner. The strike was against being required to run large new engines of the Santa Fe type through the numerous tunnels between Danville, Ky., and Oakdale, Tenn. With these engines the clearance at the sides and top is so small that the flow of fresh air is seriously checked; so much so that in hot weather the enginemen have reported temperatures in cabs of 140 deg. F. Fans to ventilate the cabs, by air drawn from below the pilot, are being fitted to the engines.

Seventeen Lives Saved

H. M. Mayo, Superintendent of Safety of the Southern Pacific and other lines in Texas, in his latest bulletin to employees (No. 23) says that the safety record of his lines, always reasonably good, since December has been splendid. In the first half of 1918 35 persons were killed and 1,056 injured; in the same period of this year 16 were killed and 753 injured, a saving of 17 lives and the prevention or avoidance of injury to 303 persons. This, says Mr. Mayo, is due to a greater sympathy with the safety work on the part of employees. "It is due to a better conception of your responsibilities to each other, and to a better realization of what you owe your families, yourselves, and the company. You are acquiring the habit of thinking before acting. To save 17 lives in six months is fine. You did it. But how much greater an accomplishment it would be to save all. Let us neglect no detail of condition or practice that may help to success. It is a grand work."

Blockade by a Pint of Water

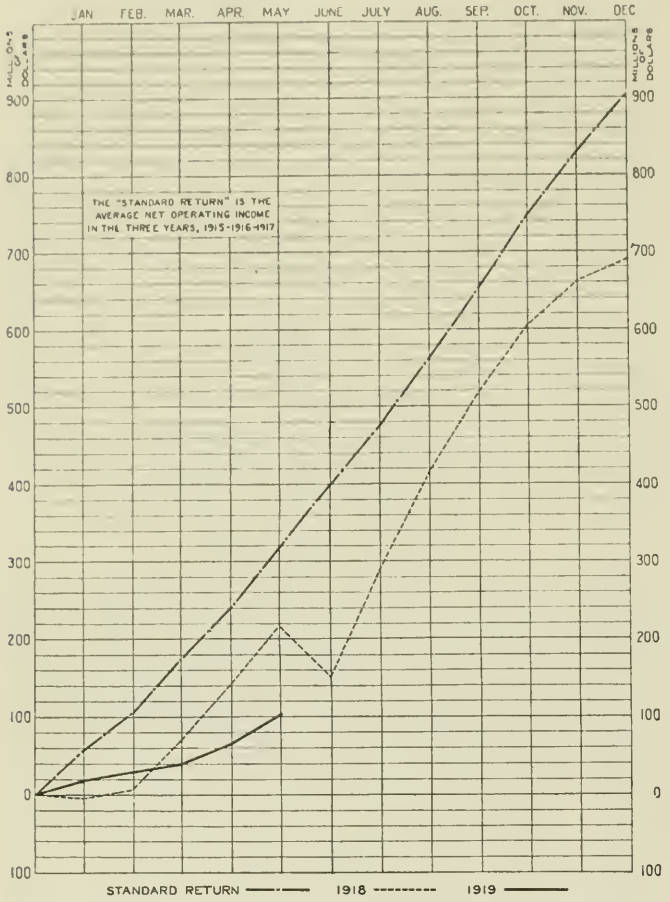
This is the heading in the New York Sun of an account of the stoppage of all trains to and from the Pennsylvania terminal, New York City, for about 30 minutes, on July 23, because of the failure of electric power. The mosquito, which once on a time stopped innumerable trains by getting caught between the points of a relay controlling a block signal, is outdone. The Sun says:

Rainwater, after eight days of gentle persistence, succeeded at 4:27 o'clock yesterday afternoon in seeping into fuse boxes in the so-called Sunnyside yards of the Pennsylvania railroad in Long Island City. Probably there wasn't more than a pint of the stuff that did the business, but no pint of booze ever accomplished so much mischief so quickly. For at 4:27 o'clock, trains scooting across Long Island plains suddenly grew tired and stopped. Trains scooting across the New Jersey meadows did the same. Also trains which had been roaring through black tubes beneath two rivers—the East and the North—stopped roaring and died, with lights out. Just for good measure, trolley cars in Queens,

Nassau and Suffolk counties also stopped. The trains advertised with important sounding names were just as impotent as the dinky 5:15's. Not until 6:15 was the mischief repaired and by that time even the vast waiting room of the Pennsylvania Terminal was hardly large enough for the throngs. As for the unlovely little brown and red stations in Brooklyn, they sent waiting crowds of suburbanites out into the drizzle of the cheerless Brooklyn streets.

Net Operating Income

The chart made by the Bureau of Railway Economics shows the net operating income of the Class 1 Roads in 1919, compared with the average in the test period (1915-1916-1917) on which government rental is based. The table gives the figures on which the chart is based.



Net Operating Income, Cumulated by Months, 1918 and 1919, Compared with Standard Return, Class 1, Railways of United States

Month	Average net operating income (standard return) in 3-year test period: By months	Average net operating income (standard return) in 3-year test period: Cumulative	Net operating income earned in 1919: By months	Net operating income earned in 1919: Cumulative	Deficit in 1919: By months	Deficit in 1919: Cumulative
Jan...	$56,613,000	$56,613,000	$18,783,702	.....	$37,830,000	.....
Feb...	47,934,000	104,547,000	10,106,268	$28,889,970	37,828,000	$75,658,000
March.	68,251,000	172,798,000	10,842,608	39,660,778	57,409,000	133,067,000
April..	67,289,000	240,087,000	26,115,214	65,916,807	41,174,000	174,241,000
May...	77,385,000	317,472,000	39,462,367	105,215,450	37,923,000	212,257,000
June..	82,550,000	400,022,000	.....	.....	.....	.....
July...	75,341,000	475,363,000	.....	.....	.....	.....
August	86,860,000	562,223,000	.....	.....	.....	.....
Sept...	91,273,000	653,496,000	.....	.....	.....	.....
Oct...	94,333,000	747,829,000	.....	.....	.....	.....
Nov...	83,536,000	831,365,000	.....	.....	.....	.....
Dec...	73,282,000	904,647,000	.....	.....	.....	.....

Railway Men Wanted for Service in Russia

The office of the director general of military railways is desirous of securing the services of a few good roundhouse foremen, car foremen, and railway store material men who have had experience in railway storekeeping, for railroad work in Russia. A statement by President Wilson regarding the work being done by American railroads in Russia is given in another page of this issue. Applications should be addressed to "Office Director General Military Railways, 2709 Munitions building, Washington, D. C., Attention Lieutenant R. G. Cole," and should give applicant's experience in detail. The machinist and car foremen will be paid $2,000 a year and all expenses, including uniform, etc., and will rank as second lieutenants in the Russian Railway Service Corps. The store material men will be ranked as either first or second lieutenants, receiving $2,500 or $2,000.

The Dunkirk Wreck and the Deadly Angle Cock

In a letter to the editor under the above title, which appeared on page 92 of the July 18 issue of the *Railway Age*, the following statement was made near the end of the closing paragraph:

"Had the angle cock been as far back as the water station pans the A. S. A. brake would have stopped the train without any collision whatever." The meaning of this sentence was obscured through the inadvertent omission of a word. The sentence should have read as follows: "Had the angle cock been turned as far back as the water station pans, etc."

Half a Million Billionths, Plus

United States District Judge Hollister, at Cincinnati, has entered a decree in the foreclosure suit of the Bankers' Trust Company of New York et al. vs. The Cincinnati, Hamilton & Dayton Railway Company et al., confirming the sale of four parcels of securities to Herbert Shaffer as representative of the purchasers of the Cincinnati, Hamilton & Dayton Railway Company. These securities represented all the property of the C. H. & D. not sold with the real estate, rolling stock, etc., more than a year ago. Receivers are directed to turn this property over to Shaffer upon the payment of the purchase price, $45,085. After certain deductions, the receivers are ordered to pay the balance to holders of claims allowed by court. The face amount of these claims is $79,201,177, and under the order of Court the dividend is calculated at $0.0005005155 on each $1 (otherwise 50 cents on $1,000).

Labor Day to Be Devoted to Propaganda Against Return of Railroads

Labor day activities and oratory this year are to be devoted to the single purpose of promoting the campaign of the railroad labor organizations to prevent the return of the railroads to their owners, according to plans being worked out by the Plumb Plan League and the American Federation of Labor. The plan is to have speeches in favor of the Plumb plan in every community in the country and that all the usual activities of the day, such as speeches, meetings and parades, shall be used to call attention to the campaign of the labor organizations to have government control of the railroads continued until the present wave of opposition to government ownership shall have had an opportunity to subside and the prospects for the carrying out of the Plumb plan or some other plan which will give labor a large degree of control over the railroads appear more propitious than at present. It is also reported that a movement is on foot to call the day "Nationalization Day" rather than "Labor Day," on the theory that the word "nationalization" in some measure relates to the proposed plan of having the government buy the railroads and turn them over to the control of the employees.

It is understood that the leaders of the Plumb plan organization are not so optimistic as to expect the adoption of their plan in the near future, but that their primary object is to prevent the restoration of private management until circumstances shall be more favorable to their ultimate purposes. Considerable pressure is being brought to bear on members of Congress to influence them to oppose the return of the roads, which the President has stated will take place at the end of the year, and those who recall the abject surrender of Congress to the demands of the brotherhoods at the time of the passage of the Adamson "eight-

hour" law are inclined to listen with some interest to a rumor that the labor organizations are planning a call for a nation-wide strike if necessary by way of protest against any move for the return of the railroads, because there is still no more machinery for dealing with such a situation than there was at the time Congress passed the Adamson law because it thought it the only way to prevent a strike.

Federation of Labor Demands Agreement

Representatives of the Railroad Department of the American Federation of Labor are in Washington threatening to order a general strike on August 1 unless the Railrad Administration will enter into a comprehensive agreement on wages and working conditions. A committee of 100 shopmen, representing the six different crafts, conferred in Washington on Wednesday with Director General Hines. Mr. Hines advised them that the Railroad Administration would enter into an agreement and he expects to give them a decision on the wage question without delay; and as to working conditions he has given no decision, but the strike seems to be temporarily averted. Following the interview with Mr. Hines, E. M. Buell, assistant president, wired the chairmen throughout the country that there must be no stoppage of work until the conclusion of the negotiations.

Association of Railway Executives' Meeting

The standing and law committees of the Association of Railway Executives met at the New Haven board room, Grand Central Terminal, New York, Friday morning, July 25, and in the afternoon the member-roads of the association met. After the meetings, Thomas DeWitt Cuyler, chairman of the association, said:

"The railroads have had under consideration today a number of important matters, including the question of the maintenance of the properties while in the possession of the government, remedial legislation to accompany the return of the railroads to private operation, and the formation of a proposed national equipment corporation.

"The question of maintenance during federal control is now being investigated and considered by both the Railroad Administration and by the railroad companies. Sufficient data has not yet been secured to lead to any conclusion, but it is hoped and expected that with all the facts in hand an amicable understanding can be reached between the government and the railroads as to the extent to which they have been properly maintained while in the government's possession.

"Within a short time the railroads expect to submit to the House Committee on Interstate Commerce substantially the same recommendations for remedial legislation as were submitted by them to the Senate Committee in January of this year. In order to show precisely the form which these recommendations would take, they have been reduced to the phraseology of a bill. The only change of importance will be the substitution of a board of transportation for the secretary of transportation with a seat in the President's cabinet as originally proposed.

"For some time we have had under consideration with the government the formation of a national equipment corporation to take up and finance in a single operation a large part of the equipment contracted for by the government, and allocated by it to the various railroad companies. Some time ago we submitted to the roads belonging to this association the report of a committee of bankers on a proposed national equipment corporation. Our member-roads having equipment valued at approximately $250,000,000, have signified their willingness to finance this through this proposed national equipment corporation. The participation already assured represents over 70 per cent of the value of the equipment allocated to roads belonging to this association. The matter has been referred back to the special committee on allocation and financing of equipment, which has been empowered to negotiate the details and arrangements necessary for the formation of the proposed national equipment corporation. The facts of the situation have been communicated to the government, which is understood to be ready to negotiate the matter to a conclusion.

"The railroad companies have made every effort to cooperate with the government in this matter, and many of the strongest railroad systems which could make thoroughly satisfactory other arrangements, have nevertheless elected to join in this general movement in the belief that relationship with the government will be simplified and that the general railroad situation will be benefited by such co-operative action."

Meetings and Conventions

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

Air Brake Association.—F. M. Nellis, 165 Broadway, New York City. Next convention, May 5-7, 1920, Chicago.

American Association of Demurrage Officers.—F. A. Pontious, Supervisor of Demurrage and Storage, C. & N. W. Ry., Chicago.

American Association of Dining Car Superintendents.—E. H. Thayer, St. Louis-San Francisco R. R., St. Louis, Mo.

American Association of Freight Agents.—R. O. Wells, Illinois Central, Chicago.

American Association of General Baggage Agents.—E. R. Reynolds, C. G. W. R. R., Chicago. Next meeting, November 11-13, 1919, New Orleans, La.

American Association of Passenger Traffic Officers.—W. C. Hope, C. R. R. of N. J., 143 Liberty St., New York.

American Association of Railroad Superintendents.—J. Rothschild, Union Station, St. Louis, Mo.

American Electric Railway Association.—E. B. Burritt, 8 W. 40th St., New York. Next convention, October 6-10, Atlantic City, N. J.

American Electric Railway Manufacturers' Association.—C. F. J. Dell, 50 E. 42nd St., New York.

American Railroad Master Tinners', Coppersmiths' and Pipe Fitters' Association.—Otto E. Schlinck, 165 W. 5th St., Peru, Ind.

American Railroad Association.—J. E. Fairbanks, 75 Church St., New York:

Section I, Operating (including former activities of Association of Railway Telegraph Superintendents).

Section II, Engineering (including former activities of American Railway Engineering Association and Railway Signal Association).—E. H. Fritch, 431 South Dearborn St., Chicago.
Signal Division.—H. S. Balliet, 75 Church St., New York.

Section III, Mechanical (including former activities of Master Car Builders' and Master Mechanics' Association).—V. R. Hawthorne, 431 South Dearborn St., Chicago.

Section IV, Traffic (including former activities of Freight Claim Association).

Section V, Transportation (including former activities of Association of Transportation and Car Accounting Officers).

Section VI, Purchases and Stores (including former activities of Railway Storekeepers' Association).

American Railway Bridge and Building Association.—C. A. Lichty, C. & N. W. Ry., 319 N. Waller Ave., Austin Station, Chicago. Next convention, October 21-23, 1919, Cleveland, O.

American Railway Engineering Association.—(See American Railroad Association, Section II, Engineering).

American Railway Master Mechanics' Association.—(See American Railroad Association, Section III, Mechanical).

American Railway Perishable Freight Association.—E. F. McPike, 135 E. 11th Place, Chicago. Regular meetings, 2d Wednesday in March and September.

American Railway Tool Foremen's Association.—R. D. Fletcher, 6202 Greenwood Ave., Chicago. Next convention, August 27-29, Hotel Sherman, Chicago.

American Society for Testing Materials.—C. L. Warwick, University of Pennsylvania, Philadelphia, Pa.

American Society of Civil Engineers.—Charles W. Hunt, Engineering Societies Building, 33 W. 39th St., New York. Regular meetings, 1st and 3d Wednesday in month, except July and August, 33 W. 39th St., New York.

American Society of Mechanical Engineers.—Calvin W. Rice, 29 W. 39th St., New York.

American Short Line Railroad Association.—T. F. Whittelsey, 708 Union Trust Bldg., Washington, D. C.

American Train Despatchers' Association.—D. L. Darling, Northern Pacific Ry., Spokane, Wash.

American Wood Preservers' Association.—F. J. Angier, B. & O., Mt. Royal Sta., Baltimore, Md.

Association of Railway Claim Agents.—Willis H. Failing, C. R. R. of N. J., Jersey City, N. J. Next meeting, May, 1920, Atlantic City, N. J.

Association of Railway Electrical Engineers.—Jos. A. Andreucetti, C. & N. W., Room 411, C. & N. W. Sta., Chicago. Next meeting, October, 1919. Chicago.

Association of Railway Telegraph Superintendents.—(See American Railway Association, Section I, Operating).

Association of Transportation and Car Accounting Officers.—(See American Railroad Association, Section V, Transportation).

Bridge and Building Supply Men's Association.—M. J. Trees, Chicago, Bridge & Iron Company, Chicago. Next annual convention, October 21-23, 1919, Cleveland, O.

Canadian Railway Club.—James Powell, 46 Aberdeen Ave., St. Lambert (near Montreal), Que.

Car Foremen's Association of Chicago.—Aaron Kline, 841 Lawler Ave., Chicago. Regular meetings, 2d Monday in month, except June, July and August, New Morrison Hotel, Chicago.

Car Foremen's Association of St. Louis.—Thomas B. Koeneke, Federal Reserve Bank Bldg., St. Louis, Mo. Regular meetings, first Tuesday in each month, American Hotel Annex, St. Louis, Mo.

Central Railway Club.—Harry D. Vought, 95 Liberty St., New York. Regular meetings, 2d Thursday in November, and 2d Friday in January, March, May and September, Hotel Statler, Buffalo, N. Y.

Chief Interchange Car Inspectors' and Car Foremen's Association.—W. R. McMunn, New York Central, New York.

Chief Interchange Car Inspectors' and Car Foremen's Supply Men's Association.—D. B. Wright, Lehon Company, 45th and Oakley Sts., Chicago.

Eastern Railroad Association.—D. G. Stuart, Washington, D. C.

Freight Claim Association (See American Railroad Association, Section IV, Traffic).

General Superintendents' Association of Chicago.—A. M. Hunter, 321 Grand Central Sta., Chicago. Regular meetings, Wednesday preceding 3rd Friday in month, Room 856, Insurance Exchange Bldg., Chicago.

International Railroad Master Blacksmiths' Association.—A. L. Woodworth, B. & O., Lima, Ohio. Next convention, August 19-21, Hotel Sherman, Chicago.

International Railway Fuel Association.—J. G. Crawford, 702 E. 51st St., Chicago. Next annual meeting, May, 1920, Hotel Sherman, Chicago.

International Railway General Foremen's Association.—Wm. Hall, 1061 W. Wabash Ave., Winona, Minn. Next convention, September 2-5, Hotel Sherman, Chicago.

Maintenance of Way and Master Painters' Association.—F. W. Hager, 1323 Hurley Ave., Ft. Worth, Tex. Next annual convention, October 21-23, 1919, American Annex Hotel, St. Louis, Mo.

Master Boiler Makers' Association.—Harry D. Vought, 95 Liberty St., New York.

Master Car and Locomotive Painters' Association of the United States and Canada.—A. P. Dane, B. & M., Reading, Mass. Next convention, September 9, 1919, Hotel La Salle, Chicago.

Master Car Builders' Association.—(See American Railroad Association, Section III, Mechanical).

National Association of Railway and Utilities' Commissioners.—James B. Walker, 49 Lafayette St., New York. Next annual convention, October 14, 1919, Indianapolis, Ind.

National Foreign Trade Council.—O. K. Davis, 1 Hanover Square, New York. Next convention, May 12-15, 1920, San Francisco.

National Railway Appliances Association.—C. W. Kelly, Kelly-Derby Co., Peoples Gas Bldg., Chicago.

New England Railroad Club.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meetings, 2d Tuesday in month, excepting months of June, July, August and September.

New York Railroad Club.—Harry D. Vought, 95 Liberty St., New York. Regular meeting, 3d Friday in month, except June, July and August, 29 W. 39th St., New York.

Niagara Frontier Car Men's Association.—George A. J. Hochgrebe, 623 Brisbane Bldg., Buffalo, N. Y. Regular meetings, 3d Tuesday in each month, Tenjost Hall, Buffalo, N. Y.

Pacific Railway Club.—W. S. Wollner, 64 Pine St., San Francisco, Cal.

Railway Accounting Officers' Association.—E. R. Woodson, 1116 Woodward Bldg., Washington, D. C.

Railway Business Association.—Frank W. Noxon, 30 Church St., New York. Next annual meeting, December, 1919, Buffalo, N. Y.

Railway Club of Pittsburgh.—J. D. Conway, 515 Grandview Ave., Pittsburgh, Pa. Regular meetings, 4th Thursday in month except June, July and August. Colonial Annex Hotel, Pittsburgh, Pa.

Railway Development Association.—D. C. Welty, Missouri Pacific R. R., St. Louis, Mo.

Railway Electric Supply Manufacturers' Association.—J. Scribner, General Electric Co., Chicago. Annual meeting with Association of Railway Electrical Engineers.

Railway Equipment Manufacturers' Association.—D. L. Eubank, Galena Signal Oil Company, Richmond, Va. Next annual meeting, September, 1919, Hotel Sherman, Chicago.

Railway Fire Protection Association.—G. L. Ball, St. Louis-San Francisco Ry., St. Louis, Mo. Next annual meeting, October 21-23, 1919, La Salle Hotel, Chicago.

Railway Real Estate Association.—James P. Nelson, President, C. & O., Richmond, Va.

Railway Signal Association.—(See American Railroad Association, Engineering Section, Signal Division).

Railway Storekeepers' Association.—(See American Railroad Association, Section VI, Purchases and Stores).

Railway Supply Manufacturers' Association.—J. D. Conway, 1841 Oliver Bldg., Pittsburgh, Pa.

Railway Telegraph and Telephone Appliance Association.—G. A. Nelson, Waterbury Battery Co., 30 Church St., New York.

Roadmasters' and Maintenance of Way Association.—P. J. McAndrews, C. & N. W. Ry., Sterling, Ill. Next annual convention, September 16-18, 1919, Chicago.

St. Louis Railway Club.—B. W. Frauenthal, Union Station, St. Louis, Mo. Regular meetings, 2d Friday in month, except June, July and August.

Signal Appliance Association.—F. W. Edmunds, West Nyack, Rockland County, New York.

Society of Railway Financial Officers.—L. W. Cox, 1217 Commercial Trust Bldg., Philadelphia, Pa. Next annual meeting, October 16-17, New York City.

Southern and Southwestern Railway Club.—A. J. Merrill, P. O. Box 1205, Atlanta, Ga. Regular meetings, 3d Thursday in January, March, May, July, September and November. Piedmont Hotel Atlanta.

Southern Association of Car Service Officers.—E. W. Sandwich, Western Ry. of Ala., Atlanta, Ga.

Supply Association of American Railway Tool Foremen's Association.—C. N. Thulin, Duff Manufacturing Company, 935 Peoples Gas Bldg., Chicago. Next convention, August 27-29, Hotel Sherman, Chicago.

Track Supply Association.—W. C. Kidd, Ramapo Iron Works, Hillburn, N. Y. Next annual convention, September 16-18, 1919, Auditorium Hotel, Chicago.

Train Despatchers' Association of America.—J. P. Finan, A. T. & S. F. Ry., Needles, Cal.

Traveling Engineers' Association.—W. O. Thompson, N. Y. C. R. R., Cleveland, O. Next annual meeting, September 16-19, 1919, Hotel Sherman, Chicago.

Western Association of Short Line Railroads.—Clarence M. Oddie, Mills Bldg., San Francisco.

Western Railway Club.—J. M. Byrne, Chief Clerk to Mechanical Assistant, Central Western Region, 547 Jackson Blvd., Chicago. Regular meetings, 3d Monday in month, except June, July and August.

Western Society of Engineers.—Edgar S. Nethercut, 1735 Monadnock Block, Chicago. Regular meetings, 1st Monday in month, except July and August.

Traffic News

Edwin Kluever, assistant general freight agent of the New York, Chicago & St. Louis, with headquarters at Cleveland, Ohio, has been elected president of the Cleveland Traffic Club.

Representative Black has introduced in Congress a bill directing the President to grant reduced rates over railroads under federal control one and one-third fare for the round trip to passengers attending conventions, meetings or congresses of religious, charitable and other organizations or associations.

The Canadian National Railways, in the five months January-May, transported from the seaboard 116,328 home-coming troops, in 318 trains, an average of 366 men per train or about 33 in each car. Each of these train movements included also the movement of an empty train in the opposite direction, and the total train mileage was 539,212, the average length of the trip of each loaded train being 848 miles.

Seven cents, instead of five cents, is now the fare for a large portion of the street car rides in Brooklyn, N. Y., where hitherto the rate has been five cents. This increase is brought about by abolition of the practice of giving free transfers at 959 points where these have been given to passengers changing from one car to another. Now, passengers must ask for such transfer when beginning their journey, and must pay for it two cents. At 49 places the issuance of free transfers, allowing the passenger to ride over two lines for a single five-cent fare, will be continued. It is estimated that the additional two-cent collections will increase the annual revenue of the Brooklyn Rapid Transit Company by $1,200,000.

The Canadian Pacific Ocean Services, Ltd., at the outbreak of the war had in commission in the Atlantic and Pacific services 38 steamships with an aggregate gross tonnage of 341,399 tons. Since August, 1914, the construction of four steamships, having a gross tonnage of 67,000 tons, has been completed and 12 steamships of 76,000 gross tons have been purchased within the same period. During the war 15 steamships were lost by enemy action or through accidents at sea and eight have been sold to the British government and one to an Indian prince who later presented it to the British government for use as a hospital ship. A ship 625 ft. long, having a gross tonnage of 22,000 tons, is now being built at the Clyde yards of the Fairfield Shipbuilding & Engineering Company, while work will soon be started on the building of three passenger ships of intermediate class for the Atlantic service. At the end of the last fiscal year the company had in ocean service 28 steamships of a gross tonnage of 264,430 tons, and 6 steamships under order or purchased but not delivered having a gross tonnage of 88,600.

Tobacco Association Co-operates in Heavier Car-Loading Campaign

The Tobacco Association of the United States at its recent annual meeting adopted resolutions that the members of the tobacco trade as far and as soon as possible adopt as a standard the 48-inch by 46-inch hogshead, which was recommended by the Railroad Administration on the ground that a large saving in car space and a much heavier loading of tobacco can be made in a hogshead of that size, which admits of loading in the car side by side and then double decking. The resolutions call attention to the advantages of standardization: Recooperage is decreased to a minimum insuring arrival at destination in better order; the cylindrical hogshead, which shape does not stand shipping, can be done away with. Several of the largest export firms have adopted this size hogshead and others have expressed their intention to do so. The railroads are requested to see that full size cars are furnished and that agents understand the necessity of full and careful loading.

Commission and Court News

Interstate Commerce Commission

The Commission has submitted a report on its investigation, conducted at the request of Director General Hines, into the controversy between coal operators as to the relationship of rates on bituminous coal by rail-lake-and-rail from Ohio and West Virginia to the northwest to rates by rail all the way from Illinois and Indiana mines, which relationship was changed by the increases resulting from Mr. McAdoo's General Order No. 28 last year. The commission finds that there has been no recognized relationship between these rates and that therefore, there is none to be restored.

State Commissions

The New York State Public Service Commission, Second District, announces that freight and passenger tariffs issued by the United States Railroad Administration, and now in force, will be accepted as legal tariffs by the commission when the railroads are returned to their owners. This does not mean formal approval of the rates in such tariff; they will be subject to protest, complaint and investigation, the same as is the case, under the law, with rates established by the carriers.

The New York State Public Service Commission, Second District, acting on a complaint from the Brotherhood of Railroad Trainmen, holds that under the full-crew law of New York every passenger train of five cars or more must have a baggageman—whether there be or be not any baggage to be handled. The commission says that the law is very clear on this point, and calls attention to the general practice of requiring that the baggageman shall act when necessary, in place of a brakeman in the protection of the train from collision.

Court News

Federal Employers' Liability

The Circuit Court of Appeals, Second Circuit, holds that an employee in a local switching crew at a station in New Jersey, injured while setting a brake on an open coal car being switched between sidings, the car having come from Pennsylvania consigned to a company in New Jersey, was not engaged in interstate commerce so as to bring his case within the federal act.—D., L. & W. v. Peck, 255 Fed. 261.

Hours of Service Act

The Circuit Court of Appeals, Fifth Circuit, holds that where a railroad detained train crews in service more than 16 hours, it cannot excuse the violation of the law because an accident occurred at a point some distance from division points, where it could have sent relief crews, since section 3 of the act, relieving railroads in case of casualty, does not relieve from the duty to exercise diligence to comply with the act.—G., C. & S. F. v. U. S., 255 Fed. 753.

Doing Business in District

The federal district court in Massachusetts holds that a railroad company which operates no line of road within a federal district, but merely maintains an office therein for the solicitation of passenger and freight business, paying the rent and salaries of the employees, is not doing business nor is "present in the district," in such sense as to be subject to suit in the federal court therein.—Davis v. Baltimore & Ohio, 256 Fed. 407. Decided February 11, 1919. Graustein v. Rutland, 256 Fed. 409. Decided March 4, 1919.

Foreign Railway News

American Rail for Danish State Railways

Sophus Berendsen, Inc., have announced the placing of an order for 2,000 tons of rail with the United States Steel Products Company. The rail is to be supplied to the Danish government, and if the quality of the rail proves satisfactory, it is expected that the government will accept shipments of 2,000 tons per month, not including curve rails, frogs and switches.

The rail is a special section, formerly supplied by manufacturers in England and Germany. It is said that the purchasers experienced some difficulty in getting an American concern to roll a rail of special section, but that the United States Steel Products Company went to considerable trouble to meet every requirement of the purchaser.

Siberian Railroad Management Petitions Authorities for Loan

The management of the Atchinsk-Minusinsk Railway has petitioned the authorities for a loan to be used to survey a railway from Menisseisk to Tomsk and thence to Tara, a distance of 800 miles. This line would be the central section of the proposed North Siberian main line extending from Krasnufinsk eastward and paralleling the existing main line.

It is stated that there are 1,000 loaded freight cars between Manchuria and Irkutsk waiting to be forwarded. The railway situation is said to account for wide difference of prices at Manchuria and at points farther westward. For example, an arshine (28 inches) of Chinese cloth costs 8 rubles at Manchuria, 12 rubles at Tchita, and 23 rubles at Irkutsk, although the freight per arshine is calculated at 2.10 rubles from Manchuria to Irkutsk.

Arrangements were made to ship 140 cars of freight west of Blagovyeshtchensk by the Amur Railway in February and that 68 cars were to be loaded with fish. Owing to the cutting of the Amur Railway line by insurgents, this program could not be carried out fully.

From April 1 on, all freight rates are to be increased, according to newspaper reports, so that they will be 10 times as high as those prevailing up to July 10, 1917.

"Railway Nationalization in Japan"

The *Railway Age* is in receipt of a copy of "Railway Nationalization in Japan," a 200-page book with pages 8 in. by 12 in. in size and in English, issued by the Imperial Government Railways of Japan. The book is a general review of ten-years' progress of the Japanese Railways under unified state management from 1907-8 to 1916-17, including the report for the fiscal year 1916-17. It is profusely illustrated and in addition to giving the detailed figures of finances and operation gives also a history and description of the Japanese lines, details concerning the stations, cars and locomotives, etc., information concerning the through traffic arrangements to China, Manchuria, Russia, etc., as well as data concerning the wages and treatment of employees, etc. As the title indicates, emphasis is placed principally on the difference between the lines under private control in 1906 and the government owned lines of today as shown by the increased weight of engines, larger capacity cars, etc. The book is especially interesting to American readers, however, because of the descriptions and diagrams given of the equipment in use and other valuable information relating to the physical and traffic characteristics of the Japanese system.

The figures concerning the operation of the Imperial Government Railways show that on March 31, 1918, the government lines had a mileage of 5,206 as compared with 5,094 in the year preceding. In the fiscal year ended March 31, 1918, the "working revenue" was $91,763,000 as compared with $70,628,000 in 1917. Operating expenses totaled $42,185,000, leaving a profit of $49,578,000, as compared with $40,046,000

in the preceding year, the operating ratio being 46 per cent in 1917-18, as against 43 per cent in 1916-17. The balance after the deduction of inspection and survey charges, additional works expenses, subsidies to light railways and interest charges, amounted to $21,790,000 in 1917-18, as compared with $17,497,000 in 1916-17. The figures show that in 1917-18 the passengers carried totaled 245,234,480, as compared with 197,043,320 in 1916-17, and that the passenger revenue was $37,080,000 as against $29,373,000 in the year preceding. The freight ton miles totaled 5,033,344,000, bringing in a revenue of $43,862,000, a considerable increase over the ton miles of 4,179,135,000, yielding a revenue of $34,666,000 in 1916-17. The average receipts per passenger mile remained the same over the two years, namely .67 cents, but the revenue per freight ton mile in 1917-18 was .87 cents as against .83 cents in 1916-17. The average trainload showed an increase over the two years from 128 to 142.6.

On March 31, 1918, the Japanese Government Railways owned 2,827 locomotives, 6,903 passenger cars and 46,600 freight cars.

The Russian Railway Service Corps

In a message to the Senate regarding the reasons for sending United States soldiers to Siberia, President Wilson has given an explanation of the operations of the Russian Railway Service Corps. He says in part:

"In February, 1919, as a conclusion of negotiations begun early in the summer of 1918, the United States accepted a plan proposed by Japan for the supervision of the Siberian railways by an international committee, under which committee, Mr. John F. Stevens would assume the operation of the Russian Railway Service Corps. In this connection it is to be recalled that Mr. John F. Stevens, in response to a request of the provisional government of Russia, went to Russia in the spring of 1917. A few months later he was made official adviser to the minister of ways and communication at Petrograd under the provisional government. At the request of the provisional government, and with the support of Mr. John F. Stevens, there was organized the so-called Russian Railway Service Corps, composed of American engineers. As originally organized, the personnel of this corps constituted 14 skeleton division units as known in this country, the idea being that these skeleton units would serve as practical advisers and assistants on 14 different sections of the Siberian Railway and assist the Russians by their knowledge of long-haul problems as known in this country, and which are the rule and not the exception in Siberia.

"Owing to the Bolshevik uprising and the general chaotic conditions, neither Mr. Stevens nor the Russian Railway Service Corps was able to begin work in Siberia until March, 1918. They have been able to operate effectively only since the railway plan was adopted in February, 1919.

"The most recent report from Mr. Stevens shows that on parts of the Chinese-Eastern and Trans-Baikal Railway he is now running six trains a day each way, while only a little while ago they were only able to run that many trains a week.

"In accepting the railway plan it was provided that some protection should be given by the allied forces. Mr. Stevens stated frankly that he would not undertake the arduous task before him unless he could rely upon support from American troops in an emergency. Accordingly, as provided in the railway plan and with the approval of the interallied committee, the military commanders in Siberia have established troops where it is necessary to maintain order at different parts of the line. The American forces under General Graves are understood to be protecting parts of the line near Vladivostok, and also on the section around Verchne Udinsk. There is also understood to be a small body of American troops at Harbin. The exact location from time to time of American troops is, however, subject to change by the direction of General Graves.

"The instructions to General Graves direct him not to interfere in Russian affairs, but to support Mr. Stevens wherever necessary. The Siberian Railway is not only the main artery for transportation in Siberia, but is the only open access to European Russia today. The population of Siberia, whose resources have been almost exhausted by the long years of war and the chaotic conditions which have existed there, can be protected from a further period of chaos and anarchy only by the restoration and maintenance of traffic on the Siberian Railway.

"Partisan bands under leaders having no settled connection with any organized government, and bands under leaders whose allegiance to any settled authority is apparently temporary and transitory, are constantly menacing the operation of the railway and the safety of its permanent structures.

"The situation of the people of Siberia meantime is that they have no shoes or warm clothing; they are pleading for agricultural machinery and for many of the simpler articles of commerce upon which their own domestic economy depends and which are necessary to fruitful and productive industry among them. Having contributed their quota to the Russian armies which fought the Central Empires for three and one-half years, they now look to the Allies and the United States for economic assistance.

"The population of western Siberia and the forces of Admiral Kolchak are entirely dependent upon these railways.

"The Russian authorities in this country have succeeded in shipping large quantities of Russian supplies to Siberia, and the Secretary of War is now contracting with the great cooperative societies which operate throughout European and Asiatic Russia to ship further supplies to meet the needs of the civilian population. The Kolchak government is also endeavoring to arrange for the purchase of medical and other Red Cross supplies from the War Department, and the American Red Cross is itself attempting the forms of relief for which it is organized. All elements of the population in Siberia look to the United States for assistance. This assistance can not be given to the population of Siberia, and ultimately to Russia, if the purpose entertained for two years to restore railway traffic is abandoned. The presence of American troops is a vital element in this effort. The services of Mr. Stevens depend upon it, and, a point of serious moment, the plan proposed by Japan expressly provides that Mr. Stevens and all foreign railway experts shall be withdrawn when the troops are withdrawn.

"From these observations it will be seen that the purpose of the continuance of American troops in Siberia is that we, with the concurrence of the great allied powers, may keep open a necessary artery of trade and extend to the vast population of Siberia the economic aid essential to it in peace time, but indispensable under the conditions which have followed the prolonged and exhausting participation by Russia in the war against the Central Powers. This participation was obviously of incalculable value to the allied cause, and in a very particular way is a commendation to the exhausted people who suffered from it to such assistance as we can render to bring about their industrial and economic rehabilitation."

Railways of Northern China

In the claim of China for the abrogation of the treaties and notes concluded with Japan on May 25, 1915, which claim was printed in the Congressional Record of July 25, 1919, there occur the following paragraphs dealing with the railway situation:

"The meaning of this Japanese succession to German rights in Shantung is best illustrated in the railway situation arising out of Japan's exercise of two of the 'other railway rights' that were vested in Germany.

"Although Japan's claim now before the peace conference, in so far as it relates to China, is confined to the 'railways and other rights possessed by Germany in respect of Shantung Province,' she has pressed (in a set of secret agreement and notes concluded on September 24, 1918) on China the acceptance of the view that her first demand in Group I—which is substantially repeated in her conference claim—covers the German rights to finance, construct, and supply the materials for two lines of railway running into the two other Provinces of Kiangsu and Chihli, though starting in Shantung.

"If the peace conference concede this Japanese claim, the following formidable situation will be created: Through the

trans-Shantung Railway, with its western or inland terminus at the provincial capital of Chinanfu where it flanks the northern section of the Tientsin-Pukow Railway—built by the Germans—Japan will at once dominate the whole of Shantung as well as the northern half of this important trunk line. Then, by financing, constructing, and supplying the materials for the first of the aforesaid 'two lines of railway'—i. e., a line from the city of Kaomi, on the trans-Shantung Railway, to a point strategically dominating the southern or British constructed section of the same Tientsin-Pukow Railway—Japan will practically master the great railroad linking Tientsin (the port of Peking) and north China with the Yangtze Valley and south China.

"Next, by financing, etc., the second of the 'two lines of railway'—i. e., a line practically extending the trans-Shantung Railway from Chinanfu, where it will bisect the Tientsin-Pukow trunk line, to a point westward on the Peking-Hankow Railway—Japan will flank the other of the two trunk lines connecting Peking and north China with central and southern China. (It is important to note that the administration of a Japanese constructed railway in China goes far beyond that of any other foreign constructed railway in China, including even those constructed by Germany in Shantung. It means that the railway is practically manned by Japanese, to the exclusion even of Chinese; that the railway is policed by Japanese gendarmerie and is guarded by Japanese troops along its entire length. That is the danger.)"

Railway Material for South Africa

Purchases of railway supplies from the United States are again bothering the British House of Commons. The Times, London, in a recent issue reports the following:

In reply to Mr. Houston (West Toxteth, C. U.), who asked the president of the Board of Trade whether, in view of the friendly relations existing between the South African and British governments, he could state why the former had placed important orders for railway material in America instead of in this country, seeing the necessity of finding work for the people of Great Britain and for maintaining her export trade.

Colonel Amery, Under-Secretary for the Colonies (Birmingham, Sparkbrook, C. U.), said: Some of the orders were placed by the South African authorities in the United States before the armistice at a time when it was impossible to supply railway material from this country. As regards 70 locomotives, which have been ordered since the armistice, I am informed that the British offers in respect both of price and of date of delivery were so unfavorable that the South African authorities felt themselves obliged to go further afield. Forty of the locomotives, however, were, I am glad to say, ordered in Canada. I would remind the honorable member that the policy on which the governments of the Empire have agreed is that of preference, in contracts, to the produce and manufactures of the Empire, and not merely to those of the United Kingdom. Contractors in this country cannot expect preference from other governments in the Empire, except as against foreign countries.

[The orders in question are the 30 Mountain type locomotives ordered from the Baldwin Locomotive Works and 40 of the same type ordered from the American Locomotive Company (Montreal Locomotive Works) as reported in the *Railway Age* of February 7.—Editor.]

Mr. Kellaway, Parliamentary Secretary, Ministry of Munitions (Bedford, C. L.), replying to Mr. Houston, said that arrangements had been made to sell to the South African government a quantity of 75-lb. flat-bottomed rails, payment to be made from a grant of $2,500,000 by the British government in respect of services rendered by the South African government in connection with the transport of troops and material during the war. The rails to be supplied were not required by the British railway companies, there being sufficient material of this class to meet home requirements in addition to those of South Africa. No rolling stock was to be sent to South Africa and special arrangements were being made to bring over as rapidly as possible to this country all the surplus railway material in France suitable for the re-equipment of British railways.

Financial and Construction

Railway Financial News

Canadian Northern.—Wm. A. Read & Co., New York, have bought from the company and resold to the public $10,000,000 two-and-a-half-year six per cent collateral trust Canadian Northern notes. These notes are secured by the deposit of $14,286,000 Canadian Northern guaranteed general mortgage four per cent bonds due 1934. These pledged bonds are guaranteed, principal and interest, by the Canadian government.

Cleveland, Cincinnati, Chicago & St. Louis.—This company has sold to a syndicate of bankers, headed by J. P. Morgan & Co., the First National Bank, the National City Company and the Guaranty Trust Company, all of New York, $15,000,000 ten-year six per cent refunding and improvement mortgage bonds, July 1, 1919 to July 1, 1929. The bankers are offering these bonds to the public at 98, yielding over 6¼ per cent interest on the investment. These bonds are part of a total authorized issue of $20,000,000 series "A" bonds issued under the refunding and improvement mortgage, which mortgage also secures the company's 4 per cent 20-year European loan of 1910 and its 20-year 4½ per cent debentures of 1911.

Erie.—The New York & Erie second mortgage 5 per cent bonds, of which $2,149,000 are outstanding, maturing on September 1, are being paid or extended at the option of the holder by J. P. Morgan & Co., New York, and Drexel & Co., Philadelphia. The extended notes bear 5 per cent interest and are due September 1, 1939, and the holder of each thousand-dollar bond, which is extended, receives $27.50 in cash. In other words, the new bonds are offered to holders of the old bonds at a price to yield 5.20 per cent interest.

Railway Construction

Grand Trunk Western Lines.—This road is enlarging its freight handling facilities at Belsay, near Flint, Mich., where the construction of switching yards with a capacity of 500 to 600 cars has already been started. The layout will also provide for a large roundhouse which will be built in the future.

Missouri Pacific.—The L. J. Smith Construction Company, Kansas City, Mo., has been awarded a contract for filling five bridges on the White River branch of the Missouri Pacific near Hollister, Mo. This company has sublet the placing of 1,000 cubic yards of reinforced concrete on the same job to the J. W. McMurray Contracting Company, Kansas City.

Savannah & Atlanta.—A contract has been given to H. O. Young, Savannah, Ga., to build a freight warehouse for the Savannah & Atlanta in Savannah. It will be a one-story building of wood frame sheathed with galvanized iron, 40 ft. wide and 320 ft. long. The work is to be started at once and will cost about $10,000.

St. John & Quebec Railway.—This company has completed the work since January 1 on the section from Gagetown, N. B., to Westfield, 37.92 miles, and the entire line of 158.83 miles is expected to be in operation early in August.

Winchester & Western: This company has completed track laying on 28 miles of its new line, between Winchester, Va., and Wardensville, W. Va., 40 miles, on which work was started in 1916. Track laying is now under way between Shiloh and Capon Springs, on about 6 miles. The line will have maximum grades of 3 per cent, and maximum curvature of 12 deg. The Intermountain Construction Company, Winchester, Va., has the contract to build the line. The railway company expects to develop a traffic in lumber, iron ore, livestock, fruit and forest products. W. B. Cornwell, Winchester, Va., is president, and William Morgan, chief engineer.

Equipment and Supplies

Locomotive Deliveries, Week Ending July 19

The following new locomotives were shipped to railroads under federal control during the week ended July 19:

Works	Road.	No.	Type
American	C. & N. W.	4	USRA 6W. Sw.
	C. St. P. M. & O.	8	USRA 6W. Sw.
	Virginian	3	USRA Mallet
		15	
Baldwin	A. T. & S. F.	7	Santa Fe
	C. C. & O.	1	Mallet
	C. R. I. & P.	6	USRA Mikado
	N. & W.	1	Mallet
	R. & O.	2	USRA Pacific
	C. & S.	1	USRA Santa Fe
	S. P.	2	USRA Santa Fe
	A. T. & S. F.	1	Pacific
	P. L. W.	1	Mallet
		22	
	Total	37	

Locomotive Deliveries in June

The Railroad Administration has compiled the following statement of locomotives shipped for the month of June:

Name of road	Region	On order prior to Federal control: Type	No.	USRA orders: Type	No.	Constructed in railroad shops: Type	No.	Total	Builders
A. T. & S. F.	Cent. W.	Mountain	2		..		..	2	Baldwin
A. T. & S. F.	Cent. W.	Pacific	8		..		..	8	Baldwin
B. & O.	Allegheny		..	USRA 6-w. Sw.	20		..	20	American
B. & O.	Allegheny		..	USRA 6-w. Sw.	1		..	1	Baldwin
B. & O.	Allegheny		..	USRA Pacific	13		..	13	Baldwin
C. B. & Q.	Cent. W.	Mikado	1		..		..	1	Baldwin
C. B. & Q.	Cent. W.	Santa Fe	2		..		..	2	Baldwin
C. C. & O.	Southern	Mallet	3		..		..	3	Baldwin
C. & O.	Focahontas		..	USRA Mountain	1		..	1	Baldwin
Erie	Eastern		..	USRA Pacific	3		..	3	Baldwin
E. J. & E.	Northw'n		..	USRA Mikado	5		..	5	American
G. T.	Eastern		..	USRA 6-w. Sw.	5		..	5	American
I. H. B.	Northw'n		..	USRA 8-w. Sw.	6		..	6	Baldwin
K. C. T.	Cent. W.		..	USRA 8-w. Sw.	5		..	5	Baldwin
M. K. & T.	South'w		..	USRA 8-w. Sw.	10		..	10	Baldwin
N. & W.	Focahontas		..	USRA Mallet	20		..	20	American
N. & W.	Focahontas	Mallet	3		..		..	3	Baldwin
P. L. W.	Allegheny		..	USRA 6-w. Sw.	4		..	4	American
P. L. W.	Allegheny		..	USRA Santa Fe	12		..	12	American
P. L. W.	Allegheny	Mallet	1		..		..	1	Baldwin
P. & R.	Allegheny	Mallet	1		..		..	1	Baldwin
Southern	Southern		..	USRA Mountain	2		..	2	Baldwin
S. P.	Cent. W.	Santa Fe	18		..		..	18	Baldwin
T. & P.	Southw'n	Santa Fe	3		..		..	3	Baldwin
U. P.	Cent. W.	Santa Fe	3		..		..	3	Baldwin
Virginian	Focahontas		..	USRA Mallet	2		..	2	American
Wash. Ter.	Allegheny		..	USRA 6-w. Sw.	3		..	3	American
Penn. R. R.	Allegheny		..		..	Mallet	1	1	Penn. R. R.
P. L. W.	Allegheny		..		..	Decapod	9	9	Penn. R. R.
So. Pac.	Cent. W.		..		..	10-w. Sw.	1	1	So. Pacific
So. Pac.	Cent. W.		..		..	Mikado	1	1	So. Pacific
Total			45		112		12	169	

Freight Cars

The Texas & Pacific is in the market for 110 tank cars.

The Chesapeake & Ohio, Richmond, Va., is inquiring for 12 12-yd. air dump cars.

The Arthur J. Dunkle Company, New York, is inquiring for fifteen kerosene or gasoline driven cars.

O. B. Cintas, Havana, Cuba, has ordered 25 cane cars from the American Car & Foundry Company, Chicago.

The Island Refining Company has ordered 1,400 tank cars from the General American Tank Car Corporation, Chicago.

The General Chemical Company, New York, has ordered five steel flat cars from the American Car & Foundry Company, Chicago.

The Havana Central of Cuba is in the market for 500 30-ton box cars, 500 25-ton flat cars, and 50 15-ton narrow gage cane cars.

The Sun Company, Philadelphia, Pa., has ordered 100 50-ton 10,000 gal. tank cars from the American Car & Foundry Company, Chicago.

The North American Car Company, Chicago, has ordered fifty 40-ton 8,000 gal. tank cars from the American Car & Foundry Company, Chicago.

Willits & Patterson, San Francisco, Cal., Victor Labadie, traffic manager, are in the market for 25 standard 8,000 gal. tank cars equipped with steam coils for handling vegetable oils imported from the Orient.

Passenger Cars

The Havana Central of Cuba is in the market for 8 first-class passenger coaches and 12 third-class passenger coaches.

Six rigid air ships of improved type, representing successive stages of development, are under construction for the British Navy at a cost of about $11,000,000.

An Early Train Ferry.—There has recently come into the possession of one of our staff, says the Railway Gazette, London, a copy of a limited autograph edition of the "Reminiscences of General Herman Haupt," who was chief of the Bureau of the United States Military Railroads in the Civil War. Therein is a reference to a subject which has been much in evidence recently in connection with the train ferries from Richborough and Southampton. It is difficult, without local knowledge and a large scale map, to reconstruct the situation that gave rise to the events about to be related, so it must suffice to say that in the autumn of 1862 the Confederate forces, under Lee, were on the south side of the Potomac river and in command of certain railway communications from Washington southwards, and thus severing the army of the Potomac at Washington from that on the Rappahannock. What Haupt did to remedy this was to lash two canal barges together by long timbers bolted transversely and to lay thereon eight tracks, each track being of sufficient length to hold one car. The loaded cars were put on the ferry at the advanced base of the Federal army on the Orange & Alexandria Railroad, towed down the Potomac to Acquia Creek, a distance of 60 miles; there again put on the rails and conveyed to Fredericksburg on the Rappahannock river and the Richmond, Fredericksburg & Potomac Railroad. This, we should say, was the first military train ferry.

Supply Trade News

The **Camden Forge Company,** Camden, N. J., has opened a district sales office at 2 Rector street, New York, with **Samuel W. Hilt** as manager.

The Page Steel & Wire Company, New York, has opened a branch office at 29 South La Salle street, Chicago, and another in the Book building, Detroit.

H. A. Wolcott has been appointed district manager of the **Ohio Locomotive Crane Company,** Bucyrus, Ohio, for the Chicago territory, with office in the Lytton building, Chicago.

George C. Isbester, district sales manager of the Rail Joint Company, with headquqarters at Chicago, has resigned to become district sales manager of welded and weldless products for the American Chain Company, Inc., with headquarters at Chicago, effective August 1. Mr. Isbester was connected with the mechanical department of the Great Northern Railway at St. Paul, Minn., from 1897 to 1899, leaving the Great Northern at this time to go to the Sargent Steel Company, with headquarters at Chicago. He remained with this company until about 1902, when he went with the Q & C Company, with headquarters at Chicago, afterwards becoming vice-president of that company. In 1912 he left the Q & C Company to go with the Rail Joint Company as district sales manager, which position he held until his change as noted above. Mr. Isbester has been a director of the National Railway Appliances Association for several years until his resignation recently. During the war Mr. Isbester served in the United States Naval Reserve Forces as Lieutenant Commander, having been on active duty from April, 1917, until he was placed on the inactive list during May, 1919. He was recalled to active duty on July 28, 1919, to be sworn in as Commander in the supply corps. He was selected for promotion from lieutenant commander to commander by the Board of Selection, and after receiving his promotion he was again detached from active duty. Commander Isbester has also served with the Illinois Naval Militia for ten years.

G. C. Isbester

D. C. Schultz, Sr., who has had a wide experience in the design and sale of Morgan & Northern cranes, has been appointed sales manager of the **Pittsburgh Crane & Equipment Co.,** with headquarters at Sharpsburg, Pa.

Frank O. Leitzell, assistant to the general manager of the **H. K. Porter Company,** Pittsburgh, Pa., has been appointed an engineer-salesman in the sheet and tin mill specialties department of the Blaw-Knox Co., Pittsburgh, Pa.

The Ulster Iron Works, Dover, N. J., has completed a new puddling mill at Dover, with a main building 390 ft. by 77 ft. and an adjoining wing 90 ft. by 60 ft. The entire output of the mill is distributed by Joseph T. Ryerson & Son, Chicago.

J. Leonard Replogle, president of the **American Vanadium Company,** New York, also president of the **Wharton & Northern Railroad** and chairman of the board of directors of the **Wharton Steel Company,** who, during the period of the war was director of steel supplies for the War Industries Board, has had conferred upon him by the French Government the decoration of Chevalier of the Legion of Honor, in recognition of services rendered by him in the Allied cause during the war.

The National Railway Appliance Company, New York, has completed arrangements for the sale in the Eastern and Southern states of a line of car heaters, including the Jewel hot blast forced ventilation stoves and Cutler-Hammer electric heaters.

John J. Greer, president of the J. J. Greer Company, Kansas City, Mo., which operates commissaries and boarding camps on the Chicago, Burlington & Quincy and the Chicago, Rock Island & Pacific and also news service and hotels on the latter road, died suddenly at the Pfister Hotel, Milwaukee, Wis., on July 19. He was about 60 years old.

Theodore L. Dodd & Company, 80 East Jackson boulevard, Chicago, have been appointed western sales representatives for the Worth Steel Company of Claymont, Delaware, manufacturers of high grade steel for railroad uses in connection with fire boxes and boilers. This company has a 160-in. mill with 4 100-ton open hearth furnaces. It was formed by former members of the Worth Brothers Company, of Coatesville, Pa., which concern was sold to the Midvale Steel Company several years ago.

Kenneth R. Hare, whose appointment as district manager for the **Transportation Engineering Corporation,** New York, with headquarters at Chicago, was briefly noted in our issue of July 25, was graduated from the University of Wisconsin in 1911 with the degree of electrical engineer, Mr. Hare having previously spent his vacations on railroad location and construction in Northern Minnesota, as concrete inspector and later in connection with transit and level work, estimates, etc. He also did considerable work in connection with the electrical construction, installation of dynamo electric machinery, transformers and switchboards for the Duluth Edison Company, and the General Electric Company. After graduation he took the test and shop course at the Schenectady works of the General Electric Company, following this, in 1912, with construction and meter work for the Great Northern Power Company, Duluth, Minn. Later, in the same year, he was appointed chief electrician for the Northern Pacific Railway, in charge of all electrical work from St. Paul to the Pacific Coast. In 1915 he was appointed associate editor, and later became managing editor of the Railway Electrical Engineer, published by the Simmons-Boardman Publishing Company, New York. He left this position in 1917 to enter military service as first lieutenant in the Ordnance Department. In 1918 he was appointed, on behalf of the government, assistant superintendent of the munition plant of the American Can Company, Kenilworth, N. J., in direct charge of the high explosive plant, remaining in that position until the work of the plant was about finished. He now becomes district manager of the Transportation Engineering Corporation, which is the authorized representative of the Edison Storage Battery Company in the sale of storage batteries to railroads, and of the Automatic Transportation Company in the sale of industrial trucks and tractors to railroads. Mr. Hare is in charge of the territory in the Middle West, including Chicago, St. Louis and other important railroad centers.

K. R. Hare

American Car & Foundry Company

The war activities of the American Car & Foundry Company afford an interesting commentary on the adaptability and efficiency of the organization. This company alone built all of the specially designed railroad guns mounted for the seven- and eight-inch guns and twelve-inch mortars used by the American army. Furthermore, nearly all of the six-inch gas and ten-inch high explosive shells used by the Americans were manufactured by the American Car & Foundry Company. With the cessation of hostilities there came, of course, a large number of cancellations of war orders and the company which had $290,000,000 of business on its books at the beginning of the year had $100,000,000 business on its books at the end of the fiscal year (April 30) 1919. The management of the American Car & Foundry Company has made special efforts to develop the manufacture and sale of miscellaneous supplies. The profit from this business has proved satisfactory and it would seem that the experience with war business would further aid in the development of this department.

Despite very heavy taxes estimated at $24,000,000, the income account of the company shows a large margin over dividend requirements. Net earnings after deducting expenses and taxes amount to $17,273,000. From this is charged out $5,501,000 for renewals, replacements, new patterns, etc., leaving $11,772,000 net earnings, comparing with $11,283,000 net earnings in the previous fiscal year. Dividend requirements (7 per cent on the preferred and 8 per cent on the common) call for but $3,000,000 added to the reserve for general overhauling, $2,400,000 added to the reserve for dividends on the common stock and $1,872,000 added to surplus. The company had on April 30, 1919, net working capital exclusive of reserves, $23,799,000.

In studying the accompanying balance sheet for the company for June 30, 1919, it should be borne in mind that the American Car & Foundry Company was awarded an order for 31,000 out of the total 100,000 freight cars purchased by the Railroad Administration. These cars are in the process of construction and materials for completion of the order are included in the materials on hand, as itemised in the balance sheet shown below. The company received orders for 10,000 cars for Italy and 3,250 cars for India during the fiscal year.

ASSETS.

Property and Plant Account		$67,525,272
Cost to April 30, 1918	$66,782,532	
Add: For expenditure for additions to plants during year	742,740	
Current Assets		110,266,605
Materials on hand, inventoried at cost or less, and not in excess of present market prices	$46,276,398	
Accounts and notes receivable	14,024,529	
U. S. Certificates of indebtedness and Liberty Bonds	32,052,000	
Stocks and bonds of other companies at cost or less	1,070,091	
Cash in banks and on hand	16,843,587	
		$177,791,877

LIABILITIES

Preferred Capital Stock		$30,000,000
Common Capital Stock		30,000,000
Current Liabilities		73,152,326
Accounts payable, and bills payable not due, and pay rolls (paid May 10, 1919)	$34,357,156	
United States Railroad Administration, advances for materials	13,195,170	
Provision for federal income and war profits taxes	24,475,000	
Dividend No. 81, on preferred capital stock (payable July 1, 1919)	525,000	
Dividend No. 67, on common capital stock (payable July 1, 1919)	600,000	
Reserve Accounts		13,315,030
For insurance	$1,500,000	
For general overhauling, improvements and maintenance	4,101,967	
For dividends on common capital stock, to be paid when and as declared by Board of Directors	7,200,000	
For improving working conditions of employees	513,063	
Surplus Account		31,324,521
		$177,791,877

Railway Officers

Railroad Administration

Federal and General Managers

J. B. Carothers, assistant to the federal manager of the Baltimore & Ohio, Western Lines, with headquarters at Cincinnati, O., has had his jurisdiction extended over the departments of fuel and locomotive operation.

Operating

H. R. Frierson, trainmaster on the Central of Georgia, with office at Macon, Ga., has been transferred to Savannah, to succeed C. E. Scarborough, who has been assigned as trick despatcher at Columbus; and F. D. Barnes, road foreman of engines, has been appointed trainmaster of the Macon division, with headquarters at Macon, vice Mr. Frierson.

T. W. Crowley, superintendent of the Adirondack division of the New York Central, with office at Utica, N. Y., has been transferred to the St. Lawrence division, with headquarters at Watertown, vice J. W. Evans, deceased, and C. H. Calkins, assistant superintendent at Buffalo, has been promoted to superintendent of the Adirondack division to succeed Mr. Crowley.

F. J. Gavin, general superintendent of the Western district of the Great Northern, with office at Seattle, Wash., has been appointed general superintendent of the Lake district with headquarters at Superior, Wis., vice G. S. Stewart, deceased, and J. H. O'Neill, terminal manager of the Puget Sound district, United States Railroad Administration, has resumed his position as general superintendent of the Western district of the Great Northern, with headquarters at Seattle, vice Mr. Gavin.

E. W. Lollis, division superintendent on the Chicago, Milwaukee & St. Paul, with headquarters at Des Moines, Iowa, has been transferred to the Illinois division, with headquarters at Savanna, Ill., succeeding L. T. Johnston, who has been transferred to the Green Bay division, with headquarters at Green Bay, Wis., to succeed C. H. Buford, who has been transferred to the Sioux City division, with headquarters at Sioux City, Iowa, in place of M. L. Larsen, who has been assigned to other duties.

Traffic

The authority of R. A. Ebe, live stock agent of the Eastern Lines of the Baltimore & Ohio, with office at Baltimore, Md., has been extended to cover both B. & O. Eastern and Western lines and allied lines.

Charles D. Quinn, chief clerk in the general freight office of the Louisville & Nashville, has been appointed assistant general freight agent, with headquarters at Louisville, Ky., succeeding G. C. Devol, resigned.

Engineering and Rolling Stock

J. W. Kern, who has just returned from military service abroad, has been appointed roadmaster on the Illinois Central, with headquarters at Water Valley, Miss., succeeding C. A. Maynor, who has been transferred to Memphis, Tenn., to take the place of J. L. Downs, who has been transferred to Champaign, Ill., to succeed F. B. Oren, who has resigned to enter private business.

Obituary

W. M. Blount, assistant to president of the American Short Line Railroad Association, died on July 27, at Union Springs, Ala.

EDITORIAL
Railway Age

Table of Contents will be found on Page 5 of the Advertising Section

Good Taste in Passenger Stations

The posters of the War and Treasury departments which, in large numbers, are now seen everywhere in railroad stations, afford a good index of the efficiency of the station master. They give loud testimony to his taste and neatness—or the lack of these qualities. There are numerous villages, here and there, in which the railroad station is the most prominent—or the only—public building in which neat "housekeeping" is exemplified. We have seen such stations. There are also a good many stations of the opposite kind—a fact which, perhaps, it is not necessary to recall to our readers. These posters—large and small, colored and plain, of pleasing design and some not so pleasing—are issued quite frequently, and the care which the regional directors have been taking to prescribe exact and detailed rules for putting them up in waiting rooms (and cars) suggests that they call for serious attention. Ragged edges and big spots of dirt, when added to carelessness in posting or in selecting places for posting, spoil much of the good effect which it is desired to produce. The station master who neglects these details is to be classed as inefficient. This may sound like a rather severe indictment, but will not the testimony of all first-class trainmasters confirm it? In short, the agent who manifests taste and neatness is the same one who stands at the head in plain business efficiency, is he not? The idea of taste has been too intimately connected with the idea of "frills" and other elements usually associated only with Pullman and dining cars; but there is danger of becoming too contented in that notion. There is much truth in the old saying that "the beautiful is as useful as the useful, and sometimes more so."

Union Agreements Become "Scraps of Paper"

The recent strikes on the railways, especially the widespread strikes of shop employees, have demolished the last argument in favor of government operation that had been left standing. This was the argument that government operation would prevent strikes. There were no serious strikes on the railways under government operation as long as the government promptly advanced wages every time a class of employees ask it. Strikes began as soon as wage demands were not complied with, just as they did under private operation. One of the notable features of these shop craft strikes is that they are "illegal." Probably they do not violate any governmental statute, but they violate the laws of the unions whose members have struck. These employees through the officers of their unions have made certain agreements with the government. These agreements were still in existence since neither the government nor the officers of the unions had given notice of their abrogation. Most of the strikes have been avoided by a self-constituted organization formed by the unions in Chicago. The officers of the unions have ordered all the men to return to work until a strike vote can be taken, but the number of men out continues to increase. The government has encouraged railway employees to organize in order that it might have responsible unions to deal with. If, however, the men will not be led by their "leader" and strike in violation of their agreement with the government, their agreements become mere "scraps of paper," and if union agreements are to become merely "scraps of paper," what is the use of making them?

Car Lighting Generator Belts

The belts used under passenger cars for driving car lighting generators are a constant expense, an occasional cause of lighting failures, and are frequently an aggravation to the operating man who is not entirely in sympathy with the trials and tribulations of the car lighting man. These operating men know, however, that the electric systems are the best for general car lighting service and that the belts are the only kind of generator drive which heretofore has met all requirements. Attention is now called to two gear and shaft generator drives which have appeared in the field. In years past experiments were made with generators mounted directly on the axle and with flexible shaft drives, but nothing was developed which met with all the requirements. The makers of the new gear and shaft drives have profited by the experience of automobile manufacturers as they have adopted designs similar to those which have stood up under hard service in automobiles and have produced equipment which bids fair to be a strong competitor of the belt.

History Repeats Itself, With Variations

Three years ago this month some highly interesting and important conferences took place at the White House in Washington. The four brotherhoods of railway train service employees had demanded the basic eight-hour day time and a half for overtime. The Conference Committee of Managers, representing the railways, had refused to grant the demands, but had offered to submit all the points in controversy to arbitration. The representatives of the employees had declined to submit anything to arbitration and threatened to call a strike unless all their demands were granted. President Wilson asked the representatives of both the railways and the brotherhoods to meet him. He told the Conference Committee of Managers that it must withdraw its demand for arbitration and grant the employees the basic eight-hour day. The Conference Committee refused to do so. President Wilson then sent for the railroad presidents and told them the same thing he had told the Conference Committee of Managers. The railroad presidents stood firm for arbitration. The result was that the heads of the brotherhoods ordered a strike, and President Wilson recommended and Congress passed a law requiring the railways to grant the basic eight-hour day. Some important changes have occurred in the official personnel of the railroads since then. Instead of their operation being in charge now of a number of presidents, it is in charge of just one President. There was an important conference between this one President and the officers of the railway shop crafts' organizations this week. It also was held at the White House. The shop

crafts, after having been given a big increase in wages last year, are demanding another big increase. The President now in charge of the operation of all the railroads asked the officers of the shop crafts to submit their claims to investigation by a government commission. They turned him down cold, as they did the managers of the railroads three years ago, and have ordered a strike vote.

The president *now* in charge of the operation of all the railroads was president of the United States three years ago, and he is still president of the United States now. Three years ago he upheld railroad employees in refusing to submit their demands to arbitration. And now a group of railway employees which has made demands upon President Wilson as the operating head of the railroads of the United States under the law, declines to accept what would practically be arbitration of the demands that they have made upon him.

There were persons who criticised President Wilson three years ago for the way he dealt with the eight-hour basic day controversy upon the ground that his course was arbitrary and would encourage railway employees to persist in refusing to arbitrate controversies with the railway managements and to rely in future, as they did then, upon the use of force to get what they wanted. Now railway employees give to President Wilson the same answer which they gave to the railway managers three years ago, namely, that they will not submit their claims to a commission as suggested by him, but that he must grant them what they demand or they will strike. In fact, a good many thousands of them already have struck.

We wonder if President Wilson does not think better of the reasonableness and fairness of railway officers and worse of the reasonableness and fairness of some railway labor organizations now than he did three years ago?

We wonder if he does not think better of arbitration and worse of arbitrary methods as a means of settling railway labor disputes now than he did three years ago? Departures from sound principles in dealing with important matters always establish dangerous precedents.

Meantime, how much is left of the argument that serious strikes on railways will not occur under government operation?

The Wage Demands And the Plumb Plan

We do not quite understand from the various statements being made by the railroad labor leaders whether they propose to drop their demands for a billion dollar wage increase if they can have their Plumb plan adopted or whether the idea they would have the public receive is that if they are given control of the railroads the employees would work so much harder and more efficiently than they ever did for private management, or than they have been doing for the past year and-a-half for the government, but they could afford to pay themselves the increased wages and still show a surplus for a wage dividend.

If the former is the case, their argument that the higher wages are needed to meet the increased cost of living falls to the ground. If, on the other hand, they expect to pay themselves the increased wages their payroll would be equal to if not greater than the present total earnings of the railways. Certainly we have not heard any of them say anything about reducing the payroll by dismissing a large number of employees because the others would be able to do all the work, and there is not enough margin between the payroll and the total earnings to allow for any economies that would bulk very large as compared with the recent rates of wage increases.

There is no longer any room for discussion of the possibility of increasing wages at the expense of capital. The 1918 cycle of wage increases took more than capital ever got out of the railways in their most prosperous year. Practically all that capital is now getting for its guaranty is coming out of the treasury because in the first six months of this year the roads have earned only $157,000,000 toward paying the cost of $18,000,000,000 of capital. The literature circulated by the Plumb plan press bureau promises large reductions in freight and passenger rates. W. G. Lee and L. E. Sheppard, in testifying before the wage board, declared that large increases in rates are necessary.

Their public statements and what they say when they are not talking to the public do not hang together.

The brotherhoods and other railroad labor unions would receive more sympathy from those who have an opportunity to read the text of their repeated demands for higher wages, as distinguished from the public that gets merely newspaper statements based usually on the minimum rates they ask, if they did not invariably couple their pleas for relief for the lower paid men who undoubtedly have great difficulty in making both ends meet, with such unreasonable and outrageous rules for the benefit of the more prosperous members of the organizations as are contained in the demand which was recently presented to the Railroad Administration by the Brotherhood of Railroad Trainmen. Mr. Lee refers to his demand in the newspapers as for a minimum of $150 a month, which does not sound especially unreasonable. But that is merely his minimum for flagmen and brakemen in passenger service. The proposed minima for baggagemen, assistant conductors and conductors in passenger service are $160 and $169 for two classes of baggagemen, $179 for assistant conductors and $200 for conductors. In freight service the proposed rates are stated as so much per mile or per day, for 100 miles or less, or eight hours or less, and range from $5.88 per day for flagmen and brakemen to $8.64 for conductors. It may be added that the Order of Railway Conductors is not satisfied with the demands made by Mr. Lee's organization for the conductors who are members of it, but ask higher rates.

But even the rates named are no index to the earnings of the men, because probably 50 per cent of them are paid mileage rates, plus various arbitrary allowances and overtime, and by making more than 150 miles a day in passenger service or 100 miles in freight service, earn much more than the basic day's pay, frequently in a period of less than eight hours. But this is not all. While Mr. Lee says he is demanding rates which will preserve the pre-war standard of living, he is asking not only enough to offset the depreciated purchasing power of the dollar but also to enable the employees to preserve their pre-war standards by doing less work. They have already been given the eight-hour basic day, which increases the rates per hour by 20 per cent, and large increases in the rates besides. Now, they want time and one-half not only for overtime but also for Sundays and holidays, and also a guaranty of the minimum rates named, for a 26-day month, exclusive of any earnings from overtime and extra service. The extra payment for Sunday and holiday work is not only demanded for men who may have 10 or 12 lay-off days in a month, but for all men, in spite of the fact that there are not 12 26-day months in a year exclusive of Sundays and holidays. Out of a 365-day year there are 52 Sundays. The holidays for which time and one-half is asked number seven. This leaves only 306 days, but the Brotherhood of Railroad Trainmen demands a guarantee of 312 days' pay, with any overtime or extra work additional.

Another feature of the B. R. T. demand is a rule that

'mountain" rates, 10 per cent higher than the ordinary rates, shall be paid in freight service for the entire trip over any line where the gradient on any part of the trip whatever is 1.8 per cent or over. Mountain rates were originally established many years ago to meet the frontier conditions existing in the sparsely settled western country, and to compensate for the danger or difficulty of operating trains with hand brakes on mountain grades. Now the frontier conditions have largely disappeared and trains are equipped with power-brakes, yet it is proposed to extend the "mountain" rates to all parts of the country; and this is because a large percentage of railroad divisions include short stretches of track the grade of which is 1.8 per cent or over.

Moreover, the maintenance of the elaborate system of differentials between the rates of pay of the various classes of employees requires that any increase to the men who really need more money shall be granted in even greater proportion to the higher paid men who might be able to stand high prices for a time until an opportunity has been afforded to puncture some of the inflation which represents one of the costs of war.

It is interesting to note also that Mr. Lee is not satisfied with trying to meet the increase in the cost of living up to date, but told the wage board that he was "predicting into 1920."

Get Ready for a Strike to Force Government Ownership

THE AGITATION which has been started by the railway labor organizations, and especially by the employees in the shops and in train service, regarding wages and the cost of living, presents two entirely different phases. This is true because the leaders of these organizations are coupling their agitation regarding the cost of living with their propaganda for the Plumb Plan of government ownership and employees' management of railroads.

It is easy to sympathize with the complaint of the employees that the benefit of the billion dollar a year advance in wages which has been given them under government operation has been nullified by the increase in the cost of living. But even if it be true that the increase in the cost of living has been as great, or even greater, in proportion as the advance in railway wages, it does not follow that further advances in railway wages should be made. Any further advance in wages, like the advances which already have been made, would have to be paid by the public, either in the form of higher taxes, if the railroads are to continue to charge only the present rates, or in higher freight and passenger rates if rates are to be advanced enough to cover all expenses and fixed charges. The real question, then, is whether the railway employees are better entitled to further advances in wages than the public is to immunity from the increase in taxes or in freight and passenger rates which a further advance in railway wages would make necessary. This question might be intelligently and fairly investigated and determined by some government commission such as that which Director General Hines has recommended to President Wilson, and the President in turn has recommended to Congress, shall be created.

The leaders of the labor organizations have made clear, however, that they would not be satisfied by any such disposition of the question of wages and living costs. They have a scheme of their own for dealing with the cost of living. This is the adoption of the so-called "Plumb Plan" for government ownership of the railroads and their management by a board one-third of whose members would be appointed by the President, one-third by the officers, and one-third by the employees. Railway salaries and wages, under this plan, would be fixed by the board of directors, and as two-thirds of the directors would be chosen by the persons whose salaries and wages were to be fixed, undoubtedly they would be fixed high enough—at the expense of the general public—to more than offset all increases in the cost of living of railway employees.

But the claim that the Plumb Plan would stop increases in the general cost of living and even cause reductions in it is of all claims that could be made for it the most preposterous. This claim is based upon the ground that the cost of railroad transportation would be reduced under the Plumb Plan in two ways. First, it is said, the government could issue bonds bearing 4 per cent interest to buy the roads, while the companies must pay substantially higher rates of return. But everybody knows that the government had finally to pay 4¾ per cent interest to raise money to carry on the war; that war bonds are now selling in the market at rates that yield practically 5 per cent, and therefore it is an insult to the intelligence of the American public to claim that the government could raise at 4 per cent the many billions that would be required to buy the railroads. Second, it is claimed that if the railroads were turned over to the management of a board one-third of whose members were appointed by the President of the United States, and two-thirds by the officers and employees, vast economies would be effected. The question naturally arises, how would they be effected? The Plumb Plan advocates reply, by unified operation and better co-operation between the officers and employees. But we have unified operation already; and at least 99 per cent of the railroad operating officials of the United States are of the opinion that the Plumb Plan would destroy the last vestige of efficiency in the operation of the railroads. Now, whatever would destroy efficiency in the operation of the railroads would necessarily tend to increase the cost of living.

If the railway labor organizations were disposed to rely entirely upon propaganda for the promotion of the Plumb Plan, their advocacy of it would afford no ground for concern. Any person with even an elementary knowledge of economics and railway operation can demonstrate that the Plumb Plan is unsound in almost every particular and that its adoption would result disastrously to the public and in the long run to railway employees themselves. But unfortunately it is daily becoming more evident that the railway labor organizations do not intend to rely entirely, or even mainly, on propoganda to secure the adoption of their plan.

There have been sinister rumors for several weeks that the leaders of the large railway brotherhoods were quietly preparing to first prevent the return of the railroads to private operation and then to force government ownership and employees' management upon the American public. Recent developments, and statements made by the railway labor leaders, show that credence must be given to these reports, which a few weeks ago sounded incredible. The shop crafts and the Brotherhood of Railway Trainmen already have given notice that they will strike unless demands which they have presented to the Railroad Administration are favorably acted upon, and several serious strikes of shop employees already have occurred.

These and numerous other developments show that the labor leaders are taking steps to bring about a general condition of demoralization in the railroad labor field as the time approaches, according to the announcement of President Wilson, for the return of the railroads to private operation. Among the most ominous and conclusive signs are statements which are being made by the labor leaders. W. G. Lee, president of the Brotherhood of Railway Trainmen, said before the Board of Railroad Wages and Working Con-

ditions in Washington last week: "The war is over, but peace is not before us, or I am a poor prophet. We are nearer war today, I believe, than when the Kaiser threw down the gauntlet." L. E. Sheppard, acting head of the Order of Railway Conductors, also said: "They tell us that the railroads are going back in January, but mark this prediction: While I am not a prophet, or a son of a prophet, they will not go back January 1." Warren S. Stone, Grand Chief of the Brotherhood of Locomotive Engineers, in a newspaper interview published on August 4 was asked the question: "How far will you go in the fight?" He replied —"emphatically," as the reporter noted: "We will go far enough to win, and we are going to win." He was asked: "What if the roads are turned back to their owners?" He replied: "If they should be, they wouldn't stay there long, and it is not absolutely sure that they will be turned back by next January."

Three years ago the country was given an example of what Mr. Stone and his associates mean when they say, "We will go far enough to win." Declining to submit their basic eight-hour day demand to arbitration in any form, the "Big Four" brotherhoods frightened Congress into passing the Adamson Law by issuing an order for a tie-up of all the railroads of the United States and refusing to withdraw it until Congress passed the legislation that they wanted. The man who doubts that the nation is going, within the next few months, to be brought face to face with another similar crisis is blind.

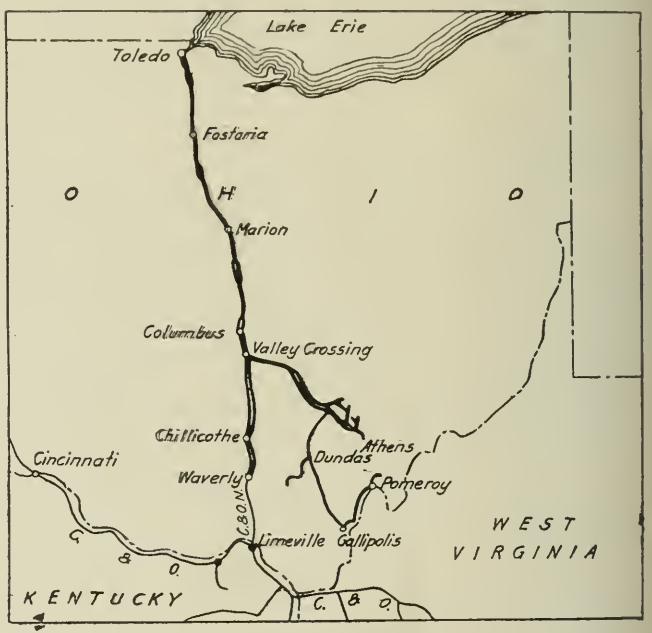
There can be no question, in view of what all classes of persons say and of the attitude of the press, that at least 80 per cent of the people of the United States are opposed to government ownership and in favor of returning the roads to the operation of the companies. The railroad labor leaders are plainly trying to create a labor situation which will convince the public and Congress that a return to private operation on January 1, as announced by the President, is impracticable; and it is beyond serious question that they are prepared to take the same steps to force Congress to adopt the Plumb Plan that they took to force Congress to pass the Adamson Act. In other words, they are fully prepared to call a general railroad strike for the purpose of forcing government ownership and employees' management of the railroads upon the American people whether the people want it or not. This may seem an extreme view. But a little over three years ago anybody who had said that the Brotherhoods would go the length of calling a general railroad strike to force Congress to pass an eight-hour basic day law would have been accused of libeling them; yet they did it; and if they cannot get their plan for employees' management of the railroads adopted in any other way, they will try to force it through by means of a strike.

In view of past developments, it would be the greatest folly for the American public not to meet squarely the question which the attitude of the Brotherhoods has raised. That question is, do the 110,000,000 people of the United States, of whom at least 80 per cent are opposed to government ownership and favor a return of the railways to operation by the companies, intend to let the labor leaders force the public, by threatening or actually calling strikes, to continue government operation beyond January 1; force the public to buy the railroads and assume complete responsibility for their financial results; and then force the public to turn them over to the employees to manage as they see fit? If the public doesn't intend to submit to this, it must begin very soon to manifest its purpose to the President and the Congress of the United States and to demand that they adopt effective measures for the public's protection. There can be no reasonable doubt whatever as to how far the railway brotherhoods will go to get what they want. How far will the public go to protect itself?

Hocking Valley

IT WAS GENERALLY considered by the railroad men directly interested in traffic conditions in the Hocking Valley territory that there were distinct advantages to all concerned in having the Hocking Valley and the Toledo & Ohio Central, which parallels it, operated under conditions of restrained competition. For many years these roads were controlled jointly by the Chesapeake & Ohio, Pennsylvania, New York Central, Baltimore & Ohio and Erie. The state of Ohio, however, fought vigorously to break up the so-called monopoly, and in 1910 the control of the Hocking Valley passed to the Chesapeake & Ohio and the control of the Toledo & Ohio Central to the New York Central interests. Under government control, of course, the Hocking Valley has been operated as a part of the government unified system, but there is nothing in the figures in its report to indicate that it derived any operating advantages from this.

In 1918, under government operation, total operating revenues of the Hocking Valley amounted to $13,156,000, an increase of $2,459,000 or 23 per cent over 1918. The entire increase in revenue was due to increased freight



Hocking Valley

and passenger rates. The business handled by the road was less in 1918 than in 1917. The ton mileage of revenue freight carried in 1918 was 1,893,000,000, which was 73,000,000 ton miles or 3.7 per cent less than carried in 1917. The number of passengers carried one mile was 42,551,000 or 7,450,000 passenger miles or 14.9 per cent less than in 1917. The average revenue per ton mile of coal was 5.38 mills in 1918 or 32.8 per cent higher than in 1917, and the average revenue per ton mile of freight other than coal was 9.12 mills or 39.9 per cent higher than in 1917. The average revenue per passenger per mile was 2.441 cents in 1918 or 26.9 per cent higher than in 1917.

The increases in expenses on the Hocking Valley in 1918 over 1917 represent purely and simply increased costs of handling the same or less business. Total operating expenses amounted to $10,449,000, an increase of $3,040,000 or 41 per cent over 1917. It should be pointed out that the largest increases came in maintenance, being 58 per cent in maintenance of way and 57 per cent in maintenance of equipment. Transportation expenses, however, amounted to

$4,913,000 or a little over 32 per cent more than 1917 transportation expenses.

Both train and car loading fell off somewhat in 1918 as compared with the very high average obtained in 1917. The revenue train load in 1918 averaged 1,267 tons or 5 per cent less than in 1917, and the average loading per loaded car was 43.7 tons or a fraction of 1 per cent less than in 1917. There was a decrease in the proportion of empties northbound but the number of these northbound empties is so small, anyway, that a reduction of 8.7 per cent meant only an average of two-tenths of one car less northbound in 1918 than in 1917. The average number of loaded cars southbound per train was 10.8 in 1918 and 13.2 in 1917, a decrease of 18 per cent. The average number of empty cars southbound was 40.9, an increase of a fraction of 1 per cent.

It would seem that whatever operating advantages might have been shown by operation of the Hocking Valley jointly with competing roads were offset by other conditions in 1918.

The rental which the government pays the Hocking Valley Railway Company is $2,637,000. The operation of the property by the government failed to earn this amount by only a few thousand dollars.

This rental is sufficient to pay interest, war taxes, etc., and leaves $1,360,000 available for dividends. The 4 per cent dividends which were paid called for $440,000, leaving over $900,000 to be put into the property.

As a matter of fact, the government paid, during 1918, no part of the rental due, but attempted to compel the company to accept 500 50-ton coal cars which, in the opinion of the board of directors, were of a type unsuited for the proper and efficient operation of the railroad. The cost of these 500 cars was $1,348,000. The board of directors, however, will probably accept them as the lesser of two evils, thus clearing the way to getting payment of part at least of the rental due.

The Hocking Valley has deservedly had good credit, although probably the anti-monopoly suits of the state of Ohio have made that credit somewhat lower than the earning power of the property would justify. Even under federal operation and the war conditions of 1918 the property earned a substantial margin above the dividend rate actually paid by the company.

The company had outstanding $5,000,000 six per cent notes which fell due November 1, 1918. The director general refused to accept the plan for refinancing these notes proposed by the bankers and which was acceptable to the Hocking Valley directors. After an extension of the notes a plan was agreed upon whereby the Hocking Valley made a general mortgage to secure $50,000,000 bonds, of which $9,600,000 notes bearing 6 per cent interest were issued and deposited as security for $7,500,000 five-year, six per cent notes, due March 1, 1924, sold to the public.

The following table shows the principal figures for operation of the property by the government in 1918 as compared with the operation of the property by the owners in 1917. This is not the corporation income account.

	1918.	1917.
Mileage operated	350	350
Freight revenue	$11,343,613	$8,974,873
Passenger revenue	1,038,843	961,700
Total operating revenues	13,155,861	10,696,434
Maintenance of way and structures	1,490,446	945,590
Maintenance of equipment	3,718,010	2,365,944
Traffic expenses	83,422	120,675
Transportation expenses	4,912,857	3,716,384
General expenses	248,697	261,469
Total operating expenses	10,448,792	7,409,123
Taxes	634,842	612,800
Operating income	2,072,112	2,667,792
Other income (balance)	519,913	646,933

Corporate Income Account

	1918.
Standard return (rental)	$2,637,167
General expenses and war taxes	82,708
Other income	77,284
Total	2,631,744
Interest	1,271,915
Dividends	439,980
Surplus	919,849

Letters to the Editor

Automatic Train Stop Economy

Chicago.

To the Editor:

The *Railway Age* of June 20 offers an interesting discussion by the New York Commission on the collision problem. In my opinion Mr. Frank Rhea of New York City has definitely advanced the cause of automatic train control by suggesting the combination of the best features of all inventions into one standard system.

The automatic train control system designed by the late Benton C. Rowell of Chicago solves the problem more completely than any other system. However, there are many commendable features in other systems and ultimately, when the advocates of automatic train control are recognized, as they should have been years ago, and when such systems come into common use, the combination of the best ideas and the coalition of manufacturers must follow. Otherwise this particular line of manufacture will prove an exception to the rule that similar industries have a tendency toward consolidation.

And if ultimately the makers are going to combine their interests and ideas, would they not progress faster by such a consolidation at the present time? Why not all pull together for the best and most practical solution of the problem?

The old saying that competition is the life of trade is undoubtedly true; but where the life or limb of the traveling public is a factor such competition can do a great deal of harm. The cheapening of the grades of materials and workmanship in order to meet competition can cause untold damage, and that to human beings. The problem of train control is one not only for the inventor but for the humanitarian as well. A man's conscience must be his dictator in this work.

C. W. Morgan.

The I. C. C. or a New Federal Body?

To the Editor:

It is much to be regretted that many of the splendid letters and articles that have recently appeared in the columns of the *Railway Age* relative to government control and government ownership and the situation generally with respect to Interstate Commerce Commission affairs and methods of dealing with the transportation companies are not read and thoroughly understood by the entire public that they, as well as those directly interested, including shippers, manufacturing and industrial concerns of every class and those connected with them, may be fully and correctly informed of the manner in which the railroads, which have accomplished more in the expansion and development of this great nation than perhaps any other business, are having their energy and life crushed out as the result of political propaganda.

It is the opinion of the writer, based on long experience and study of the question, that the Interstate Commerce Commission with its present powers and prerogatives, if allowed to continue, will result in complete demolition of the whole system that has taken years of energy and capital in the midst of difficulties and discouraging conditions to put even on a paying basis. Let's ask this question of ourselves: If left to the government itself, would we have as many miles of railroad as we have today? Would there be the vast army of railroad employees there is; would the manufacturer and farmer have prospered as he has? When it comes to a question of who has been the most benefited, there is no doubt

but that in the majority of cases the forces responsible for all this development have really benefited the least. It appears to me that it is like killing the goose that laid the golden egg.

Suggestions that the Interstate Commerce Commission be superseded by a newly created federal body sounds good if, in the selection of such, it is to be composed entirely of representatives who are practical railroad men in matters of operation and traffic and with power, say to the extent of acting in the capacity of arbitrators, or merely a referee in fact in the adjustment or settlement of controversies or differences arising as between railroads or railroads and the public, each case of dispute to be investigated and considered in accordance with conditions and circumstances as may exist in any particular location.

With the creation of this new body, let follow the abolishment of all State Commissions, with the exception that there be one representative for each state who will be present at any hearing and act in conjunction with the federal representative who may be assigned to investigate and consider any particular case merely in order that a state official may be in immediate touch with the situation that concerns his own state.

Can any one except a politician offer any satisfactory or good reason why there should be a dual commission in each state?

If it is really necessary that the railroads must have a guardian, then let it be one, and one who is competent in experience and judgment to render a decision that is as fair to the railroads as it is to the public, and eliminate entirely any ideas that tend to build up a powerful political machine.

E. B. Seymour.

The Weak and Strong Road Problem

Iowa City, Iowa.

To the Editor:

The letter from Charles S. Fay and the address of E. P. Ripley, published in your issue of June 27, lead me to speak briefly on the subject of the reorganization of the railroads.

Mr. Fay's difficulty is that no plan provides for adjustment of rates as between the strong and weak lines which will not allow the strong too great compensation and the weak too little.

It seems to me that several plans make proper provision for this particular matter. Almost any plan that provides for the consolidation of weak and strong lines into systems, if carried out on a proper basis of value, would accomplish this purpose, possibly even better than the plan proposed by your subscriber, which aims to do the same thing.

Public attention has not been called to this plan and I beg to present the feature covering Mr. Fay's difficulty. By this plan the body fixing rates is to make rates such that the aggregate earnings of all railroad properties of the country shall be equal as nearly as may be to the following sums:

1. The aggregate of all costs of operation including wages and material and supplies for operation and maintenance, and including also proper allowance for depreciation for those items not properly maintained by the replacement method from year to year, and including also the cost of administration of the holding company. (A federal holding company to take over the stock of separate companies is provided in this plan. Separate properties, however, would be operated as independent concerns.)

2. All interest on the funded and other debt of the separate properties.

3. The stated interest on the preferred stock of the holding company. (This will be about 4 per cent. on the total value of the stock of the properties of the country, determined by taking the market value at a selected proper time for normal properties and an agreed value for abnormal properties.)

4. A surplus emergency allowance of 5 per cent. of the sum of items 1, 2 and 3 to be collected only until the surplus funds shall equal 10 per cent. of the par value of the preferred participating stock of the holding company and thereafter to be collected at a rate only sufficient to maintain the surplus emergency fund at approximately 10 per cent. of the preferred participating stock par value.

5. A profit of not less than 10 per cent and not more than 20 per cent. of items 1, 2, and 3, calculated to be about 15 per cent. in the beginning and to increase toward the higher limit as the sum of 1, 2, and 3 per unit of service is decreased and to decrease as the sum of items 1, 2 and 3 is increased and in such proportion to be worked out as will penalize extravagance and reward economy.

From the earnings obtained the holding company is to distribute cash, equivalent to the net earnings in the following manner:

Semi-annually to pay the interest on the separate property bonds and other obligations.

Semi-annually to pay the stated interest on the holding company preferred stock. (In effect the stock of all separate properties.)

Semi-annually to charge the surplus funds quarterly to pay the profits.

Now comes the point of Mr. Fay's objection. The profits shall be distributed to the several properties in proportion to their *net earnings.*

It is expected that the foregoing will develop efficiency by making each separate property put forth its efforts to secure the largest traffic, that is, to render the largest service, and to handle it at the least cost.

Every road deemed essential to the commercial interests of the country will receive its operating expenses and interest on its obligations and a minimum rate of return on the value of its stock. The profit that it may earn above this will depend upon the traffic it secures and the efficiency with which this traffic is handled, which it seems to me is a just arrangement. Those properties that have been well located and are well handled are entitled to a larger rate of return than those properties which have been unwisely located and inefficiently handled.

With respect to Mr. Ripley's difficulty, the plan referred to creates a board made up of representatives of the people, appointed by the President, railroad owners and railroad operators. This board is to fix the rates in accordance with the requirements of the statute indicated above and is to determine the general policy of the transportation business of the country, assuming the executive and administrative duties of the Interstate Commerce Commission and leaving that commission to be a sort of court of appeals when the board cannot agree within itself or when objection to its policies or determinations is made by any one of the three parties interested, namely: the people, the operatives and the owners. This board also assumes the control of transportation on interstate roads now exercised by state commissioners, except the police power exercised by these commissioners.

The plan provides further for handling of the labor question, but that is another matter and this letter is not to present that complete plan, but to touch upon the two points made by Mr. Fay and Mr. Ripley.

No assertion is made that the provisions of this plan will bring about the results expected. It is merely believed by the subscriber that they will, and for that reason they have been offered as a contribution to the general discussion.

Wm. C. Raymond,
Dean the State University of Iowa.

Labor Leaders Fight to Prevent Return of Roads

Present General Demands for New Wage Increases or Reduction in Cost of Living with Plumb Plan as Alternative

WASHINGTON, D. C.

ORGANIZED RAILROAD LABOR came out in the open this week with its campaign to prevent the return of the railroads to their owners.

The alternatives of a nation-wide strike or strikes of railroad employees, a new cycle of wage increases duplicating the large increases of the war period, a reduction in the cost of living or the retirement of capital from the management of the railroads by the odoption of the Plumb plan of government ownership for the benefit of the employees, were put up to the government by the leaders of the railroad labor unions united in the Plumb Plan League, with strong indications that the adoption of the Plumb plan or something like it or at least the prevention of the return of the roads was the real object sought.

Speedy legislation providing for the creation of a tribunal to investigate and determine all questions concerning the wages of railroad employees, and also making its decisions mandatory upon the Interstate Commerce Commission to provide any increases in rates necessary to cover any recommended increases in wages was the remedy for the situation urged upon Congress on August 1 by President Wilson, on the representations of Director General Hines that such a course is required by the almost universal demand of the employees for further increases in wages to meet the high cost of living. The President and Mr. Hines, apparently conceding the need for higher wages, also turned their attention to efforts to reduce the prices of necessities.

President Wilson

"I hope that it will be possible to consider and recommend legislation which will provide a body of the proper constitution, authorized to investigate and determine all questions concerning the wages of railway employees, and which will also make the decisions of that body mandatory upon the rate-making body and provide, when necessary, increased rates to cover any recommended increases in wages, and, therefore, in the cost of operating the railroads."

The legislative solution proposed was received rather coldly by Congress, whose committees awaited the submission to them of the draft of a bill to carry out Mr. Hines' proposal. Many Congressmen, remembering their surrender to the brotherhoods in passing the Adamson law three years ago rather objected to being stampeded this time, while many were opposed to having any other tribunal fix the basis for rates established by the Interstate Commerce Commission.

The House committee, meeting on Monday, took no action on the President's recommendations, but voted to report the Cummins bill already passed by the Senate, which would make it impossible for the director general to put rates into effect without the chance of suspension by the commission. The Senate committee, meeting on Tuesday, appointed a subcommittee to report whether the full committee should first conduct an inquiry as to whether the cost of living has so increased since the wages were raised as to render them now inadequate. There were also some other indications during the first part of the week that Congress might "pass the buck" back to the President.

Director General Hines, without funds to pay increased wages, with a deficit of $295,000,000 for the first six months of this year, confronted with a strong probability that Congress would pass the Cummins bill to curtail his ability to increase rates, and also sympathizing to some extent with the claim that present wages of many of the employees are inadequate, has declared the inability of the Railroad Administration to deal with the situation without special legislation.

The labor leaders, on the other hand, insist that he can meet their demands by raising rates to whatever point is necessary. They have made it clear that the plan proposed by Mr. Hines and the President does not meet with their approval and have threatened not to wait for action by Congress along the lines suggested.

The only alternative they seem willing to discuss is the Plumb plan which was introduced in the House as a bill by Representative Sims on Saturday (by request) and given a hearing before the House committee on Wednesday.

While Director General Hines was seeking to transfer from the Railroad Administration to the national government as a whole the responsibility for deciding on wage and rate increases that has perplexed him for some time, he in turn was appointed a member of a committee of three, including also R. C. Leffingwell, assistant secretary of the treasury, and W. B. Colver, chairman of the Federal Trade Commission to report on a program for dealing with the cost of living problem. The report was submitted to the Cabinet on Tuesday, but its recommendations were not made public.

These developments were precipitated by a new demand from the Brotherhood of Railroad Trainmen on July 1 for another large wage advance, accompanied by a resolution threatening the possibility of a strike if the increase is not allowed by October 1; notice that the other brotherhoods and other organizations were contemplating similar action, and by the announcement of the six shop craft unions that they would wait no longer for the general increase in wages demanded in January, which has since been under consideration by the Board of Wages and Working Conditions.

After a conference with the President at the White House on Monday, B. M. Jewell, chairman of the shopmen's committee, told newspaper men that "if Congress adopts the plan proposed by Director General Hines and President Wilson we will tie the railways up so tight that they will never run again." He added that this was also the position of the other organizations.

The entire situation was discussed with the President, and he was informed that his program was not acceptable. In a statement to the President, the committee said in part:

"We have not been consulted as to this entirely new departure, and it is only fair to say to you that the suggested plan does not at this time meet with our approval, nor are we willing to say that we are prepared to indorse any such procedure as the basis upon which wage rates shall be finally determined. From our point of view to do so would, in a great measure, deny to the men we represent the right of collective bargaining as we understand it.

"The letters of transmittal accompanying the recommendations, submitted by the Board of Railroad Wages and Working Conditions to the director general, copies of which have been furnished us by the director general, do not materially differ as to the necessities of meeting to a reasonable degree the increase of wages to the men we represent. The differ-

ence being only to the extent that the three labor members of the board recommend a specific increase, specified in the amount to be paid per hour. The three members representing the railroads qualified their recommendations to the extent of saying that unless costs of living could be reduced, thereby increasing the purchasing value of a dollar earned, it would be necessary to meet the situation by granting increases in wages.

"We particularly call your attention to the position now occupied by the railroad employees whom we represent. The only increase they have received since the railroads were placed under federal control is that provided for under Supplement No. 4, effective January 1, 1919.

"Practically all other employees of the railroads have received substantial increases under General Order 27, effective as of January 1, 1918, and other adjustments creating substantial increases were granted by the issuance of Supplements 7 and 8, effective September 1, 1918, and subsequent supplemental orders issued up to as late as April 14, 1919, effective to January 1, 1919.

"Members of these same organizations engaged in other industries have received substantial increases, establishing a differential in rates of pay, ranging from 10 to 30 cents per hour in excess of that now paid to the men in the railroad service, reserving, in a large degree, the pre-war conditions, as the railroad employees at that time received, as a general proposition, equal compensation paid men in other industries.

"As a result of this changed condition and the disappointment resulting from the long delay in disposing of the question which was submitted last January, we are now confronted with a situation which is nearing a point that can be no longer controlled.

"Information received within the last 48 hours is to the effect that not less than 20,000 of our railroad members have suspended work, as a protest against this long-deferred decision.

"In view of this condition, there is but one course open for us to pursue. That to submit to the entire membership the proposition as it has been presented to us by the director general, with a request that by their vote they shall decide what further action they may deem necessary to secure the much needed relief.

"We are in accord with the thought that an increase in wages of itself will not altogether solve the problem, but it is well to bear in mind that the classes of employees herein referred to, and for whom we speak, feel, and we believe justly so, that they are entitled to an increase in wages which will restore them to the same relative position as compared to their fellow-members employed in outside industries. We are not aware that this condition applies with equal force to other classes of railroad employees.

"May we urge upon you the necessity of meeting the present situation by putting into effect our original request submitted to the director general on January 7, 1919?"

President Wilson told the committee frankly, Mr. Jewell said, that while every agency of the government was working on plans to bring relief from the high cost of living, the country could not expect a reduction to pre-war standards for a good many years to come.

Mr. Hines' recommendation, which was also placed in the form of a letter to the President, was transmitted by the President to the chairman of the House and Senate committees on interstate commerce on August 1 with a letter urging action along the lines suggested, and the President also wrote to the speaker of the House, asking it to postpone its recess, which had been set to begin on August 2.

Director General Hines' Recommendation

Mr. Hines' letter to the President is as follows:

Several months ago the railroad shop employees asked for an increase in wages. The matter was considered by the Railroad Administration's Board of Wages and Working Conditions, which is composed of three representatives of labor and three representatives of the railroad managements. This board was unable to agree, and therefore took no action as a board, but on July 16 I received two reports from members of the board, one from the three labor members recommending a general increase in wages (for example, increasing the wages of machinists from 68 cents per hour to 80 cents per hour and proportionately increasing the wages of other classes of shop employees), and another report from the three management members recommending against any general increase in wages, although recommending certain readjustments of the wages of some classes of the employees.

The position of the labor members of the board is that the wages of railroad shopment are substantially below the wages paid similar classes of employees in the navy yards, arsenals and shipyards, and in many industrial enterprises in the principal cities of the country, and that substantial increases in the wages in the shipyards and outside industrial enterprises have taken place since the wages of the shop employees were established in the summer of 1918, and the cost of living has been, and is, steadily rising. The position of the management members on the board is that the wages of shop employees are not properly comparable with the wages of non-railroad employees cited by the employees and their representatives, and that these latter industries have differentiating conditions which account for the high wages paid by them, and that a further wage increase at this time would simply begin a new cycle in the cost of living which would not benefit the employees. They urge instead, the adoption of methods of reducing the cost of living.

On July 28 a conference was begun in accordance with an arrangement made on July 8 between the representatives of the Railroad Administration and representatives of the shop employees. At this conference the representatives of the employees made it plain to my associates that their members expected, and believed that they were entitled to, a substantial increase in wages retroactive to January 1, 1919, and that the state of unrest was so great that it was of the highest importance that a definite answer be given on the

L. E. Sheppard

President, Order of Railway Conductors

"I hope he (director general) will see his way clear to cut the Gordian knot and throw the responsibility back on the government where it belongs.

"God knows the people of this country are against government control. Almost everybody is against it. But mark this prediction. They will not go back January 1."

Elisha Lee

Chairman of Regional Directors' Committee opposing trainmen's demands

"It is a very serious question in my mind, whether during this period of reconstruction we can all go back to pre-war conditions."

wage matter without delay. These representatives expressed the same views to me yesterday.

On July 17 the Shop Crafts Convention, meeting at Atlanta, Ga., and representing employees from 16 railroads in the Southeast, strongly urged the necessity for substantial increases in wages by August 1, retroactive to January 1.

The earnest insistence that immediate action be taken to equalize wages with the rapid increase in the cost of living is not confined to the shop employees.

The Triennial Convention of the Brotherhood of Railroad Trainmen, representing about 160,000 railroad employees, meeting at Columbus, Ohio, adopted on May 31 a resolution strongly urging substantial additional increases in wages to meet the cost of living.

The Triennial Convention of the Brotherhood of Locomotive Firemen, meeting at Denver from June 9 to July 15 and representing about 116,000 employees, likewise adopted resolutions insisting upon the necessity for substantial increases in wages to meet the increased cost of living.

The Thirteenth Annual Convention of Railway Signalmen of America in session at Kansas City on July 15 strongly urged a further increase in wages and similar action was taken at Boston on July 27 by 150 delegates to the convention of the United Brotherhood of Maintenance of Way Employees and Railroad Shop Employees of the railroad systems of New England and New York. The International Convention of the Brotherhood of Railway Clerks, which was held in Cincinnati from May 12 to 24, endorsed proposals to the Railroad Administration which also urged an increase and readjustment of the wages of the employees represented by that organization.

The representatives of the Railroad Administration have had assurances from representatives of practically all classes of employees that the continuance in the increase in the cost of living would necessarily involve very substantial increases in wages, and that any increases in wages given to any one class of railroad employees would necessitate corresponding increases to all other classes of railroad employees.

The situation thus presented involves the following considerations:

We have received the most positive assurances that any general increases to shop employees will result in demands for corresponding increases to every other class of railroad employees. The situation, therefore, cannot be viewed except as a whole for the entire two million railroad employees. Viewing it as a whole, every increase of one cent per hour means an increase of $50,000,000 per year in operating expenses for straight time with a substantial addition for necessary overtime. An increase of 12 cents per hour as asked for by the shop employees would, if applied to all employees, mean (including necessary overtime) an increase of probably $800,000,000 per year in operating expenses.

The government is already incurring a deficit at the rate of several hundred million dollars per year in operating the railroads, because the increase in transportation rates has been proportionately less than the increases in wages already granted and the increases in prices which have taken place. Therefore, there is no fund whatever out of which additional wages can be paid, so that additional wages cannot be paid unless new revenues are produced through an increase in transportation rates, and any immediate payment of additional wages would necessitate for several months an appropriation by Congress out of the Treasury because substantial increases in rates could not be made immediately effective.

While you may find it expedient to use the temporary rate-making power, which was conferred upon you as a war emergency during federal control, to prevent the continuance of the deficit now being incurred which grows out of increases in wages and prices due to the war, you would not, in my opinion, be justified in regarding that rate-making power as a sufficient warrant for making still additional increases in rates for the purpose of paying still additional increases in wages to be established under existing peace conditions, and to be controlling as the wage basis in the future.

The question presented for an additional increase in wages, whether the total amount be $800,000,000 or any proportion of that sum, is a peace-time question between the entire American public on the one hand and the two million railroad employees and the members of their families on the other hand. It is a question which I do not believe the Executive ought to undertake to decide unless specific authority is conferred upon him for the express purpose of deciding it.

The fact that these demands are made and are so urgently pressed emphasizes the great necessity of having for their decision legislation which will provide adequate machinery representing both the public and the employees. Obviously any such machinery should include a method whereby revenues will be provided to the extent required to pay the increased wages awarded.

While the general powers implied in the federal control act were sufficient to admit of taking as war measures the necessary steps to deal with the wage problems that arose during the war they are not sufficient to satisfy the requirements arising in connection with any present proposals for general wage increases. Under the existing machinery the ultimate public interest is exclusively represented by the Railroad Administration in the making of wages but by the Interstate Commerce Commission in the final decision upon rates. Moreover, the Railroad Administration while thus charged with the final decision as to what wages are proper as between the American public and railroad labor is also charged with the responsibilities incident to the day to day operation of the railroads. On the one hand, a decision by the Railroad Administration against an increase in wages will be regarded by the employees as a decision dictated more by the immediate difficulties of railroad management than by the broad interests of the public as a whole. On the other hand, a decision by the Railroad Administration in favor of an increase in wages will not necessarily be binding on the Interstate Commerce Commission, which is now the final representative of the public as to transportation rates. To deal with these problems under peace time conditions there ought to be a final and authoritative presentation of the public whose decision when in favor of a wage increase would carry with it the obligation on the part of the final rate-making power to prescribe rates which would furnish the necessary funds with which to pay the increased wages. It is obvious that no wage increases could be put into effect at the moment except on the theory that for several

Warren S. Stone

Grand Chief, Brotherhood of Locomotive Engineers

"We do not believe that increasing the compensation, accompanied by a greater increase in the cost of commodities of life, will produce lasting benefits to our craft or to the American citizen in general. We believe the true remedy for the situation, and one that will result in lifting the burden under which the whole people are struggling, is for the government to take some adequate measures to reduce the cost of the necessaries of life to a figure that the present wages and income of the people will meet."

months they would be paid by an appropriation of Congress because even under the existing machinery rate increases could not actually be put into effect for a substantial period. Undoubtedly any rate increases of a general character ought at the present time to be considered by the Interstate Commerce Commission before they shall be put into effect.

The conclusion to which I have come has been forced upon me by the recent developments above referred to.

When I announced last March the increases in wages for the employees in train and engine service I stated that they completed the war cycle of wage increases.

When it developed in May and June that the continued pressure of the increase in the cost of living was causing railroad employees generally to urge that they be given substantial protection through further important increases in wages if the cost of living was not reduced, I realized that the question was assuming such wide and deep significance to the American public as well as to railroad employees that the question ought not to be dealt with in the same way in which the railroad wages had been increased in connection with the war emergency. I therefore advised the Board of Railroad Wages and Working Conditions on July 3 that they could not regard themselves as vested with jurisdiction to formulate and recommend further general wage increases to be made by me, but that in all cases thereafter arising they should report the facts to me that I might decide in the light of the facts upon a fair and just procedure.

The receipt of the observations of the members of the board with reference to the shop employees, the hearings now in progress before the board with reference to the Brotherhood of Railroad Trainmen, the conferences I have had in the last three days with the representatives of the shop employees and the conferences which my associates and I have been having recently with the representatives of practically all classes of railroad labor with reference to the menace in the continued increase in the cost of living, force me to the definite conclusion that the problem is too great and has too much permanent significance to the American public as well as to railroad labor to admit of its being decided through the exercise of the war emergency powers of the federal control act and which are subject to the limitations and embarrassments above pointed out. I feel that the developments have now reached the point where the situation has taken a sufficiently concrete form to serve as the basis for a positive recommendation.

I therefore respectfully recommend that Congress be asked promptly to adopt legislation providing a properly constituted body on which the public and labor will be adequately represented and which will be empowered to pass on these and all railroad wage problems, but not on rules and working conditions (because the latter cannot be satisfactorily separated from the current handling of railroad operations and therefore should continue to be dealt with by the Railroad Administration). Such legislation should also provide that if wage increases shall be decided upon it shall be mandatory upon the rate-making body to provide where necessary increased rates to take care of the resulting increases in the cost of operating the railroads.

I do not think that we can properly deal with this great problem without a full recognition of the fact that the cost of living is rapidly rising, and that every month that passes promises to impair still further the purchasing power of the existing wages of railroad employees unless the rise in the cost of living can be successfully restrained (as I earnestly hope in the general public interest it can speedily be). I therefore further recommend that Congress be asked to provide in any such legislation that any increases in railroad wages which may be made by the tribunal constituted for that purpose shall be made effective as of August 1, 1919, to such an extent as that tribunal may regard reasonable and proper in order to give railroad employees from that date the benefit which the tribunal may think they were then entitled to. In this way the delay necessarily incident to the creation of such tribunal and its action will not be prejudicial to the fair interests of the railroad employees.

W. G. Lee

President, Brotherhood of Railroad Trainmen

"We are going to have time and one-half for overtime, we are going to have decent living wages and we are going to get it in our own way if we must.

"The railroads properly refer to their inadequate rates, but it is up to the Railroad Administration to determine what is needed to pay the going costs of railroad operation and to fix the rates to meet it. There is no business in this country that is asked by the public to operate at a loss except the railroads. Unless these employees are given a wage that will permit them to live under pre-war conditions there is going to be something worse happen on these railroads, so far as the public is concerned, than an increase in freight and passenger rates.

"I will admit that we are going the wrong way. I admit to you that it is time to call a halt, but as long as present methods continue I believe in everybody getting his share as nearly as he can until the final upheaval comes.

"We are dealing with this situation wrongly in trying to settle these things as we are, and not getting after the people who are to blame."

President Wilson Urges Legislation

The President in his letters to Senator Cummins and Representative Esch said:

I take the liberty of enclosing a copy of a letter which I have just received from Mr. Walker D. Hines, the director general of railroads, and which I am sure you will agree with me in thinking contains matter for very serious thought and for action also.

May I not say that I concur in the suggestions which Mr. Hines makes in the two concluding paragraphs of his letter. I hope that it will be possible for your committee to consider and recommend legislation which will provide a body of the proper constitution, authorized to investigate and determine all questions concerning the wages of railway employees, and which will also make the decisions of that body mandatory upon the rate-making body and provide, when necessary, increased rates to cover any recommended increases in wages and, therefore, in the cost of operating the railroads. In view also of the indisputable facts with regard to the increased cost of living, I concur in Mr. Hines' suggestion that the legislation undertaken should authorize the body thus set up to make its findings with regard to wage increases retroactive to the first of August, 1919, at any rate to the extent that that tribunal may regard reasonable and proper, in order to give real realief to the employees concerned.

I need not, I am sure, urge upon you the importance of this matter, which seems vital from more than one point of view, and I hope that you will think this form of action the proper and necessary one.

In the letter to Speaker Gillett, President Wilson said that Mr. Hines had informed him that the situation with reference to the railroads is growing so critical every hour that

ıe hoped it would be possible to postpone the recess until some definite action is taken. He also said that officials of the government have been in consultation with reference o the problems growing out of the high cost of living, upon which he expected recommendations to be made within a fortnight. Somewhat grumblingly, because a large number of the Representatives had already bought their tickets for ıome, the House rescinded its adjournment to September 9, although an unsuccessful effort was made to adopt a pro-gram of three-day recesses.

As soon as the President had announced his approval of he plan, Mr. Hines went to the Capitol and conferred with Senator Cummins and Representative Esch, offering his as-istance in the drafting of a bill.

Some of the Congressional leaders were disposed to try to ıake political capital out of the fact that the President ıad "passed the buck" to Congress. Representative Mon-lell, the Republican floor leader, said he still believed that careful and wise consideration of the railway problem, in-luding the very problems suggested by the President, would ıave been advanced by the ecess, because the committees would have continued con-ideration of great questions, ncluding the railway prob-em, during the recess. Speaker Gillett, in replying o the President's request for postponement also said ıat "as to railroad legisla-ion, I supposed by an act of Congress you had now full uthority, and one of the easons of our recess was ıat the committee of the House might, uninterrupted y the business of the House, repare the legislation which ill be necessary when your uthority ceases." However, Representative Blanton was ıe only one to vote against ıe postponement, which he id on the ground that it was nother "hold-up" on the art of the labor organiza-ons. Mr. Blanton de-ounced the brotherhoods nd declared that the grant-ıg of the proposed wage in-reases might solve the high cost of living problem for ailway employees, but it would leave the other people of the ountry worse off than before.

Walker D. Hines

Director General of Railroads

"The question presented for an additional increase in wages, whether the total amount be $800,000,000 or any proportion of that sum, is a peace-time question between the entire American public on the one hand and the two million railroad employees and the members of their families on the other hand. It is a question which I do not believe the Executive ought to undertake to decide unless specific authority is conferred upon him for the express purpose of deciding it.

"Contentions that existing wages are lower than they ought to be in view of the present cost of living raise an exceedingly grave question for the government. That question is whether, when railroad operations are now being conducted at a very heavy deficit, the government ought to enter upon a course which will bring about large additional increases in wages, and will inevitably bring about also very heavy increases in rates, and without question set in motion a new and dangerous cycle of increases in the cost of living."

"Big Four" Brotherhoods Prepare Demands

On the same day that Mr. Hines conferred with the resident, Warren S. Stone, grand chief of the Brotherhood f Locomotive Engineers, and the other members of the dvisory board of the brotherhood, called on the President nd presented the statement published in last week's issue nnouncing an alternative demand for either a reduction in ıe cost of living or a wage increase. The brotherhood has ınce served formal notice of its intention to present a new age proposition and L. E. Sheppard, president, and other fficers of the Order of Railway Conductors, which had oted not to ask for a wage increase at this time, but had sked the wage board for consideration in connection with ny increase that might be allowed on the request of the rotherhood of Railroad Trainmen, also called on the Presi-ent on August 2 and announced the intention of asking or a 35 per cent increase.

The Brotherhood of Locomotive Firemen and Enginemen has called a meeting for August 12 at Cleveland to frame its demands. President W. G. Lee of the trainmen has referred to his demands as providing for a 45 per cent increase. The demand of the Brotherhood of Railway Clerks which has since been filed is for 20 cents an hour increase and a 44-hour week.

Urge Action to Check Cost of Living

While insisting that their demands must be granted, officers of the transportation brotherhoods have expressed a realization that repeated increases in wages do not solve the problem because they are immediately followed by increasing rises in the prices of commodities, and have strongly urged a campaign to prevent further increases in living costs. They have bitterly criticised Congress for not doing something but have directed most of their invective toward alleged profiteering. W. G. Lee and L. E. Sheppard have also been outspoken in their demand that freight rates be advanced to a level sufficient to pay higher wages.

The wage demands before the Railroad Administration upon which hearings have been held had reached a total of approximately $400,000,000 a year. This includes $210,000,000 for the 450,000 shop employees, $100,000,000 for the 140,000 trainmen, $40,000,000 for the 40,000 conductors on the basis of the demands presented by the trainmen; and $50,000,000 for time and one-half for overtime in road train service, on which Railway Board of Adjustment No. 1 has submitted a divided report to the director general.

The re-opening of the wage question by the "Big Four" brotherhoods so soon after the $60,000,000 award made in April came as a surprise. The brotherhoods received more than $60,000,000 in 1917 through the Adamson law; last year they gained a further increase of $140,000,000 under Director General McAdoo, and this was followed by the $60,000,000 supplementary award this spring—a total of $260,000,000, or an average increase of about $800 per man, bringing their average up from $1,250 and $2,050 a year.

The new demands also have definitely destroyed the theory so sedulously advanced by the labor leaders that wage and labor controversies can be satisfactorily settled by bi-partisan boards composed of equal numbers of representatives of the management and of labor. This plan for dealing with labor questions, with provision for a referee in case of disagreement, was adopted by the National Transportation Conference called by the United States Chamber of Commerce and was advocated before the House committee as recently as July 24 by W. N. Doak, vice-president of the Brotherhood of Railroad Trainmen, who said that it made little difference who the referee was because the boards could agree in most cases. The bi-partisan plan has worked very successfully in the handling of the multitude of disputes as to schedule interpretations and discipline which have been passed on by the Railroad Administration boards of adjustment but questions of wages have been handled by the bi-partisan

Board of Railroad Wages and Working Conditions, which has merely made recommendations to the director general who had the responsibility of final decision. This board has not always been unanimous and in the case of the shopmen's demands the representatives of the management and of the employees divided evenly. Moreover, when the Brotherhood of Railroad Trainmen started the new cycle of demands for the brotherhoods the director general on July 3 removed even the jurisdiction of the board to make recommendations except as to matters of equalization and directed the board to report to him a summary of the facts.

Cabinet Tackles Cost of Living Problem

Director General Hines has been giving serious consideration for some time to the cost of living problem and its causes, in its relation both to wages and to rates, and is understood to have strongly urged upon the President and members of his cabinet the fundamental importance of taking such steps as may be possible to deal with the situation. His reluctance to increase freight rates to offset his steadily mounting deficit, although such a course had come to be regarded as inevitable even by many shippers who did not like the idea, has been due to his unwillingness to furnish even the excuse for further increases in prices if it could be avoided.

On the day after Mr. Hines saw the President a conference of eight high government officials was called by Attorney General Palmer to discuss the matter, which was attended by Secretaries Glass of the Treasury, Houston of the Department of Agriculture, Redfield of the Department of Commerce, Wilson of the Department of Labor, Director General Hines, Chairman W. B. Colver and Victor Murdock of the Federal Trade Commission, and R. C. Leffingwell, assistant Secretary of the Treasury. After a general discussion lasting nearly three hours the conference adjourned to meet on Tuesday, when Julius H. Barnes, director of the United States Grain Corporation, was also included, and Messrs. Hines, Colver and Leffingwell were appointed a special committee to report at the next meeting. The new developments also stirred up a good deal of oratory in Congress and in a couple of Congressional committees that are holding the usual kind of Congressional investigations of the cost of living. The Senate passed a resolution requesting its banking committee to report whether legislation to reduce the amount of currency in circulation was advisable, and several bills were introduced. A plan for selling surplus army food supplies at cost is also being worked out.

The purpose of the labor organizations to prevent the return of the roads to their owners is indicated in a statement issued on Saturday by the heads of the four brotherhoods and of the Railway Employees' Department of the American Federation of Labor regarding the bill introduced in Congress on Saturday by Representative Sims to carry out the provisions of the Plumb plan. In this it was declared that "the railroad employees are in no mood to brook the return of the lines to their former control," also President Sheppard of the Order of Railway Conductors, in his statement before the Board of Wages and Working Conditions, told the board to "mark his prediction that the railroads will not go back on January 1."

Although in speaking before the wage board W. G. Lee and L. E. Sheppard had both expressed great impatience because Mr. Hines was not willing to order large increases in freight and passenger rates in order to pay the higher wages asked, they both signed the statement issued by the Plumb plan press bureau asserting that the Plumb plan would reduce both rates and the cost of living. They failed to explain in any detail how they expected to pay themselves another billion dollar increase in wages on top of the increases in last year, which have produced deficits for eight months, and still reduce rates while paying a wage dividend out of the surplus. Warren S. Stone, asked how far the organizations proposed to go, said, "We are going far enough to win the fight, and we are going to win." Such statements are not carelessly made public.

Shop Crafts Take Official Strike Vote

The labor organizations apparently did not take kindly to Mr. Hines' proposal for an independent tribunal to pass upon wage questions. The shop organizations particularly were aroused by the suggestion that any increases be made effective as of August 1 because they had demanded that their increase be made retroactive to January 1, 1919. B. M. Jewell, acting president of the Railway Employees' Department of the American Federation of Labor, announced on August 2 that it had been decided to call for a strike vote, returnable by August 24, of the approximately 500,000 shop employees involved. Acting on behalf of the six shop crafts a committee of 100, of which Mr. Jewell as chairman presented to the director general on January 7 a request for a minimum of 85 cents an hour for mechanics, an increase of 17 cents; a minimum of 60 cents for helpers, an increase of 15 cents; an increase of 10 cents per hour for apprentices and various differentials for special classes of work. On February 8 the question was referred to the Board of Wages and Working Conditions, during March and April hearings were held by the board, and on July 16 the board made its divided report to the director general. During this period the board was also giving consideration to a demand by the shop crafts for a national agreement covering rules and working conditions, to be effective on all roads under federal control regardless of whether they had previously had contracts with the unions. These were considered by committees representing the employees and the regional directors, which submitted a report to the board and the board made its recommendation to the director general on July 16. During June and July several local shop strikes were called by way of protest against the delay in passing on these two matters, but they were settled. Beginning on July 28 the committee of 100 began a series of conferences with the director general demanding a decision by August 1. The unions on the southeastern roads had definitely decided to strike on that date unless their demands were granted. On July 30 Mr. Hines advised the committee he would be glad to enter into the agreement covering rules and working conditions, and promised to give a decision on the wage question later. Mr. Jewell then wired the various local organizations that they had gained one point sought and instructing them that there must be no stoppages of work pending the conclusion of the negotiations. This was not sufficient to hold the men in check, however, and the shop men walked out in various parts of the country on August 1, the number increasing on the following days. The dissatisfaction was increased on Friday, when in lieu of a decision on the wage question Mr. Hines read to the committee his letter to the President proposing a special wage tribunal. Meanwhile the negotiations as to the rules and working conditions have been temporarily set aside.

"We shall continue to endeavor to settle the demands by negotiation with the Railroad Administration pending receipt of the strike vote," said Mr. Jewell. "That will, when taken, simply center the power for calling a strike in the hands of the committee. The first effect will probably be the ending of the present strike, which has taken out a considerable number of men over various sections of the country who have been impatient of the long delay. Their walkouts have been unauthorized, but we expect they will return when they see that the organizations intend action in a united fashion."

Approximately 30,000 shopmen in Chicago and 100,000 men in the Chicago district were reported to have left their

work at 10 a. m. on August 1 and approximately 35,000 men on 16 railways in the Southeast took similar action. This strike came at a particularly unfortunate time because the Railroad Administration has been bending every effort to put its equipment in condition to meet the demands of the heavy grain traffic. Shopmen in Boston, Philadelphia, Denver were also reported to have gone out, and the strike spread somewhat on the following day. By Monday leaders of the shopmen in Chicago declared that 50,000 men were out throughout the country. The shop employees of the Southern Railway at Alexandria, Va., a strategic location for making an impression on Congress, were among the first to walk out, and they were followed on Saturday by the employees at Potomac yard, and on Monday by those at the Washington terminal.

On Monday B. M. Jewell and other members of the shopmen's committee called on the President at the White House.

Director General Hines held a conference on Monday with the labor officers who were in the city, including the Brotherhood officers and J. J. Forrester of the clerks, to explain his attitude to them first hand.

Opposition to Wage Tribunal in Congress

Many members of Congress have expressed disapproval of the plan for the creation of a special wage tribunal, very brave in their declarations not to be stampeded by organized labor as long as they thought that by inaction they could leave the responsibility for dealing with the situation with the President or Director General Hines. There was a lively discussion of the proposal in the Senate on Tuesday, when Senator Cummins declared that the President and the Railroad Administration already have full power under the federal control act. He insisted that no legislation was necessary, but that the President's recommendations would receive careful consideration. He said the President can fix both wages and rates, that the Cummins bill was not yet a law and that even if it were the director general could still initiate rates. Mr. Hines, however, has taken the position that while he could initiate rates he would have no knowledge as to whether they would stick and that even under the present law the commission could reduce his rates after a review, and he does not like the idea of raising wages and then wondering whether the money to pay them is to come from rates or an appropriation, with uncertain factors attending both methods.

Chairman Esch of the House Committee also indicated a belief that the President already has ample powers, and he opposed the idea of a new commission whose findings would leave the Interstate Commerce Commission no discretion as to an increase in rates. Mr. Esch in discussing the Plumb plan bill said he thought the people are opposed to government ownership and that if labor tries to force its plan by threatening strikes such action will react against them.

Senator Cummins also declared that nationalization of the railroads would be a step toward socialism that could only be followed by its application to other industries, but, he said, he did not anticipate that the step would be taken.

Senator McKellar urged that the efforts of Congress be devoted to working out a permanent solution of the railroad problem.

Senator Pomerene said that if he were director general he thought he would "have the courage to say either that there ought or ought not to be an increase of wages," or resign.

Senator Kellogg took the position that the President is recommending only temporary emergency legislation and expressed the opinion that the President already has sufficient authority. But he said he would give the matter earnest consideration and would not say that he would not finally favor the action proposed by the President.

Senator Thomas denounced the action of the labor organizations in a long speech, in which he said: "I do not want to be extreme, and yet I cannot in my mind characterize a threat like this from government employees as short of treason."

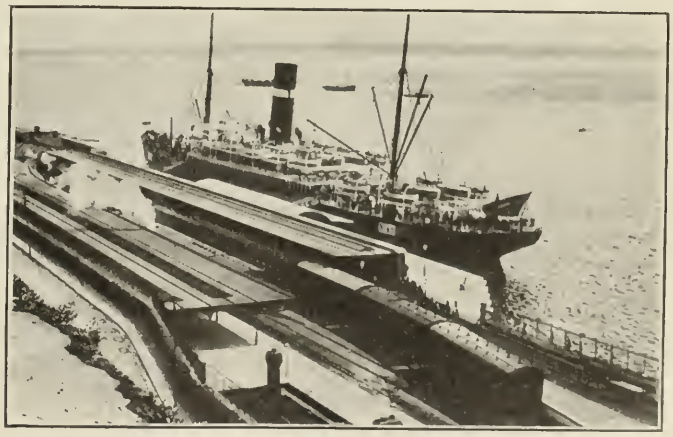
Senator King referred to the criticism already caused by the increases in rates and wages last year and asked if it would not be far better, if such an important step is to be taken, that Congress should legislate and direct whether there shall be an increase in wages, and if so, advise the means by which an increase shall be made.

Executive officers of all fourteen railroad labor organizations have been in Washington conferring with Director General Hines, and on Tuesday left with him some kind of a proposition, the nature of which was not disclosed. They also made it clear that they were united in opposition to the plan for a wage tribunal.

President Wilson cancelled all other engagements to devote his attention to the cost of living problem, which was the subject of the cabinet meeting on Tuesday, and received many reports bearing on it from various government departments. It was announced he would address Congress on the subject on Friday.

In a statement presented to Director General Hines by fourteen railroad organizations his proposal for a wage commission was opposed, and he was urged to recommend the passage by Congress of an appropriation bill to enable him to increase wages pending a careful study as to what increases in rates would be necessary. They declared that employees were at least entitled to compensation that would re-establish the pre-war purchasing power of their wages, that board of wages and working conditions already affords necessary machinery to handle the wage questions and they asked that its functions be restored, but that its recommendations be submitted to the organizations before being issued. A plan for a Congressional investigation was disapproved because it would mean delay. "Prompt action in this regard is both essential and desirable. This will only give temporary relief and must be accompanied or immediately followed by a determined united effort to not only prevent a further increase in cost of living but to secure a reduction therein." They also declared that any permanent solution of the railroad problem must necessarily remove the element of returns on capital as the sole purpose of operation.

The Senate committee on Wednesday decided to take no action on the President's recommendation, and authorized Chairman Cummings to write a letter to the President saying he already has full authority and that a special board is neither necessary nor desirable.



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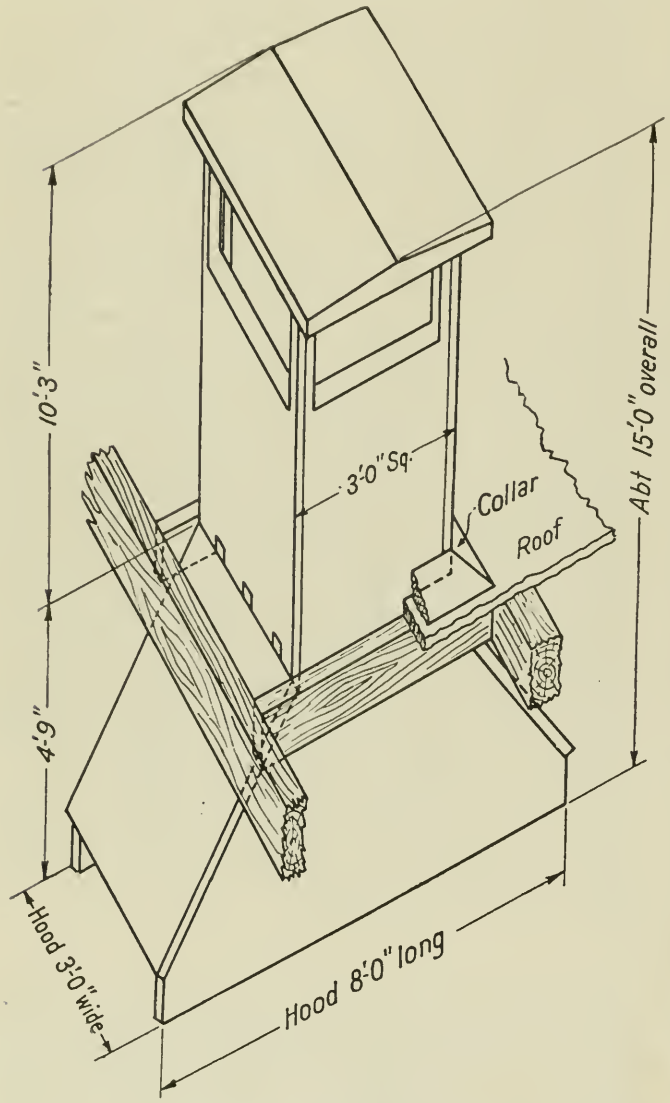
Scenes from Foreign Ports—The Station of the Great Southern & Western at Queenstown, Ireland

A Timber Smoke Jack

ONE OF THE RECENT developments in engine house equipment has been the development of a smoke jack manufactured of kiln-dried California redwood, thoroughly treated and fireproofed before being fabricated. It has the advantages of being light in weight and easy to handle and is furnished knocked down ready for assembly by unskilled labor. No nails or fastenings are exposed to the smoke or locomotive gases and it is claimed for the jack that it is free from sweat, rust and other objectionable features. The jack is built of mill construction, the details of which are clearly



Details of the Mill Type Jack

shown in the drawing. It is supported in place by a simple collar resting on the roof and requires no guy wires or other supports. In operation, the jack presents a large ventilating area and it may be equipped with an automatic damper if desired. It presents smooth surfaces inside and out, which, with the absence of supports, are reflected in the low cost of maintenance. The jack is manufactured under the trade name of Mill Type Smoke Jack by the Smoke Jack Company of East Boston, Mass.

Croesus was once a poor man, but he saved. He would have jumped at a chance to buy War Savings Stamps.

The Striking Shopmen

THE NUMBERS OF SHOPMEN on strike on the principal roads in the Central Western region as reported on Wednesday, August 6, were as follows (numbers reported by labor leaders are much larger than these):

Chicago, Burlington & Quincy	500
Chicago, Rock Island & Pacific	7,250
Chicago & Eastern Illinois	2,800
Indiana Harbor Belt	425
Atchison, Topeka & Santa Fe	1,100
Chicago Junction	280
Kansas City Terminals	800

The total in the Central Western region is approximately 18,000. The Northwestern region reports the total number of shopmen out as 38,000. The strike appears to be rapidly spreading westward. Press reports on Wednesday indicated that the shopmen of the Union Pacific, Denver & Rio Grande and Southern Pacific walked out on that day.

On the Wabash, as a consequence of the strike, freight service was practically suspended. The Chesapeake & Ohio announced at Huntington, W. Va., on Wednesday evening, that on all its lines west of Clifton Forge, Va., both passenger and freight traffic would be discontinued at once.

The St. Louis-San Francisco and the Missouri Pacific placed embargoes on all freight.

Eastern railroads up to the time of going to press have reported little disturbance, though there were a number of local walkouts in New England, apparently not large.

In Macon, Ga., according to "The Telegraph" of that city, about 1,600 shopmen struck on Saturday, August 2, the larger number being employees of the Central of Georgia. At Florence, S. C., about 400 men struck, at the shops of the Atlantic Coast Line. Considerable numbers struck at the shops of the Chesapeake & Ohio at Silver Grove, Ky., and Covington, Ky.; on the Louisville & Nashville at Covington and Decoursey, and on the Cleveland, Cincinnati, Chicago & St. Louis at Riverside yards.

Reports from Duluth, Minn., indicated that all shop employees on all roads in Duluth and Superior were out. All shop employees on the Duluth, Missabe & Northern left their work and all on the Duluth & Iron Range, except a few at Two Harbors. The electrical workers on the Duluth, Missabe & Northern coal dock went out Tuesday morning, tying up operations of the dock. Dock workers struck at Escanaba and Ashland. Duluth reported no interruption to freight or passenger train service; the necessary work on locomotives was being done by emergency help.

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Scenes from Foreign Ports—The Water Front at Stockholm, Sweden

The Reconstruction Program for French Railways*

Plan for New Construction and Standardization of Railway Material; Cost of Improvements to Inland Waterways and Seaports

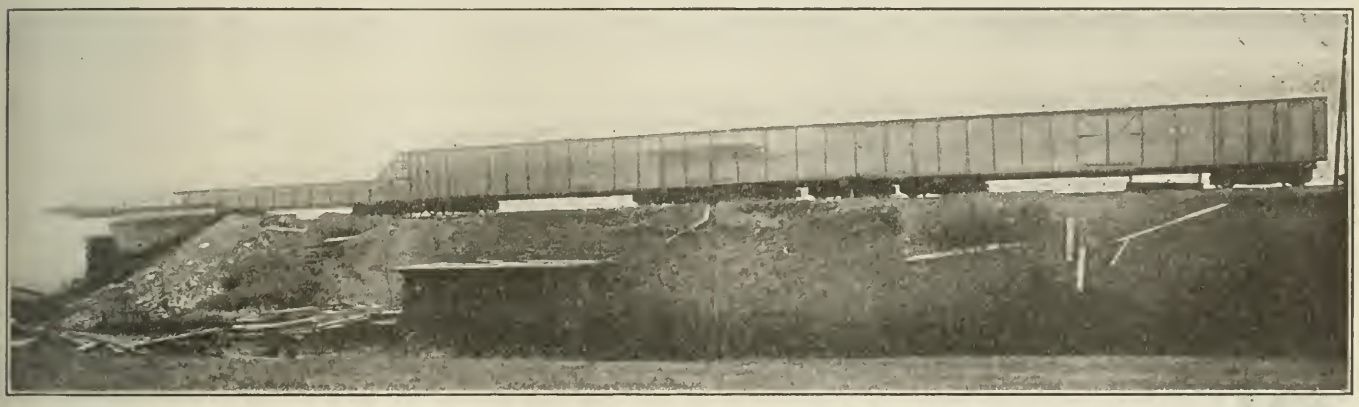
By Robert E. Thayer,
European Editor of the *Railway Age*

Part II

THE PROBABLE COST of work for the reconstruction of the lines of communication of the liberated regions mentioned in the first part of this article may be summed up as follows:

Principal Railroads (way and buildings)	$250,000,000
Railroads of Local Interest	83,000,000
Navigable Waters	43,000,000
Maritime Ports	16,000,000
Highways	64,000,000
Total	$456,000,000

This figure is not final, but only gives an approximate estimate of the probable cost of each class of work. It does not include the material, supplies and machinery of the principal railroads, as well as all the damages which have no direct connection with work still to be carried out.



This Shows the Members of the Bridge Rivetted in Place and Ready to Extend Out Over the Span

Plans for New Construction

As pointed out at the beginning of this article, the French Minister of Public Works in addition to the general reconstruction of the devastated lines, is seeking to not only carry on the new construction contemplated before the war but to still further improve the railways to meet the new conditions arising on account of the war. He has asked that the following program be carried out in order to handle the problems in a practical way:

1. The work interrupted by the war should be completed as rapidly as possible, as well as that already properly authorized, using to advantage everything that has been constructed or imported during the war for the needs of the French and Allied armies. For this purpose, on March 2, 1919, a commission was named to study all questions regarding the handing over to the French Government of installations in connection with railroads, navigation and ports, as well as equipment belonging to the British and American armies.

2. A new financial system is to be adopted, controlled by a law, preventing the overburdening of the present generation and permitting the making of a program for each big problem, thus reducing as much as possible the charges on the treasury and regulating the execution of the work so as to prevent its being dependent on the variations of the budget from year to year. The Minister proposed that this law should require:

(a) That a special report should be submitted for each big piece of work, which should be studied by a committee composed of technicians, manufacturers, financiers, etc., and then be examined by the Supreme Council of the Ministry of Public Works.

(b) That the authorizations necessary be then requested from the Chamber of Deputies, account being taken of the amount of the financial participation of the communities, corporations and other parties interested in the project.

Realizing the importance of completing the new working contemplated as soon as possible and at a reasonable cost the Minister of Public Works gave strict instructions that the engineers should not seek to construct elaborate structures (ouvrage d'art).

He stated that all unnecessary features should be avoided, and that wherever possible the stock material on the ground should be used. He also mentioned, that although the size of the installations—particularly in the ports—should take into account the future needs, certain ones should be constructed rapidly and cheaply now, using the best methods employed during the hostilities, in order to meet present requirements.

Standardization of Materials

The Ministry of Public Works is doing its best to standardize the types of material and equipment used on railroads. Instructions were issued February 24, 1918, by the Ministry requesting that a study be begun of the general improvements to be made after the war in the operating of railroads, and calling attention to the unfortunate situation—from both a technical and a financial point of view—resulting from the diversity of types of material and equipment in use on the

*Part one of this article was published in the *Railway Age* of August 1, page 191.

six main railroads. Special committees were formed for this purpose, made up of government officials, and representatives of the railroads and private manufacturers. During the meetings held in December, 1918, the Supreme Council of the Ministry of Public Works adopted the following rules for the future:

As regards the "Vignole" or "T" rail; in the future the railroads are to order the following specified weights only:

92 lb. rail for standard gage tracks with heavy traffic.
72 lb. rail for tracks with average or small traffic.
52 lb. rail for meter gage tracks of general interest.

The length of each rail is to be normally 18 meters (58 ft. 6 in.) or in any case a multiple of 6 meters.

As far as the different types of rolling stock are concerned, the Supreme Council of the Ministry of Public Works, and the Minister himself, have declared that this rolling stock should be standardized on the French railroads in the following way:

(a) The elementary parts should be made uniform, such as truck frames, springs, wheels, tires, axles, couplers, buffers, draft gear, journal boxes, brake rigging, etc., for use in constructing complete cars and locomotives.

(b) Finished locomotives, and passenger and freight cars should be limited to as few types as possible, differentiating only where necessary on account of the various operating requirements and not on account of the fact that they are going to be used by different railroads.

New Construction Work on the Principal Railroads

Included in the new work to be done is the replacing of tracks removed during the war for military needs from the State, Paris-Orleans, Midi, and Paris-Lyons & Mediterranean. The sum total of the track thus removed amounted to 930 miles divided as follows:

	Miles
Single track lines	217.5
Double track lines reduced to single track lines	637.5
Siding tracks	75.

Since the armistice, measures have been taken for the reconstruction of these lines and many of them have already been re-opened. By March 1, 1919, 130 miles of track had been put back. For the reconstruction of four lines on the Paris-Orleans arrangements were made by the French Government in May, 1919, to purchase 62 miles of 80 lb. rail from available American stock.

The increase in traffic is going to require the railroads to make improvements as regards stations, engine terminals, double tracking of lines, sidings, and in general all railroad installations. The amount of all additional work inter-

The Next Step in Placing the Bridge

The Last Step. The Light Guiding Structure on the End of the Span Serves to Support the Weight of the Bridge on the Opposite Shore

rupted by the war, or approved by the Ministry of Public Works and remaining to be done total up as follows*:

State	$91,730,400
Nord	3,142,000
Est	5,445,200
Paris, Lyons & Mediterrenean	36,376,000
Paris-Orleans	7,210,800
Midi	7,836,000
Total	$151,740,400

acter, the armies constructed, in the regions of the Nord and the Est, 1,030 miles of new lines, made up of 1,002 miles of standard gage track and 28.6 miles of meter gage track. The only one of these lines entirely constructed by the American army is the one from Aubréville to Aprémont, 10 miles long, although two others were done under American supervision—one from Souilly to Courreuvre (10.5 miles) and the

The B. S. Type of Bridge in Place

It will be necessary to revise these projects, for some will certainly have to be enlarged on account of the increase in the traffic because of the war, and others reduced owing to the fact that work will be kept which was done by the French and Allied Military Services during the hostilities. It is certain that the cost will in any case be very heavy. Mention should also be made of the fact that Minister Claveille requested the Est and Paris, Lyons & Mediterranean on February 14 and 18, to particularly consider the new improvements to be made to meet the additional traffic resulting from the return of Alsace and Lorraine to France.

Besides the stations and work of a purely military char-

other from Loxeville to Pierrefitte (11.8 miles). Steps have been taken with the railroads and geographical departments interested for having all or part of these lines incorporated in the lines of the principal railroads or in those of local interest.

The following totals show the number of miles and the approximate cost of the lines which the Administration in-

This Shows the Marcille Type of Bridge Ready to Be Swung Across the Span. It Will Be Noted That This is Somewhat Similar to the B. S. Type of Bridge

tends to construct as actively as possible as soon as it has the necessary resources:

	Total length. Miles	Probable Cost
Nord	41.5	$10,400,000
Paris-Orleans	326.	28,600,000
Paris, Lyons & Mediterranean	200.5	86,440,000
Midi	390.	34,440,000
Other lines	138.	25,200,000
Total	1,096	$185,080,000

* On account of the uncertainty of prices, the estimates given here are not very precise. In general they are calculated by increasing pre-war prices 60 per cent.

As a result of the war certain modifications have come about in international relations which will require the study of new railroad lines. In this respect, the Supreme Council of the Ministry of Public Works has given its approval, in principle, to the execution of the following work:

Improvement in the present lines to facilitate communications by railroad between Switzerland and the French seaports.

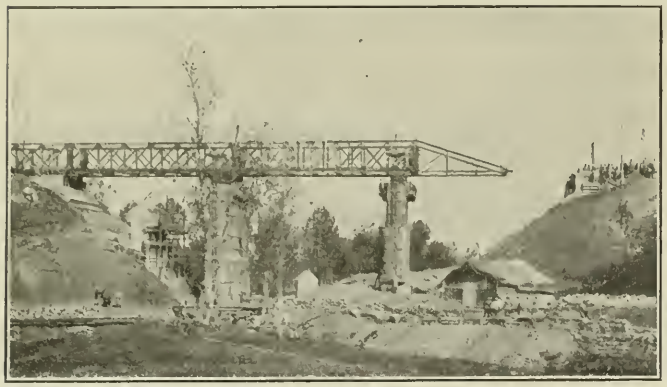
New communications across the Vosges Mountains by connecting the line from Remiremont to Bussang with the line from Krûth to Mulhouse by the construction of a line from St. Maurice to Uesserling; and by the construction of a line from St. Die to Saales.

It has also been judged indispensable to construct a new line between Rouen and Hâvre in order to develop the Maritime installations of the lower Seine and the Ports of Rouen and Hâvre.

New Construction on Railroads of Local Interest

The Ministry of Public Works is making the same efforts with the railroads of local interest as with the principal railroads regarding the standardizing of track material and rolling stock.

The 308 miles of track removed during the war from railroads of local interest for the military requirements will gradually be put back as soon as the material is obtained.



The Henry Type of Bridge in Process of Construction

It is hoped that this will be finished before the end of the year. The following figures show the new work to be done on these lines:

	Length of lines. Miles	Probable Cost
Work interrupted by the war	541.7	$25,645,400
Work declared of public utility or belonging to projects already approved	1,382.8	153,113,400
Totals	1,924.5	$178,758,800

Inland Waterways, Seaports and Highways

Although inland navigation, sea ports and highways do not belong to our immediate province, perhaps a few figures will be of interest to show the probable future cost of work to be done.

Inland Waterways—In connection with inland navigation, 450 bridges (300 of steel) will have to be reconstructed, 115 canal locks were destroyed or seriously damaged, and 62 miles of canal bed will have to be cleared out and put into shape. The total cost of the work to be done for the restoration of the inland waterways will probably reach $43,200,000. In general it will take from six weeks to six months to complete the work; but in the case of the canal from the Oise River to the Aisne River, eighteen months to two years will be required to rebuild the great viaduct carrying the canal. In addition to the reconstruction work to be done on the canals, the following figures show the vast program which is to be carried out:

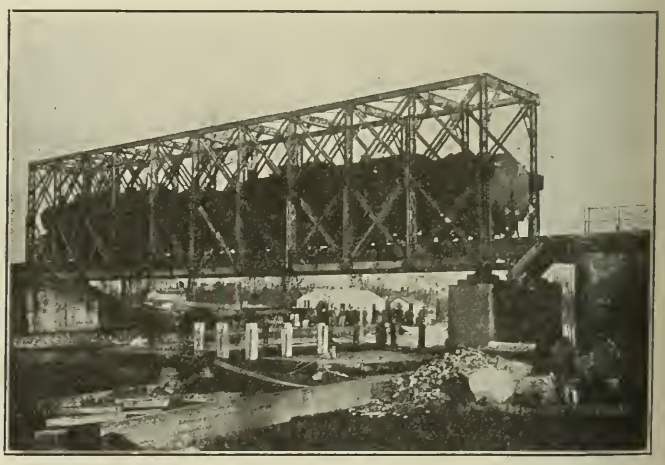
Work interrupted by the war	$39,976,800
Work approved but not begun	30,647,600
Total	$70,624,400

In the work approved but not begun, a figure of $22 000,000 is included for changes to be made to the Seine River, where it crosses Paris, in order to improve navigation and prevent floods.

Sea Ports.—The ports which suffered most damage during

Method of Supporting the Henry Bridge During Construction

the war are those of Dunkirk, Calais and Boulogne. The damages to the docks, locks, storage yards, etc., as a result of bombardments were not very heavy, amounting to about $201,800. The damages done to buildings belonging to the port service and the Chamber of Commerce, and to port machinery, etc., are far greater, being $911,000. If these figures are added to the cost of removal of wreckage and of clearing out these ports, the approximate cost will be $1,600,000. These figures do not include an outlay of $14,000,000, made to construct temporary berths in the ports for receiving the supplementary coal imported on account of the destruction of the French mines. In addition to this reconstruction work, the following program is to be carried out:



The Henry Bridge in Place, Supporting Two Heavy Locomotives

Work interrupted by the war	$17,072,000
Work approved but not begun	89,439,800
Work underway not interrupted	16,000,000
Total	$122,511,800

Highways.—During the war the highways of 19 geographical departments of France were badly destroyed. The following figures will give an idea of the damage done:

National Highways		
Length of roads to be repaired	5,592	miles
Material required	2,900,000	metric tons
Number of bridges destroyed	550	
Approximate cost	$30,000,000	
Other Roads		
Length of road to be repaired	59,650	miles
Material required	7,500,000	metric tons
Number of bridges destroyed	1,500	
Approximate cost	$52,000,000	

On account of the wonderful work done in keeping up the highways during the hostilities, they can still be used nearly everywhere, but much of the construction work is only temporary and must be replaced. At the time of the declaration of war, a program for improving the national highways was being carried out, involving an expense of $5,881,600. This is going to be continued. Some of this work has already been begun, and the American army has helped to a great extent in certain regions, furnishing the labor, material and means of transportation.

This Shows How the Permanent Bridge Has Been Constructed Under the Temporary Henry Type Bridge Without Interference with Traffic

Summary

The following figures show approximately the cost of the program outlined above:

Reconstruction of lines in the War Zone	$456,000,000
New work on principal railroad lines being operated	151,600,000
New lines	185,000,000
Work on railway lines of local interest	178,600,000
Navigable waters	70,600,000
Maritime ports	122,000,000
Highways	40,000,000
Total	$1,203,800,000

This cost will be divided between the State, the geographical departments interested, the railway companies, and the communities.

The facts given in this article will go to show the vast destruction wrought by the enemy to the lines of communication in France, and principally to the railroads. The effort to be made in the future for reconstructing and improving them will be immense, but the establishment of adequate means of communication will permit France to rise up out of her ruins more than any one thing. In this work America can be of great assistance, but she should always remember that she is there to help and she should not expect to compete in a way which would be detrimental to the rebuilding of French industries.

The House committee on interstate and foreign commerce has favorably reported the resolution which was introduced by Representative Dyer requesting the Interstate Commerce Commission to investigate the future supply of tie timber and the possibility of using steel ties.

Plumb Plan Introduced as Bill in Congress

The bill embodying the "Plumb plan" of organized labor for government ownership and what it pleases to call "democracy in the operation of the railroads," was introduced in the House on August 2 by Representative T. W. Sims, former chairman of the House Committee on Interstate and Foreign Commerce. The bill provides for the following:

1. Purchase by the government on valuation as determined finally by the courts.
2. Operation by a directorate of 15, 5 to be chosen by the President to represent the public, 5 to be elected by the operating officials and 5 by the classified employees.
3. Equal division of surplus, after paying fixed charges and operating costs, between the public and the employees.
4. Automatic reduction of rates if, as, or when the employees' share of surplus is more than five per cent of gross operating revenue.
5. Regional operation as a unified system.
6. Building of extensions at expense of the communities benefited, in proportion to the benefit.

Congressman Sims introduced the bill in the form it was drafted, which in detail, he said, is not to be considered as being textually labor's final draft, but is subject to change and for which suggestions are invited.

"The heads of the four railway brotherhoods and ten affiliated railway organizations of the American Federation of Labor, numbering 2,200,000 men," he said, "have asked me to present this bill. The executive council of the American Federation of Labor was instructed on this matter at its last convention at Atlantic City on June 17, last, to co-operate with the organizations representing the railroad employees.'

"The proposed law would leave the valuation of the railroads to the courts, providing review on appeal from the findings of a properly constituted appraisement board. By the decisions of this body or of the courts, it would pay back every honest dollar put into the railroads, issuing therefor government bonds at 4 per cent. It would work at every stage by peaceful, constitutional methods.

"It would establish harmony between the public interest, the interest of the wage earners and capital. It would protect the public against exploitation for the benefit of either capital or labor, and it would assure the public of reductions in rates exactly equivalent to any increase in earning power which the employees might create for themselves by the efficiency of their organization or the skill of their management. This would be the first step in solving the problem of the high cost of living, as the cost of transportation enters into the price of every commodity which is paid by the consumer. Protection against increased rates—assurance of reduced rates—would inspire industry with confidence; would increase the purchasing power of the dollar; and would break the vicious cycle which now exists whereby every increase in wages is reflected in an increase in the cost of production. The plan itself, without committing myself to the details by which it is to be carried into effect, to my mind offers a solution of the railroad problem much more perfect than any other that has been presented."

Warren S. Stone, president of the Plumb Plan League, has announced that Edward Keating, former Representative from Colorado, has been appointed business manager of the league, and that he, with the representatives of the brotherhoods and other organizations in Washington, will devote their efforts to looking after the progress of the bill in Congress. Mr. Stone predicted that within 90 days Congress will have heard from 1,000,000 of the people on the plan. "If the roads are returned to their private owners,"

he said, "the majority of them will be in the hands of receivers within 60 days."

"Labor's railroad bill has the purpose of reducing the cost of living by operating the most important industry in the country for service rather than for profit," says a statement on the Sims bill issued by the heads of the four brotherhoods and the chief of the railway division of the American Federation of Labor.

"Labor faces a persistently serious situation due to the cost of living, and the impossibility of wages keeping pace with the depreciation of money," the statement continues. "No fundamental changes are being advanced to save workers from continual defeat in the economic struggle of life. The railroad employees are in no mood to brook the return of the lines to their former control, since all the plans suggested for this settlement of the problem leave labor essentially where it has stood, and where it is determined not to stand. We realize that in the strife for wage increases we cannot win any permanent victory. It is not money but value which counts. The vicious circle is infinite; increased wages are over-capitalized for inflated profits and the cost of goods mounts faster than the wage level. A few grow wealthy, and the multitude is impoverished.

"Any basic change must begin with the railroads. We believe the interests of labor and the public to be identical in the railroad question. The properties have been operated for the profit of the few, not for the service of the many. Not only have we suffered from inadequate wages, but the public has paid an extortionate tax for transportation, a tax based on inflated values and collected from every person buying the necessaries of life.

"Our proposal is to operate the railroads democratically, applying the principles to industry for which in international affairs the nation has participated in a world war.

"It has been argued that labor is merely asking the public to let the workers become the railroad profiteers in place of Wall Street. This argument cannot survive a scrutiny of our proposal. We do ask for a share of the surplus, at the end of each year, after operating costs are met and fixed charges are paid. But we also provide an automatic reduction in rates when this surplus comes to a given level. To restore the surplus, the employees of the railroads must increase the efficiency of their management, and they must invite new business. We should not profit from the railroads as financiers have done; we should participate in the increased earnings from our increased production. We could not earn dividends unless industry as a whole were stimulated by improved transportation service. In our bill, the rights of the public are protected. The rate-fixing power, which is the final check upon railroad management, remains with the Interstate Commerce Commission. If the new corporation should attempt to pay itself excessive returns, and produce a deficit, the lease is forfeitable.

"We assure the public immediate savings. The cost of capital would be reduced from the present 6 to 7 per cent paid to Wall Street, to 4 per cent paid upon government securities. The savings assured under a unified system are enormous. The savings through efficiency, rendered possible only by democratic operation, are even greater. For the increased production resulting from harmonious relations between employees and their managers are incalculable. We believe our plan will reduce transportation charges in surprising measure, and that it is the first and the most important step in any constructive effort to lower the cost of living."

The brotherhood executives and Mr. Jewell issued another statement on Monday, saying in part:

"The innuendoes in telegraphed despatches from Washington, appearing also in the speech of Representative Blanton of Texas, that the railroad unions are 'holding up Congress and the government,' may as well cease.

"This appeal is made to the American people direct. It invokes the judgment and common sense of public sentiment of all the public which earns a wage or a stipend. We recognize that the only way in which we can exist under the present system is to demand further increases in wages, but we agree that this affords but temporary relief. It does not offer a remedy.

"Labor's bill, on the other hand, provides a remedy. That this role originates with labor is merely because labor happens to have firm organizations through which it may become articulate. It is not to benefit labor as labor alone; it is to benefit the consuming public, of which labor at present is the audible part. In labor's bill providing that the public take over the railroads and establish a tri-partite control between the public, the railway operating management, and the employees, the labor organizations of America have established this new policy which envisages their condition, not only as producers, but also as consumers.

"It marks the step by which organized labor passes from demands for wage increases to demands that the system of profits in industry be overhauled. Hitherto during successive wage negotiations and arbitration awards we have called for provisional attention only of questions arising out of differences as to wages, hours and conditions of labor. That principle of genuine co-operation and partnership based upon a real community of interest and participation in control, of which President Wilson has spoken to Congress, has been ignored both by labor and by the private owners of the railroads.

"What wage increases have been received during the past few years resulted only in immediately being followed by more than proportionate increases in the cost of living. Each rise in wages has turned out to mean only temporary relief for the affected workers. When the increases have gone around the circle, labor as producer loses the advantage of the new wages through the additional cost it pays as consumer. Moreover, through compounded profits taken on the wage increases each cycle becomes an upward spiral of costs, which the consuming public vainly reaches to control.

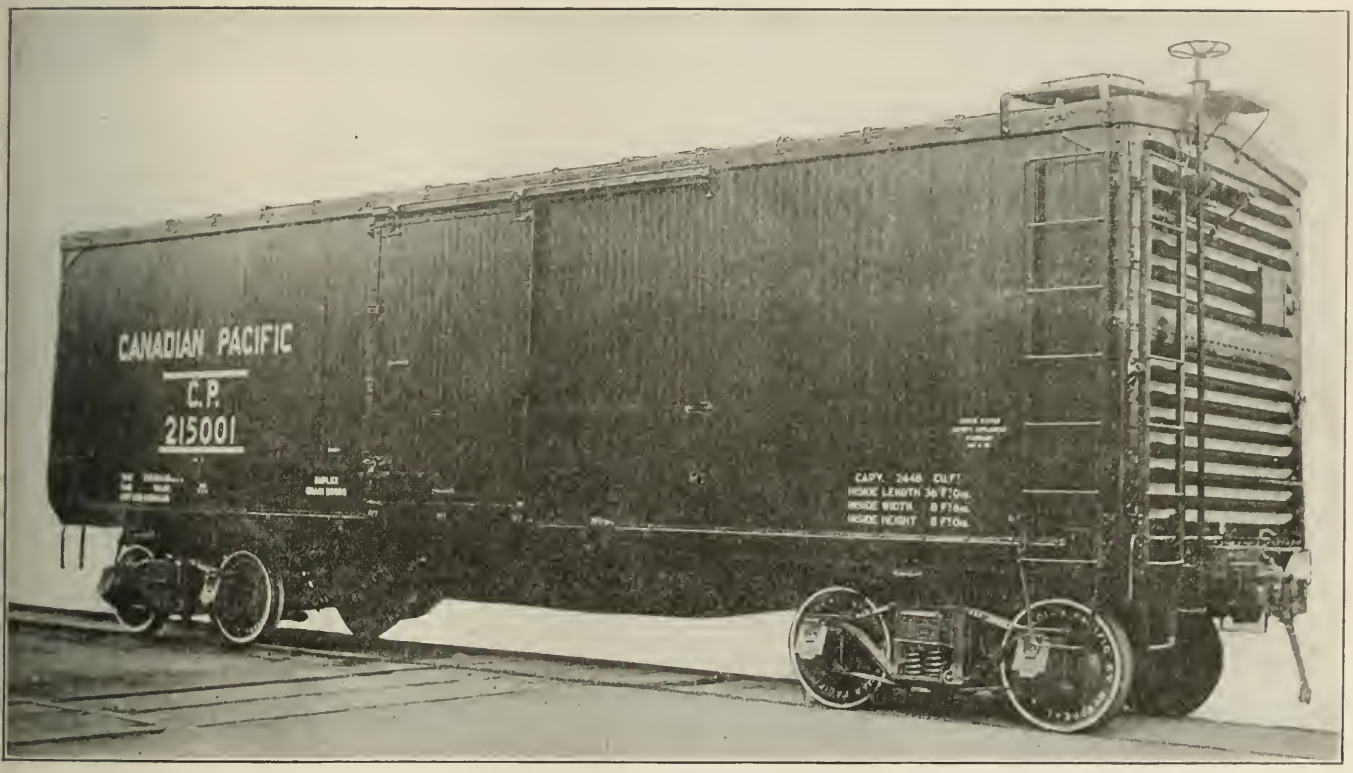
"As the major part of the consuming public, labor is entitled to representation on the directorate of the public railroads; as a producer of capital it is entitled to representation on the directorate of the railroads. To capital, which is the fruit of yesterday's labor, we now propose to discharge every just obligation. We demand that the owners of capital, who represent only financial interest as distinguished from operating brains and energy, be relieved from management, receiving government bonds with a fixed interest return for every honest dollar that they have invested in the railway industry. We ask that the railroads of the United States be vested in the public—that those actually engaged in conducting that industry, not from Wall Street, but from the railroad offices and yards and out on the railroad lines, shall take charge of this service for the public."

The eight-hour day for seamen has already been established by law in France. The Norwegian Legislature is discussing the question. The ship owners and men agreed on the eight-hour day several months ago, and the Shipping Board was forced to follow suit. Seamen on ships from the Pacific coast come into New York regularly, working eight-hour days, while men on other routes work twelve hours. When the eight-hour day is granted here it will only be a short time until England will do the same. On the Pacific coast, where the eight-hour day is in effect, it costs 25 per cent less per ton mile to move cargo, because the seamen are of a better type, more highly skilled, and work together better.—A. Furuseth, president, International Seamen's Union (New York).

Double Sheathed Box Cars for The Canadian Pacific

Length Inside, 36 Ft.; Weight, 39,500 Lbs.; Steel Underframe, Wood Superstructure and Metal Roof

The Canadian Pacific has built an order of box cars of the steel underframe, double sheathed type, the design of which in a general way is similar to the 40-ton double sheathed box cars designed by the United States Railroad Administration. The Railroad Administration cars, however, have an inside length of 40 feet 6 inches, and a height of 9 feet, with an actual weight of about 46,000 pounds. Owing to the very high average box car load in 36 ft. by 8 ft. cars on the Canadian Pacific, the building of cars of these dimensions on trucks on 5 in. by 9 in. journals, with the additional weight which would thus be required, did not seem to be justified. The Canadian Pacific cars, therefore, have an inside length of 36 feet and a height of 8 feet, the width in both cases being 8 feet 6 inches. An average care weight of 39,500 pounds has thus been obtained, which represents a saving of over three ton-miles for each car-mile in the movement of loaded or empty equipment, as compared with the Railroad Administration standard car of similar type. The cars have been designed for a limit load of 92,000 pounds.



Canadian Pacific Steel Underframe Double Sheathed Box Cars

Underframe

Like the Railroad Administration cars the Canadian Pacific box cars have steel underframes built up on center sills of the fishbelly type. The center sills are built up of plates and angles, the web plates having a thickness of ¼ inch, with a maximum width at the center of 25 inches. Each plate is flanged at the bottom with two 3½ inches by 3½ inches by 5/16- inch angles and at the top with a single 3½-inch by 3½-inch by ⅜-inch angle riveted on the outside of the plate. The top of the sills is completed with a ⅜-inch cover plate 26½ inches wide, which extends continuously from end to end of the car. Bottom cover plates are also applied at each end, extending from the rear draft gear stop through the bolster construction to a point about halfway down the slope of the deepening section of the sills. These bottom cover plates are replaced for the remainder of the length of the car by the inside flange angles, the ends of which overlap the ends of the plates far enough to provide against weakening the section at the point of transfer.

The side sills are 6-inches by 4-inches by ⅜-inch angles, with the horizontal flange at the top and extending outward. The end members of the underframe are 5-inches by 3-inches by 5/16-inch angles placed horizontally, resting on the center sill cover plate and the top flanges of the side sill.

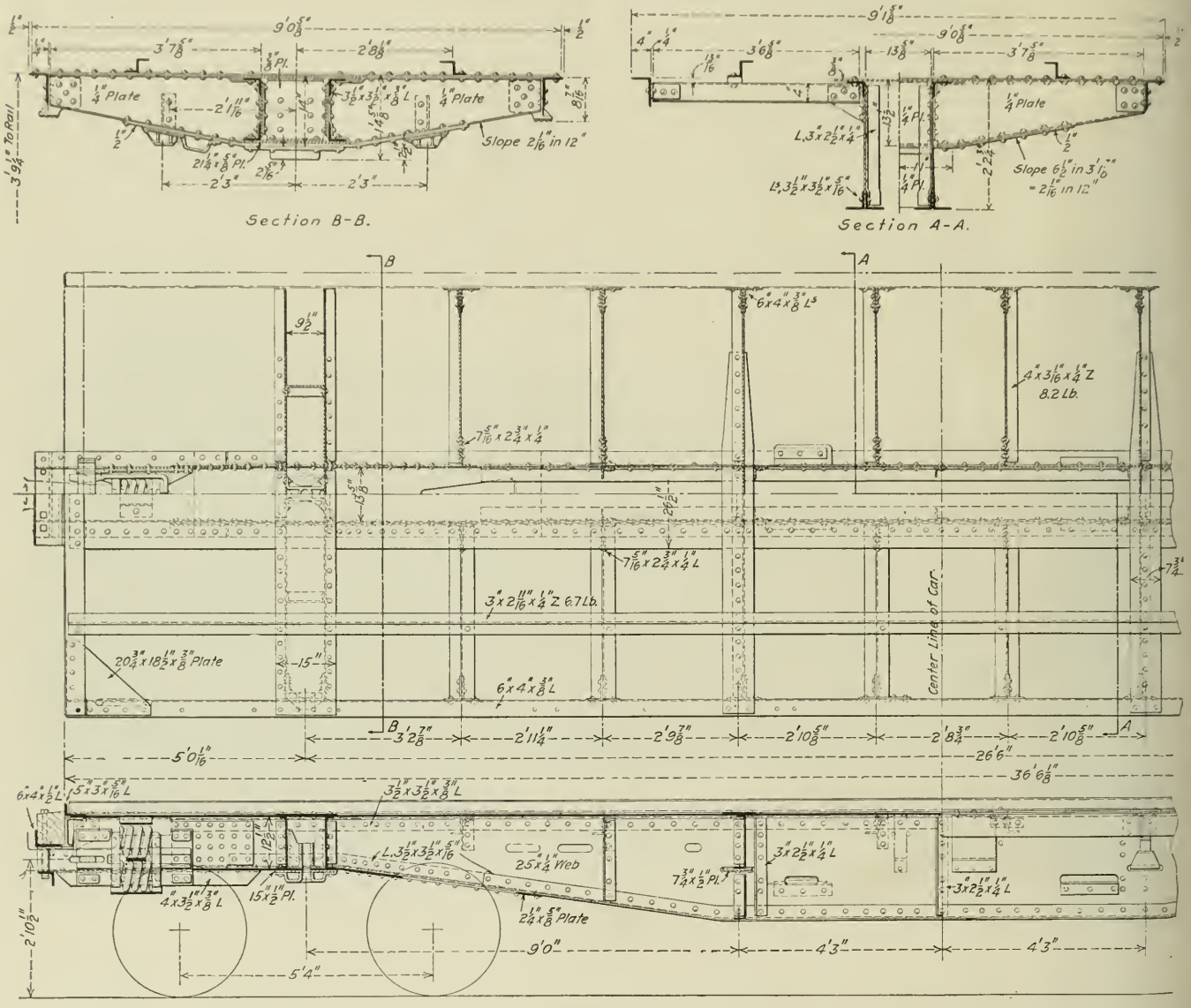
The bolster is of the double diaphragm type. The pressed steel diaphragms are of ¼-inch material spaced 9½ inches apart, tapering with a slope of 2 1/16 in 12 from a maximum depth at the center of 13½ inches. A continuous top cover plate 15 inches wide is riveted at the ends to the side sills and at the center through the center sill cover plate to the top flanges of the sills. Filler diaphragms of ¼-inch material are placed between the center sills and to these is riveted the center plate support casting. A bottom cover plate extends across the under side of the center sills, terminating just beyond the side bearings. The ends of the bolster diaphragms are secured to the vertical flange of the side sills by means of a filler casting to which all three members are riveted. Intermediate crossties of single diaphragm section are located at points 4 feet 3 inches from the trans-

verse center line of the car. The diaphragms of these members are of ¼-inch plate with a depth at the center of 13½ inches, which decreases toward the sides of the car with a slope of 2 1/16 in 12. The flanges of these diaphragms are reinforced with a ½-inch top cover plate 7¾ inches wide, extending across the car above the center sill cover plate, and a short, tapering ½-inch bottom cover plate.

The intermediate floor beams are 4-inch Z-bars, attached at the center and side sills with angle connections and carrying the intermediate longitudinal floor supports of 3-inch, 6.7-pound Z-bars, the web of which is placed 2 feet 8⅛ inches from either side of the longitudinal center line of the car.

used for the posts and braces with the exception of the intermediate posts. The wood posts and braces are of 3-inch by 4½-inch section.

The intermediate posts are 3-inch steel I-beams, these being used for the purpose of providing ample stiffening against bulging when the car is loaded high with grain. The C. P. R. cars also differ from the Railroad Administration cars in that diagonal brace rods are used at each panel section to provide against endwise racking of the car super-



The Steel Underframe of the Canadian Pacific Box Cars

The Car Body

The design of the car body differs from the Railroad Administration cars in that the body frame members are not secured directly to the steel underframe. Above the side and end sills are placed 3⅜-inch wood stringers, to which the post and brace pockets are attached with bolts extending through the steel members. The floor is thus raised above the underframe structure, allowing the use of the intermediate Z-bar supports previously referred to.

The side frame members are 3 inches thick, wood being structure. The side plates are of 7-inch by 3½-inch section, while the end plate is formed integral with the corrugated steel end of the car.

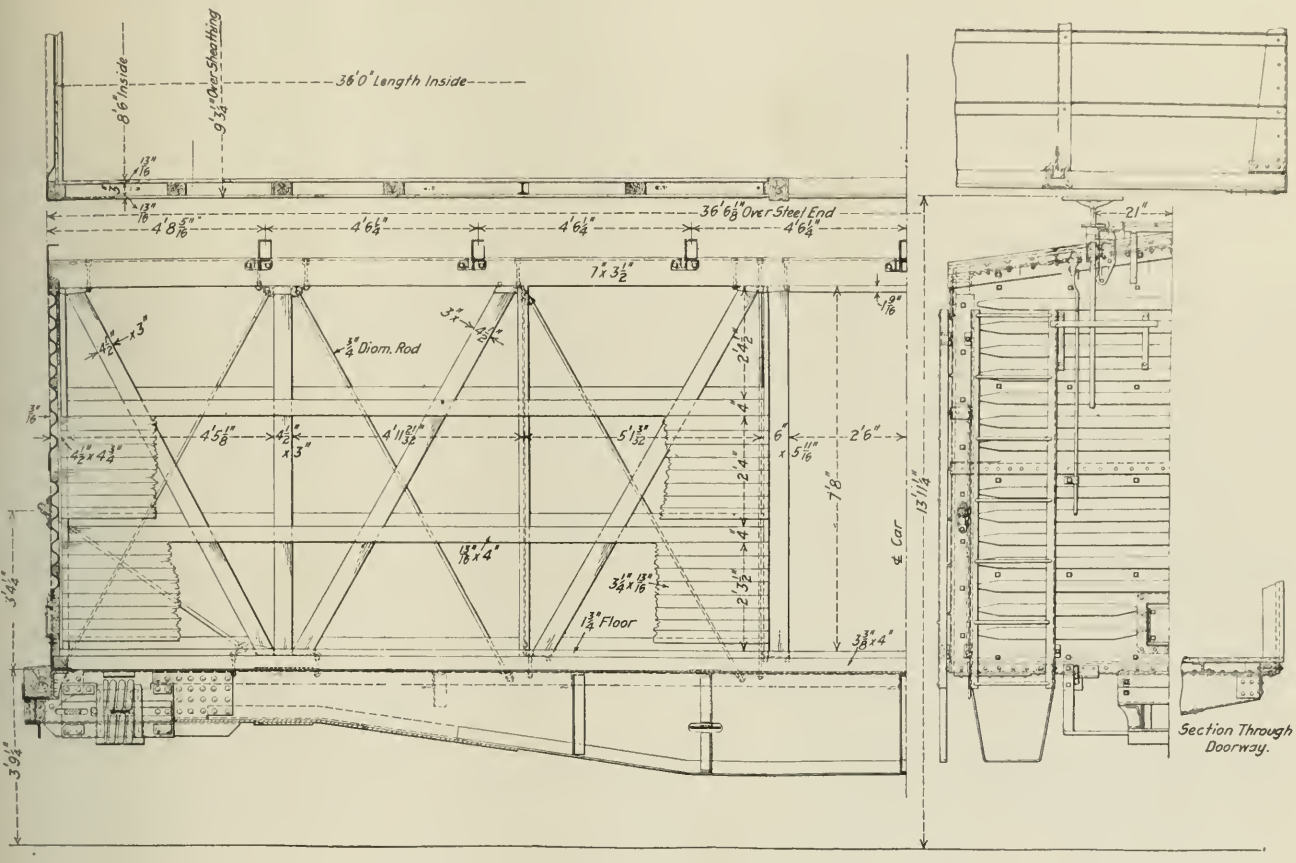
The outside sheathing is standard 13/16-inch tongued and grooved material nailed in the usual way, and in addition to nailing, it is further secured at the side sill by a steel angle bolted at frequent intervals. There are two girths on each side of the car, and the inside lining is carried up to the second girth, 5 feet 3½ inches above the floor. The ends are lined full height with tongued and grooved lumber 13/16 inch thick, which is placed vertically and nailed to strips secured in the bottoms of the steel end corrugations by means of bolts, the outer ends of which are riveted to the steel end sheet.

The side-door openings are 5 feet wide. The doors are of wood, bound with metal on all of the edges. The band at the back edge of the door is arranged to engage with the strip on the back door post, forming an effective weather and spark strip and further securing the door from bulging outward. The front stops are of wood, braced with malleable brackets. The locking arrangement is of the combined lock and stop type equipped with a door starting lever. Two handles are provided on each door, one on the bottom for track level operation and the other near the center girth for platform operation.

Two types of roof are applied to these cars, one an outside metal roof and the other an inside metal roof. The carlines for both roofs are of 4-inch angles, which are attached to the side plates by means of malleable brackets. These brackets are secured to the plate by two horizontal bolts, with the nuts on the inside of the car and the head secured from turning by a flanged double washer plate back of the fascia board.

Trucks

The cars are fitted with trucks of the arch bar type with a wheel base of 5 feet 4 inches, and 5-inch by 9-inch journals. The bolsters are the Simplex type, with long column guides to provide the maximum area between the bolster and the cast steel truck columns. The trucks are fitted with roller type side bearings.



End and Sectional Views Showing the Body Construction

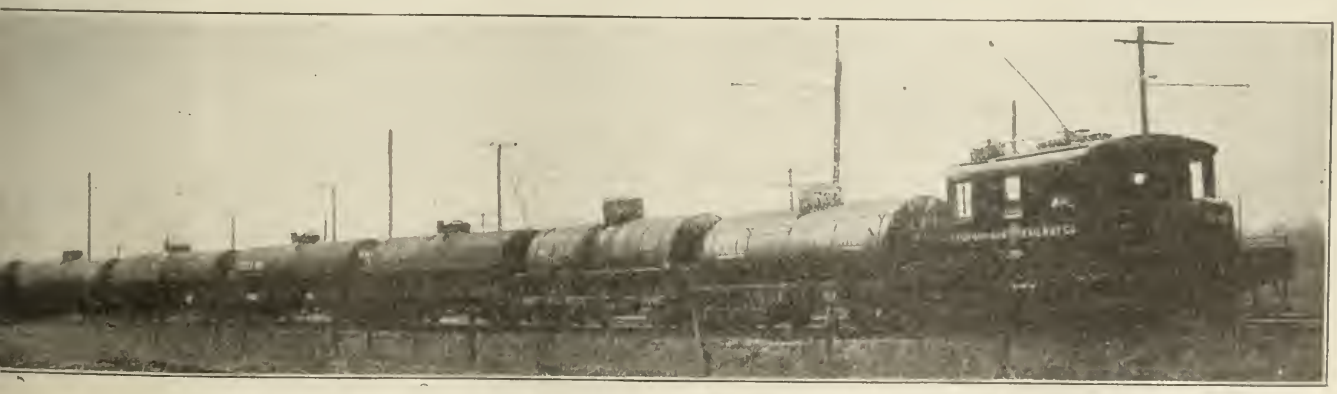


Photo from Underwood & Underwood, N. Y.

Hauling Freight on Electric Railways

An electric locomotive pulling an oil train on the Sand Springs Railway in Oklahoma

Turn Around Service on The Western Maryland

On February 10, 1919, the Western Maryland inaugurated an innovation on its Hagerstown division which has been a decided factor in reducing the cost of operation.

The innovation was the adoption of "Turn-Around" service between Hagerstown and Cumberland, a round trip distance of 160 miles. The westbound opposing grade is 6 per cent and the eastbound opposing grade is 3 per cent. Cumberland to Williamsport 7.3 miles, with seven mile helper grade (1.1 per cent) Williamsport to Hagerstown.

In former years power was called at Hagerstown and run to Cumberland and there tied up for rest before resuming the eastward trip. There was no incentive for crews to make a good run westbound as they knew they would be tied up for rest on their arrival at Cumberland. In some cases crews made terminal overtime before being called for the eastward journey.

With the advent of turn-around service, the incentive of "breakfast and supper at home" was put before the men with a result that they entered into the plan determined to help make it a success. Of course, the same rate of pay was maintained for the new service as they had obtained from the old: viz.: Minimum of 100 miles, or eight hours for the run in each direction. In order to successfully make the run, experiments proved that it would be necessary to relieve the men on westbound trips for one hour and thirty minutes after putting engine on ash track at Cumberland, in order to clean the fires, coal and water the engine, and allow men time for breakfast or lunch.

The Hagerstown division includes the line between Hagerstown and Cumberland, but the Cumberland terminal is included in the Elkins division, and it is therefore necessary that the two divisions work very closely together in order to avoid delay in despatching eastbound loaded trains from Cumberland on the return movement to the home terminal at Hagerstown. Another interesting feature was the fact that at no time was the tonnage or the number of cars reduced to enable good runs. All trains moved 100 cars when available with approximately 2,500 tons on the westward trip; these consisted of empties as a rule. On the eastward runs trains were given 100 loads and handled successfully trains of 7,200 tons. The average tonnage eastward, however, was between 6,600 and 6,700 tons.

These trains were all handled by Mallet locomotives and on the eastward trip were helped by the same type of locomotive from Williamsport into Hagerstown, a distance of seven miles.

The following figures show conclusively the reduction of hours on duty for the four months of 1919 as compared with the same months of 1918:

		Average time on duty			Average cars and tons handled: West		East.	
Month.	Year	West	East	Both ways	Cars	Tons	Cars	Tons
Turn-Around Service, 1919								
Feb.	1919	8′ 52″	9′ 58″	18′ 50″	91	2,695	100	6,823
March ..	1919	7′ 33″	8′ 23″	15′ 56″	94	2,592	99	6,739
April ...	1919	7′ 18″	7′ 40″	14′ 58″	88	2,557	100	6,687
May	1919	7′ 09″	7′ 41″	14′ 50″	92	2,487	99	6,781
Single Trains Operated 1918								
Feb.	1918	14′ 30″	14′ 35″	29′ 05″	78	2,182	92	6,435
March ..	1918	14′ 12″	12′ 06″	26′ 18″	78	2,106	85	5,962
April ...	1918	12′ 37″	11′ 36″	24′ 13″	92	2,593	95	6,547
May	1918	12′ 17″	10′ 56″	23′ 13″	91	2,582	94	6,642
4 mos...	1919	7′ 39″	8′ 21″	16′ 00″	91	2,572	99	6,755*
4 mos...	1918	13′ 16″	12′ 18″	25′ 34″	86	2,384	93	6,395†

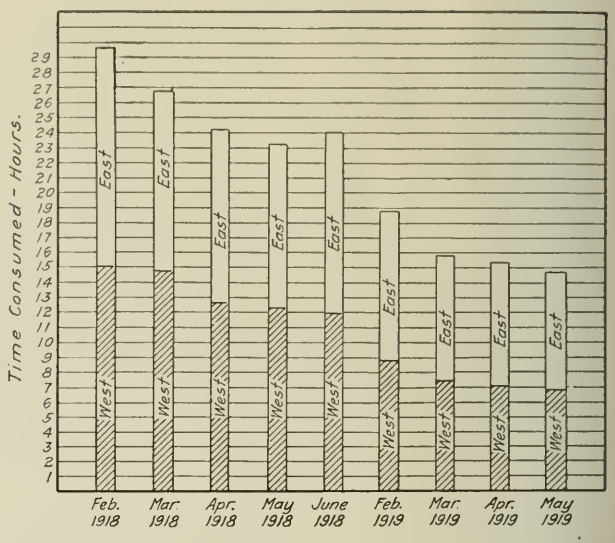
* Equals 10 miles per hour.
† Equals 6¼ miles per hour.

A number of trips were made under 12 hours and the best one was made by Conductor Wm. M. Manning and Engineer W. W. Waite with engine 921 on April 17. The time consumed was 5 hours and 45 minutes west and 5 hours and 30 minutes east making the round trip of 160 miles in 11 hours and 15 minutes with 101 loads—6,182 tons east. On March 26, Conductor T. Wilhide and Engineer G. E. Alsip with engine 918 made the round trip in 11 hours and 35 minutes with 100 empties 2,000 tons west, and 100 loads 6,780 tons east.

The trains were carefully inspected before leaving each terminal, particularly in regard to high and low couplers, truck frames and to guard against hot boxes. The conductor in charge of train reported promptly any car that became defective between terminals, stating cause of trouble and giving car inspector's number. This information was handled by the chief despatcher by telephone, and the proper officer gave the matter immediate attention.

Daily detail reports of each complete "turn-around" were made and sent to all officers interested, so that a careful study could be made of the delays and proper remedy applied to improve the operation.

Close co-operation existed between officers and men in engine and train service, and many suggestions were made by the employees which resulted in elimination of delays and improvement of the service. The average daily performance for April and May 1919 is unusual in handling tonnage trains. It will be noted that about 100 loads were moved east and 90 empties moved west on each train, and that the average time actually in service for handling approximately 190 cars on the west and eastbound legs of the turn-around and running 160 miles with a helper grade on the east end was less than 15 hours, including all delayed trains and relief crews used.



Performance of Tonnage Trains Between Hagerstown and Cumberland

The most reliable measuring stick today in efficiently handling tonnage freight trains is the number of gross ton miles moved per crew hour, and it will be noted that for April and May 1918 there was an average of 31,000 gross ton miles handled per crew hour compared with an average for April and May 1919 of 49,700, or an increase of 60 per cent in gross ton miles moved per crew hour, by the turn-around plan compared with the handling of traffic by single trains.

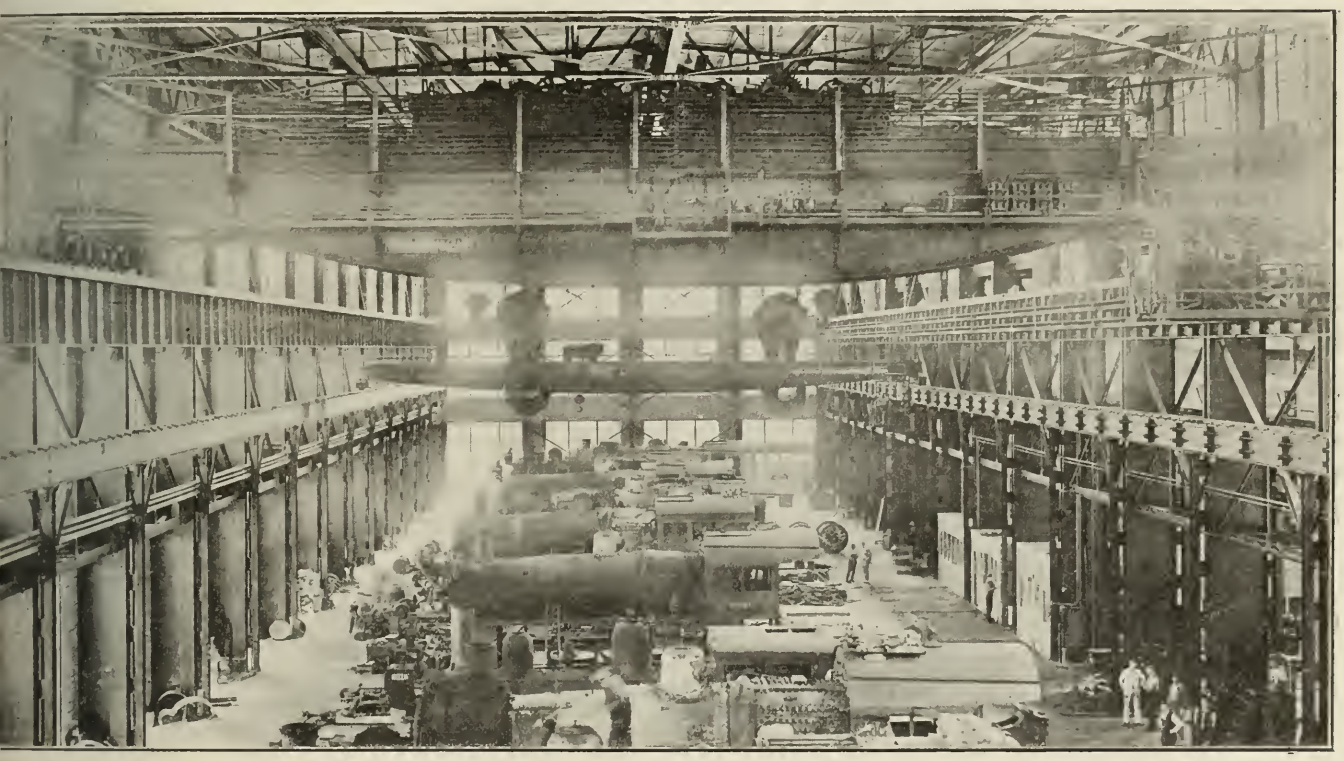
The Railway Fire Protection Association will hold its annual meeting at Chicago on October 21, 22 and 23. The executive committee of the association is now preparing the program for the meeting.

The Design of Modern Locomotive Repair Shops*

A Study of the Considerations Entering Into an Efficient Layout for the Maintenance of Engines

By Gaustave E. Lemmrich
Layout Engineer, the Austin Co., Cleveland, Ohio

A MODERN LOCOMOTIVE REPAIR SHOP should be a plant of well balance proportions, with conveniently arranged sub-departments, equipped with up-to-date ools and appliances, and capable of repairing the maximum umber of locomotives per year. On the other hand, the nancial condition of the railroads as a whole has largely revented the application of these ideas to recent locomotive epair shop construction. The need for additional shop



The Erecting Bay of a Modern Locomotive Shop

apacity is now pressing, and with financial relief in sight, ndoubtedly many improvements in this direction will be ndertaken.

In view of the cost of the U. S. standard locomotives rang- ng from about $36,000 for the light switching engines to ractically $100,000 for the heavy Mallets, it is evident that very day a locomotive is held out of service because of a ack of proper repair facilities creates a heavy charge. There re still in operation quite a number of antiquated locomo- ive repair shops which should gradually be replaced by odern facilities.

The Functions of Locomotive Shops

The functions of a locomotive shop may vary from com- paratively small repairing and some overhauling in an im- portant engine terminal to complete overhauling in a gen- ral locomotive repair shop, or to a locomotive manufacturing lant. Locomotive shops may be classified as follows:

1. A backshop at a very important engine terminal or at the sole terminal of a short or belt line, where general repair work, on a small scale, has to be included in its functions.
2. A locomotive repair shop for overhauling locomotives only.
3. A locomotive repair shop as a part of the general repair shop of a district on a large railroad or as the main shop of a small railroad.
4. A locomotive repair shop in connection with some new locomotive building.
5. A locomotive shop for new locomotive construction or a locomotive manufacturing plant.

The scope of the work to be performed is more or less different in each of these five classifications and the layout will need correspondingly different treatment to produce maximum efficiency in each case. However, the principles governing the design of shops of the third and fourth classes enumerated above are closely similar to those of the second class, with the exception of the layout, which, of course, is more complicated and demands careful study for a practical solution, while the number of locomotive manufacturing plants built by the railroads is so few as to be practically negligible. For this reason the discussion which follows will be confined to shops of the first two classes

The Back Shop

Generally speaking, a back shop is the result of greatly enlarging the machine shop of an engine terminal. The

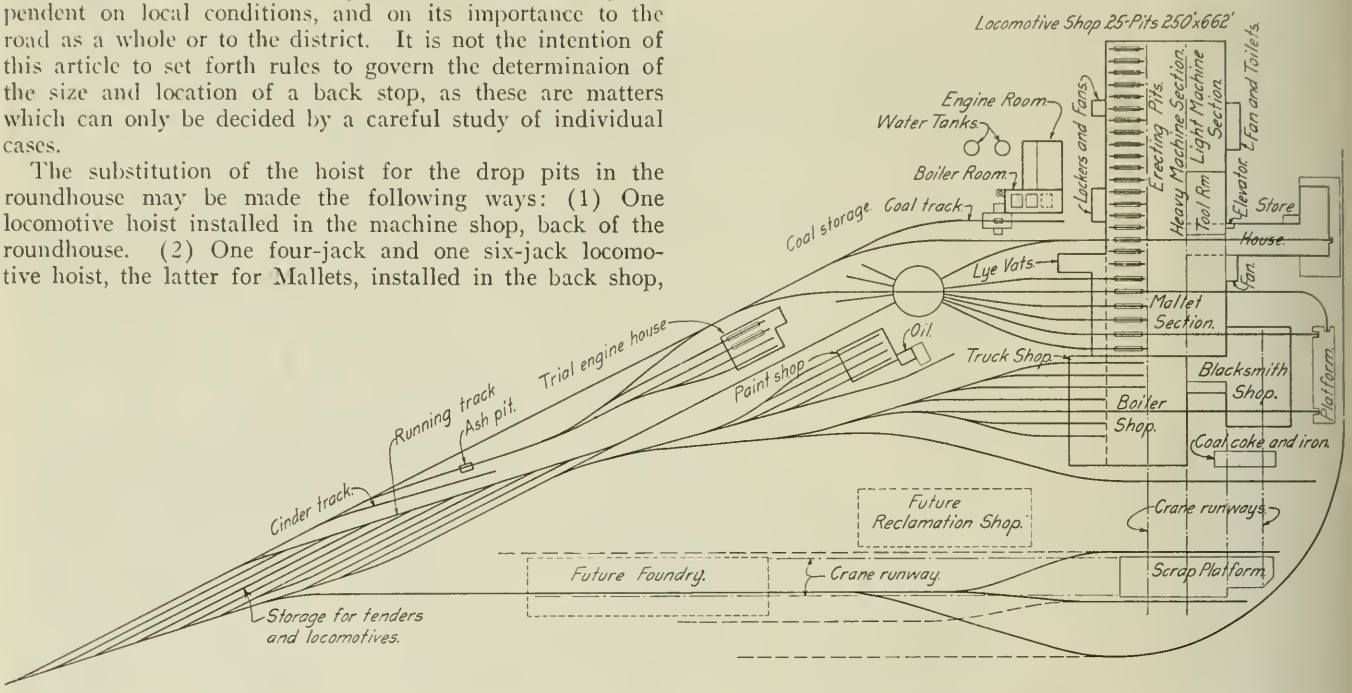
modern, heavy, costly power requires efficient attention and maximum employment. To accomplish this, modern tools, appliances and housing are required, together with an organization to make this investment effective. But to warrant all these costly improvements and above all the organization, it has to be proved and demonstrated fully that the location is in fact the right one. Undoubtedly, one of the most important factors affecting location is the expense due to overtime resulting from the Adamson law. A thorough investigation of this question will frequently show that great economy will result from an entire relocation of terminals and a revision of engine runs. One thing, however, is quite sure —the heavy power has put the drop pits out of date, and that means the installation of a locomotive hoist or a heavy crane in a back shop.

A back shop should be seriously considered for any important engine terminal with a preponderance of passenger traffic, or with some passenger runs of about 200 miles and for terminals at important junction points. The scope of repairing to be done at such a place, however, is largely dependent on local conditions, and on its importance to the road as a whole or to the district. It is not the intention of this article to set forth rules to govern the determinaion of the size and location of a back stop, as these are matters which can only be decided by a careful study of individual cases.

The substitution of the hoist for the drop pits in the roundhouse may be made the following ways: (1) One locomotive hoist installed in the machine shop, back of the roundhouse. (2) One four-jack and one six-jack locomotive hoist, the latter for Mallets, installed in the back shop, close to the roundhouse, or, better, it should be connected to the roundhouse by a passage way. In addition to the back shop the repair department of the terminal should embrace a complete working unit in buildings and equipment. Its magnitude, of course, will depend on the importance of the terminal, its location relative to other repair facilities, and, in fact, on many more or less deciding factors.

Generally, the machine shop is enlarged to embrace erecting, heavy and light machinery sections. The erecting bay section in small layouts is sometimes of the longitudinal type with one or two tracks, but the transverse type is more generally adopted. The shop's dimensions should be fixed according to its demand. In the transverse shop the pits may be spaced 22 ft. or 24 ft. apart, and the erecting aisle width may be 80 ft. or even 90 ft. wide. The height from the floor to the under side of the roof trusses may vary from 36 ft. to 58 ft., depending on the size of the cranes and importance of the terminal.

The size of the machine shop should correspond to its



Proposed Layout for Locomotive Repair Shop Facilities

with additional shop area and tools, which will result in an increased cost above that for the drop pits of about $40,000, or infixed charges, at 11 per cent of $4,400 per year. (3) One six-jack locomotive hoist for Mallets, one 100-ton crane serving four pits, a few heavy tools, and a full equipment of light tools installed in some additional shop area near the four pits. This will cost about $90,000 above that for the drop pits, or in fixed charges, at 11 per cent, or about $10,000 per year. Assuming an engine terminal with an average of 100 engines per day for about 300 days per year, or an average of 30,000 engine days per year, the second scheme will result in an additional fixed charge of 15 cents per engine per day, while scheme No. 3 will result in an additional fixed charge of 33 cents per engine per day. The selection of the scheme or more elaborate improvements should be considered as entirely dependent on existing local and other prevailing conditions.

Sometimes the back shop is operated in connection with a transfer table, but the need for this should be investigated in each case. In many instances a transfer table will prove a very desirable and satisfactory accessory, even though the shop is of the lift-over type. The shop should be erected

sphere in the terminal and its place in the railroad as a whole. Its present and future possibilities and the character of power to be repaired have an important bearing on the size of the machine shop. The possibilities of doing some boiler repairing should also be considered. Quite often this may be done at one end of the erecting shop. If separate buildings are required for the blacksmith shop, storehouse and office, their location and size should be studied in each individual case on broad lines as outlined before. The power house, however, should be a separate building, incorporating such features as were outlined in the article on engine terminals, published in the *Railway Age* of March 14, page 587.

The Locomotive Repair Shop

The locomotive repair shop referred to in the second classification above is intended for repairing locomotives only. In analyzing the scope of work done in a general repair shop, on locomotives, coaches and freight cars, it will frequently be found that a separate locomotive repair shop is more economical. In a general repair shop, the work in the three departments is so different in character that it requires sepa-

rate organizations, except perhaps where coach and car repairs may be combined so that separate buildings and possibly a different location may be more satisfactory from an operating standpoint.

In case separate shops are desirable they can be located at points most suited to each special case. The selection of a location is usually a question for each road to decide, and it should be based on operating requirements material and labor markets, suitable available sites, the amount of grading, its drainage possibilities and the cost of providing a sufficient water supply. On larger systems the tendency seems to be to divide the spheres of the shops into districts. The size of the shop depends on the number of engines tributary to it and the average number of engines to be repaired per year. A modern locomotive repair shop should be so laid out that it would have an average output of two locomotives per pit per month.

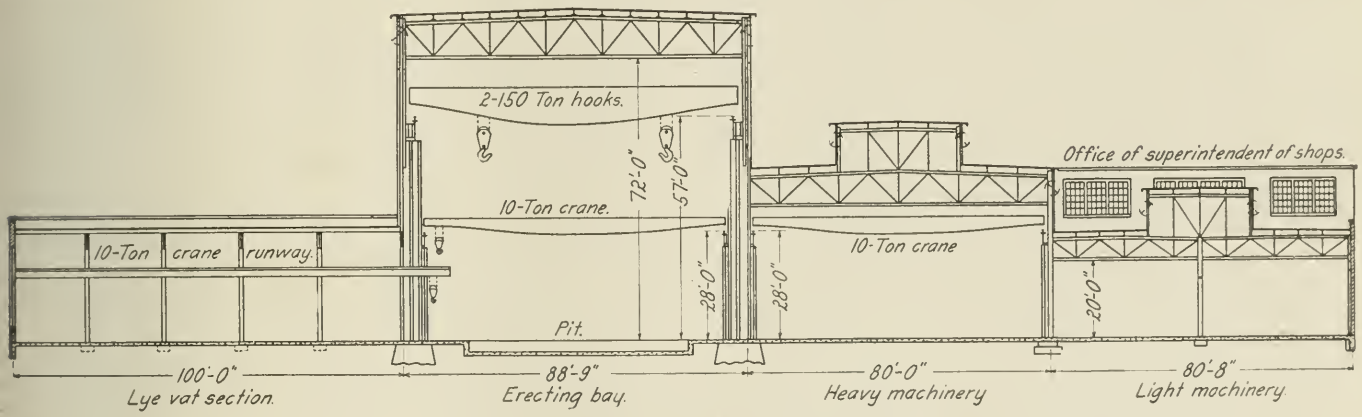
There is still some controversy regarding the relative merits of the longitudinal and transverse types of repair shops. In the first years of the modern locomotive shops, it was a mooted question as to which of these two types was best suited for a contemplated plant. In these years of infancy the longitudinal shop with its middle communicating track demonstrated its good points, and its flexibility, in capacity, but as soon as the crowding of locomotive repairs began, trouble arose. Cost statements, output, etc., of those days are of little value today, as the conditions and requirements have entirely changed.

It may be of historical interest to refer to statements by R. H. Soule in a series of articles in the *American Engineer*, 1903, which gave different longitudinal shops considerably larger outputs than a certain number of transverse shops. The comparisons were not based on exactly equal terms, and it looks as though a great share of the early favor for the longitudinal shop was largely due to its relatively greater machine shop area per engine as compared at that time with the transverse shop. This was at that stage in locomotive shop operation when the middle track was totally or partially kept open. The transverse shop had a width of the erecting bay proper of about 65 ft. and this quite often necessitated encroaching on the already limited area of machnie shop space. Moreover, sometimes the decision for a layout was influenced more by the preference of motive power officers on questions of organization, shape of available property, track arrangements, etc., than by the real advantage of the type of shop. Lately some railroads that were inclined to favor a longitudinal arrangement have prepared or built shops of the transverse type.

One of the most important features of the transverse shop is that the machine aisle, through its traveling cranes, is readily accessible to any locomotive on any pit. The smaller shops of this type can be operated with or without a transfer table, but in the larger shops the lift-over type is more generally applied. Where very large shops are desired, double erecting bays, one on each side of a central machine shop, have been installed. Plants of this design are special and require individual treatment. Each case should be treated on its own merits. A very close study in all its details of the operation of a modern locomotive shop, its organization and the location of assembling and dissembling pits, lye vats, tools, tool room, storage of wheels, etc., is of the utmost importance.

The width of the erecting aisle should not be less than 80 ft., and 90 ft. is preferable; this width now being adopted by some important lines in their latest shop layouts. The distance between columns has now been increased to 24 ft. and 25 ft. To utilize the end pits for the heavy crane service a distance of 30 ft. to 35 ft. is required, and this width would be quite useful at the stripping and assembling pits. The height from the floor to the under side of the truss should not be less than 58 ft. while a 71-ft. vertical clearance will permit simultaneous operation of both cranes, the heavy one carrying a locomotive. In a long shop this latter arrangement is of more importance than the extra cost involved.

For the heavy Mallets a width of 90 ft. may be somewhat scanty, but this can be overcome by locating a Mallet section with a lean-to at the front. It is a question whether this lean-to should not be extended for the whole length of the shop. A so-called covered bay may be well worth special study in some individual cases.



Cross Section Through Main Shop Building

Lean-tos, besides that required for the Mallets, are also suggested for the stripping and assembling sections and they should extend over one adjoining pit each side. The lye vats can be placed in the latter sections, and a crane extending into the erection bay should be installed in it. By this arrangement material to be cleaned in bulk can be transferred directly from the stripping pits into the lye vats.

In the erecting bay proper the capacity of the heavy crane has now been increased to carry two 125-ton hooks, and the next step will probably be to a crane with two 150-ton hooks. The type of general service crane used is commonly of 10 tons capacity.

The size of the machine shop is a controlling factor in the output of the entire plant. An area of 4,000 sq. ft. per pit of the erecting shop seems generally to be considered the correct relation under normal conditions, to produce a satisfactory working unit, and obtain maximum output. This area was suggested by G. W. Wildin in 1905, and is now adopted in some of the larger shops. However, there are many other points which might influence this question, such as the extent to which repair parts are manufactured for other smaller shops. As mentioned before, the question of

the size of the machine shop is of such magnitude that it demands careful study in each particular case.

The capacity of the cranes in the heavy machine shop section is generaly 10 tons. In many cases a layout will produce more satisfactory results if these crane runways are extended to the outside of the shop. The heating plant for the locomotive shops should be of the hot air type operated by a fan. A division in units may prove to be economical in first cost and operation.

By locating the boiler shop in a building adjoining the erecting shop, partitioned off but arranged with electrically-operated doors, the heavy crane runways in the erecting aisle may be extended into the main aisle of the boiler shop. This will permit the heavy crane to transfer boilers into this shop, and at the same time the noise incident to the boiler shop is confined. The machine shop crane may also be extended into an aisle of the boiler shop, and should be extended through this building to the boiler plate storage and to the scrap platform. This will greatly facilitate the handling of material, scrap, etc. In the first stages of operation it may also save a few cranes.

The truck shop can be located in the bay in front of the boiler shop proper. It should be provided with a crane of such capacity as will be in line with a possible future greatly increased length and load capacity of locomotive tenders. An 80-ft. width for the truck shop appears to be about right.

The blacksmith shop should be well lighted and ventilated and equipped with modern tools and appliances. The installation of an overhead traveling crane is perfectly feasible and desirable. The crane runways should extend outside of the shop to the iron storage sheds and to the scrap platform, thus increasing the sphere of its usefulness. The size of this department depends on the size and requirements of the rest of the plant, and each case will require special consideration.

The scrap platform should be located convenient to the blacksmith shop, and for the delivery of scrap from other shop departments. Its size, bins and other accessoreis depend on local conditions, and should have facilities for handling scrap.

The storehouse should be located convenient to the machine shop. In the tentative layout it is placed back of the tool room and directly connected to the machine shop. It should be of reinforced concrete construction with concrete retaining walls, concrete floors for the house, platforms, etc. It can be of two or three stories, according to local requirements, utilizing the upper floor for the offices. In the tentative layout the offices are located in the upper story, beside the machine shop. The private office of the superintendent of the shop can be in an upper story over the light machinery bay, which location will furnish a perfect view of the entire shop. The storehouse should be equipped with elevators, vaults, etc.

If the location of the plant is somewhat isolated, a restaurant for the employees on the top floor of the storehouse might be well worth serious consideration. Provisions for a lecture hall, apprentice room and a technical library will also be along modern lines. There are numerous repair parts which are usually stored outside. Suitable shelters for these should be provided wherever desirable, and they should be readily accessible for receiving and delivering materials.

The points regarding the design of a power house suggested in the article by the writer on the design of roundhouses in the *Railway Age* of March 14, page 587, apply here also, except that the power house should be designed on lines proportionate to its greatly increased importance. The track hopper should be housed, permitting the unloading of coal under all weather conditions. Coal storage should be provided for about two months supply. The coaling installation can be extended to include a coal pocket and sand storage facilities for engines requiring trial trips. Near the power house one or two water tanks of such capacity as the local requirements may demand can be provided, thus furnishing further facilities at this point for outgoing engines on trial trips.

In case the locomotive shop is not located at or near an engine terminal, these facilities should be provided for engines requiring trial trips after they have been repaired. In the accompanying sketch for a tentative layout of a locomotive plant, such an engine terminal is indicated. The engine house is rectangular, about 80 ft. by 110 ft. in plan, although this size can be changed as local conditions require. A small ash pit is also indicated on the plan which may be of the water type, but of such design as to correspond to its purpose. This pit may be operated by a locomotive crane, which, in a plant of this character, is a most useful appliance.

Sometimes it is found desirable to have a small paint shop in a separate building. The plant also requires an oil house of such proportions as local conditions require. It should be a fireproof structure, similar to the one outlined in the article on engine terminals referred to previously. The oil house might be combined with the oil room of the paint shop, if it could be so located as to make this arrangement feasible. This plan would also save an organization.

Unless the locomotive plant is situated at an engine terminal or near an existing wye, there should be at least a 100-ft. turntable. Studies and plans should also be prepared for a drainage and sewerage system, and also for water supply and fire protection, including a house for the fire department.

A good operating track layout is of great importance to an efficient locomotive repair plant. In the tentative layout, storage tracks for locomotives, tenders, materials, etc., are indicated.

It is very desirable to have an easy approach for automobiles, trucks and pedestrians to the storehouse and office. Driveways laid out for fire protection, without having to cross a net work of tracks, are also important. At some points, because of conditions, overhead bridges may be necessary for proper fire protection. The tentative layout represents practically an ideal condition in this respect.

The whole plant should be fenced and the main entrances for tracks, automobiles, employees, visitors, etc., should be controlled if possible at one point where a gateman's house should be provided. It is needless to say that the plant should be equipped with telephones, and wherever required, with telegraph service. The vacant grounds not used for storage should be treated in some pleasing way, suitable for recreation. Some inexpensive landscape gardening may be worth considering.

The layout should be so arranged that reasonable extensions are feasible, in line with good operating practice, and so they can be made without any serious alterations. Sufficient property should be secured at the start to make future extensions possible.

Features of the Accompanying Layout

The tentative layout of a locomotive shop accompanying this article is planned for handling the repair of 600 locomotives per year. The shop is based on 25 pits which should handle two engines per pit per month.

The main features of this layout are a plant of liberal proportions embracing all departments under one roof in order to reduce the travel and the handling of material between departments to a minimum. The departments are separated by partition walls, but arranged for continuous crane runways and crane service, which also extends to the outside material store yards and scrap platforms. This plant was laid out in one unit on the continuous mill plan to produce the maximum output.

The incoming engines drop their tenders on the storage tracks provided for that purpose, and then proceed over the turntable to the dissembling pits. The lye vats are located beside these, but in a lean-to, which can be closed by elec-

trically-operated doors to prevent the spread of bad odors to the erecting way. The machine shop is of such dimensions as to permit a liberal allowance of space for tools and at the same time provide reasonable storage room.

Approximate Estimate of Cost of a Locomotive Shop for Repairing 600 Locomotives Per Year

	Cost	Percentage of total cost
Grading, drainage and track	$120,000	4.6
Locomotive shop—		
Erecting bay $375,000		
Machine shop bays 235,000		
	610,000	23.4
Boiler shop	240,000	9.2
Blacksmith	75,000	2.9
Storehouse—		
65 ft. by 220 ft. } 2 stories	105,000	4.0
60 ft. by 80 ft. }		
Powerhouse, including thawout house, track hopper, coal and ash-handling piping, stack, etc	85 000	3.3
Paint shop, oil houses and engine terminal	60,000	2.3
Scrap platform, material sheds and outside crane runways	30,000	1.2
Water supply, fire protection	30,000	1.2
Misc. fencing, driveways, concrete walks, etc	20,000	0.8
Cranes	155,000	6.0
Total	$1,530,000	
Shop tools and equipment	$630,000	24.2
Power house	180,000	6.9
Cost of property, interest during construction, eng., etc.	260,000	10.0
Total	$1,070,000	
Grand total	$2,600,000	100.0

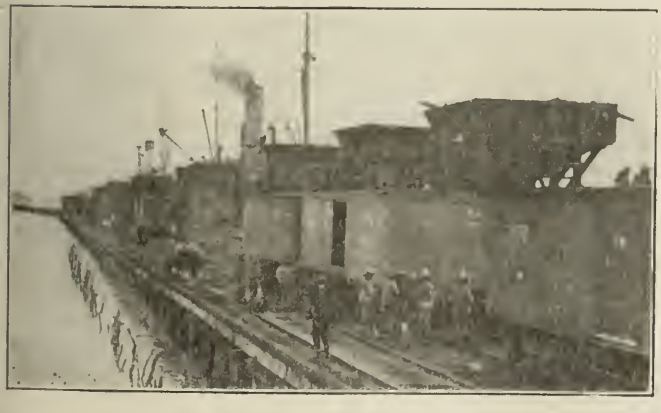
This estimate, which indicates the respective percentages of the main items, shows that an increase in the size of any particular building or facility would change the percentages only slightly, and at the same time might lead to improvements more fitting to local conditions which would result in increased output.

Comparative Proportions of Lemmerich Layout With That of Walter Berg*

	Lemmerich layout		Berg	Relative size of four departments in percentage of erecting bay		Four departments	
	Total sq. ft.	Sq. ft. per pit	Sq. ft. per pit	Lemmerich	Berg	Lemmerich	Berg
Erecting bay (90 ft. by 662.5 ft.)	59,625	2,385	1,750	100	100	23	25
Machine shop (160 ft. by 662 ft. 5 in.)	106,000	4,240	2,450	178	140	42	35
Boiler shop (250 ft. by 230 ft.)	57,500	2,300	1,575	96	90	22.5	22.5
Blacksmith	32,000	1,280	1,225	54	70	12.5	17.5
Total four depts.		10,205	7,000	428	400	100	100

Note.—Mr. Berg's blacksmith shop is designed for a general repair shop with car departments.

*Mr. Berg's figures are taken from his book, American Railway Shop Systems.



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Scenes from Foreign Ports—On the Docks at Tampico, Mexico

Doings of the Railroad Administration

THE RAILROAD ADMINISTRATION has executed a compensation contract with the Delaware, Lackawanna & Western, providing for an annual rental of $15,749,476; also co-operative short line contracts with the Weatherford, Mineral Wells & Northwestern and the Denison & Pacific Suburban.

Six Months Deficit $296,000,000

Director General Hines has authorized the following regarding the June earnings:

"Detailed statistics will shortly become available of the operating results for the month of June of practically all the Class One railroads and large terminal companies in Federal operation. These results will indicate that the net operating income for the month of June, 1919, was about $51,800,000. After allowing for one-twelfth of the annual rental due the railroad companies whose railroads are covered by these statistics, the net loss to the government on account of these properties was for the month of June about $23,000,000.

"The corresponding net loss for these same properties by months of the present calendar year has been as follows:

Month	Net loss to the Government after allowing for one-twelfth of the annual rental
January	$57,782,557
February	65,430,850
March	64,881,856
April	48,757,057
May	36,249,334
June	23,000,000
Total	$296,101,654

"The falling off in freight business as compared with the years 1918 and 1917 continues to be an important factor. This is indicated by the following comparison of net ton miles per mile of road per day:

	Net ton miles per mile of road per day Revenue and non-revenue		
	1919	1918	1917
January	4,275	3,878	4,770
February	4,002	4,591	4,511
March	4,059	5,273	5,192
April	4,134	5,471	5,257
May	4,524	5,226	5,617
June	4,615	5,423	5,694
6 months ended June 30	4,266	4,975	5,081

"The month of June, 1919, shows a slight improvement over May, 1919, both with reference to the actual business handled and the relation to the corresponding month of 1917.

"The unfavorable showing also continues to be due in part to the fact that the increase in rates has been on a much lower percentage than the increases in wages and prices of materials."

Orders of Regional Directors

COOLING OF HOGS.—The Southwestern regional director, in order 225, gives instructions for drenching hogs in cars, especially during the present heavy movement.

Examination of Drinking Water.—Circular 232 of the Southwestern regional director promulgates a complaint of the Surgeon General that the Bureau of Public Health Service and also many of the state departments of health, making examinations of water supplies used by railroads for drinking and culinary purposes, are having difficulty in securing the co-operation of railroad officers; containers are not promptly returned.

Forty-ton Wooden Coal Cars.—The Southwestern regional director, in order 224, calling attention to light capacity coal cars now out of the service, says that wooden cars of 80,000 lb. or less capacity can be used for transporting company material.

Safety Chains on End Doors.—Order 227 of the Southwestern regional director promulgates a note from

the Safety Section of the Railroad Administration recommending that chains or some other suitable device be applied on automobile cars with end doors to prevent these doors from opening further outward than the line of the side of the car; and gives instructions to have cars in this region so equipped as rapidly as possible.

Oriental Oil.—Order 226, canceling order 212 of the Southwestern regional director, quotes rules for the handling of shipments of Oriental oil and the containers therefor. These quoted rules amplify instructions issued in order 212. Shipments of nut and bean oils have been made in barrels and other wooden containers which were not of sufficient strength to prevent leakage; all shipments should comply with Section 2, Rule 8, of the Western and Official Classifications.

Removal of Placards Regarding Troop Movements.—The Central Western Regional Director in a letter to Central Western railroads, dated August 1, quotes a letter from Edward Chambers, director of the Division of Traffic, giving authority to take down the placards regarding the heavy movement of returning soldiers during June and July.

Controlling the Traffic at Its Source*

By Walter D. Hines
Director General of Railroads.

THERE IS ONE specific feature of railroad operation which I think is particularly important to this part of the country, and I want to say a few words about it, and that is what the Railroad Administration has done and is trying to do in order to control the movement of traffic, so as to avoid as far as possible the serious congestion of traffic, such as has occurred in recent years. For several years past, before the federal operation of railroads began, in my capacity as an officer of the Santa Fe, I had occasion to make frequent trips through the west, and I took a number of those trips in the fall of the year, and for two or three years I was very much impressed with the fact that the railroads in the west were tremendously hampered in carrying on their business, and in giving adequate service to their part of the country, due to the fact that the railroads in the east were so congested that they could not accept shipments which were ready for delivery in the west and the railroads in the west could not get back the cars to supply their customers, because these cars were tied up under load in the east. I saw in the fall of 1916 train loads of cars that stood on the side-tracks in Missouri, and even in Kansas, because the eastern railroads could not accept this traffic at Chicago. The eastern railroads could not accept these trains of traffic at Chicago, because the consignees in every part of the east were unable to accept the traffic which had been loaded and shipped to the east and was being held for them and there was a tremendous congestion and a very serious paralysis of railroad transportation.

Last year the government took advantage of the opportunity of having a unified control of railroads and undertook to meet that situation by controlling the loading and movement of the traffic, and I believe the results accomplished were very gratifying to the country as a whole, although, no doubt, in some individual cases the shipper may have felt that he was being deprived of the right to ship his traffic when he wished to do so. Under the old system it was really haphazard as to when the traffic would be started in railroad channels, and as to what would happen to it after it started. When the shipper had a load which he wanted shipped it was put into a car and the car was turned into the stream of traffic regardless of the question whether or not that carload of traffic could be unloaded at the point of destination and the car released and sent back to the other road. It was very much the same situation that would exist if you had a stream and had it full of logs, on the point of getting jammed, and every man up the stream would put additional logs into the stream, at his own option, without regard to the general situation. Such a situation as a log jam would be the inevitable result and the movement of the logs would be slowed down until that log jam could be broken. We have undertaken to control that situation under the federal railroad administration by controlling the traffic at its source, by making a rule that the traffic shall not be loaded at the point of shipment until there is an assurance that it can be unloaded at destination. The result of that has kept the railroads free from this jamming of traffic and we have moved a great deal more traffic than could possibly be moved without that restriction. Therefore, the arrangement is eminently in the public interest, and I wanted to mention that fact, because I believe this summer and fall we are going to have an enormous movement of grain, and if that grain were to be loaded just at the option of the shipper—the individual shipper—without regard to the policy of taking care of it at destination, we would soon have an unparalleled condition of railroad congestion in this country which would slow down the movement of traffic to such an extent as would amount almost to a public disaster.

Our plan is to control that and to prevent the loading of traffic until we are sure it can be delivered at destination, and I am sure we will find this year, just as we did last year, that an observance of that policy is going to result in moving a vastly larger amount of traffic than otherwise could be moved and give to the individual shipper far better service than he could otherwise have, and while at times some individual shipper may feel it is an arbitrary disregard of his personal rights, we are going to be able to accommodate them much better and give far better service to the public, a greater quantity of traffic will be moved and the public interest greatly promoted.

*From an address before the Omaha Chamber of Commerce, Omaha, Neb., on June 10, 1919.

"Railroad Democracy"

A WEEKLY MAGAZINE entitled "Railroad Democracy," published by the Plumb Plan League in the interest of its campaign to have the government buy the railroads and turn them over to the employees to operate, made its appearance on July 22. It is published at the headquarters of the league in Washington and contains eight pages devoted to arguments for the adoption of the plan. The leading article is by Warren S. Stone, grand chief of the Brotherhood of Locomotive Engineers and president of the Plumb Plan League, entitled "The Labor Campaign Is On." In it he says, "Labor is starting the greatest enterprise in its history and it has called upon every man of its rank and file to rally in support of its railroad program." He calls on every worker to act as a missionary in getting public support for the plan and says that the plan will get this support because its interests are identical with the publics, although "it may, and doubtless will, take time and effort to make the country realize the fact." Then follows a series of questions and answers regarding the Plumb plan, some brief editorial paragraphs asserting that the railroads want a guaranty, two headed editorials and an article on "Co-operation vs. Competition," by B. M. Jewell, acting president of the Railway Employees' Department of the American Federation of Labor. In a "filler" item it is asserted that Congressman Rose of the 19th district in Pennsylvania has received more than 2,000 letters from his constituents in one city asking his support for the Plumb plan.

Hearing on Wage Demands of the Trainmen

W. G. Lee Admits "We Are Going the Wrong Way," but Insists on His Members "Getting Their Share"

WASHINGTON, D. C.

HEARINGS BEFORE THE Board of Railroad Wages and Working Conditions on the demand of the Brotherhood of Railroad Trainmen for another general increase in wages, which was followed before the hearing closed by a demand from the Switchmen's Union and a statement from the Order of Railroad Conductors that if the trainmen's demands were granted the conductors should have a corresponding increase, were concluded on July 31. In this case the board is not authorized to recommend increases but merely to make a report to the director general summarizing the facts.

The demand of the trainmen was submitted on July 1 and was followed by a resolution adopted by the brotherhood committee threatening a strike if the demands were not met by October 1. It provides for a minimum wage of $150 per month of 26 days for brakemen, flagmen and baggagemen, and of $200 for conductors, and increases in mileage rates ranging up to 48 per cent. It is estimated that the new schedule, if granted, would amount to an increase of about $100,000,000 a year for trainmen and about $40,000,000 a year for conductors. In its letter to the board the committee representing the brotherhood said:

"The second triennial convention of the Brotherhood of Railroad Trainmen, in session May 14 to June 4, 1919, inclusive, unanimously decided that the wage rates outlined and ordered effective in Supplement No. 16 to General Order No. 27 were entirely insufficient to meet the just claims of the men, and the convention provided for the creation of a special committee to meet and prepare rates and certain uniform conditions commensurate with the service requirements incident to the employment of the men represented by our brotherhood. The convention, composed of more than nine hundred delegates, declared that not less than $150 per month of 26 days should be conceded as a minimum living wage for any employee in the classes we represent.

"The special committee, composed of 16 general chairmen, 5 from the East, 5 from the West, 5 from the South, and the chairman of the Chicago Switching Association, with the grand lodge officers, met at Cleveland on June 23, and below will be found an outline of a proposed revision to Supplement No. 16 which, in the opinion of the special committee, should be conceded by the United States Railroad Administration to govern the employment of train and yardmen and to maintain proper standards of living.

"The Brotherhood of Railroad Trainmen disapproves the rates established for trainmen, yardmen and switchtenders by Supplement No. 16 to General Order No. 27, for the reason that under present economic conditions they are not commensurate for the service performed, nor sufficient to maintain proper standards of living, and that the rates and rules herein proposed are essentially necessary, if proper standards are to be maintained and thrifty and wholesome conditions are to exist among these classes and their families.

"The responsibilities, hazards, cost of uniforms, standard watches, living expenses (while away from home), physical examinations, age limit, rules, exposure to the climatic elements and the fact that their industrial life is shortened by some of these requirements, all tend to entitle these classes to more liberal wages and working conditions than have been covered in Supplement No. 16.

"We contend that in addition to being entitled to receive wages that properly compensate for services performed, to enable men to maintain American standards of living, they are entitled to receive sufficient compensation to enable them to set aside sufficient surplus each year to protect them when, on account of old age, or requirements of the railroads, they are no longer able to follow their employment."

The proposed rates for passenger service range from 3.85 cents to 4.55 cents per mile, $5.77 to $6.88 per day and $150 to $179 per month for flagmen, brakemen, baggagemen and assistant conductors, and the minimum rates for conductors are 5.13 cents per mile, $7.70 per day and $200 per month. One hundred and fifty miles or less is to constitute a day's work. Time and one-half is asked for overtime, including Sundays and holidays.

The rates in passenger service are based on the assumption that brakemen and flagmen should receive not less than 75 per cent of the conductor's rate and the baggagemen not less than 80 per cent, and in freight service on the assumption that the brakemen and flagmen should receive not less than 80 per cent of the conductor's rate.

In through freight service the rates proposed are 5.88 cents a mile, or $5.88 a day for flagmen and brakemen, and 7.35 cents or $7.35 a day for conductors for "valley" service, and 6.47 cents per mile for flagmen and brakemen, and 8.08 cents for conductors, for "mountain" service, which is defined as service on lines where the gradient on any part of the trip is 1.8 per cent or over.

In local or way freight service the proposed valley rates are 6.28 cents for brakemen and flagmen, and 7.85 cents for conductors, and the mountain rates are 6.91 cents for brakemen and flagmen, and 8.64 cents for conductors. One hundred miles or less, eight hours or less, is to constitute a day's work in all road service except passenger service and where, under mileage schedules, a more favorable condition exists. Numerous other rules and rates are also contained in the demand.

In presenting the demands W. G. Lee, president of the Brotherhood of Railroad Trainmen, began in the usual style of threatening protest that wages are too low to meet the cost of living and demanding the increase as the only alternative to a strike. Before the hearing was concluded, however, he changed his tone somewhat and adopted the attitude taken by W. S. Stone of the Brotherhood of Locomotive Engineers in his statement to the President that continued increases in wages do not afford relief, and he declared that instead of shouting across the table at each other all interests would accomplish more if they would get together to reduce the cost of living. But, he said, as long as present methods continue, he believed in "everybody getting his share as nearly as he can until the final upheaval comes."

A large part of the hearing was devoted to a technical discussion of the proposed rules, which the railroad managers objected to as arbitrary and as designed to give larger increases to the higher paid men than to the lower paid men whose needs were made the basis of the brotherhood argument. W. G. Lee was given a preliminary hearing before the board on July 3 and presented his demands which he had previously discussed with W. T. Tyler, director of operation, and W. S. Carter, director of labor. He dwelt especially on the increased living expenses of the men when away from home, saying that the men in road service in many instances spend one-fourth of their salary in this way. Mr. Lee told the board that his committee had voted that in the event they were not given a prompt hearing and a satisfactory adjustment he was authorized to "use the protective features of the

brotherhood." As the trainmen and conductors have usually presented joint demands he had wired A. B. Garretson of the Order of Railway Conductors on June 24, asking whether the conductors contemplated asking for any increase over the wages allowed in the director general's recent Supplement No. 16 to General Order 27, and Mr. Garretson had replied that they had not decided. Thereupon the B. R. T., which includes some 24,000 conductors, had gone ahead with its own plans.

Chairman A. O. Wharton of the board read from a letter from Director General Hines pointing out that the requests now arising for the consideration of new wage rates fall into two classes, which necessitate different treatment.

Such cases, Mr. Hines said, as the various contentions that rates heretofore granted have not made a proper equalization between different classes of employees, are naturally proper for the board to consider and make recommendations, but contentions that existing wages are lower than they ought to be in view of the present cost of living "raise an exceedingly grave question for the government." "That question," he said, "is whether, when railroad operations are now being conducted at a very heavy deficit, the government ought to enter upon a course which will bring about large additional increases in wages, and will inevitably bring about also very heavy increases in rates, and without question set in motion a new and dangerous cycle of increases in the cost of living, and which undoubtedly will involve in addition the development of great additional hostility toward the whole scheme of government operation of the railroads. This problem is so grave and difficult that I am not in a position, in advance of opportunity to consider it further, to delegate to the Board of Railroad Wages and Working Conditions the authority to make recommendations as to additional increases in wages predicated upon the claim that conditions have newly arisen which were not in existence at the time the board made its recommendations heretofore acted upon."

The hearing was resumed on July 21 after notices had been sent to the Order of Railway Conductors and the Switchmen's Union. At this meeting Chairman Wharton read another letter from Mr. Hines, dated July 19, which definitely disposed of the theory that wage questions should be handled by a bi-partisan board. Mr. Hines authorized the hearing on the demands of the brotherhood, but made it clear that the board had distinct functions as to two separate branches of the application. As to questions of equalization, Mr. Hines said, the functions of the board as established by General Order No. 27 were broad enough to admit of its entertaining the application for the purpose of determining whether Supplement No. 16 should be corrected to make proper equalization, but General Order No. 27 does not confer upon the board any jurisdiction to consider the broad subject of the proposition that existing wages are lower than they ought to be in view of the present cost of living. Without further light on that question, he said, he was not in a position to delegate to the board a new jurisdiction to deal with this great problem for any special class of railroad employees. "Nevertheless, the responsibility rests upon me to consider the facts at all times on all matters affecting the railroad employees to the end that I may take such action as may be just and reasonable. To aid me in discharging this general responsibility I shall be glad to have you hear anything that the Brotherhood of Railroad Trainmen may wish to present on this second branch of the subject and to make a report to me carefully summarizing the facts brought out. Upon the basis of that report I will rest under the responsibility of taking just and reasonable action to protect the fair interests of the employees concerned."

Mr. Lee began his general argument by saying that the government had promised that pre-war living conditions for employees would be maintained. "So far as we are concerned," he declared, "this has not been done." In four years, he said, the increases in wages for his members in passenger service had been as follows: Conductors $45 a month or 33.3 per cent; baggagemen, $42.30 or 51.2 per cent; brakemen, $43.50 or 56.5 per cent; in through freight service, conductors, 1.4 cents per mile, 35 per cent; brakemen, 1.41 cents or 52.8 per cent; flagmen, 1.4 cents or 52.8 per cent; in local freight service, conductors, 1.42 cents or 31.5 per cent; brakemen, 1.48 cents or 49.3 per cent; flagmen, 1.48 cents or 49.3 per cent; yard service, day foremen, $1.53 per day or 40.2 per cent; night foremen, $1.33 a day or 33.2 per cent; night helpers, $1.30 or 35.1 per cent. As against these increases, he said, the cost of living had increased 82 to 100 per cent.

"It is inconsistent for the Railroad Administration," Mr. Lee declared, "not to at least maintain the faith of the people in the expression of the government itself that the pre-war standards of living must be maintained and do what it properly should to maintain them by allowing wages at least that will permit men to do so. They are entitled to earn enough in six eight-hour days to permit them to live in comfort for seven 24-hour days, and this is the basis of our demand. We are asking for a wage that need not be pieced out with overtime."

After saying that the brotherhoods had surrendered their demand for time and one-half for overtime in 1916 in order to protect the public against a strike which he said would have been successful, Mr. Lee continued: "When the railroads were taken over by the government an agreement was entered into by the Administration, the railroads and the men that made a strike on the government operated roads impossible. They took their chances on being treated fairly by the Railroad Administration. They were so conspicuously good that their willingness to surrender their economic rights for the period of the war did not get even passing recognition from the public and not much more than that from the Railroad Administration. Now the war is over. We have kept faith with the government and the people and we have reaped the reward that comes to one who pulls his teeth and tries to remain a meat-eater.

"In the winning of the war the railroad transportation men must have had some part, and, having helped to win the war, we do not propose to pay the entire cost of it. We are going to have time and one-half for overtime; we are going to have decent living wages and we are going to get it in our own way, if we must, unless the Railroad Administration shows as much disposition to be fair to us as it has been to others.

"The railroads properly refer to their inadequate rates, but it is up to the Railroad Administration to determine what is needed to pay the going costs of railroad operation and to fix the rates to meet it. We have little patience with the Railroad Administration when it declares it will wait until later on when it can determine how much the rate increase ought to be, for the purpose of protecting the public against an increase in the cost of living.

"The packers, coal mine owners, shoe makers, clothing factories, builders, in fact, every business, put up no such weak plea of continued loss in earnings. They saw their chance to get the money and they took it, in most instances with the support of the government and without apology to the Railroad Administration or any of the rest of us. The spirit of the Railroad Administration in holding off the cost of living for everybody else at the expense of the railroad employees carries no appeal to us. The Railroad Administration is not paying its way. There is no argument on that. But it is up to the director general to quit begging the question. The deficit is due to insufficient revenue, from natural causes, or to administration failure. There is no business in this country that is asked by the public to operate at a loss except the railroads, which generally is their own fault. We don't agree with the director general's plan

of waiting to see what will turn up. It makes it too long between meals. It is up to the Railroad Administration to put the rates where they can pay wages and the going cost of operation."

When A. O. Wharton, chairman of the board, remarked that the trainmen were asking for rates of pay which would represent increases of from 112 to 121 per cent in four years as compared with an increase in living cost of about 85 per cent, Mr. Lee replied:

"We were predicting from everything surrounding us that the increase would extend into 1920, and if that is true the 112 per cent is not appalling. The Department of Labor says there was a 2 per cent increase in March, 1919, over February, 1919."

Mr. Wharton said the Department of Labor statistics also show a reduction in several of the months since the armistice was signed.

"How long will such wages remain equitable if the cost of living keeps going up?" asked J. J. Dermody, one of the labor representatives on the board.

"I can assure your board in advance that if the railroads stay under government control and the increased cost of living continues to go up you have not seen the last of me," replied Mr. Lee, "but we have predicted forward into 1920."

"I have no patience with the director general or the administration who say 'We are going to wait and see if something will not come along to take care of this terrible deficit, and continue to do business at a loss. We do not meet that in any store we patronize. There is something radically wrong in our policy that will permit the people controlling the commodities of life that a very large majority of people depend on to increase out of all proportion. Just so long as that continues you will add to the world's unrest."

Mr. Lee was followed by other officers of the organization, Val Fitzpatrick, L. L. McDowell, P. C. Bradley, J. L. Rowe, H. R. Sauer, James A. Farquharson, A. F. Whitney and James Murdock, who testified and were cross-examined regarding the detail schedule rules. One of the questions asked inspired Mr. Lee to take up the general proposition again when he declared that it would be better to go after the cost of living than to try to keep up with it by wage increases. Mr. Lee said:

"If these organizations and the different departments of the government would use the same effort and energy to assist in some manner to crush profiteering and to stop this constant increase in the cost of living, the cycle after cycle that is bound to come on, you would come nearer, I believe, to harmonizing the working people of this country than we are by shouting across the table at each other as we have been doing. All of us are to blame because we are exerting every effort to try to get more money for ourselves and better conditions and every day we must realize that the profiteers are taking double from the working men what is given to them. The trouble with the people on the (Capitol) Hill, with us, and with every corporation and with everybody is that we are exerting ourselves to get the dollar, while the working man is merely existing, and while the profiteer is piling up millions, and if a 25 per cent increase in freight and passenger rates is granted, it simply means 50 or 75 per cent increase on the commodities that the railroads are paid for hauling and that the consumer must buy.

"I will admit to you, gentlemen, that we are going the wrong way. I admit to you that it is time to call a halt, and I admit to you that until we get together to stop this there will be hell in this country, and it is nearer to-day than I ever knew it in my years of experience. You can talk about stopping this and satisfying the working people all you please; you can talk about high rates all you care to, but just let somebody drop a match today in this country of ours and it will be a sorry day for all of us. I am not blaming the administration a particle for declining as far as they can to give additional increases. I think I know what it means. But unless my vision is most terribly obscured, then there is something coming to us pretty soon in this country that we had better take notice of. We are dealing with this situation wrongly in trying to settle these things as we are and not getting after the people who are to blame.

"Surely some method can be devised that will call a halt and stop this, and if we were back on a pre-war basis we would be far better off. The war is over, but peace is not before us, or I am a poor prophet. We are nearer war to-day, I believe, than when the kaiser threw down the gauntlet.

"Our lawmakers are to blame in my opinion for this because the masses of the people would be behind them if they would attempt to correct it. Surely, there is power to correct it, but instead of that they are playing politics, as some of these labor organizations, I am sorry to say, are playing politics, and it is the same all down the line, but unless we get together as honest people should and say 'a fair day's pay for a fair day's work,' then we are going to meet a sorry condition."

"Then, you believe that the true fundamental principle is to increase the purchasing power of the dollar?" said W. E. Morse, one of the representatives of the railroad managers on the board.

"Absolutely so," replied Mr. Lee.

"Do you believe in doing that at the expense of any one certain class of employees?" asked Chairman Wharton.

"No," replied Mr. Lee. "But as long as present methods continue I believe in everybody getting his share as nearly as he can until the final upheaval comes."

"How can the increased cost of living be stopped or present prices reduced?" asked Mr. Dermody.

"I am not authorized either by my organization or by the public to say how it can be stopped," Mr. Lee said. "We are paying millions of dollars to the men on the Hill who are supposed to have all the brains in the world, and they are not wasting any time in doing it." Another increase to the working man means that those selling commodities will not only immediately take it away from him, but more. I am not a red card man, but I am coming close to it if this thing keeps up.

"Surely, if we can make laws that we cannot have a glass of beer in this country, we ought to be able to make a law that a man cannot make millions over night off the working man."

Mr. Dermody asked, "In your opinion, is the increased cost of living based on wage increases, or will the increased cost of living continue whether wages are increased or not?"

"My experience," replied Mr. Lee, is that the increased cost of living is not based on wage increases, but is boosted on the slightest intimation of a wage increase."

"I think the record will show," said Chairman Wharton, "that since 1914 approximately 75 per cent of the increased cost of living was prior to the announcement of the 25 per cent increase in freight rates, and after the rate increase there was a slight jump further in the cost of living, but after business had adjusted itself to the new conditions the increased cost of living has been steadily mounting and in greater proportion than it did during the period that the adjustment of the freight rate increase was in effect."

Mr. Lee continued: "The government or the director general should, regardless of any criticism, place the railroads while under government control on a paying basis, and if the 25 per cent rate increase will not take care of it, and we know it will not, we know that on some of the railroads prior to the war 25 per cent would hardly have put them on a living basis, the director general should come out boldly and say that if the railroad business is going to be operated on a living basis, with a fair return to the investor and good service to the public, and with living wages to the employee, then the increase in freight and passenger rates

may perhaps be, not 25 per cent, but 50 or 75 per cent before we get through. If we did that we would not have equalled many of the principal industries of the country. We believe the increased cost of living should stop. If it does not we will hardly get this proposed increase applied before we are back here again. Unless these employees are given a wage that will permit them to live under pre-war conditions there is going to be something worse happen on these railroads, so far as the public is concerned, than an increase in freight and passenger rates.

"This is the first time in my 25 years' connection as an officer of this brotherhood that I have ever gone before any tribunal and raised the question of living cost in connection with a request for an increase, because I thought that, like a boomerang, it would come back and hit us some time. But now it is the all-absorbing question.

"We are going to get a pre-war living condition in our own way if we must, but we would rather get it in a business-like and gentlemanly way, and we would rather that the director general should see the necessity for it and tell the public so."

F. F. Gaines, one of the railroad members of the board, said: "Taking all of the classes Mr. Lee represents, this request averages 16½ cents per hour. Sixteen and one-half cents for all railroad employees—and, we might as well acknowledge the fact that if one class is given an increase it has got to go around the circle—and for each cent an hour increase it is $50,000,000 a year, and a 16½-cent an hour increase would bring it up to $825,000,000 a year increase. Their present deficit, it has been figured, would require a 10 per cent increase in rates to cover. The other $825,000,000 would require 33 per cent additional, or right now, if this were granted, it would mean at least 43 per cent increase in rates to cover the deficit, and that does not take into consideration any punitive overtime for Sundays and holidays, and that does not cover the increased cost of coal, rails or anything else, only wages."

Mr. Morse asked what would be the attitude of the employees when living prices descend.

"That would be a question I would submit to the membership and answer by their vote," replied Mr. Lee. "Knowing human nature as I do, I have an idea what they would tell me they wanted."

A. F. Whitney, vice-president of the Brotherhood of Railroad Trainmen, said that it would be impossible to estimate the cost of the wage demand, because he claimed the effect of the punitive overtime rate would be to reduce overtime and Sunday and holiday work. "But," he said, "I imagine you would see committees of the Brotherhood of Railroad Trainmen asking for a reduction of pay about as soon as you would see the General Managers' Association going to the Interstate Commerce Commission for a reduction in rates."

Mr. Whitney asserted that the percentage of overtime had been materially reduced since the Adamson law went into effect, but it appeared later that he was speaking principally of yard service. Mr. Morse said that before the Adamson law the percentage of overtime to the gross payroll in road service was 10 to 12 per cent, whereas he had information that now it is 20 to 30 per cent.

"Since the roads were taken over by the government," Mr. Whitney said, "there has not been a very close check on overtime. There seems to have been a lack of supervision." Mr. Lee added that if there had been any laxity of discipline it was under the same officials as before.

"But in order to discipline the average train service employee you would have to have more evidence than is usually necessary to convict a man for life sentence to the penitentiary in civil law before the courts," retorted Mr. Morse.

"Generally speaking, I think what we would term good employees, whether it be federal manager or brakeman, have tried to give good service," said Mr. Lee, "but perhaps they may have been discouraged by too many higher-ups. I imagine that under government control an operating officer or federal manager today has his troubles as compared with private control. I imagine he is bound around with red tape more than he ever dreamed of being under private control."

L. E. Sheppard, president of the Order of Railway Conductors, entered a protest against the Brotherhood of Railroad Trainmen or any other organization except the Order of Railway Conductors, appearing before the board in an effort to legislate wages for conductors, saying his organization has an agreement with 95 per cent of the railroads. The grand lodge of the Order of Railway Conductors at its recent session, he said, refrained from taking any action on a wage increase on the advice of the officers. If additional rates and rules are given which appear to the conductors as reasonable and fair, he said, it is possible there will be no action on the part of the organization. He protested, however, against the ratio between the pay of the brakemen and that of the conductors proposed by the Brotherhood of Railroad Trainmen as being too high. The B. R. T. proposed that the brakemen's scale should be 75 per cent of that of the conductors, and proposed rates for the conductors, of whom about 24,000 are included in the membership of the B. R. T., based on that ratio. Mr. Sheppard said that the ratio should be 66 2/3 per cent and that whatever rate was awarded to brakemen, the conductors should receive a corresponding differential, and he submitted a scale of rates for conductors which he said would leave the ratio where it was fixed in the director general's latest wage order. Mr. Sheppard said that the conductors had received an increase of approximately 50 per cent, counting the reduction from a ten-hour to an eight-hour day as 20 per cent, and that as the increased cost of living was 85 per cent they still had 35 per cent coming to them. He asked to be excused from commenting on the proposed rules of the Brotherhood of Railroad Trainmen, but said that in order to get the extra 35 per cent the conductors should have $9 a day in passenger service, $8.10 in through freight service and $8.88 in local freight service. He trusted that the board would give the director general such recommendations or information that would lead him to see his way clear to do something for these men.

"I hope he will see his way clear," Mr. Sheppard said, "to cut the Gordian knot and throw the responsibility back on the government where it belongs. Let these men on the Hill, who are batting at toy balloons and fanning the air and who are running around like a cat chasing its tail and doing nothing else, let them get busy. If the government can fix wages, hours and the price of steel rails, it can fix the price of things which men must have to maintain life. God knows the people of this country are against government control. Almost everybody is against it. They tell us the railroads are going back in January, but mark this prediction: While I am not a prophet or a son of a prophet, they will not go back January 1. The party in power dares not put them back under these chaotic conditions. It may be the gentleman in the White House will give them back, but from my observation of and experience with that gentleman, he is too wise to do it.

"What have they done on the Hill? They have recessed for the summer with the whole world aflame. Like Nero, they are fiddling while Rome burns. There are too many fiddlers up on the Hill instead of statesmen."

Mr. Sheppard was not so vociferous as Mr. Lee for an advance in freight rates. "My position," he said, "is that the old idea that every time an increase in wages is given the freight rates should be put up is merely subterfuge. Freight rates ought to be based on equity and justice without regard to labor, but I firmly believe freight rates ought to go up considerably more."

Mr. Sheppard also suggested reducing the tonnage of freight trains as one way of reducing overtime. He said if the railroads were not so largely regulated by the necessity of showing a good tonnage many of the things the brotherhoods asked could be adjusted.

"It has been repeatedly stated in this hearing," said C. E. Lindsay, a member of the board, "that the only thing the men had to dispose of was their time, and they have evinced very little interest in accomplishing the results that are to be obtained by the railroads. What I think ought to be brought about would be some means by which they would become interested, from selfish and personal standpoints in accomplishing the results that must be obtained by the railroads, and that is in the moving of ton miles and passenger miles."

"Adopt the Plumb plan, and we will have it," replied Mr. Sheppard.

S. E. Heberling, president of the Switchmen's Union, presented a demand for the following rates east of the Rocky Mountains:

Night foremen, $8 a day; night helpers, $7.50; day foremen, $7.50; day helpers, $7. He also asked for a higher scale for the mountain district and time and one-half for overtime, Sundays and holidays.

Elisha Lee, federal manager of the Pennsylvania, as chairman of a special committee representing the regional directors, presented a statement in opposition to the demands. He said the B. R. T. proposition represents a revision of Supplement 16 only in part, as it contains requests not heretofore submitted. He also said the railroads have no knowledge of changed conditions to justify a closer relation between the wages of the brakemen, flagmen and baggagemen and those of the conductors. He took up in detail the various provisions of the demand. Regarding overtime, he said: "The principle of overtime for road service employees on the basis of time and one-half is wrong and inequitable, and cannot be fairly applied where the regulation of business and the traffic requirements of business are beyond the control of the employer. It should be remembered that road service provides a dual basis of pay, miles and hours, and cannot be considered in the same category or comparable with other classes of service or labor. In road service it is quite evident that in many cases neither the management nor the men can prevent overtime." Regarding the demand for a higher rate for Sundays and holidays, he quoted from a statement by the director general in a wage order: "In the nature of things it is unjustifiable to impose such punishment in respect of work which cannot be avoided."

A rule for overtime for Sundays and holidays, Mr. Lee said, could have no other effect than simply to increase the compensation of the men, and he pointed out that while they demand a guarantee of 26 days a month, they could not work 26 days a month without working on Sunday or a holiday some of the time. He also pointed out that many of them now have 10 to 12 layover days a month, and he gave several examples to show that such a rule would merely result in large increases in pay to some of the men now receiving high wages. For example, on the Erie between Jersey City and Salamanca, a run of 413 miles, he said the brakemen work two Sundays and 18 week days a month, and would be increased under the proposed rule from $219.72 to $333.91. On a Baltimore & Ohio train between Baltimore and Frederick, Md., Mr. Lee said, the crew leaves Baltimore at 5.05 P. M., and gets back at 8.55 A. M. The elapsed time is 15 hours and 50 minutes, but the actual time on duty is 8 hours and 25 minutes. The conductor now earns $312.45 a month, and under the proposed rule would get $500 a month.

Mr. Lee also pointed out that mountain rates were established to meet frontier conditions in the west, and in recognition of the difficult braking conditions in the old days of hand brakes. Now the trains are equipped with power brakes, and living conditions in the west are as good as in other places, so there is no reason for the higher rates and certainly not for their extension to other parts of the country, but the proposed rule would require mountain rates to be paid on every trip which contained any grade, no matter how short, over 1.8 per cent. This would apply the higher rates, he said, to a very large percentage of the divisions on nearly all roads in the United States.

As to the general question of an increase in wages, Mr. Lee said that Supplement 16 represented an equalization with other classes of employees, and if any one class is given more it will undoubtedly be necessary to bring the other classes of employees up in proportion. "We understand," he said, "that the foundation of this request is predicated on the statement of one member of the War Labor Board (in which we understand the balance of the War Labor Board does not concur) that the minimum wage should be $150 per month. This statement has been public information for many months, and so far as we have heard there has been nothing presented either to substantiate that statement or to indicate it is other than the opinion of one man. Hundreds of thousands of railroad employees have wages considerably under $150, many of whom have more onerous working conditions than many of the men here represented, whose units per day are not an index to their actual earnings per month. The mileage factor fixes the pay of more than 50 per cent and results in earning approximating if not in excess of $150. You are already informed as to the financial situation of the Railroad Administration, so it does not seem necessary to comment thereon. It is a very serious question in my mind whether during this period of reconstruction we can all go back to pre-war conditions."

At the conclusion of the hearing Mr. Wharton put into the record a statement of the Bureau of Labor Statistics estimating the increased cost of living in April, 1919, as compared with the average for 1913, which showed an increase in wholesale prices of 111 per cent, on which basis the present comparative purchasing power of the dollar would be 47.4 cents.

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Scenes from Foreign Ports—Loading Iron Ore at Cartegena, Spain

Chicago Suburban Lines Demonstrate Efficiency

Strike of Street and Elevated Railway Employees Results in Taxing Terminal Organization and Equipment

THE STRIKE OF CHICAGO'S street and elevated railway employees, which began on Tuesday morning, July 29, and lasted until Saturday, August 2, presented an opportunity to the steam railroads entering Chicago and to operating officers in the Chicago district to show the efficiency with which they could handle an enormous overload of traffic; and the way in which the business was handled cannot be praised too highly.

Early Tuesday morning the 15,000 employees of the street railway and elevated lines, after negotiations with their employers, were stampeded by a radical element into initiating a strike. Although negotiations had been under way for some time the action on the part of the men was wholly unexpected by the public, and threw upon the steam lines entering Chicago's business district the task of providing transportation for the hundreds of thousands of workers who ordinarily depend upon the street railway and elevated lines for transportation daily to and from their work.

When the controversy over the question of wages first arose between the street and elevated railway line's employees and officers of the line, the steam railroads operating suburban service into Chicago immediately began making preparations for any eventuality which might arise. Preparations were made particularly by the Chicago & North Western and the Illinois Central, the two roads upon which the burden would be heaviest because of the fact that they traverse heavily populated residential districts and handle a large suburban business at all times. When it is considered that until Monday night the negotiations between the two factions were to all appearances progressing satisfactorily and a strike did not seem imminent, the preparedness demonstrated by the railways is all the more commendable. The cisis came on Monday night when a meeting of the car men was stampeded by a radical element and the car men were forced into the declaration of a strike beginning the following morning. The next morning not a street car or an elevated train was running in Chicago.

Officials of the various steam roads upon which the burden would be thrown were immediately notified and early in the morning the final arrangements were made for the handling of the increased traffic. The actual results accomplished by each of these roads may best be told in the tentative records compiled at the end of the four-day period.

The Chicago & North Western during this four-day period operated 1,555 trains carrying approximately 704,480 passengers as compared with a daily average under ordinary circumstances of 100 trains carrying 40,000 people, or 400 trains carrying 160,000 people during an average four-day period. In other words, this road operated 300 extra trains per day, carrying approximately 140,000 passengers in addition to its regular traffic. Stated another way, this road operated 1,200 extra trains in four days, carrying approximately 600,000 extra passengers.

The mere increase in the number of trains operated and in the number of passengers carried does not adequately tell the story. With this increase in trains and in passengers carried there were no accidents reported on the Chicago & North Western lines in the district served by the suburban trains. Extra ticket booths to the number of 15 were erected at the Chicago & North Western terminal in order to accommodate the crowd, and all of the passengers were required to purchase tickets before entering trains. Several tracks were assigned to each route from the downtown terminal and large signs were placed over the train gates entering these tracks. The crowds after purchasing their tickets were assembled on the station concourse in front of the gates for the different routes and were allowed to enter the platform as soon as the trains were placed in position.

In addition, extra ticket booths were established at practically all of the suburban stations where heavy traffic was

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Crowds Waiting for Trains at North Western Terminal

likely to originate, and practically the only difficulty encountered in handling the crowds on the North Western was in the handling of these additional trains. This difficulty was overcome by eliminating the regular suburban schedules and substituting therefor a shuttle service. In consequence, the large number of suburban trains ran between, into and out of the terminals as the traffic permitted and at no time was it necessary to hold trains after they were loaded to capacity. On July 30, the second day of the strike, the North Western operated 402 trains carrying 175,993 passengers.

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Special Ticket Booths Outside the Chicago & North Western Station

On the third day of the strike, July 31, the North Western operated 388 trains carrying 176,130 passengers. On August 1, the fourth and last day, 393 trains were operated carrying 184,830 passengers.

Much of the credit for the expeditious and satisfactory handling of the crowds on the North Western is due to S. G. Strickland, federal manager, who personally assumed im-

...m Chicago Daily News.

Hanging on the Rear End of an Illinois Central Train

...diate direction of the suburban service during the four-...y period.

The Illinois Central, which with the Chicago & North ...estern normally carries the bulk of the suburban traffic, ...ried during this four-day period approximately 800,000 ...sengers as compared with the normal travel during that ...iod of approximately 200,000. As in the case of the ...rth Western, plans were perfected by the Illinois Central for handling the increased travel on short notice when the strike of the car men became imminent. In fact, Illinois Central officials were watching the situation so closely that trains began operating within 15 min. of the time the strike was called, and by 5 a. m. on the first morning of the strike a 10-min. service was being conducted into Randolph street, the suburban terminal of the road. During the peak load in the morning and evening rush hours trains were run into and out of the Randolph street station every minute. At the Van Buren and Randolph street stations inbound passengers were discharged during the morning rush hours at the rate of approximately 500 each minute and the same number of outgoing passengers were handled at these stations during the evening rush hours. Considering the increased traffic handled on such short notice, the service was particularly free of congestion and accorded a free movement of passengers at all times, there being no delays, no accidents and no personal injuries recorded. The extra employees which were delegated to handle this increased traffic were given dining and sleeping car facilities throughout the entire period of

From Chicago Daily News

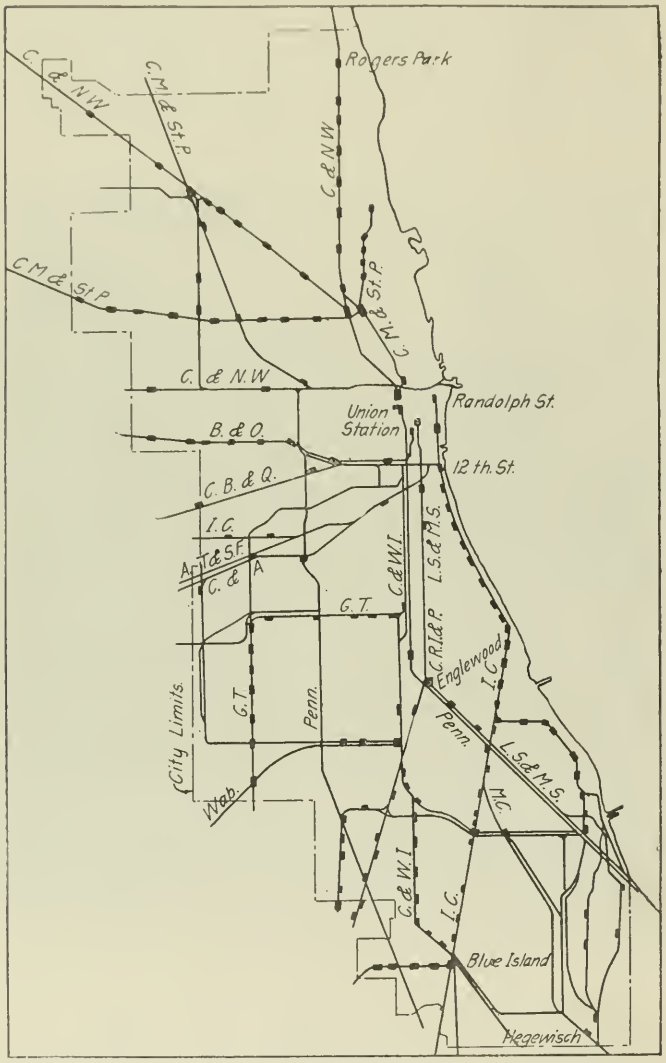
Reserved Seats on the Tender of an Illinois Central Engine

service, and because of this fact no extra employees were used to handle the increased traffic.

The Chicago, Rock Island and Pacific under ordinary conditions has a heavy suburban traffic, running 75 trains a day and carrying from 17,000 to 18,000 passengers. During this four-day period there were put in service approximately ten extra trains a day, which, with the regular trains, handled between 30,000 and 35,000 passengers, or an increase of 12,000 to 13,000 over the regular traffic. In other words, the Rock Island during the strike period carried 120,000 to 140,000 passengers on 340 trains as compared with an average traffic of 68,000 to 72,000 passengers carried on 300 trains. Additional ticket booths were installed at the La Salle street station, and preparations were made to handle the traffic expeditiously.

The Chicago, Milwaukee & St. Paul under ordinary conditions does a limited suburban business, although its lines traverse heavily populated districts which are ordinarily

served by the street and elevated railways. Its regular schedule consists of six suburban trains which carry on an average 5,000 passengers per day. During the four days of the strike the number of trains daily was increased by 12, making a total of 18. These trains handled approximately 30,000 additional passengers during each day of the four days, making a record for the four-day period of 72 trains handling 140,000 passengers. Service on the Evanston line of this road, which has been abandoned for several years, was resumed, and during the morning and evening rush hours service was rendered as far north as Buena Park, a distance of approximately 6 miles. In addition service was resumed on this company's line to Dunning, serving portions



Distribution of Suburban Stations on Steam Roads in Chicago

of the city normally served only by the street and elevated lines.

The Chicago & Western Indiana, which normally runs 7 suburban trains a day which carry a total of approximately 3,000 passengers, increased its trains by 30 each day during the strike, making a total of 37 trains per day which carried daily a total of approximately 23,000 passengers per day.

Conditions on the Chicago, Burlington & Quincy approximately duplicate conditions on the other lines handling a suburban traffic from Chicago, but its lines do not traverse a section of the city that affords much suburban business. The number of trains on this line were increased from the normal number of 70 by the addition of 5 trains, beside an increase in the number of cars per train, and the number of passengers handled was increased from the average daily number of 14,000 by the addition of approximately 7,000 a day.

One of the difficulties encountered in the operation of this additional suburban service was in the collecting of tickets and fares. This difficulty was overcome by requiring passengers to buy trip or commutation tickets before entering the trains and taking up these tickets as the passengers entered the train platform. At the suburban stations on many of the roads the station platforms were fenced off and the tickets purchased were collected or punched as the passengers passed through to the station platform.

The experience these railroads obtained during a similar situation in June, 1915, enabled them to avoid many of the difficulties encountered at that time. The congestion was further relieved by the fact that a greater number of street vehicles were pressed into service than in 1915 and because the public did not commence to use the steam roads to the fullest extent until the second day of the strike.

Hydrogen Gas for Cutting and Welding

WHILE ACETYLENE in combination with oxygen is widely used for welding and cutting, there are certain disadvantages in the process due to the explosive character of the acetylene. In order to eliminate the disadvantages incident to the use of acetylene, the Carbo-Hydrogen Company of America, Pittsburgh, Pa., has developed a gas known as carbo-hydrogen with the view to furnishing an efficient and safe medium for use in cutting and certain types of welding.

Carbo-hydrogen is a product of the destructive distillation of suitable hydro-carbons and is a general analysis of 85 per cent hydrogen, the balance being light hydro-carbons. It is a fixed gas, permanent under all weather conditions, and does not solidify or leave any residue in the tank. Being a combustible gas and not an explosive, it is easy to use and safer than acetylene. No air or free oxygen is mixed with the gas in the process of manufacture.

Gases having a high B. t. u. value are necessarily slow in combustion and require a longer time to deliver a given amount of heat and a larger expenditure of oxygen than gases having a higher rate of combustion. For this reason, a smaller portion of oxygen is needed for a given amount of work where carbo-hydrogen is used. The gas maintains a very high rate of combustion and ignition consequently generates an intense heat.

In cutting ferrous metals gases having a high carbon content change the character of the metal at the cut hardening it so that machining or canting is exceedingly difficult. It is claimed that metal cut by the carbo-hydrogen process on the other hand retains soft surfaces that can readily be worked, while the absence of slag increases the speed of cutting and produces a smoother surface.

The use of carbo-hydrogen for heavy welding on steel parts is not advocated by the manufacturers, although the process is said to be superior to the oxy-acetylene flame for welding softer metals.

Among the advantages of carbo-hydrogen may be mentioned the absence of dangerous and poisonous gases in the products of combustion which often prove injurious to operators being composed largely of pure hydrogen, carbo-hydrogen burned almost entirely to water, while the combustion of acetylene and oxygen produces at least 50 per cent carbon monoxide. Carbo-hydrogen compressed to 1,800 lb. per sq. in. is supplied in drawn steel cylinders. The working pressure varies from 5 to 19 lbs. per sq. in.

Plumb Plan Given Hearing Before House Committee

Congressmen Not in Receptive Mood and Resent Threatening Attitude. Stone, Morrison and Plumb Testify

WASHINGTON, D. C.

THE PLUMB PLAN for having the government take the railroads from the "bourgeois," paying them the number of dollars representing their original investment, but in the depreciated dollars of today, and turning their operation over to a corporation not for the benefit of the "proletariat," but only of that section of the proletariat employed on the railroads, was given a hearing before the House committee on interstate commerce on Wednesday and Thursday, during which it encountered some rude jolts at the hands of the committee members.

Warren S. Stone, grand chief of the Brotherhood of Locomotive Engineers, and president of the Plumb Plan League, and Frank E. Morrison, secretary of the American Federation of Labor, opened the presentation, and they were to be followed by Glenn E. Plumb, the author of the plan, and A. B. Garretson, until recently president of the Order of Railway Conductors. Mr. Stone and Mr. Morrison made very brief statements, but they did not leave the witness stand until they had been questioned at length by nearly every member of the committee, most of whom made it very plain that they were neither in sympathy with the ideas represented by the plan nor with the threatening manner in which it has been presented to the public.

Both Mr. Morrison and Mr. Stone said that the cost of living constituted the real problem; that increased wages would afford only temporary relief, and that the Plumb plan would afford no immediate relief along that line, but they had no concrete suggestions to offer for a reduction of the cost of living, and Mr. Morrison insisted that an increase in wages would be necessary in any event while the cost of living was being reduced, although he admitted its effect would probably be to increase the cost of living. Mr. Stone denied that the labor organizations propose to strike for the purpose of securing the adoption of the Plumb plan, but said there might be some strikes to "secure relief from the high cost of living."

Mr. Plumb Speaks on Living Costs

Before discussing the principles underlying the Sims bill Mr. Plumb spoke on behalf of labor as holders of Liberty bonds. "Twenty-two million citizens out of patriotism contributed," he said, "20 billion dollars to aid in the prosecution of the war. On this contribution, they are assured a return of only 3½ to 4½ per cent. If they now see the Government guaranteeing 6 per cent returns on $20,000,000,000 of railroad securities, of which at least half is fictitious, if the Interstate Commerce Commission's figures on five small roads are to be taken as characteristic of the entire industry, representing no service to the public, thereby depreciating their securities, for which they paid par value, by 50 per cent, can you expect them to maintain that patriotic belief in their country?

"Would you not believe that such action merely transferred from the market value of war bonds to the market value of railroad securities, six or seven billion dollars?

"The representatives of railway securities, the railway security holders, and the United States Chamber of Commerce appearing before you have asserted that they speak for half of the citizens of the United States as being interested in the value in maintaining the credit of railway securities. By what basis they reach this conclusion I cannot tell. But if 50 million people are indirectly affected by the market value of 20 billion of railway securities held by 200,000 individuals, how many people are affected by the market value of 20 billions of Government bonds held by 22 million individual subscribers? And to what extent are the holders of life insurance policies and depositors in savings banks interested in seeing that the assets of those institutions are not damaged by shrinkage in the market of Government bonds which they hold?

"If the value of a labor investment be calculated by the return which it receives, in the same manner in which a capital investment is determined, then that labor investment measured financially approximates a value of 50 billion dollars. In addition to that at least three million citizens appear here as capitalists owning a large proportion of the national debt and seek to have their interests as such owners likewise considered and justly protected.

"This vast army of producers are not divided. They present no conflicting plans, no diverse theories for the solution of this problem, but appear before you a united force profoundly convinced of the economic soundness of the principles upon which their plan is built, imbued with the crusaders' spirit to support the principles upon which their faith is founded.

"The progress of recent events has brought us face to face with a crisis of tremendous importance. The constantly rising cost of commodities to the consumer has far outstripped the purchasing power of the consumer's wage. This difference between earning power and spending power of the great mass of the workers has compelled a corresponding lowering of the standard of existence. This is an onfluence entirely hostile to the interests of humanity, and to be resisted by all the powers of mankind. Human nature cannot do otherwise than oppose the universal lowering of the standard of living. To avoid the deprivations which loss of purchasing power necessarily inflicts, the first natural reaction is the demand for increased purchasing power through demanded raises in wages, yet, this demand is acknowledged to be futile, because such increase in cost of production is immediately more than reflected in the increased cost of commodities.

"In answer to this first reaction, demand for increased wages, we now find a hundred thousand railway employees refusing longer to render their services for these constantly diminishing returns. This manifestation of revolt is but symptomatic of the entire industrial situation. It is not unrest that confronts us, it is revolt because of industrial conditions no longer to be borne.

"We already number in the supporters of labor's plan approximately six million adult producers—about one-sixth of the productive man-power of the United States, perhaps the same proportion of the political power of the nation, and a financial power which few comprehend. Those employed on the railways alone represented in this movement, receive as their annual compensation for the investment of their life and labor upwards of 2½ billion dollars a year,—two and a half times the amount of compensation paid for the use of the money invested in railways.

"It is claimed by those who represent the financial interests before this committee that they have investments of approximately 20 billion dollars in this industry. Unless they receive a return of a billion dollars a year, how shall this investment of money be compared with that investment of life and labor that receives a return of 2½ billion dollars a year? By what standard can they be compared which gives

to the investment of life a value less than that allotted to the investment of dollars? By what reason can the interest of things exceed in value the interest of human beings? He who speaks of the interests of property as consisting of rights which the property possesses disassociated from the human right of ownership, reasons falsely.

"All citizens are consumers. Most citizens are producers. Those who consume and do not produce are either beggars or capitalists. Many who produce are also capitalists. I have already shown that 1,700,000 of the wage-earners on the railroads, producers, are capitalists in that they hold Government securities. Many of those who hold investments in the railroads, also, serve the industry in some capacity. So that these three interests are commingled in the great body of citizens. Likewise, all producers are consumers; and again all consumers are producers, except those who live by charity or those who live on interest alone. All of organized labor are consumers, and it is the failure of producers in industry to recognize their interest as consumers that has made the efforts of organized labor ineffectual in securing for its membership a greater share of the profits of the industries in which they are employed.

"The owners of the capital alone have benefited. Wages have been increased, but all commodities which the wage-earners must purchase have been more than correspondingly increased in price by the profit demanded by the owner of capital upon the increased cost of production. Under such a system earning power can never overtake spending necessity. But the necessity of purchase always outstrips the power of buying exactly by the profit demanded on the increased purchasing power, and to the extent of the profit compounded by each intermediate handling and transportation of the commodity. This constantly growing difference between necessity for buying and ability to pay must be compensated by a lowering of the level of existence. In no other way can the sheet be balanced, and mankind not only here but the world over refuses to accept that balance sheet.

"Organized labor now realizes that further advances in wages at the expense of a cost of living exceeding that of values are wholly futile. Equally, organized labor realizes that to correct this vicious system the interests of both producers and consumers must be protected; that the great increase in the productive power of human effort should be reflected equally in increased earning power of those who produce and the decreased cost of the commodity, so reduced.

"In order to affect the price of all commodities by advances in wages to those who produce, then, it would be necessary to complete the entire cycle of industrial production. An advance to the shoemakers is reflected only in the advanced price of shoes. It does not affect any other commodity.

"But with transportation the situation is quite otherwise. The cost in transportation is reflected in the price of all commodities, whether transported or not. The consumer pays the freight on everything that he consumes, although it may be produced next door, and may never have passed over any line of transportation. Heretofore railroad rates have not been advanced universally. A commodity rate is advanced here, a classification rate advanced there, and only those commodities affected by such local advances reflect the increased cost in their price. But with the coming of the war a 15 per cent advance was allowed by the Interstate Commerce Commission, covering all rates and all commodities, and reflected the next day in the purchase price of everything by which we live. Later the director general again advanced these rates 25 per cent. This advance was again immediately reflected in the price of commodities, and the cost of living. The wages earned by those who produce constitutes the great bulk of the purchasing fund of this nation. When the price of all commodities is advanced due to an increased cost of transportation and the wage fund is not correspondingly increased, the difference is exactly reflected by a restriction in the amount of commodities consumed. This soon reacts on the producing agencies. They provide a restricted output to correspond with the restricted demand. This, again, restricts the wage or purchasing fund, and the cycle of restriction endlessly repeats itself, until we find production stifled, industry in stagnation, unemployment and inevitable political and social revolution.

"Reverse this vicious system. Reduce rates. The costs of all commodities are then reduced accordingly. The purchasing power of the wage fund is then correspondingly expanded. A greater volume of commodities is consumed. The demand on industry is increased. There follows a wider field of employment, which, in turn, increases the wage or purchasing fund of the community. This must inevitably follow, unless the savings of the cost of transportation, instead of being reflected in the price of commodities, are appropriated to swell the volume of profits of those who control capital. Insure the savings effected by a reduction in rates to the consumer, and you will have turned the tide that now threatens to overwhelm us."

Testimony of Warren S. Stone

Declaring that "American democracy is controlled by an autocracy in industry and that America must become the home of industrial freedom," Warren S. Stone, grand chief of the Brotherhood of Locomotive Engineers and president of the Plum Plan League, argued that there could be no solution of the industrial problem and no lowering of the cost of living as long as consumers had to pay extortionate profits on their own earnings in purchasing the necessaries of life. Labor's belief in the Sims bill, he said, was profound. "In this plan," he concluded, "we raise the banner of democracy in control of industry, we advance to a new crusade with the faith of the Pilgrims, with the convictions of the framers of the Constitution and with the hope of America for economic independence." His statement was in part as follows:

"At the request of these organizations the Sims bill is now before you. I speak as the voice of these two million men, delegated by them to announce to this committee and to the people of this country that they are supporting this measure with all the strength and all the unity of purpose that can move so large a body of citizens. Joined with us is the American Federation of Labor, adding three million and a half men to that body of railway employees who instituted this movement.

"In the industrial development of this country great organizations of capital first appeared as employers. Individual workers, following the example set by capital, organized as employees. Their purpose was to secure better working conditions and a larger measure of return for their labors. The full force of capitalistic organizations has been set against labor to hold and to keep all the profits of industry. The strength of the labor unions has been exerted to wrest from capital some share of the profits for the wage-earners.

"This has been a perpetual struggle by the workers to maintain a tolerable standard of existence; on the part of capital to amass greater profits. At times both sides could ignore the needs of the public. But now the very growth of the labor organizations has brought into their ranks a great mass of the consumers. The large number of the wage-earners now constitute a large percentage of the people.

"For whatever the worker receives in wages he must spend for the necessaries of life. In addition, he is always compelled to pay to the employer an excessive profit on his own wages. The cost of his living is determined by the sum he earns plus the profit he is charged on his own labor. And as a group, labor is forever prevented from bettering its lot because of the profits exacted by the employer. The hope

of a finer life is never realized. So long as consumers are forced to pay extortionate profits on their own earnings to a third interest there can be no solution of the industrial problem.

"We find that this third interest absolutely controls and dominates the management of industry. It fixes wages and controls working conditions. It fixes the prices of commodities without regard to the needs of society, or the necessities of producers and consumers. We have a democratic form of government but an autocratic control of industry.

"We exist under government, but by industry we live. Under such a system the majority of a democracy can through their government enjoy only such rights and privileges as an autocracy in industry permits them to receive. This country was peopled by a race who sought within its boundaries religious freedom. It was established by their descendants through revolution as a land of political freedom. We now demand that it become the home of industrial freedom. This can only be accomplished by extending to industry the same right of individual freedom recognized by the founders of our government in establishing this democracy. The need of mankind for the products of industry must be accepted as the basic interest in all industry. The right of the worker who supplies that need demands like acceptance. This can only be achieved by permitting producers and consumers to share in control of the management of their means of existence. The machinery for attaining this result we believe is embodied in the plan outlined in the Sims bill."

Mr. Stone Questioned

Members of the committee apparently had prepared themselves for the labor leaders, and Mr. Stone promptly bumped into a hornet's nest of hostile questions. Chairman Esch began by reading from the statement signed by the brotherhood leaders that labor is in no mood to brook the return of the railroads, and asked what was the purpose and intention of that declaration.

"We are bitterly opposed to the railroads being returned to the old plan of private ownership and the struggle of labor," replied Mr. Stone.

"This committee has heard numerous plans for dealing with the railroads, and we have given you the same chance as everybody else to present your plan," said Mr. Esch, "but should the committee not endorse the Plumb plan what will be the attitude of your organization?"

"We will try to create enough public sentiment so that the majority of the House and Senate would endorse it; through every means at our command; through the press; through our members, and in every legitimate way."

"Would you seek to develop your plan through a strike?"

"No. I can speak only for the B. of L. E. We have made no threat of a strike. We have not even asked for an increase. We prefer a reduction in the cost of living."

"I don't think any of these organizations are going to strike simply to get the Plumb plan," said Mr. Stone, "but I think some of them may strike if they don't get some relief, and they do object to the plan proposed by the President. I don't believe they will wait that long because they cannot live under present conditions."

"If the President does something to reduce the cost of living, will the strike be withdrawn?" asked Mr. Esch.

"I am not advised as to what the other organizations will do," answered Mr. Stone, "but if you reduce the cost of living you will solve the problem of industrial unrest."

"Have you any concrete suggestions for reducing the cost of living?"

"No. We want to see what the President and the government will do. If they fail, and I hope they don't fail, I am satisfied the labor organizations can do something."

"Have you any suggestions to make as to what Congress can do?" said Mr. Esch.

"I think we could offer you many, but they are not in concrete form at this time. We might advocate a firing squad for some kinds of people."

"You say you will not brook delay; yet you have no concrete suggestions to make. Shouldn't Congress have some time to deal with the problem?"

"Congress should have seen this was coming months ago. The working man knew it, but it looked as if Congress was going to go away and take a summer vacation."

Mr. Esch pointed out that even if Congress had taken a vacation the committees were to remain in session in an effort to work out some of the problems.

"We realize that an increase in wages is only temporary relief," Mr. Stone said, "but if it takes a bushel basket of dollars for a man to live 30 days then his wage for 30 days must be a bushel basket of dollars. A dollar now is worth only 43 cents."

"Isn't that the result of the war influence?" said Mr. Esch.

"Pardon me, I cannot agree to that. It is due to the system of profiteering that has been developed since the war. Prices are higher today than they were during the war period and there is no excuse for it. Yet up to date no one has done anything to remedy the situation."

Mr. Stone, as an example, stated that carloads of food are thrown on a dump in Cleveland every day in order to keep prices up, and when it was suggested that this was a problem for the municipality he said similar conditions exist all over the country and that the government ought to do something about it. He said Congress was able to do a good many things during the war period and that it ought to be able to control prices.

Representative Winslow then took up the questioning, asking first whether the Plumb Plan League had been authorized by a referendum or any definite expression of the members themselves. Mr. Stone said it had been organized by the officers with full authority to speak and with a knowledge of what the members wanted. Mr. Winslow wanted to know if any of the two million railroad men Mr. Stone had mentioned as supporters of the plan were included in the three and one-half million members of the American Federation of Labor he had mentioned in the same way. Mr. Stone turned to Mr. Morrison, who said he was unable to give the exact figure. Mr. Winslow said he would like to know whether the real number was five and one-half million or whether this represented duplication.

Referring to statements that labor always got the worst of it while capital is always protected, Mr. Winslow asked if every business did not have periods of depression when there were no profits and no dividends and which might properly be offset by larger profits in a good year. Mr. Stone replied that labor always suffers when capital does not make its money and that such conditions might be due to mismanagement and overcapitalization. "It is a question anyway," he said, "whether capital is entitled to any return or not."

"What do you think Congress should have done to reduce the cost of living?" asked Mr. Winslow.

"Well, Congress could have seen this coming months ago, but it was so busy playing politics that it had no time to pay attention to the common people."

"Is that your answer?"

"It should have done something about the cost of living, not merely talk about it."

"What should Congress have done and when should it have done it? Let us suppose we are boneheads and have not seen it; what do you say we should have done?"

"You should have done something to stop profiteering and as soon as you met in session."

"That marks the time," said Mr. Winslow, "but I ask

you frankly as man to man, with no halo around either of us, what should we have done?"

"After we have had a reasonable time to see what the government does, I think we can formulate a plan. I have no concrete remedy to propose this morning."

"But suppose Congress is of the same mind after having perhaps given the subject more investigation than you have given it?"

"They could get some suggestions from their constituents."

"Yes, but no remedy. Then, so far as you are concerned as a witness, we do not get any help?"

"I have some ideas, but I am talking about government ownership of the railroads now."

Representative Sanders asked Mr. Stone's opinion regarding government ownership of coal mines. The witness was not prepared to discuss that question.

"There is a propaganda being carefully circulated," he said, "that this is only a move to have the government take over everything, but we are only dealing with the railroads. I think there should be some regulation of the price of coal, at least. Whether the government at some time should take over all natural resources is a question for the future."

Representative Rayburn asked if Mr. Stone believed in a general price-fixing scheme.

"Unless we get some other solution," replied Mr. Stone.

Mr. Rayburn then read the statement attributed to B. M. Jewell, chairman of the shop employees' committee, threatening to tie the railroads up so tight they would never run again. Mr. Stone said he had no authority to speak for Mr. Jewell and questioned whether he had made such a statement because it was sheer nonsense. "We know the railroads are going to run some way," he said, "if the government has to do it."

Representative Denison asked if the adoption of the Plumb plan would not have great influence on its spread to other industries. Mr. Stone said that if under it they were able to show a better operation of the railroads it would undoubtedly have such an influence. He would not think it wise to begin now on a policy of socializing industry, but he thought the time had come for the government to take over the railroads. "Any other plan," he insisted, "would simply mean financial panic and chaos and result in receiverships of a number of railroads inside of 30 days because they could not meet interest charges." Mr. Denison asked if Congress could not possibly prevent a panic in some other way.

"Yes, by subsidizing them," Mr. Stone said. "That is the plan proposed by capital interests. The proposed guaranty means a subsidy and there is no reason why the railroads should be given a guaranty any more than labor. The Railroad Administration agrees that we should have a 25 per cent increase, but that it has no money to pay it."

Mr. Denison asked why, if the time has come for the government to take over the railroads, the same thing does not apply to other public utilities that are in a similar condition. Mr. Stone said he was not so familiar with other industries.

"Do you desire an increase in wages under your plan?" asked Representative Montague.

"Under our plan," replied Mr. Stone, "there can be no increase in wages until we have shown a profit."

"But suppose you do not show a profit?"

"We are going to," insisted Mr. Stone. "There is no argument about that. We know that we can."

"At prevailing rates?"

"We think so; yes."

"Do you believe rates are going up, or down?"

"I think we can show a reduction," replied Mr. Stone.

"How long will it take; how many years?"

"I wouldn't undertake to say," replied the witness, "but you must remember there can be no increase unless the Interstate Commerce Commission says so."

Testimony of Frank Morrison

Frank Morrison, secretary of the American Federation of Labor, said, in part:

"In all discussions of this question it would be well to bear in mind that quasi-public corporations are created for service and not for profit. A long line of decisions, from the Supreme Court of the United States down have invariably held that the fundamental purpose of these corporations is to serve the public and that they are only entitled to a fair remuneration.

"Hardly any one will deny that under private management the railroads have been financial footballs, and that they have been directed by interests whose wreckage of numerous railroad systems is common knowledge. This wreckage has been accompanied by a debauching of legislatures and other political activity that tested democratic institutions.

"The times call for new arrangements in the management of properties that are only made possible by the public's consent. The passage of the Sims bill will re-establish the theory that railroads should be operated for public service rather than for private profit.

"Aside from the application of democracy in these properties, and their handling by practical railroad men, the Sims bill will squeeze all fictitious value out of these properties This will affect living costs and reduce charges the public must now meet, for then it will no longer be necessary to compel the railroads to earn dividends on millions of dollars of watered stock."

Regarding the question raised by Representative Winslow as to the number of supporters of the Plumb plan, Mr. Morrison said that the membership of the federation was 3,700,000 paid members and over 4,000,000 if those not paid be taken into consideration and that including the brotherhoods the total would be brought up to 4,700,000. It also claims to represent all other organized labor and therefore that all the wage workers of the country have endorsed the plan. He said that of the 14 railroad labor organizations in the Plumb Plan League, 10 are members of the federation, two, the conductors and engineers, have made applications for membership and the Brotherhood of Railroad Trainmen has authorized negotiations with the officers of the federation to become a member.

Chairman Esch asked what method could be used to develop the public sentiment of the country as to the plan. Mr. Morrison said that any method that could be used to convince the public that the plan was necessary should be followed, that duress was not a part of the plan, but that it proposed to educate the public and to support the men, regardless of party, who would favor labor's plan. Mr. Esch asked if, assuming the Plumb plan is not adopted by Congress at this session, an effort will be made to submit the proposition to the people by a national referendum. Mr. Morrison did not give a direct answer to this and showed a marked aversion to giving a direct answer to many of the questions that followed. He said that members of Congress were supposed to represent public opinion and could easily find out the sentiment of the people in their districts.

Representative Rayburn led the witness through a number of questions in which Mr. Rayburn took the position that wages in the last analysis would be settled by the board of directors, on which the employees, including the officers, would be two to one as against the representatives of the public. Mr. Morrison would not agree that the officers would vote with the representatives of the employees.

Mr. Winslow tried to get the witness' opinion of a suggestion that all wages be reduced 25 per cent for the purpose of reducing the cost of production and thereby decreasing the cost of living. Mr. Morrison preferred to discuss this question in terms of government employees rather than in terms of the workers engaged in a productive capacity. Mr.

Winslow then put to the witness the following two questions which he had prepared and on which he asked a careful answer:

"Has labor, including railroad labor, at any time, in any country, ever been so well fed, so well clothed, so well housed, so well entertained, and so well furnished in its homes, as is labor in the United States today?

"Has labor ever been so well off in respect to bank deposits and other evidence of savings and prosperity as now?"

Mr. Morrison went into a long discussion which did not answer the questions, saying that when four million went into the army it reduced the problem of unemployment and kept the people pretty well employed for long hours and for extra compensation. That, he said, however, was a war condition, changed since the armistice, and now there is a great deal of unemployment and unrest.

"Do you prefer not to answer my question?" asked Mr. Winslow.

"Well, taking into consideration the fact that railroad men have received only 37 per cent increase in wages, while the cost of living went up 82 per cent, it is not possible that they should be in as good condition as they were."

After considerable argument Mr. Winslow repeated the questions. As to the second, Mr. Morrison replied that he had no accurate information, but that taking into consideration the great efforts made to promote thrift during the war, the railroad employees, being loyal citizens, naturally deprived themselves of a great many things and there was no question in his mind that labor has saved more.

In reply to Representative Webster, he admitted that if wages were increased the probable result would be a further increase in prices, but when Mr. Webster suggested that for this reason the idea of increasing wages as a remedy should be set aside while Congress devoted its attention to some better method, the witness demurred, saying that the railroad men are entitled to a large increase now and will need it during the time required by the effort to reduce the cost of living.

"But we are after a cure, not a palliation," said Mr. Webster, "and since both you and Mr. Stone admit that an increase in wages will result in an increase in the cost of living, must we not, in our search for a cure, lay aside that remedy? You want us to engage simultaneously in the task of increasing the cost of living and reducing it."

"I don't believe wages are the cause for the cost of living," replied Mr. Morrison. He admitted that it would take a long time to put the Plumb plan into effect, but declared that in the meantime the workers should be protected by being put on a basis as good as they enjoyed in 1914."

"But both you and Mr. Stone concede that the Plumb plan is not a panacea for the high cost of living. Would it not be the part of good sense for Congress to lay the Plumb plan on the shelf for the time and devote itself to immediate consideration of some immediate remedy, particularly since the Plumb plan is revolutionary and experimental?"

"But I understand the proposition before your committee is this bill," said Mr. Morrison. "The high cost of living affects every one and there will be other hearings on that. We are here today to advocate this bill."

Mr. Webster tried repeatedly to get the witness to say whether the united effort on the part of the government to reduce the cost of living would not be preferable to a wage increase at this time. Mr. Morrison thought that the railroad men should not suffer the increased cost while a solution is being worked out.

"But you propose to increase the cost to the public generally while we are working on it," said Mr. Webster.

Mr. Morrison insisted that the Plumb plan would assist in the solution of the difficulty and that the Railroad Administration had not given its employees the wages they have been entitled to.

In concluding the questioning, Mr. Webster said that he was perfectly willing to sit night and day in order to give a fair and intelligent consideration to any plan proposed, but that he would not be dominated or coerced by any threat, however vaguely conveyed, as to what organized labor will do to him if he does not vote as they wish.

"I am sorry," said Mr. Morrison, "if any one has got the idea that we are threatening, but there is an unrest in this country because men are not receiving what they should have and great bodies of them have already gone on strike in spite of the efforts of their officers. There comes a time when the burden is too great, and when that time comes you may expect revolution, to the extent at least of strikes."

Other Witnesses

R. C. Fulbright, representing a number of Texas shippers' associations, testified before the committee on July 31 and August 1, making a strong argument for the establishment of six regional commissions under the Interstate Commerce Commission, to relieve the Interstate Commerce Commission of a burden of detail and to supplement the local regulation of the state commissions. He pointed out that the Esch-Pomerene bill makes no provision for regional commissions, although, he said, the demand for them is very general. The work of railway regulation has become so vast, he said, and complicated, that the commission needs the assistance of other bodies and power to delegate some of its work to them. Regional commissions would expedite the handling of cases, bring regulation closer to the people, insure greater efficiency in the routine of regulation, and promote better cooperation and understanding between both shippers and carriers and between the state and the interstate commissions. The commission now cannot pass upon a formal complaint in much less than a year, and the Esch-Pomerene bill proposes to give it several classes of additional functions. The commission, Mr. Fulbright said, is the hardest-working group of public officials he had ever had anything to do with, but it is physically impossible for them to give real consideration to all the cases that come to them for decision.

John Martin, representing the Railway Investor's League, proposed the abolition of the Interstate Commerce Commission on the ground that it has outlived its usefulness, and the creation of a federal transportation board. He urged the consolidation of the railroads into 15 or 20 systems and a Government guaranty of 4½ per cent.

W. A. Wimbish, of Atlanta, Ga., special counsel for the Southern Traffic League, testified before the committee on Tuesday and counseled it not to be stampeded by the demands of the labor organizations, but to "sit tight," and proceed with its hearing just as it otherwise would do.

"If you are considering Government ownership or this new radical proposition," he said, "if you propose to lie down supinely and let any interest in this country, capital or labor, dictate what Congress shall do, I have little to say to you, but I don't think you are going to be stampeded, because you would be condemned by your constituents, and I can't think that this proposition represents even the thought of intelligent working men."

Mr. Wimbish then gave his views on the railroad problem generally, supporting the Esch-Pomerene bill, which he said came nearer meeting what is required than any plan that has been presented. He declared that the return of the roads would not mean bankruptcy to the Southern roads, which he was particularly interested in, nor to the transcontinental lines. He thought the commission in fixing rates ought to take into consideration the cost of labor and the cost of capital, but that it ought not be bound by either. The railroads had got along very well financially before Government control, and no radical changes in the system of regulation were necessary. Therefore he opposed most of the plans that have been advanced.

General News Department

The Senate has confirmed the appointment of John Barton Payne, now general counsel of the Railroad Administration, as a member of the Shipping Board.

The Bill appropriating $17,000,000 additional to complete the construction of the Alaska railroad has been made the subject of a favorable report by the House committee on territories; and members of the territories and appropriations committees have gone to Alaska to inspect the road.

E. E. Betts, superintendent of transportation of the Chicago & North Western, with headquarters at Chicago, and vice-president of the General Superintendents' Association of Chicago, has been elected president of that Association, and W. C. Staffa, superintendent of the car service on the Chicago & Alton, Chicago, has been elected vice-president.

Near Verona, Italy, on August 2, fourteen persons were killed when the airplane in which they were flying fell to the ground from a height of more than 3,000 ft. The airplane was a Caproni, which had started from Venice for Milan. Press despatches report the fall as due to an explosion caused by the careless use of a cigar or cigarette by one of the passengers.

Rubber tires to the number 2,300 figure in the latest reported freight car robbery. Near Alliance, Ohio, one night last week, thieves, armed with shotguns, held up a freight train crew while they unloaded the tires and carried them off in motor trucks. Press despatches say that there were six men in the gang.

Edward H. Shaughnessy, formerly trainmaster of the Galena division of the Chicago & North Western, with headquarters at Chicago, and lately a lieutenant in the Thirteenth (Railway) Engineers, has been commissioned a lieutenant-colonel, in charge of transportation for the American expeditionary force. He has been awarded the distinguished service medal "for meritorious performance of the highest type in the prosecution of his duties."

Isaiah Hale, safety superintendent of the Atchison, Topeka & Santa Fe, in a recent bulletin devoted to the interest of the safety-first movement says that 40 per cent of the injury reports which passed over his desk during a ten-day period consisted of mashed toes. "No favorites are played," says Mr. Hale, "it is the major toe as often as the little buck private toe down at the foot. The cases range from the man who drops a coupler on his toe, to the man who steps on his own feet. The law of gravity is universal: if an object is unsupported it falls and keeps on falling until it strikes the earth—or your own or some other fellow's toe. Toe injuries threaten to make our personal injury record look bad; there is nothing fanciful about them, they are a stern reality." And the sensation monger who glories in large totals of "killed and injured" can make as much out of a mashed toe as out of a broken neck.

Frauds in the sale of unclaimed freight are charged in indictments against two expert brokers who were arraigned in the United States District Court, in New York City, August 1, and held in bail of $25,000 each for trial in October. Two clerks in the freight claim office of the Central of New Jersey have been indicted on charges of having accepted bribes to approve fraudulent dealings with these sales agents. Between June, 1917, and March, 1919, it is alleged that about $100,000 was stolen by rendering to the railroad company false reports, showing sums much smaller than those for which the goods actually were sold. The irregularities were discovered by an investigator of the Interstate Commerce Commission, who examined the books of the claim department of the railroad. Similar but smaller frauds have been committed against the Central Vermont and the Long Island railroads.

The railroads of Detroit, Mich., ought to pool their freight and passenger service to prevent duplication of effort; at least, so says the City Council, which body has decided to appeal to the Interstate Commerce Commission, the United States Railroad Administration, the Public Utilities Commission of Michigan, and the Michigan representatives in Congress, to bring about such unification. The Toledo and the Bay City divisions of the Michigan Central form a direct straight line across the city from the southwest to the northeast. Between the west city limits and Milwaukee junction, this line has been paralleled by the Grand Trunk and the Wabash with freight spurs. The old main line of the New York Central (the Lake Shore) is now being used for freight only from West Detroit. These parallel lines already have expended $2,250,000 for grade separation. The councilmen declare that one railroad would serve the industries as well as four. The City Council also has plans for the establishment of "rapid transit" for the benefit of workers in the factories along the Bay City, and Toledo divisions of the Michigan Central. A group of large manufacturers are preparing a petition to present to the Michigan Central for the installation of gas-driven passenger cars. Henry Russell, vice-president and general counsel of the railroad, tells the councilmen, however, that the company's tracks are now being used already to their full capacity for regular passenger and freight service, and further, the workmen would have long distances to walk as the railroad lines do not touch the residential districts. The industrial growth of Detroit is so rapid that the railroads have got to devise some way of increasing their facilities to handle freight instead of overloading them with this local passenger service.

Signal Division—A. R. A.

H. S. Balliet, secretary, 75 Church street, New York city, has issued the call for the annual meeting of the American Railroad Association, Signal Division, to be held at Congress Hotel and Annex, Chicago, on Wednesday, Thursday and Friday, September 17, 18 and 19. The notice of the meeting, containing reports of committees, will be issued on September 2. Orders for rooms at the hotel should be sent by members direct, at an early date. Rooms for one person, with detached bath, $2.50 to $3 a day; for two persons, $3 to $5 a day. Room with bath, $3.50 to $6 a day; or, for two persons, from $5 to $10.

Pullman Porters and the Chicago Riots

A serious problem confronted Chicago's railroads and the Pullman Company at Chicago in the handling of their colored employees during the race riots in that city from July 27 to August 2. The problem was successfully solved, however, by the adoption of a plan whereby the colored employees on the passenger lines upon arriving in Chicago were immediately assigned to outgoing trains, thereby eliminating their layovers in Chicago to a large extent. When this was impossible, the men were given permission to remain in the cars in which they arrived, until such time as they could be assigned to outgoing trains. In this manner the majority of the thousands of colored men on railroads entering Chicago were able to avoid any serious clashes.

A surprisingly small number of the 1,200 Pullman porters, cooks and other employees failed to report for regular work during the period of the rioting. Adequate guards were provided at the railroad yards to protect the men and where it was necessary for them to return to their homes they were provided with police protection.

Chicago & Alton

In the July 18 issue of the *Railway Age*, on page 125, the passenger earnings of the Chicago & Alton are shown as $5,407,589 for the month of May. This should be $540,759.

One Perfect Railroad—Almost

The above is the title of an interesting pamphlet issued by George Bradshaw, supervisor of safety of the Pere Marquette and other roads under the jurisdiction of federal manager Frank H. Alfred. The road in question is described as being less than 500 miles long and it has more than one main track. It is one of the few roads that have been able to pay a regular 10 per cent dividend and in addition extra dividends running as high as 40 per cent. The road's cars and engines, if coupled together, would make a train considerably greater than the total main line mileage of the road and the yard and siding mileage of this road is approximately three times its main line roadway. The main line is stone ballasted and equipped with automatic block signals and its shops are provided with the latest machines; in fact, the road, physically, is as near perfect as possible. However, of the 12,000 employees on this near-perfect road, 27 were killed last year; and not one of these met death accidentally or by reason of an unsafe physical condition. In other words, every one of the 27 men was killed on account of the failure on the part of himself or some other employee to use reasonable care in performing his duty. Hence, the title "One Perfect Railroad—Almost."

Proposal to Include Coast and Geodetic Surveys Under National Department of Public Works

One advantage to accrue from the organization of a National Department of Public Works in accordance with the bills recently introduced in both houses of Congress would be the correlation of the work of the Coast and Geodetic Survey with other activities of an allied nature now being conducted by other departments of the government. The principal work of the Survey is the charting and sounding of the coast waters of this country. This is strictly an engineering work, done by and under the supervision of engineers. The next activity of the Survey is the providing of horizontal and vertical control points throughout the interior of the country. This is of the highest importance as it provides skeleton framework on which all other surveys should be based. It is important to note, however, that a large number of other government agencies are also engaged in map making. These include the Corps of Engineers, the Geological survey, the Land office, the Bureau of Indian Affairs, the Forest service, the Boundary commission, the Bureau of Roads and Rural Engineering, the Bureau of soils, the Reclamation service and the Hydrographic survey of the navy. This results in a large amount of confusion that could be eliminated by the co-ordination of all of this work under a Department of Public Works. This is particularly pertinent with respect to the Coast and Geodetic Survey since it necessarily forms the foundation for all survey work. It would result in a comprehensive mapping and leveling plan of inestimable value to the railroads and land owners and others who have occasion to make use of the maps and records of any of the existing survey bureaus. There is no work of the survey that does not fit well with the work planned for the Department of Public Works. It is essentially engineering work and should consequently belong in the national department designed to correlate all engineering activities of the government.

Northwestern fruit growers, at a hearing recently conducted by Examiner Marshall of the Interstate Commerce Commission, at Portland, Ore., on the proposed Perishable Protective Tariff No. 1, declared that the rate increases proposed in this tariff would endanger the industry in that district; and they thought that the adoption of some of the rules in the tariff would practically eliminate the carriers' liability on fruit shipments. The fruitmen are backed up by the Public Service Commissions of Oregon and Washington.

Traffic News

In accordance with notice previously given, the permit system for the shipment of grain was put into effect on August 1. In lieu of the individual permit system that was in effect last year (and which will be continued this year on a portion of the traffic), a so-called blanket permit system is now in operation, experimentally.

Because of the fact that locomotives operating over the National lines of Mexico between Laredo, Tex., and Pochica, Mexico, must be moved to San Antonio, Tex., for repairs, the International & Great Northern has petitioned the Dallas District Freight Traffic Committee for a reduction in rates on this movement from $0.26½ per 100 lb. to $0.09½ per 100 lb., the same basis as that which applies on intrastate movements in this territory.

The House committee on interstate and foreign commerce has voted 6 to 5 to report favorably the Cummins bill, already passed by the Senate, to restore the former jurisdiction of the Interstate Commerce Commission and the state commissions over rates. This would leave the director general subject to the same restrictions as were formerly imposed upon the railways, including the suspension power, except that the House committee adopted an amendment proposed by the Interstate Commerce Commission to remove the requirement of approval of the Interstate Commerce Commission before a tariff containing an increased rate may be filed. The committee also adopted an amendment to provide that no change or increase shall be made in interstate rates without having first secured the approval of the state authorities.

Traffic conditions throughout the country for the week ended July 28, 1919, were somewhat improved over the previous week in several regions, but as a general thing the movement was behind that for the same period in 1918. In the Northwestern region freight loaded for the week totaled 164,819 cars, a decrease of 2 per cent. In the Pocahontas region, compared with July 28, 1918, tidewater coal dumped decreased 54 per cent, coal and coke 12 per cent and other freight 12 per cent. In the Southern region, although the situation shows steady improvement for the last week in July, 1919, car loadings decreased 6,700 under the same period for 1918. In the Central Western region there has been an increase in the total traffic handled, both as compared with the same period last year and with previous weeks of the current year.

Senate Inquires About Coal Cars

The Senate on August 4 adopted a resolution introduced by Senator Pomerene calling on the director general of railroads to inform the Senate regarding the number of coal cars now in use in the transportation of coal, the number of empty coal cars which are suitable and available, whether the coal cars belonging to the railroads under federal control are now or have been during the past six months sufficient to meet the demand, the number constructed and purchased which have not been sold or transferred to the railroad companies and the reasons therefor, the methods adopted to supply producers of coal with necessary cars and any action by Congress which may be required in order to meet demands. Senator Pomerene had a number of letters from coal men complaining of car shortages and apparently did not know that the Railroad Administration had already taken steps to put into service the U. S. R. A. cars which had been accepted by the railroad companies, as announced in *The Railway Age* last week. The Columbia Trust Company of New York has been appointed by the Railroad Administration to be trustee to hold title to a large number of these new cars, pending the adjustment of questions respecting their allocation which are now being studied in connection with the plans for a general equipment trust.

Commission and Court News

Interstate Commerce Commission

At the request of the director general, the Interstate Commerce Commission has ordered an investigation as to the rates and regulations applying on grain and grain products from points in Idaho, Montana, North Dakota, South Dakota, Minnesota, Wisconsin, Iowa and Nebraska. The Railroad Administration in General Order No. 28 increased the rates and numerous complaints have been made regarding the disturbance of the parity formerly existing as between markets and interior milling points and as between country shipping points and markets.

Bill of Lading Order Postponed

Because of the injunction obtained by the Alaska Steamship Company and other carriers to restrain the enforcement of the Interstate Commerce Commission's order of April 14 prescribing forms of bills of lading, the commission has postponed the effective date of its order until further order of the commission.

State Commissions

The New York State Public Service Commission, First District, which has been asked by the city authorities of New York City, to revoke its approval of the increase in fares on surface street cars in Manhattan and the Bronx (a charge of two cents for transfers from one line to another where heretofore the transfer has been free) will not decide the question for two weeks yet; but the proceedings do not operate as a stay, and the transfer charge is now in effect. The counsel for the city alleges that each of the 99 points where the two-cent charge is imposed has been designated in the franchises of the company as a free transfer point. The Public Service Commissioner says that he has allowed the tariff, making the charge two cents, instead of approving three cents, as requested by the receiver in charge of the car lines, because he feels sure that there will be an increase in traffic sufficient to enable the company to maintain its facilities.

Court News

Federal Safety Appliance Act

The Circuit Court of Appeals, Eighth Circuit, holds that the movement by a switch engine of 40 or more cars coupled together over a Duluth terminal track, used only to connect different terminal yards, over which no through or local trains pass, and on which trains are moved slowly, without orders, time cards, or block signals, is a switching operation, and not within the air brake provision of section 1 of the federal Safety Appliance Act.—U. S. v. Northern Pacific, 255 Fed. 655.

The Circuit Court of Appeals, Fifth Circuit, holds that the movement by a switch engine of 30 to 50 cars, coupled together, some containing interstate shipments, for several miles, crossing main line tracks of several railroads and streets at grade, and running for parts of the distance over main line tracks, although in a network of tracks commonly called the city yards, was not a switching operation, but the running of a train, and the failure to connect up the air brakes was a violation of section 2 of the federal Safety Appliance Act.—U. S. v. G. H. & H., 255 Fed. 755.

Failure to comply with the federal Safety Appliance Act requiring hand brakes is held by the Circuit Court of Appeals, Second Circuit, to render a railroad company liable for injuries to a switchman resulting from such violation, although the punishment fixed by the statute is a penalty recoverable at the suit of the United States.—D., L. & W. v. Peck, 255 Fed. 261.

Foreign Railway News

Increased Use of Electricity in Norway

The continued rapid extension of the hydroelectrical development of Norway seems assured. In addition to the extensive plans which have been formulated and are being carried into effect relating to development of water power in nearly all sections of the country, there has been begun an active campaign for bringing before consumers the value and economy of electric power. Even now, in some sections of Norway electricity is used for running sawmills and heating homes in districts where timber is the principal produce marketed.—*U. S. Commerce Report No.* 172.

To Return Mexican Railways to Private Owners

A press despatch from Mexico City, dated July 31, is authority for the statement that the Mexican Railway and the Pan American Railway, which systems traverse the territory between the capital and the Gulf of Mexico and the Isthmus, have been turned back to separate management. Information from reliable sources is to the effect that the Government probably will return the systems to the private owners within a month.

The management of these systems had been merged with that of the national lines since Colonel Paulino Fontes, former manager of these lines, took over the management of the National Railways.

The Mexican Railway, which controls the important line from Vera Cruz to Mexico City, is a British-owned property. It was handed over to the Carranza Government on April 3, 1917. The stock of the Pan American Railway is owned by the National Railways of Mexico.

Traffic on Siberian Railways Disturbed

Press despatches from Vladivostok report that on July 18 the Inter-Allied Railway Commission sent a formal protest to the Omsk Government of Admiral Kolchak against violations of the Inter-Allied agreement regarding the operation of railways. The communication demands that the Russians live up to the agreement which they signed, and are a party to, if the Government expects Allied aid. The removal of General Semenoff from the zone where he can interfere with railroad operations also is asked.

The violations have chiefly been through the military station commandants, who sell tickets, allot cars and attempt general supervision of traffic, a duty assigned to the technical board of the American Railway Commission to Russia, under the chairmanship of John F. Stevens.

The chief disturber is alleged to be General Semenoff, who appears to be the dominating figure in the trans-Baikal sector.

The United States has furnished $4,000,000 and China $500,000 for the railroad reorganization, while the other allies have promised funds.

Conditions Affecting Trade With Siberia

Numerous inquiries have been received in Washington regarding the conditions and regulations surrounding trade with Siberia. In order to clear up certain misapprehensions regarding trade with this region the following notes have been compiled by the Foreign Trade Advisers' Office of the Department of State.

The so-called Allied Purchasing Committee, of which Capt. George E. Spengler is chairman, is a subcommittee of the Interallied Technical Board of the Committee for Supervision of the Chinese Eastern and Transsiberian Railways. This committee will make purchases of supplies and materials for the Siberian railways by direction of John F. Stevens, president of the Technical Board of the Interallied Committee. All orders for material to be purchased in the United States for use in connection with the railways will

be placed by the committee through the Director General of Military Railways, War Department. This committee has nothing to do with purchases of other than railway material and supplies. The Director General of Military Railways is in close touch with all American manufacturers and is in a position to expedite orders for badly needed supplies.

Reduced Cost of Living to Help German Railway Men

Press despatches from Berlin reported the Government has appropriated one and a half billion marks to be spent in three months for the purpose of reducing the cost of food. The despatches say that the cutting down of the cost of living is the direct result of the railroad strike. The railroad men asked for higher wages and accepted cheaper food as a compromise. The reduction means a weekly saving of about 27 marks, $6.75, to every worker in Germany, according to an announcement of Railroad Minister Oesar, made in the Prussian Diet.

Granting the demands of the striking railroad men would have cost four billion marks, $1,000,000,000, German railroads formerly the best paying investment of the Prussian state, are losing money at a rate of from three to four billion marks a year. Wage demands, if granted, would have increased the total deficit. It would also be impossible to raise the passenger

Minister Oesar, reporting the food agreement to the diet, said it would be impossible to raise an additional seven or eight billion marks by taxation, to make good the railroad deficit for the year to almost eight billion marks, $2,000,000,000. and freight rates again, because higher freight rates would merely increase the cost of living further.

Plight of the Russian Railways

The Russian railway system threatens to collapse, owing to the fact that no repairs have been effected since the revolution, says an article in the Reconstruction Supplement of the Review of the Foreign Press issued by the British War Office. The station buildings are for the most part deserted, the warehouses falling in, and the central switches and signalling apparatus no longer work, owing to the lack of spares with which to replace the wornout parts.

No modern electric or automatic signalling and loading apparatus exists on the Russian railways. The railway workshops were obliged to hand over important parts of their machinery to the munition workshops. This absence of necessary machinery and instruments is especially felt in the locomotive shops. The number of railway engines out of repair amounted in March, 1916, to 17.3 per cent; March, 1917, 23 per cent; March, 1918, 35.3 per cent; March, 1919, 52.4 per cent. The number of freight cars out of repair amounted in March, 1916, to 3.4 per cent; March, 1917, to 5.4 per cent; March, 1918, to 9.1 per cent; March, 1919, to 18.8 per cent.

The railway bridges and railway lines are also in a state of decay and have in some cases been badly damaged as a result of civil war. Little is heard in the press of the numerous accidents that take place in consequence of trains running off the lines. The work of repair is often hindered by the passive resistance of railway workers antagonistic to the Soviet regime. For lack of raw material, the number of engines built in 1918 was considerably reduced. In 1917, 520 locomotives were able to be built in Russian foundries, but only 191 in 1918, 152 of which were intended for goods traffic, and only 39 for passenger trains. Since the taking of the Urals by Kolchak's army, the production of pig-iron for rails has entirely ceased as far as the requirements of Soviet Russia are concerned and few new lines can be built.

In January, 1916, there were still 72,743, and in January, 1917, 70,118 freight cars, running daily; in January, 1918, this number had decreased to 16,644, and in January, 1919, it had sunk to 13,193 cars. The working capacity of the engines has fallen off in a similar degree. In 1918 they were capable of travelling only about 35 miles per day. Naturally the financial results of the railways are unsatisfactory. Up to 1916 the balance-sheet still showed a profit. In 1917, however, there was a deficit of R. 1.9 milliards, and in 1918 the deficit rose to R. 8 milliards. The measures taken by the Soviet Government are too late to prevent the ruin of the Russian railway system.

Equipment and Supplies

Locomotive Deliveries Week Ended July 26

The following new locomotives were shipped during the week ended July 26:

Works	Road	Number	Type
American	Virginian	2	USRA Mallet
	Total	2	
Baldwin	P. L. W.	2	Mallet
	S. P.	1	Sante Fe
	C. & S.	2	USRA S. F.
	C. R. I. & P.	3	USRA Mikado
	P. & R.	1	Mallet
	B. & O.	1	USRA Pacific
	A. T. & S. F.	4	Santa Fe
	A. T. & S. F.	1	Pacific
	P. L. W.	3	USRA S. F.
	Total	18	
	Grand Total	20	

Locomotives

The Pesant Company (Cuba) has ordered one Mogul locomotive from the American Locomotive Company. This locomotive will have 17 by 24 in. cylinders and a total weight in working order of 110,000 lb.

The Cerro De Pasco Railway (Peru) has ordered two Consolidation locomotives from the American Locomotive Company. These locomotives will have 21 by 28 in. cylinders, and a total weight in working order of 164,000 lb.

The American Trading Company (Cuba) has ordered one Consolidation locomotive from the American Locomotive Company. This locomotive will have 18 by 24 in. cylinders and a total weight in working order of 125,000 lb.

The Taiwan Railways (Formosa) have ordered three Consolidation locomotives from the American Locomotive Company. These locomotives will have 20 by 24 in. cylinders, and a total weight in working order of 134,000 lb.

The Imperial Karafuta Government (Japan) has ordered four Prairie locomotives from the American Locomotive Company. These locoomotives will have 14 by 22 in. cylinders and a total weight in working order of 90,000 lb.

The Tata Iron & Steel Company (India) has ordered eight six-wheel switching locomotives from the American Locomotive Company. These locomotives will have 18 by 24 in. cylinders and a total weight in working order of 110,000 lb.

The Government of Poland has given the Baldwin Locomotive Works an order for 150 Consolidation locomotives of a design similar to that of the locomotives which are supplied for the American military railroads in France. It is understood that the Baldwin Locomotive Works has arranged to finance the $7,000,000 represented by the purchase over a period of ten years and has accepted an issue of ten-year equipment notes from the Polish Government.

The United Railways of Havana have ordered 11 Consolidation, four six-wheel switching, and two Prairie type locomotives from the American Locomotive Company. Of the Consolidation locomotives, ten will have 20 by 26 in. cylinders and a total weight in working order of 160,000 lb., and one will have 16 by 20 in. cylinders and a total weight of 97,000 lb. The six-wheel switching locomotives will have 19 by 24 in. cylinders and a total weight of 130,000 lb., and the Prairie type locomotives will have 17 by 24 in. cylinders and a total weight in working order of 114,000 lb.

Freight Cars

The H. C. Frick Coke Company, Pittsburgh, Pa., is in the market for 1,200 mine cars.

The Kannoten Refining Company, Kansas City, Kan., is inquiring for 20 50-ton, 10,000-gal. tank cars.

The Lubrite Refining Company, St. Louis, Mo., has ordered 20 50-ton, 10,000-gal. tank cars from the American Car & Foundry Company.

The Kendall Refining Company, Bradford, Pa., has ordered two 40-ton, 8,000-gal. tank cars from the American Car & Foundry Company.

The Texas Oil Company has ordered 500 tank cars from the Pennsylvania Tank Car Company, Sharon, Pa., and the General American Tank Car Corporation, Chicago.

The Pennsylvania Equipment Company, 1420 Chestnut street, Philadelphia, Pa., is in the market for one second-hand flat car of about 60 tons' capacity and for 30 logging cars, with spring drawheads and of 40,000, 50,000 or 60,000 lb. capacity.

Passenger Cars

George H. Carey, New York, is inquiring for 10 electric railway cars for export to Spain.

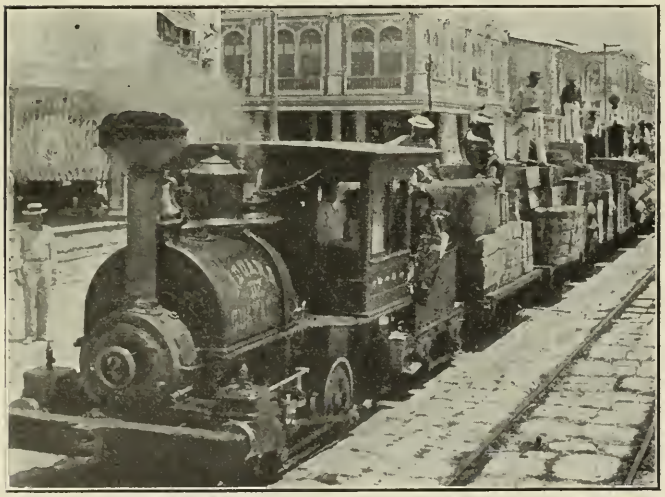
The Peerless International Corp., New York, is inquiring for gasoline driven passenger cars for export to Cuba.

Signaling

The Lehigh Valley has ordered from the General Railway Signal Company an interlocking machine, style A, 32 levers, for Constable Junction, N. J., with ten electric locks; also a 32-lever machine for Pine Junction, N. J.

Trade Publications

Blaw Cableways.—The Blaw-Knox Company, Pittsburgh, Pa., has issued a 16-page booklet illustrating and describing the various appurtenances used in cableway construction, including carriages, falls, stops, spring bumpers, etc. The illustrations show the character of the devices and also the nature of the possible installations.



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Scenes from Foreign Ports—The Custom House Railway in Guayaquil, Ecuador

Supply Trade News

Earle W. Vinnedge has received his discharge from the military service and has been appointed sales engineer for the **Worthington Pump & Machinery Corp.**, New York, with headquarters at Cincinnati, Ohio.

The **Spencer Otis Company**, 747 Railway Exchange Bldg., Chicago, has been succeeded by the **DeRemer-Blatchford Company** effective Aug. 1, 1919. The change is purely one of name and the same headquarters will be retained by the DeRemer-Blatchford Company.

E. T. Sawyer has been appointed a representative of the railway sales department of the **U. S. Light & Heat Corporation**, Niagara Falls, N. Y. Mr. Sawyer will specialize on car lighting equipment and electric car welders and will have his headquarters at 30 East Forty-second street, New York City.

J. A. Massie, sales manager for the **Hoyt Electrical Instrument Works**, Penacook, N. H., has retired from active service with the company. He will continue to be identified with the organization through his interest in the Burton-Rogers Company which has been made the sales department of the Hoyt Electrical Instrument Works. M. T. Rogers will take over Mr. Nassie's duties.

F. B. Hartman has been appointed representative of the **Hunt-Spiller Manufacturing Corporation**, Boston, Mass. He is to cover the southeastern district succeeding **J. M. Monroe**, who has resigned to become vice-president of the Charles H. Long Company. Previous to 1906 Mr. Hartman was in the service of the Union Pacific and later was with the Southern Railway, part of the time as general equipment inspector.

The Hazard Manufacturing Company, Wilkes-Barre, Pa., on July 1, opened a new sales office and warehouse at 1415 Wazee street, Denver, Colo., in charge of **Ernest P. Kipp**, district manager. The Denver office will cover the Intermountain district including in its territory Colorado, Wyoming, Montana, Idaho, Utah, New Mexico, and the western portions of Nebraska and South Dakota. Mr. Kipp served as a captain in the U. S. Engineers, and has received his honorable discharge.

Rolard S. Lebarre, assistant manager of sales for the Cleveland, Ohio, district of the Carnegie Steel Company, Pittsburgh, Pa., has resigned to become general sales manager of the alloy steel department of the **Interstate Iron & Steel Company**, Chicago. He began his business career 20 years ago with the United States Steel Corporation and in 1902 entered the sales department of the Illinois Steel Company. During the past 14 years he has been assistant district manager of sales for the Carnegie Steel Company, at Cleveland.

James H. Reed, senior member of the law firm of **Reed, Smith, Shawl & Beal**, Pittsburgh, Pa., and president of the Bessemer & Lake Erie Railroad, owned and operated by the Carnegie Steel Company, Pittsburgh, has resigned from all industrial boards on account of the present status of the interlocking directory act, which prohibits a director on a railroad from being a director of any industrial company that furnishes material to that railroad. For this reason, Judge Reed has resigned as a director of the Pressed Steel Car Company, Pittsburgh, and **J. H. Beal** has been elected in his place.

Thomas O. Morgan, until recently head of the service department of the New York office of the **American Steam Conveyor Corporation**, Chicago, has been promoted to sales engineer in charge of Long Island and Connecticut territory, and **H. S. Valentine** has been appointed sales engineer

in charge of Philadelphia territory with office in the North American building, Philadelphia, Pa. Mr. Valentine is a mechanical engineer and previously served with the Link Belt Company, Philadelphia, for five and one-half years, with the Brown Hoisting Machine Company and Yale & Towne Manufacturing Company for six years, and with the Badenhausen Company, New York, manufacturers of water tube boilers, for one year.

George H. Richie, sales engineer in New England and Eastern Canada for the **Sullivan Machinery Company,** Chicago, has been promoted to New England sales manager, to succeed **George Elmer Wolcott,** deceased. **R. S. Weiner** has been appointed district manager with headquarters at El Paso, Tex., in place of **Don M. Sutor,** who has been transferred to the St. Louis, Mo., office as sales manager for Missouri, Arkansas, Eastern Texas, Oklahoma, Kansas (except the oil territory), Western Kentucky and Western Tennessee. **Phillips S. Jarvis** has resigned as sales manager for the territory controlled from the St. Louis office and **Marion C. Mitchell** has been appointed sales manager for the territory in Indiana and Illinois previously controlled from the St. Louis office, with temporary headquarters at St. Louis. **Daniel H. Hunter** has been appointed sales manager for Louisiana, Texas (except the southwestern section), and the oil fields of Oklahoma and Kansas with headquarters at Dallas, Tex.

The **Norton Grinding Company** and the **Norton Company,** both of Worcester, Mass., have been consolidated under the latter name. **George I. Alden,** who has been president of the Norton Company for some years, is chairman of the board of directors of the reorganized company, **Charles L. Allen** is president and general manager, **Aldus C. Higgins,** treasurer and general counsel and **George N. Jeppson,** secretary and works manager. Two new vice-presidents have been appointed. **W. LaCoste Neilson,** vice-president and foreign manager, and **Carl F. Dietz,** vice-president and general sales manager. A factory for the manufacture of abrasive products has been established in Japan and the company has secured control of the Hiroshima Grinding Wheel Company, at Hiroshima, near Kobe, Japan, which was established some years ago by the company's agents. Sales agencies have been established with native houses in several foreign countries, including England, France, Italy, Belgium, Denmark, Holland and connections will be formed in Norway and Sweden. A new store at Detroit, Mich, has also been opened under the management of C. W. Jinnette.

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Scenes from Foreign Ports—Merchandise Being Landed by Lighter at Mollendo, Peru

Railway Construction

Baltimore & Ohio.—A contract has been given to the Vang Construction Company, Cumberland, Md., for the masonry work required in the reconstruction of the Baltimore & Ohio Allegheny river bridge, at Thirty-third street, Pittsburgh, Pa.

Canadian Roads.—John W. Stewart & Co., railway contractors, Vancouver, B. C., have been awarded a contract for the construction of a railway from Acme, Alberta, to Drumheller, a distance of 37 miles. Work was started on July 1.

Chicago & Alton.—This road is now actively engaged in grading operations and track laying for its Harrison street freight terminal, Chicago. Bids will be asked for in about two weeks for the construction of two large freight houses.

The officers of the Chicago & Alton have submitted a proposition to the secretary of the Nutwood Drainage and Levee District, of Illinois, for the construction of a six-mile extension from Titus, Ill., south into the Nutwood district, with a branch line of one mile to the east bank of the Illinois river, opposite the town of Harding. The proposal requires that the property owners furnish the ties, the right-of-way and the work of grading, and the company is to furnish the steel, the ballast and the labor for track work. It is estimated the cost to the land owners in the district will be about $75,000.

Chicago Union Station Company.—A contract has been given to the Mellon, Stewart & Nelson Company, Chicago, for the grading and construction of six approach tracks to the Union Station, and two joint freight tracks for the Chicago & Alton freight terminal and the Pittsburg, Port Wayne & Chicago freight connections in the territory between Twelfth and VanBuren streets. The work includes underground construction of cables for interlocking plant and necessary sewerage. The contract amounts to approximately $200,000, not including material, which is furnished by the Station Company.

Colorado Roads.—Mining interests of Paradox Valley, Colo., are ready to invest large sums in the construction of an electric railway from their mines to some point on one of the larger lines in the state, according to James M. McBride, general manager of the Cashin mines in the Paradox Valley. Data is now being gathered with which to interest railroad builders.

Pennsylvania.—This road has resumed work on the construction of a belt line around Detroit, Mich., after an interruption of more than a year. Prior to the suspension of this work in 1918 the Pennsylvania had purchased right-of-way for a six-mile extension around the city of Detroit from a connection with the Pere Marquette, north of Michigan avenue to Highland Park. Along this right-of-way sites for industries had been bought on the statement of the road that it proposed to proceed with the construction of this line at an early date. When the work was suspended, the owners of these industrial sites made no complaint, but this year they have asked that the road fulfill its promise of providing track connections and it is on account of this that the track laying has been authorized and is now in progress. Three hundred acres of land have been acquired west of the River Rouge near Oakwood, Mich., where the freight yards will be located. As now designed they will have an immediate capacity of 3,850 freight cars and an ultimate capacity of 12,000 cars. It is expected that as soon as the railroads are returned to corporate control, the work on the entire projected extension from Toledo, Ohio, to Detroit will be resumed.

Port Huron & Detroit.—Surveys are now being made for a single track from Marine City, Mich., to Detroit, a distance of 40 miles.

ANNUAL REPORT

The Hocking Valley Railway Company—Twentieth Annual Report

Columbus, Ohio, July 1, 1919.

To the Stockholders:

The Twentieth Annual Report of the Board of Directors, for the fiscal year ended December 31, 1918, is herewith submitted.

The average mileage operated during the year was 349.7 miles, an increase compared with the previous year of .1 miles. The mileage at the end of the year was 350.2 miles.

RESULTS FOR THE YEAR.

Standard Return was	$2,637,167.48
(Decrease $677,557.44 or 20.44%, compared with corresponding income items of 1917.)	
General Expenses (Corporate) were	68,507.57
	$2,568,659.91
War Taxes were	14,200.00
(Decrease $205,747.50 or 93.54%.)	
Remainder was	$2,554,459.91
(Decrease $540,318.01 or 17.46%.)	
Miscellaneous Income was	282,486.41
(Increase $180,538.66 or 177.21%.)	
	$2,836,946.32
Rentals and Other Payments were	205,202.48
(Increase $149,629.45 or 369.25%.)	
Income for the year available for interest was	$2,631,743.84
(Decrease $509,363.80 or 16.22%.)	
Interest (48.33% of amount available) was	1,271,914.50
(Increase $64,719.33 or 5.36%.)	
Net Income for the year amounted to	$1,359,829.34
(Decrease $574,083.13 or 29.69%.)	
Dividends paid during the year:	
Two dividends of 2% each, aggregating	439,980.00
Balance, devoted to improvement of physical and other assets	$919,849.34

RETURN ON PROPERTY.

The following table shows the amount of return to your Company, from transportation operations only, upon its investment in road and equipment at the termination of each year of the five-year period ended December 31, 1918; the road having been operated in 1918 by the United States Railroad Administration, the Standard Return has been used for that year in lieu of the operating and other items corresponding therewith:

Year ended December 31:	Property Investment.	Total Operating Income. (including hire of equipment and other items).	Per Cent. of Return.
1918	$48,057,539.03	$2,598,474.64	5.41
1917	46,237,480.24	3,060,174.97	6.62
1916	45,198,144.03	3,052,123.37	6.75
1915	44,802,665.64	2,041,149.36	4.56
1914	45,475,978.73	1,673,012.19	3.68
Average	$45,954,361.53	$2,484,986.91	5.41

FINANCIAL.

The changes in funded debt shown by balance sheet of December 31, 1918, as compared with December 31, 1917, consisted in the payment of $205,000.00 on equipment trusts.

An analysis of the property accounts will be found on pages 18 and 19, by reference to which it will be seen that additions and betterments were made during the year to the net amount of $1,819,858.79, of which $1,783,596.02 was added to cost of road, and $36,262.77 was added to cost of equipment.

During the past ten years your Company's net addition to property accounts has been as follows:

Equipment	$4,217,845.07
Additions and Betterments	5,559,945.26
	$9,777,790.33

Your Company had outstanding $5,000,000 of short-term six per cent. notes which matured on November 1, 1918. A plan submitted by bankers looking to the financing of this maturity was acceptable to your Directors, but the necessary sanction of the Director General of Railroads to such plan was withheld. Consequently, upon the maturity of the notes, your Company found it necessary to request the note-holders to extend the maturity of their notes for three months. In effecting this extension the Director General co-operated. At the suggestion of representatives of the Railroad Administration, your Company then undertook the creation of a General Mortgage, under which bonds could be issued if found desirable, either for sale or for pledge to secure short-term obligations, for the purpose of providing both for the extended notes and for other capital expenditures. The stockholders at a Special Meeting held on January 25, 1919, authorized the creation of such a mortgage to secure not exceeding $50,000,000 of General Mortgage Bonds. The total amount of bonds outstanding is further limited to an amount which, including prior lien bonds, shall not exceed three times the outstanding stock. On February 1st, 1919, when the extended notes matured, no plan acceptable to the Director General had been agreed upon, and a further extension until March 1, 1919, was arranged. Before the date last mentioned, your Company reached an understanding with the Director General and with bankers, whereby it was able to provide for the payment of the extended notes and for its other immediate capital requirements, through the issue and sale of $7,500,000 of Five-Year 6% Gold Notes, due March 1, 1924, secured by pledge of $9,600,000 of the new 6% General Mortgage Bonds.

Your Company purchased during the year $200,000 United States Government 4¼% Bonds of the Fourth Liberty Loan.

GENERAL REMARKS.

The equipment in service December 31, 1918, consisted of:

Locomotives owned	133	No change	
Locomotives leased under equipment trusts	8	No change	
Total	141	No change	
Passenger train cars owned	72	Increase	1
Freight train and miscellaneous cars owned	13,081	Increase	393
Freight train cars leased under equipment trusts	1,999	Decrease	500
Freight train cars under special trust	47	No change	
Total freight train and miscellaneous cars	15,127	Decrease	107

The changes during the year in accrued depreciation of equipment account were as follows:

Balance to credit of account December 31, 1917		$2,412,337.17
Amount credited during year ended December 31, 1918, by charges to U. S. Railroad Administration	$315,012.83	
Charges to account for:		
Accrued depreciation on equipment retired during year—114 freight and work cars	$13,960.93	
Accrued depreciation on cars changed in class during year	4,238.54	
	18,199.47	
		296,813.36
Balance to credit of account December 31, 1918		$2,709,150.53

Of the 27 miles of second track, north of Columbus, reported under construction last year, 3.36 miles LeMoyne to Cummings and 7.24 miles Delaware to Meredith (total 10.6 miles) have been completed, except ballasting, and placed in service; 2.35 miles Crawford to Carey were completed, except ballasting, and placed in service for siding purposes pending completion of Carey coaling station; and the grading and masonry for the remaining portions have been completed. Owing to the development of Parsons Yard the second track (.94 miles) between that point and Valley Crossing was converted into a passing track. The grading and bridging have been completed for 12.6 miles of extensions of passing tracks. A telephone dispatching and message circuit from Columbus to Toledo has been constructed. At Walbridge 9 stalls are being added to the engine house, which will be ready for use by the opening of the lake coal season, a 500-ton capacity concrete coaling station is under construction and the capacity of the yard has been increased by the construction of five 100-car departing tracks and the extension of four hump tracks to hold 100 cars each. At Carey the construction of a 500-ton capacity concrete coaling station has been commenced. At Marion a 5-stall engine house and 100-foot turntable are being constructed. At Parsons Yard South Columbus the five 100-car tracks under construction last year have been completed, the grading for 10 additional tracks (5 each in empty yard and loaded yard) has been completed, the advance lead for southbound trains has been extended three-quarters of a mile, an addition of 12 stalls to the engine house is under construction, and a 500-ton capacity concrete coaling station is practically completed. At South Columbus the separation of grades at Smoky Row Road ordered by the County Commissioners, and commenced last year, has been completed. At Logan the work of lengthening five stalls of the engine house is practically complete. At Nelsonville a 10-stall engine house, 100-foot turntable, machine shop, sand house, and oil house are under construction and will be in use early in 1919. On the River Division piers have been constructed to support two girder bridges, which are being renewed between Hawks and Minerton, and the steel work will be erected so that heavier power can be operated on this division by the middle of next summer.

OPERATION BY UNITED STATES RAILROAD ADMINISTRATION.

In the Annual Report for the year 1917, you were advised that the President of the United States, by Proclamation dated December 26, 1917, took possession and assumed control of the railroad systems of the country, appointing a Director General of Railroads, through whom the operation of such transportation systems was to be conducted. Under the Proclamation and under the Act of Congress of March 21, 1918 (generally known as the Federal Control Act), the railroad of your Company has, since December 28, 1917, been operated by the United States Government through William G. McAdoo, Director General of Railroads, and Walter D. Hines, his successor. The operating and traffic statistics contained in this report relate to the operation of your property by the Director General of Railroads.

Increases in wages of employees, made by the Director General of Railroads during the year, increased the year's cost of operation approximately $1,762,000. These increases are in addition to the increases of $625,000 mentioned in last year's report.

The revenue coal and coke tonnage was 11,799,891 tons, an increase of 10.5%; other revenue freight tonnage was 3,444,959 tons, a decrease of 17.8%. Total revenue tonnage was 15,244,850 tons, an increase of 2.5%. Freight revenue was $11,343,613.42, an increase of 26.4%. Freight train mileage was 1,494,261 miles, an increase of 1.3%. Revenue ton miles were 1,892,824,838, a decrease of 3.7%. Ton mile revenue was 5.99 mills, an increase of 31.4%. Revenue per freight train mile was $7,591, an increase of 24.7%. Revenue tonnage per train mile was 1,267 tons, a decrease of 5%; including Company's freight, the tonnage per train mile was 1,302 tons, a decrease of 4.8%. Tonnage per locomotive, including Company's freight, was 1,061 tons, a decrease of 5.5%. Revenue tonnage per loaded car was 43.7 tons, a decrease of .2%. Tons of revenue freight carried one mile per mile of road were 5,412,710, a decrease of 3.8%.

There were 1,293,257 passengers carried, a decrease of 23.9%. The number of passengers carried one mile was 42,551,254, a decrease of 14.9%. Passenger revenue was $1,038,843.40, an increase of 8%. Revenue per passenger per mile was 2.441 cents, an increase of 26.9%. The number of passengers carried one mile per mile of road was 121,679, a decrease of 14.9%. Passenger train mileage was 548,159, a decrease of 22.5%. Passenger revenue per train mile was $2.014, an increase of 48.1%; including mail and express it was $2.188, an increase of 38%. Passenger service train revenue per train mile was $2.260, an increase of 36.7%.

There were 5,726 tons of new 100-lb. rails, equal to 36.44 track miles, and 65 tons of new 90-lb. rails, equal to .46 track miles, used in the renewal of existing main tracks.

The average amount expended for repairs per locomotive was $7,579.90, an increase of 102.2%; per passenger train car $1,251.12, an increase of 49.5%; per freight train car $136.93, an increase of 54.9%.

THE FEDERAL CONTROL ACT.

The Federal Control Act authorized the President of the United States to enter into agreements with the companies owning railroads taken over for their maintenance and upkeep during the period of Federal Control, and for the determination of the rights and obligations of the companies and the Government arising out of Federal Control, including the compensation to be received or guaranteed. The Act authorized the payment, under such agreements of an annual compensation equivalent, generally speaking, to the average net railway operating income for the three-year period ending June 30, 1917, as ascertained and certified by the Interstate Commerce Commission. The President was also given power, in any case where the average of the three-year period appeared plainly inequitable as a measure of Just Compensation, to enter into an agreement for such compensation as in his judgment would be just in the particular case.

COMPENSATION CONTRACT.

The average Annual Net Railway Operating Income of your Company for the three-year period ending June 30, 1917, as tentatively certified by the Interstate Commerce Commission, being $2,637,167.48, the Directors of your Company believed it to be to the interest of the Company to enter into the agreement contemplated by the Federal Control Act, and, accord-

ingly, at the Special Meeting of Stockholders held on January 25, 1919, requested authority to proceed with the negotiation of an agreement on such basis. Such authorization was duly conferred, and the officers of your Company pursuant thereto, have made application to the Director General of Railroads for such an agreement. It is expected that the formal agreement will be executed in the near future.

CORPORATE ORGANIZATION.

During the early part of the period of Federal Control, the Director General permitted the railways to be operated under his supervision by officials of the corporations for the account of the Federal Government. Later a complete separation of the personnel and of the accounting records was ordered, and separate books were opened for Federal transactions and separate operating and accounting officials were appointed. The staff of the Director General for the operation of the railroad of your Company was selected from former officials of your Company and, as the officials so selected were by order of the Director General, required to sever all connection with the corporation, the creation of a distinct corporate organization to carry on the affairs and protect the interests of your company during Federal control became necessary. The expense of maintaining this organization has been, by order of the Director General, excluded as an operating expense chargeable to Federal Railroad operating income, which, in effect, amounted to a deduction of the cost of maintaining the corporate organization from the Standard Return provided by the Federal Control Act.

ALLOCATED EQUIPMENT.

During the year the officers of your Company were notified that the United States Railroad Administration had allocated to it five hundred fifty-five ton coal cars, the cost of which your Company was expected to assume. Your Board of Directors protested against being required to accept such equipment, as, in their opinion, the equipment allocated was unnecessary and was of a type unsuited for the proper and efficient operation of the railroad of your Company, and the prices paid for it by the Administration were unreasonably high. Notwithstanding these objections, the Director General has insisted that your Company accept this allocation under penalty of having the entire cost, approximately $1,348,500.00, charged against the annual compensation due from the Railroad Administration, which cost, if so charged, might render it impracticable for your Company to maintain its present dividend rate. Your Directors are disposed to accept the allocation, provided the Director General will assist in financing its cost which it is believed he will be willing to do.

THE FUTURE.

The President of the United States has announced that Federal Control will terminate on December 31, 1919. The practical certainty that operating costs cannot be substantially reduced below their present high level and the probability that determined efforts will be made by shippers to prevent further increase of rates and even to effect reductions, will render it very difficult, after Federal Control has ended, to maintain between revenues and expenses the margin necessary to ensure an adequate return to your Company and provide the basis of credit necessary for the improvement and development of its property. This prospect, which faces every railroad in the country, makes it of the highest importance that some plan be devised and enacted into law, which, while protecting the proper interests of the public, shall yet also ensure the financial stability of our transportation system.

Your Directors have given and will continue to give their earnest consideration to the various plans that have been proposed for dealing with this problem. Its solution will require the exercise by National and State Legislatures and by public officials generally, of broad statesmanship and wise forethought. Railroad stockholders and creditors can render invaluable assistance in the formulation and discussion of any plan that may be adopted, and will, it is hoped, co-operate actively to the end that a solution may be reached which, while protecting the public, will make railroad securities attractive to investors and thus ensure the continuance of the wise principles of private ownership and individual initiative in the management and control of our transportation systems.

On July 30, 1918, your Company sustained a serious loss in the death of Mr. Clarence Brown, who had been a Director of your Company for a number of years.

Announcement is also made with regret of the death, on June 6, 1919, of Mr. Carl Remington, Assistant Secretary and formerly Secretary of your Company.

On February 1, 1919, Mr. James Steuart MacKie was, at his own request, relieved of his duties as Treasurer of the Company, and Mr. Arthur Trevvett succeeded him in that office.

Appreciative acknowledgment is hereby made to officers and employees for their efficient services during the year.

By order of the Board of Directors.

FRANK TRUMBULL, Chairman and President.

GENERAL BALANCE SHEET, DECEMBER 31, 1918 (CORPORATE).

ASSETS.

Property Investment.			
Cost of Road	$31,672,612.79		
Cost of Equipment	15,770,359.28		
		$47,442,972.07	
Securities of Proprietary, Affiliated and Controlled Companies—Pledged.			
Stocks	$108,088.66		
Bonds	300,000.00		
		408,083.66	
Securities of Proprietary, Affiliated and Controlled Companies—Unpledged.			
Bonds	$150,000.00		
Miscellaneous	47,099.60		
		197,099.60	
Other Investments.			
Miscellaneous Investments—Securities—Pledged		400,000.00	
			$48,448,160.33
Working Assets.			
Cash	$37,755.91		
Loans and Bills Receivable	2,315.36		
Traffic Balances	3,203.64		
Miscellaneous Accounts Receivable	38,850.62		
United States Government: Unpaid Standard Return Accrued	2,637,167.48		
Interest Accrued on above	49,446.90		
Other Working Assets	1,560.83		
		$2,770,300.74	
Securities in Treasury—Unpledged.			
Stocks	$501.00		
Bonds	199,950.00		
		200,451.00	
Deferred Assets.			
Advances to Proprietary, Affiliated and Controlled Companies	$56,278.30		
Advances, Working Funds	2,999.15		
Insurance paid in advance	434.81		
Cash in Sinking Funds	650.74		
Special Deposit with Trustee—Mortgage Fund	423,334.74		
Cash and Securities in Insurance Reserve Fund	47,298.83		
United States Government	4,201,222.34		
Other Deferred Debit Items	115,343.20		
		4,848,062.11	
			7,818,813.85
Total			$56,266,974.18

LIABILITIES.

Capital Stock			$11,000,000.00
Funded Debt.			
First Consolidated Mortgage 4½% Bonds, 1999	$16,022,000.00		
First Mortgage C. & H. V. R. R. 4% Bonds, 1948	1,401,000.00		
First Mortgage Cols. & Tol. R. R. 4% Bonds, 1955	2,441,000.00		
6% Coupon Gold Notes, 1919, Extended	5,000,000.00		
		$24,864,000.00	
Equipment Trust Obligations		980,000.00	
			25,844,000.00
			$36,844,000.00
Working Liabilities.			
Loans and Bills Payable	$1,215,000.00		
Traffic Balances	4,063.59		
Audited Vouchers and Wages Unpaid	11,555.04		
Miscellaneous Accounts Payable	9,846.80		
Matured Interest, Dividends and Rents Unpaid	608,176.00		
Other Working Liabilities	11,342.00		
		$1,859,983.43	
Deferred Liabilities.			
Unmatured Interest, Dividends and Rents Payable	$92,327.49		
Taxes Accrued	14,084.65		
Operating Reserves	170.00		
Accrued Depreciation—Equipment	2,709,150.53		
United States Government	4,421,283.18		
Other Deferred Credit Items	145,639.47		
		7,382,655.32	
			9,242,638.75
Appropriated Surplus.			
Additions to Property through Income since June 30, 1907	$181,409.11		
Funded Debt Retired through Income and Surplus	131,331.90		
Reserve Invested in Insurance Fund	47,216.63		
Other Reserves	24,252.26		
Appropriated surplus against contingent liability for freight claims	120,000.00		
		$504,209.90	
Profit and Loss—Balance		9,676,125.53	
			10,180,335.43
Total			$56,266,974.18

This Company and The Toledo & Ohio Central Railway Company severally endorsed, in 1901, upon 5% First Mortgage Bonds of the Kanawha & Hocking Coal & Coke Company due 1951 ($2,842,000 outstanding) and, in 1902, upon 5% First Mortgage Bonds of the Continental Coal Company due 1952 ($1,569,000 outstanding less credit on foreclosure of $506.75 per $1,000 bond) purported guaranties thereof. In *quo warranto* litigation in Ohio, to which the bondholders were not parties, the purported guaranties of this Company upon the bonds last mentioned have been declared *ultra vires* and the performance of the contracts pursuant to which both guaranties were made has been enjoined by the Federal Court in that State. The enforceability of these alleged guaranties is now in litigation.

Railway Officers

Railroad Administration

Operating

J. W. Lynch, assistant superintendent of the Denver & Rio Grande, with headquarters at Gunnison, Colo., has been appointed trainmaster of the Salt Lake division, with headquarters at Thistle, Utah.

C. J. Connett, chief dispatcher on the Chicago, Burlington & Quincy, with headquarters at Casper, Wyo., has been promoted to trainmaster with headquarters at Lincoln, Neb., succeeding **F. G. Gurley** who has been transferred.

O. P. Whitlock, assistant trainmaster on the Cincinnati division of the Cleveland, Cincinnati, Chicago & St. Louis, with headquarters at Springfield, Ohio, has been promoted to trainmaster of the Cairo division with headquarters at Harrisburg, Ill.

W. M. Stillman, who recently received his discharge from the army, has resumed his duties as assistant superintendent of the Stockton division of the Southern Pacific, with headquarters at Stockton, Cal., in place of **E. D. Leavitt,** who has been transferred.

J. P. Phelan, assistant superintendent on the Rocky Mountain division of the Chicago, Milwaukee & St. Paul lines west of Mobridge, with office at Three Forks, Mont., has been promoted to superintendent of the Rocky Mountain and Missoula divisions, with headquarters at Deer Lodge, Mont., vice **J. J. Murphy,** assigned to other duties. **H. L. Wiltrout,** trainmaster at Tacoma, Wash., has been promoted to assistant superintendent of the Rocky Mountain division, with headquarters at Three Forks, vice Mr. Phelan, and **W. H. Wingate,** trainmaster at St. Maries, Idaho, has been transferred to the Coast division, with headquarters at Tacoma, Wash., vice Mr. Wiltrout.

Financial, Legal and Accounting

J. A. Quinn has been appointed assistant auditor of the **Oregon Short Line Railroad,** with office at Salt Lake City, Utah, to succeed H. A. Toland, resigned to accept a position with the corporation.

Traffic

Lewis T. Kavanaugh, assistant traffic manager of the Mississippi-Warrior Waterways with headquarters at St. Louis, Mo., has been promoted to manager with the same headquarters, to succeed **A. W. Mackie,** who has resigned to become general manager of the Lientz Furnace Corporation, Kansas City, Mo. **S. I. Flournoy,** assistant to the manager, has also resigned to enter other work.

G. C. Devol, assistant general freight agent of the Louisville & Nashville, with headquarters at Louisville, Ky., has resigned to enter the service of the Irving National Bank of New York. Mr. Devol was born on January 3, 1883, at New Albany, Ind., and was educated in the grade and high schools. He began railway work in October, 1898, in the freight claim department of the Louisville & Nashville. From 1901 to 1908 he served as clerk in the general freight office and then was appointed assistant chief clerk to the third vice-president and freight traffic manager. In February, 1912, he was appointed chief clerk to the general freight agent, and in March, 1917, was promoted to assistant general freight agent.

Engineering and Rolling Stock

J. R. Smith, chief electrician of the Minneapolis, St. Paul & Sault Ste. Marie, with headquarters at St. Paul, Minn., has been appointed signal supervisor, with headquarters at Minneapolis, Minn., succeeding **E. B. Dodd,** who has been assigned to other duties. **S. D. Dimond** succeeds Mr. Smith as chief electrician.

Corporate

Executive, Financial, Legal and Accounting

Colonel Frederick W. Green, assistant to the president of the St. Louis Southwestern Railway Company and the St. Louis Southwestern Railway Company of Texas, has been appointed vice-president of these companies, with headquarters at St. Louis, Mo., and his former position has been abolished.

Operating

A. D. McCarthy has been appointed assistant superintendent of the Montreal (Que.) terminals of the Grand Trunk, vice **F. J. Miller,** resigned.

R. A. Sewell, assistant superintendent of the Canadian Pacific, with headquarters at Montreal, Que., has been appointed superintendent of car service on the Eastern lines, succeeding **O. M. Lavoie,** promoted.

E. J. Naylor, auditor and car accountant of the Batesville Southwestern, with headquarters at Memphis, Tenn., has been promoted to general superintendent with headquarters at Batesville, Miss., succeeding **Henry Pingle,** who has resigned.

H. J. Humphrey, superintendent on the Quebec district of the Canadian Pacific, with headquarters at Montreal, Que., has been transferred to the Trenton division with headquarters at Toronto, Ont., in place of **R. W. Scott,** who has been transferred to the Toronto terminals division, with headquarters at West Toronto, Ont., succeeding T. Collins, who has been transferred.

Traffic

Guy Tombs, assistant freight traffic manager on the **Canadian National Railways,** with office at Montreal, Que., has resigned to enter the service of the Canadian Export Paper Company.

Obituary

Charles E. Vroman, formerly assistant general solicitor for the Chicago, Milwaukee & St. Paul, with headquarters at Chicago, died on August 30, at his summer home on an island north of Mackinac, Mich. He was 74 years old.

Edward S. Keeley, former vice-president of the Chicago, Milwaukee & St. Paul, with headquarters at Chicago, died on August 1, at his home in Summit, N. J., following an operation for appendicitis. He was born on November 11, 1858, at Peru, Ill., and entered railway service in 1874 as a clerk in the freight department of the Rock Island & Peoria at Rock Island, Ill. For two years he was employed in the traffic department of the St. Louis & Southeastern, which is now a part of the Louisville & Nashville, with headquarters at St. Louis, Mo. In 1883, he entered the service of the Chicago, Milwaukee & St. Paul as a clerk for the division freight agent, in which position he remained until 1887, when he was promoted to division freight agent with headquarters at Milwaukee, Wis. In 1891 he was appointed assistant general freight agent and in 1900, he was promoted to general freight agent, which position he held until January 1, 1907. He then became freight traffic manager which position he held up to his election as vice-president on April 21, 1909. In December, 1917, Mr. Keeley resigned as vice-president to become manager and assistant treasurer of the United States Sugar Equalization Board, Inc., with headquarters at New York.

One rain drop won't make a crop and one Thrift Stamp won't make a fortune, but both usually bring others of their kind with them.

EDITORIAL

Railway Age

Table of Contents will be found on Page 5 of the Advertising Section

Railway Wages and the Cost of Living

There is a manifest disposition in some high official quarters to concede the justice of the contention of railway employees that their wages have not been, but should be, advanced in proportion to the increase in the cost of living. But is this contention well-founded? The increase in the cost of living has affected everybody—rich and poor, large and small, capitalists, salaried people and wage workers. How many of the people of the United States have received increases in their incomes since 1915 which have equalled the increases in the cost of living? We don't know, but we venture to estimate that not one-fourth of the people of all classes have. If not one-half, and probably not one-fourth, of the people have received increases in their incomes as large in proportion as the increase in the cost of living, what right have railway employees to demand that the advances in their wages shall be made equal to the advance in the cost of living? If their wages are further advanced, the entire people of the United States will have to foot the bill, either in taxes, or in passenger and freight rates. The effect of this will necessarily be to increase the cost of living of all other classes of people. The question which really should be considered is not whether the cost of living has increased more or less than the wages of railway employees. If the cost of living is to be made the starting point of the investigation, then what ought to be ascertained is whether the wages of railway employees have increased more or less in proportion to the increase in the cost of living than have the incomes of the other people, and especially the other working people of the country. To raise the wages of any class of people enough to offset the increase in the cost of living, when the incomes of most of the other people have not increased in proportion to the cost of living, is to make a privileged class of those whose wages are raised at the expense of the rest of the people; and this the government has no right to do.

Must We Use Substitute Ties

The Dyer resolution, recently reported favorably by the House Committee on Interstate Commerce, calls attention to the waning supply of timber and directs the Interstate Commerce Commission to investigate the advisability of using steel ties. There is no denying the fact that as a nation we are rapidly exhausting our birthright of wonderful forests. According to officers of the forest service, the consumption is now three times the production. However, the scarcity will unquestionably result in such advances in prices that there will be a natural decrease in consumption in all lines where substitutes for lumber may be applied. While the relation of lumber consumption to lumber production is a matter of real concern, the scarcity of ties experienced during the war period cannot be interpreted in terms of ultimate depletion. On the contrary, the shortage of ties in 1918 was the result of the temporary cessation in production, brought about by war conditions and other circumstances previously discussed in these columns. This condition has now largely been overcome, as witnessed by the production of about 10,000,000 ties per month. If we must take cognizance of our rapidly disappearing forests, it would seem to be a matter of national concern as affecting all forests and all users of lumber. Why should the railroads be singled out to bear the brunt of a campaign for forest conservation? With any undertaking involving the use of private capital, the question resolves itself into one of cost. As long as the cost of a wooden tie, distributed over the years of its natural life, is less than the cost of some substitute considered in a like manner, the railroads cannot well be deterred from using the wooden tie in the absence of some general restriction on the use of lumber for all purposes. However, just as soon as a substitute is devised which will enable the roads to maintain their tracks at a lesser expense than with the wooden cross tie, no legislation will be necessary to promote its general introduction. In the mean time, there will be every incentive for co-operation on the part of the railroads in the development of the substitute, as there are probably more opportunties for immediate conservation of lumber through improved practice in its use. Too many wooden cross ties are still being used without preservation treatment or protection from mechanical destruction. When all the railroads have adopted the measures for conserving ties, which on some roads have resulted in a reduction of 50 per cent of their annual renewals, a very pronounced reduction in the consumption of our forests will have been accomplished.

The Slow Growth of Public Sentiment

The people of our American cities will require a generation—thirty or forty years—in which to come to an adequate realization of the simple and axiomatic truth that to get good service from their street railways they will be obliged to allow the owners of the properties a reasonable income. These are the words of Dean Mortimer E. Cooley of the engineering schools of the University of Michigan, speaking in Washington, before the commission which was appointed by President Wilson to make a general investigation of the country-wide crisis in street railway finances. Doctor Cooley, evidently, is a philosopher who believes in taking things as he finds them—while most of us go on discussing grave problems, involving the most fundamental issues; as though we expected such discussion to produce results immediately. To what extent does Dr. Cooley's time-estimate fit the general railroad situation? The Interstate Commerce Commission and Congressmen have had a pretty clear view of the thickening storm in the railroad world now for several years; what signs do we see that they have learned wisdom in that time? The few leaders who see straight have still before them the task of arousing their hundreds of colleagues to an appreciation of the broad view which will be essential to the adoption of a workable policy. There is one element of satisfaction at least; the general railroad problem is the biggest one of all; it cannot long be ignored or evaded. Even delay and inaction are clearly recognized by everybody as equivalent to a decision. The street railway problem, like the "Short Line" problem—enormous as these are intrinsically—still must be classed as secondary. Every

one of us, however, must sympathize warmly with the "traction" men pleading their cause at Washington, for we are all riding daily on street cars at rates less than cost; and we cannot help seeing that the day of settlement must surely come.

New York Central Lines' Financing

CAPITAL AS WELL AS LABOR must be secured by railroads at a reasonable price. Even the roads which, under present abnormal conditions, are able to show substantial net earnings must be provided with new capital when they are returned to the owning companies.

The New York Central Lines are illustrations of this fact. Quite recently the Cleveland, Cincinnati, Chicago & St. Louis sold to a syndicate of bankers, headed by J. P. Morgan & Co., and including the National City Company and the Guaranty Trust Company, both of New York, an issue of $15,000,000 ten-year, six per cent refunding and improvement mortgage bonds. The bankers offered these bonds to the public at 98, at which price they yield a little over 6¼ per cent. At almost the same time a banking syndicate which also included the Guaranty Trust Company and the National City Company, offered to the public $30,000,000 government of Switzerland 5½ per cent ten-year bonds at 96¼. At this price the bonds yielded a little over six per cent on the investment. The offering price of these two issues of bonds would indicate that railroad capital can be procured at a comparatively reasonable price. The $30,000,000 of foreign government bonds, however, were sold immediately upon the announcement of their offering. The $15,000,000 of railroad bonds are understood to have had a fairly satisfactory market. The New York Central Lines will have to go into the market for many times the $15,000,000 which the Big Four is raising at present. In 1918 the New York Central, itself, earned approximately the rental which the government had guaranteed to the company. The Cleveland, Cincinnati, Chicago & St. Louis and the Michigan Central earned a large surplus as over the guaranteed rentals. In regard to earning capacity, therefore, the New York Central Lines may be said to be in an exceptionally strong position as compared with most other American railroads under the present rate structure, wage scale and materials' costs, although this statement is based on the assumption that a return to private operation would not materially injure the New York Central Lines as compared with its competitors.

On December 31, 1917, the New York Central itself had loans and bills payable which amounted to over $17,000,000 with $15,000,000 notes maturing September 15, 1919, and a total funded debt, including these notes but not the floating debt, of $712,000,000, as against $250,000,000 stock outstanding. The Big Four had $3,763,000 loans and bills payable, $19,663,000 "miscellaneous obligations," $6,017,000 non-negotiable debt to affiliated companies, and a total funded debt, including the miscellaneous obligations and debt to affiliated companies, but exclusive of the floating debt, of $105,000,000, as against $57,000,000 outstanding stock. In other words, at the beginning of government control the New York Central Lines were badly in need of new capital and the proportion of debt to stock was higher than would generally be considered desirable. The Big Four note sale shows that a comparatively small amount of new railroad capital can be raised by a company which had demonstrated earning power under present conditions, but the measure of success of the sale would indicate that the term "reasonable," as applied to the interest rate on new capital has taken on a very different meaning than it had five years ago, and it does not indicate that it is safe to assume that the large capital requirements of the railroads can be met through the sale of securities bearing interest at between six and seven per cent in competition with the sale of securities in this country by foreign governments and by our own industrial companies on a huge scale.

An Efficiency Engineer On Electrification

ELSEWHERE IN THIS ISSUE there is an article giving an efficiency engineer's views on the electrification of railways. In this article the engineer makes some noteworthy comments on the subject of railroad economics, but also makes several statements which may well be questioned. Examples are cited in the following paragraphs in which the engineer's statements appear in quotation marks and the editor's comments follow:

"In our country electrification means an immense scrapping of existing equipment." This would, of course, be true if it were possible to electrify all of the roads in the United States over night, but all of the present electrically operated sections of steam railroads represent very small parts of the total mileage operated and electrifying most of these relatively small sections represents years of work. Long before it would be possible to electrify all of the steam roads, all existing steam equipment would be obsolete or worn out. Electrification, as applied to steam roads, is a matter of evolution, not revolution.

"Electric service has been successful in all respects except one—financial. The old horse-car lines made money; the electric lines are on the edge of bankruptcy." It would appear in this that the author has lost sight of the fact that the development of street railway equipment was so rapid that it was necessary in some cities to scrap horse-car and cable equipment for electric equipment, with the result that the electric lines are forced to pay their own carrying expenses along with the interest on the horse-car lines and cable lines which have ceased to exist. In addition, as expressed by Thomas A. Edison, the iron-clad contracts between the roads and cities made in the pioneering days, under normal conditions, have no protective clauses against the great change in operating costs brought on by the world war.

"Present railroad equipment works notoriously very few hours a day. Main tracks are occupied by moving trains about one per cent of the time; locomotives average less than three hours' working service a day, and cars are moving scarcely two hours a day." In using this argument, the engineer has, figuratively, set up a straw man and knocked it down. Electric operation is not advocated for sections of track which are occupied by moving trains only one per cent of the time.

"Electrification does not help the terminal situation; it aggravates it, since it tempts into the centers of cities terminals that, under steam conditions would have remained in cheaper suburbs." It is logical to suppose from this that the engineer would advocate bringing passengers and freight into the cities on already overcrowded streets from outlying railroad stations.

"As an economic or financial proposition, electrical operation is out of the question." One firm of consulting engineers, during the past two years decided that electrification was not advisable in more than half of the cases considered, but as a large number of capable operating men have concluded that electrification was the only solution of specific difficult problems, it would appear that the efficiency engineer's statements should be considered with reservations. Probably nothing has retarded the adoption of electric operation so much as the extravagant claims which manufacturers of electrical equipment have made in the past. It is quite possible to go as much to extremes in the other direction. If

the subject of electrification is to be discussed in general, it is wrong to assume that electrification of all of the railroads in the United States is the subject of discussion. Electric operation has been adopted in few cases except where local conditions made it appear particularly necessary, and it is highly improbable that more than a small percentage of all the roads in the United States will be electrified for many years to come.

New Books

Storing. By H. B. Twyford, 200 pages, illustrated, 6 in. by 9 in., bound in cloth. Published by D. Van Nostrand Company, 25 Park Place, New York.

The necessity for storing stocks of materials of various kinds arises from the practical impossibility of obtaining a constant and uniform flow of materials from the raw state to the finished product at the point of consumption, and with the growing complexity of the modern industrial operations storage problems have also grown in complexity as well as in importance. In its broadest sense, the problem of modern storage not only involves questions of efficient methods of protecting and handling material, but many questions of a commercial nature must also receive consideration.

In this volume the author has attempted to consider the whole range of questions involved in the storage problem, both economic and technical. The former are dealt with in a general way only, defining the fundamentals, and pointing out some of the more common mistakes of an economic nature.

The technical problems are dealt with at greater length. Two chapters are devoted to the question of location, equipment and appliances for the storeroom, while the greater part of the work deals with storehouse operations, including discussions of clerical work, the storehouse organization and methods of accounting for and disposing of material received and delivered from the storeroom. Although, beyond the rather general discussion of the economic phases of storing, it has been the intention of the author to confine the discussion to the problems of the storekeeper rather than to include the related problems of purchasing, a brief discussion of the value of stores inventories has been included, as these materially affect proper cost accounting in connection with the work for which the material is delivered.

The book contains a large number of illustrations showing storehouse equipment and methods of handling material, as well as various forms required in properly listing and accounting for stores stock.

Official Proceedings of Sixth National Foreign Trade Convention, size 6 in. by 9 in., 650 pages, bound in cloth. Issued by the Secretary National Foreign Trade Council, 1 Hanover Square, New York.

The Official Proceedings of the Sixth National Foreign Trade Convention are now ready for distribution in book form.

Contained in the proceedings are all the speeches made at the convention, the discussions of important foreign trade problems, the reports made to the convention, and the list of delegates and firms. This volume, together with the reports of previous conventions, finds wide application as a textbook of foreign trade. The information contained in it furnishes a summary of the foreign trade thought of the country, and will be found highly suggestive to all practical foreign traders.

Letters to the Editor

The Noise Nuisance on Railroads

Chicago.

To the Editor:

The recent articles in your paper describing the introduction of telephone signals on the Pennsylvania Railroad to call in the flagmen causes the writer to wonder if we do profit by experience.

Whistles and other noises (some unnecessary) have cost the American railroads untold millions of dollars in law suits, often resulting in relocation of terminals, elevation of tracks, electrification, etc., to abate the noise nuisance.

What thought or attention has been given to a noiseless locomotive. The chief offenders are noisy exhausts. Why not muffle them? A noisy shrill whistle made of cast iron without musical tone, a harsh metallic clanging din called a bell and noisy open pop valves! For years efforts were made to secure a tuneful bell and whistle and to produce a muffled safety valve, and considerable success was attained, as indicated by the large number in service.

This progress was cast to the winds a few years ago by the introduction of so-called high lift or increased efficiency safety valves, that open with the roar of a 13-in. gun. Likewise the composition metal tuneful bell and chime whistle have had to give place to cast iron and pressed steel.

Evidently our daddies made a mistake in giving too much consideration to the sensitive ear and slumbering public, for the muffled safety valve has now gone into the discard and evidently was not considered a necessity on the United States Railroad Administration standard locomotives.

Do we forget or are we progressing?

A Subscriber.

Preventing Collisions Due to Angle Cocks

Chicago.

To the Editor:

I have read your editorial relative to the closed angle cock in connection with the recent serious accident near Dunkirk, N. Y., and it brings to my mind the many devices and designs that have been brought out during the last thirty years to avoid just such accidents as this.

I was air brake expert for a large railroad during eight years ending in 1900, and was so concerned over the many similar, though less disastrous, failures that I personally investigated all such inventions as gave promise of simplicity and effectiveness, and since that time have had only less active interest in the subject.

The Louisville & Nashville fully 25 years ago entirely abolished the angle cock on the locomotive, both to prevent its being closed at the wrong time, and also to keep the dirt and cinders out of the engine hose where they are blown back into the train line brake pipe. It adopted an air-tight dummy coupler and was still using this a few years ago and presume it is today. However, to the best of my knowledge, no other road or roads of considerable size followed its plan, as it occasions a slight loss of air and time in connecting and disconnecting the locomotive and train. The old American feeling of optimism, that "lightning doesn't strike twice in the same place," seems to prevent effective changes of this character unless and until such accident comes to your own road, and even then they are not lasting.

A number of years back, the railroad with which I have

been connected for nearly thirty years, abandoned the so-called "angle cock" on the rear of all passenger locomotives and substituted in its place a "straight-way" cock located about a foot or more under the back tender beam, so as to be reached only by a man on the ground and especially so located that a man riding "blind-baggage" could not accidentally push it closed with his foot. We also for a time drilled a 1/4 in. hole in the side of all these rear tender cocks, which would vent the air from the hose-side of the cock rapidly enough to apply the brakes.

These ideas are simple, are not patented, and cause no delay or loss of air when the two adjacent cocks are closed nearly simultaneously and would, I believe, be well worth consideration as a "safety-first" proposition on all the railroads.

E. W. Pratt,
Assistant Superintendent Motive Power and Car Department, C. & N. W.

The Motion Picture Machine As an Engineering Instrument

Chicago, Ill.

To the Editor:

There is every reason why the moving picture machine should become a scientific instrument for the use of the civil engineering profession. Its ramifications are untold and apparently unlimited. It is surprising that some of the scientific instrument makers have not seen its possibilities and produced a machine that would meet the requirements of this field.

If an instrument were built with leveling attachments for the horizontal plane and a telescope with cross-hairs, it would seem to be what would be needed. By means of the leveling device, pictures obtained would conform to diagrams and detailed drawings. The telescope with its cross-hairs would enable the operator to focus the machine carefully on the point and in the desired plane.

Such a machine would be particularly adaptable to railway engineering. With it the problem of the rail under load, that has been bothering investigators for some time, might be solved. The instrument could be set up so that the horizontal cross-hair is parallel with the top of the rail, when free from load and at a distance of ten feet from the rail so that the instrument would be prevented from receiving the vibrations from passing trains. A record of the cars and their weight would be shown in the pictures. A cross-hair immediately in front of the films and corresponding to the cross-hair in the telescope would show the actual point of the top of the rail before being loaded. As the train passed (speed to be predetermined and the reel turned to meet such a speed) the depression of the rail would be shown upon the films.

It might be possible that some calculations would be necessary but this could be determined by experiments.

Individual films of reels, so taken, could be selected from which graphs could be made. In this manner it seems possible that accurate knowledge of the action of the rail under load at varying speeds of trains could be obtained. It would also seem possible that movements of all the rails and parts of crossings could so be obtained. These films or sets of pictures, taken in conjunction with tests of the rail under transverse and alternating stresses and with a knowledge of the elastic limit and ultimate load of the steel of the rails undergoing investigation, would apparently give the investigators a rather comprehensive knowledge of the rail under load.

Investigators of rails under load have stated that the means so far employed have not been satisfactory for many reasons. It would seem, to the writer, that the instrument or machine suggested, would be available for bridges, culverts, locomotive driving wheel counter balances and many other problems that are now perplexing railway engineers.

J. C. Marsh.

The Respectable Commission

Boston, Mass.

To the Editor:

The excellent editorial in the *Railway Age* of July 18 on the qualifications of the members of the Interstate Commerce Commission leaves off just about where it ought to begin. It is true that the majority of the commissioners are wedded for life to "the people"—that is, the majority of the voters; and as the majority of the voters do not yet know their own desires we must expect that the commission as a whole will remain flabby. Mr. Esch, for the same reason, has presented a flabby bill.

But with all its faults the Interstate Commerce Commission is the only body of men that anybody seems to be able to think of as competent to regulate our freight rates. The "average man" sets his hope on these commissioners because they are outwardly respectable, like a policeman, or a hotel clerk, or a Tammany alderman; while their disqualifications are not clearly defined—at least not to him. Railroad presidents recommend the commission as a rate-making power because they feel sure that Congress would certainly refuse to approve any action looking to the institution of a more intelligent or courageous body. So, therefore, it appears that we are destined—or doomed— to live with the Interstate Commerce Commission for better or for worse till death do us part.

What next? A number of competent writers have proposed that Congress direct the commissioners to regulate freight rates so as to permit the railroads to earn six per cent on their stock. This is good in principle; but how will the thing be done? They will spend so much time in trying to decide how low they can make the freight rates while still complying with the law that the railroads will die of apoplexy, or anaemia; delirium, or tuberculosis. To make the rates just right is impossible. It would be an endless problem on a single road, let alone the rest of our enormous railroad system. The commissioners would fear to make rates too high because of the sure displeasure of the shippers and the politicians. They would fear to make them too low, for it is by this time evident, even in Washington, that the railroad treasuries face bankruptcy; and even the politician knows something of the evils of insolvency. The only practicable plan is to make the rates *too high,* and provide for turning the surpluses over to the government. It is a difficult thing to make a law today, to provide for taxing a railroad equitably on its income which is to be earned one, two or three years hence; but it must be done, if we are to accomplish our threefold purpose of providing stable freight rates, reasonable railroad dividends and contented—or even half-way contented—voters. Let the railroads earn seven per cent. Possibly next year they will need 7½ or 8 per cent. The federal government and the states will debate many months before deciding how to apportion among themselves the income taxes to be taken from the carriers; but they will have to settle the question in some way or other.

I do not trouble you with the problem of helping the weak roads, or with any discussion of the wage question; and you may say that I am not a thoroughgoing reformer; but is it not true that the freight rate question is fundamental? And that something must be done about it even if we shirk the duty of tackling these other puzzles?

New Englander.

Plumb's Soviet Plan of Railroad Management

A Discussion of the Scheme for Employees' Operation—Public Could Be "Exploited" Without Limit

Probably no other subject has excited more interest in the United States recently than the "Plumb Plan" of having the public buy the railroads and turn them over entirely to their employees to run. The public has much difficulty in understanding just what this plan is and how it would work.

This is not surprising. The public's difficulty in understanding the plan is mainly due to the fact that it is absolutely novel in the history of industry and politics in America; and the public, like the individual, finds it hard to comprehend a thing entirely different from anything ever presented to its mind before. The same entire novelty which makes it difficult for the public to understand the plan renders it difficult for the public to visualize in detail just how the plan would work, and all the effects it would produce.

To say that the plan is absolutely novel is but another way of saying it is revolutionary; and the very fact that it is revolutionary should make the public scrutinize it long and carefully before seriously considering its adoption. Revolutions, whether in politics or industry, are not always undesirable. Sometimes they are necessary for the public good. But evolution is always preferable to revolution if needed changes can be brought about in that way. Evolution is accomplished by carefully taking one step at a time; and the man who does that usually knows where he is going and is tolerably sure not to break his neck. Revolution always is a leap in the dark, and the people who try to make progress by taking leaps in the dark, like the individual who tries to make progress that way, stands just as good a chance in doing so of breaking its neck as it does of getting where it wants to go.

The Russians recently have been taking a series of leaps in the dark similar to that the Plumb Plan proposes in their desire to make political and industrial progress. The result is that they are now living under a Government which avows that it is an "autocracy of the proletariat"; that practically all the people of real intelligence and ability have been killed or driven out of the country; that fully 95 per cent of their manufacturing and other industries are shut down, and that millions of the "proletariat" for whose supposed benefit the revolution has been accomplished and the present autocracy has been established have starved and frozen to death, while practically all the rest are hungry and half-naked.

Up to the present time Anglo-Saxon peoples have preferred to make progress by evolution rather than by revolution; and it is due to this fact that today they have the freest and most truly democratic governments, the most efficient and highly productive industries, and the best paid and most prosperous working people in the world.

Is the Plumb Plan Socialistic?

When the spokesmen of the labor brotherhoods were presenting their arguments for their plan before the House Committee on Interstate Commerce, some members of the committee raised the question whether their plan was not socialistic. Glenn E. Plumb, the author of the plan, and other spokesmen of the brotherhoods contended that it is not socialistic. Socialism, they pointed out, proposes not only the public ownership, but also the public *management* of all the facilities used in the production, distribution and exchange of commodities. The Plumb plan, on the other hand, proposes, like socialism, that the public shall acquire the railroads (and other industries), but, unlike socialism, that the railroads shall not be managed by the public, but shall be turned over to a "tripartite" board to manage. This board would consist of five directors appointed by the President of the United States to represent the public, five elected by the "official employees"—that is, the officers—of the railways, and five elected by the "classified employees"—that is, by those now known simply as "employees." Manifestly, however, this would be management by the employees, since the "official employees" would, under this scheme, have no interest distinct from that of the "classified employees."

The difference between socialism and this plan is, then, very clear. Under socialism the railways and other industries would be owned by the public and managed by persons who would represent the public, and who, therefore, presumably would try to manage the industries in the interest of the public. They might not, and probably would not succeed in managing them for the best interests of the public, this being due to various reasons which are generally accepted in this country as conclusive arguments against socialism. But at least the managers would have some motives under socialism for trying to manage the industries in the interest of the public.

Under the "Plumb plan," on the other hand, while the public would *own* the railroads, they would be managed by a board of directors two-thirds of whose members would represent the employees; whose continuance in their positions would depend absolutely upon their success in satisfying the employees; and who, therefore, would be impelled by the strongest of motives to try to promote, not the interests of the public, but the interests of the employees at the expense of the public.

How completely control over the management of the railroads would be transferred, under this plan, to the employees, is not shown by mere reference to the so-called "tripartite" board which would be given general direction of management. The details of the plan are set forth in the Sims bill, which has been introduced in Congress; and it contains several important provisions which must be taken into account before the objects at which the brotherhoods really are aiming can be completely comprehended. Section 3 of this bill provides that the board of directors shall divide the railways of the country into districts. In each of these districts it shall constitute a "district railway council." It is important to note how these councils are to be chosen. One-third of their members are to be appointed by the "tripartite" board of directors; and as two-thirds of the members of this board will be employees, the board is pretty sure to appoint employees to the district councils. Another one-third of the members of the district councils will be elected by the "classified employees within their district," and the remaining one-third will be elected by the "official employees within said district." The result will be that *all* the members of the district councils will be employees. Now the board of directors may delegate to the district councils any powers it may choose to, "and the district railway council shall, upon such delegation, have and exercise within its district all of the powers and duties of the board of directors as may be delegated to it." Thus, the actual management of the roads in each district could be and probably would be delegated to the district council, and upon this council the public, although the owner of the railroads, would have no representation at all!

The labor leaders are fully justified in saying that this plan is not socialistic. It is even worse than socialistic. Hav-

ing provided that the public shall burden itself with a huge debt by buying the railroads, it provides that the public shall turn them over to the management of a particular class of the people for management under conditions which would enable this particular class to "exploit" the public without limit. The socialist is unselfish and modest in his demands, compared with the railway labor brotherhoods.

Power to "Exploit" the Public

That the railway employees would have the *power* to hold up the public without limit as long as this plan was in operation can hardly be denied. The plan provides that all salaries and wages shall be fixed by a central board of wages and working conditions, one-half of whose members shall be chosen by the "official employees" and one-half by the "classified employees." Its decisions are to be final, unless a majority decision cannot be reached, in which case there is to be appeal to the board of directors.

Now, there is nothing in human experience, and certainly nothing in recent experience in the railway field in the United States, to indicate that the time ever will come when any class of persons will be satisfied with its income, whether derived from wages or any other source. In the years 1916 and 1917 the railway employees of the United States received advances in wages amounting to $350,000,000. In 1918 they received advances amounting to $1,000,000,000 a year. And now they are asking for advances amounting to $800,000,000 a year. Of course, they give what to them appear perfectly valid reasons why all these advances in their wages should be made. And they could convince themselves just as completely under the Plumb plan that their incomes ought to be still further and further increased as they can now. That is merely human. So we may be sure that under the "Plumb Plan" the "classified employees" would continue their perennial movements for higher incomes. And why should not the "official employees" want their incomes increased, too? And if they did, why should not the representatives of both classes on the central wage board agree to raise salaries and wages again and again until only the sky was the limit of railway wages and salaries? The central wage board, under the Sims bill, clearly would have legal *power* to fix $10,000, or even $50,000 a year as the minimum wage of a railway employee, if it was disposed to do so, and the public would have to pay it. If the railway salary and wage bill was not paid from earnings derived from freight and passenger rates, it would have to be paid from taxes, for the Sims bill expressly says (Article 2, section 5), that "all costs upon operation and charges upon the capital employed * * * shall be guaranteed by the Federal Government."

What Protection Would the Public Have?

There is no denying the fact that under this plan the "official employees" could, by acting in collusion, legally raise their salaries and wages without limit, and that, under the plan, the public would have to pay the bill. But, say the advocates of the plan, the "official employees" would have a strong incentive not to permit salaries and wages to be raised unduly. One of the features of the plan is that any surplus earned in excess of the amount required to pay operating expenses and interest on the bonds issued by the Government to buy the roads is to be divided equally between the public and the employees. The half of the surplus going to the employees is to be distributed among them in proportion to their salaries and wages, except that the "official employees" are to receive twice as much of it in proportion to their salaries as the "classified employees" are to receive in proportion to their wages.

Now, say the advocates of the Plumb plan, the "official employees" will necessarily refuse to consent to any unreasonable advances in wages and salaries, because the result would be to deprive them of part or all of their large "dividends" from the surplus. And this is absolutely the only form of protection which, under the Sims Plumb Plan bill, the public would have from excessive advances in railway salaries and wages. Of what value would this protection be? In order to answer this question we must consider, first, what would be the position of railway officers under the Plumb plan, and second, what chance there would be of the railways earning a surplus.

Position of Railway Officers Under the Plumb Plan

Under private ownership and operation of railways the president of a railway represents the owners and operates the property for them, subject to government regulation. The other officers work under the direction of the president, and supervise the work of the employees. Under Government operation the officers occupy much the same position, except that they represent the Government instead of private corporations. Under the Plumb plan the officers would work under the general direction of a board, one-third of whose members represented themselves (the officers), one-third the employees and one-third the public. Suppose that the officers did not hold out against an unreasonable advance in salaries and wages. There would be appeal to the board of directors, and as one-third of the directors would be politicians and one-third representatives of the classified employees with their large voting power, there would be a strong chance that the politicians and labor men on the board would agree to make the advance in wages. Suppose, on the other hand, that the politicians sided with the officers against the advance. The result probably would be a strike by the employees, for it is a notable feature of the Plumb plan that although it practically provides for employees' management of the railroads, it does not in any way provide against the employees striking against their own management.

As a matter of fact, however, there would be little chance of the "official employees" ever holding out strongly against an attempt by the "classified employees" to raise salaries and wages. The officers would depend for their appointments and promotions upon, and have to work under, a board of directors and district councils on which the "classified employees" would be as largely represented as the officers. Therefore, no officer would long be able to hold his place, much less secure promotion, unless he was able to find favor in the eyes of the employees, and the surest way to lose their favor would be vigorously to oppose their wage demands. The officers who have been trained and developed under corporate management and who have been used to showing independence and fearlessly exercising authority over the employees would rapidly be weeded out, and soon the entire official personnel would consist of men who owed their positions, not to their ability and experience as railroad operatives, but to their success in the game of labor politics.

A member of the House Committee on Interstate Commerce asked one of the spokesmen of the brotherhoods the other day whether it was not a fact that practically all the leading railroad men of the country had risen from the ranks. The witness answered that it was, and that labor wanted this to be true in future, but that labor intended to have something to say in future about who should rise. This shows the way the brotherhood leaders' minds are working. Doubtless they intend to vault into the seats of the managers if they succeed in ousting the present incumbents; as they certainly will if the Plumb plan is adopted. Officers practically dependent for their jobs on the employees will not resist the demands of the employees for raises in their pay.

Furthermore, their prospective shares in the possible surplus would afford the officers no real incentive to oppose advances in wages, provided these were going to be accompanied by advances in their own salaries; and there would be no reason why they could not, by acting in collusion with the employees, get an increase in salary every time there was

an increase in wages. Now, there are very few men who would not take a raise in salary in preference to a chance to share in a surplus which might not, and probably would not, be earned.

Deficit or Surplus?

It is one of the curious features of the hearings on the Plumb plan at Washington, that the advocates of that plan have refused to recognize the fact that, under their scheme, a deficit might be incurred in the operation of the railways, and have talked glibly throughout about what would be done with the "surplus." The most cursory examination of the statistics showing the results of current railway operations is all that is necessary, however, to convince any rational person that, in the absence of a large advance in passenger and freight rates, there would not be the remotest chance of a surplus being earned under the Plumb plan.

Railway earnings are now running at the rate of about $5,000,000,000 a year. Operating expenses are running at the rate of about $4,500,000,000 a year. This leaves net earnings of only about $500,000,000. The advocates of the Plumb plan claim the public could buy the railroads for $12,000,000,000 in 4 per cent bonds. Even on this basis, however, the interest on the bonds would be almost $500,000,000 a year, leaving no surplus worth talking about. But this is not all that must be considered. The employees are demanding that whether the Plumb plan is adopted or not, they shall be given new advances in wages amounting to $800,000,000 a year. These advances in wages would make the operating expenses alone exceed the present total earnings; cause an *operating* deficit of $300,000,000 a year—in other words, leave $300,000,000 *less than nothing* with which to pay interest on the bonds issued by the public to buy the roads.

If we add this operating deficit of $300,000,000 a year to the $500,000,000 a year interest on railroad bonds, which the Government would have to issue to buy the roads even on the basis the advocates of the Plumb plan say it could, the employees, in the absence of an advance in freight and passenger rates, would start operating the railroads with a total deficit of $800,000,000 a year. A fine chance they would have of ever earning a surplus to be divided between the employees and the public if they started with a deficit of $800,000,000 a year!

As a matter of fact, the deficit with which they would begin operations unquestionably would be much larger than this. It is simply nonsense to talk about the Government being able to buy the railroads for $12,000,000,000 in 4 per cent bonds. In order to buy them it would have to issue at least $18,000,000,000 in 5 per cent bonds. This, then, would make the total interest the Government would have to pay on its railroad debt $900,000,000 a year, and since the operating deficit would be $300,000,000 a year the total deficit would be at least $1,200,000,000 a year. The only way in which the employees' management could be given a chance to earn a surplus would be to make a very large advance in rates; and yet the advocates of the Plumb plan are contending that the adoption of their scheme would result in a reduction in rates.

It cannot be too often emphasized that while the advocates of the Plumb plan generously propose that in case, under the employees' management, a surplus should be earned, the employees would divide it with the public, they at the same time most ungenerously propose that if a deficit should be incurred under their management the public should pay it all. Their proposition to the public is: "Heads, we both win; tails, you do all the losing."

Effect of Plumb Plan Upon the States

There is still another point that should be considered in connection with the possible surplus or deficit. The railroads pay now about $200,000,000 a year in taxes. Part of this goes to the Federal Government, but most of it goes to the State governments. It constitutes one of the largest parts of the revenues of the States. Under the Plumb plan all the taxes now paid by the railroads, whether to the State or Federal governments, would be wiped out. The Sims bill expressly provides that all the earnings of the railroads shall be used for the payment of operating expenses, for the payment of interest on the bonds issued by the Government to buy them; for the creation of a sinking fund for the retirement of the bonds and for the creation of the "surplus" which is to be divided between the Federal Government and the employees. It even specifies what the Federal Government must do with the part of the surplus going into its treasury. The State governments doubtless will be especially interested in the parts of the plan which would at once deprive them of all power to tax railroad property or earnings.

This, however, is not all that the Plumb plan would do to the States. It would wipe out every vestige of State regulation of railroads. All the regulating of rates or operation is to be done by the Federal Government, for the Sims bill says that "the corporation shall be subject to the full regulatory powers of the Federal Government as expressed through the interstate commerce act," while nowhere does it provide for any regulation by the States. There is a provision in Section 4 that "when the board of directors delegates to any local authority or State or subdivision thereof * * * any of its powers under this section, it shall be lawful for such local authority or state or subdivision thereof to exercise any or all of the powers of the board of directors so delegated to it." In other words, the board of directors in respect to the operation of the railroads would be superior to the States themselves and they could exercise only such powers as the board might delegate to them. This, we believe, is the first case in the history of the United States where anybody ever had the impudence to suggest that the Federal Government should create a corporation which should not only be entirely above State regulation, but should be so far above it as to have authority to use the States as its agents.

Provision of "Working Capital"

One of the interesting features of the Sims bill is the care taken throughout to insure that the public shall furnish all the money that must be raised to enable the railroad employees to run the railroads. The public, of course, is to buy the railroads by an issue of bonds, the interest on which is to be guaranteed by the public and paid by it if the railroads fail to earn it. The roads are then, according to the terms of the bill, to be "leased" to a so-called "National Railways Operating Corporation," and, in the language of the bill, "The board of directors, official employees and classified employees hereinafter described shall be and constitute said corporation." Now, a corporation cannot do business, or even start business without some working capital—in other words, some ready money with which to meet current bills. It might be assumed that the "National Railways Operating Corporation" would at least furnish its own working capital. But this assumption would be incorrect. After having bought the railroads and turned them over to the employees the public must also furnish them the several hundred millions of dollars of working capital with which to do business; for the Sims bill says, "That the corporation shall be required to utilize said railway lines and properties and their equipment *and the working capital which shall be put at its command* in such manner," etc. If the working capital should be dissipated, the public would have no way of getting it back any more than it would have any way of recovering any losses that might be incurred through failure adequately to maintain the properties or through deficits. The proposition of the Plumb plan advocates is simply that the public shall furnish all the capital for the enterprise and take all the risks of loss; and if there are any profits—which the employees will have every opportunity and the strongest of in-

centives for preventing—the public will be given half of them.

That is, it will be given them in a purely Pickwickian sense. For, while the bill does not provide what the employees shall do with their half of the surplus, if there is one, it provides in detail what the public must do with its half of the surplus, if there is one. The public's part of the fund is required to be used "(1) to pay for extensions and betterments * * * before capital funds shall become available therefor, and (2) accumulations thereof in excess of $500,000,000 shall be automatically transferred to sinking fund." The sinking fund would be used to pay off the bonded debt. The reduction of the bonded debt would increase the surplus if there was one. And the employees would get one-half of the resulting increase in the surplus!

An Attack Upon Present System of Industry

There should be no mistaking the significance of the propaganda for the Plumb plan in its relation to private property in general. Questions which were asked and the answers which were made to them while witnesses supporting the Plumb plan were testifying before the House Committee on Interstate Commerce made clear that the Plumb plan for employees' management of the railroads is practically a reproduction of the Soviet plan of government and industry which was first adopted in Russia under the Bolshevik regime.

It is primarily an attack upon profits with the object of preventing industries of all kinds from earning profits in future in order to enable the workers to get in one form or another the earnings of industry which otherwise in the form of profits would go to the capitalists. It is therefore necessarily an attack upon all forms of private property, whether property in railroads, manufacturing plants, or farms. Under the present system of industry in America all property is managed for the purpose of making profits. If the opportunity to make profits is destroyed then the value of the property to the owner is destroyed. In England those who are advocating the nationalization of the railroads and the coal mines and their transfer to the employees for management are also advocating the nationalization of all farm land and its transfer to the farm laborers for management. The logical extension of the Plumb Soviet Plan to other industries themselves would result in the Government buying all the farms in the country and turning them over to the farm hands to run in their own interest. The advocates of the Plumb plan claim that some farmers are supporting it. No farm owner will support it who realizes that its logical extension would mean the nationalization not only of the railroads, the steel industry and the packing industry, but also the farming industry.

Do Railroad Employees Really Back This Plan?

The advocates of the Plumb plan claim that it has the backing of practically all the organized railway employees of the United States. The skilled employees of the railways always have been regarded as an unusually intelligent class of working men. Mr. Plumb's attempt to transplant the Russian Soviet plan to America is so grotesque and at the same time so revolutionary that it is hard to believe his scheme can possibly have the backing of as many railroad employees as he claims. If it has, this must be due to the fact that many of them do not understand what the plan really is. As a matter of fact, no complete referendum of the organized railroad employees has ever been taken on the Plumb plan, and there is reason to believe that if a referendum were taken under conditions which gave the men an opportunity to express their true views a very large part of them would go on record against the Plumb plan.

When the advocates of the Plumb plan began presenting it to the House Committee on Interstate Commerce they took a very truculent tone. They said, in effect, that the brotherhoods did not intend to permit the railroads to be returned to private management, and that they would adopt whatever measures were necessary to secure adoption of the plan of employees' management. The members of the House Committee, the press and the public at once assumed—and no doubt correctly—that what the brotherhoods' spokesmen meant was that they would go the length of calling a nation-wide railroad strike in order to force adoption of the Plumb plan, if they could not get it adopted in any other way.

Will the Brotherhoods Strike for the Plumb Plan?

Doubtless to the great surprise of the brotherhood leaders, Congress and the public did not betray the slightest symptom of becoming scared. On the contrary, there was an outburst of public sentiment against the brotherhoods. Denunciations of their leaders' attitude were published in newspapers throughout the country, and delivered by members of the house committee and other members of Congress.

Since then the brotherhood leaders apparently have been taking the back track. They have been denying that they intend to call a strike to force the Plumb plan upon the country.

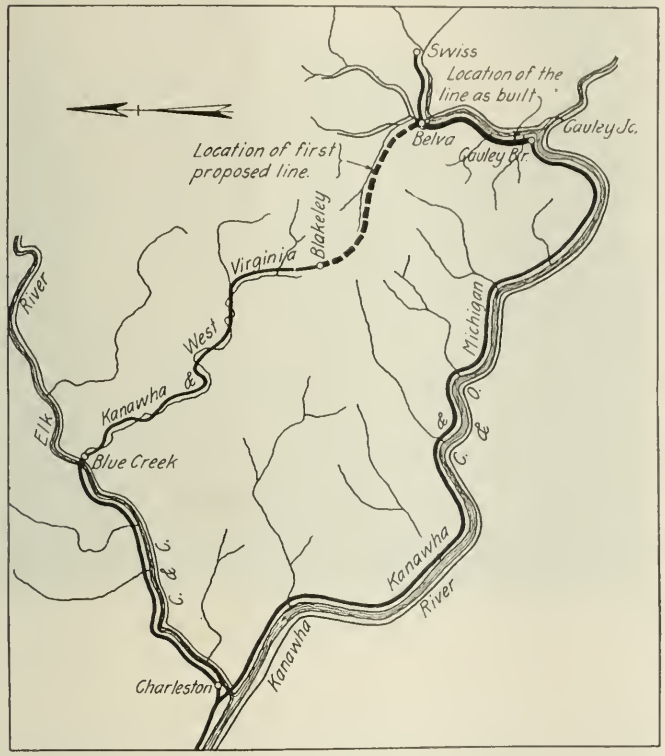
The nation should not let itself be lulled into a sense of security by the tone the brotherhood leaders are now taking. In 1916, when it was repeatedly charged that they intended to call a nation-wide strike if their demands were not granted without arbitration, they as repeatedly declared that there would be no strike. *They said then, as they say now, that they expected to win without a strike.* But when the railway presidents absolutely and finally refused to grant their demands without arbitration, the heads of the brotherhoods did issue the order for a strike; and they refused to recall the order until Congress, under whip and spur, with the brotherhood leaders holding a stop-watch on it, had passed the Adamson basic eight-hour day law.

The brotherhood leaders now say that they expect to secure adoption of the Plumb plan without a strike. But it is perfectly apparent that they are engaged now in stirring up all the labor troubles on the railroads they can, with the purpose not merely of getting higher wages, but also of making it as difficult as possible to return the railroads to private operation. Should they succeed in preventing a return to private operation, they would regard this as the first great victory in the campaign for the Plumb plan. They would then go on with their propaganda for it with redoubled energy; and if they finally found that propaganda alone was not sufficient, there can be no serious question in the mind of any person familiar with their past history that they would call a strike if they had the slightest hope that they could thereby "put over" the Plumb plan. The present leaders of the brotherhoods have supreme confidence in their ability to get anything they want by means of strikes and threats of strikes; and as long as they have this confidence, and it continues to be perfectly lawful for them to call strikes at any time they want to, and upon any pretext that appeals to them, the country will continue to have hanging over it the menace of great railroad strikes. Because of this supreme confidence of the brotherhood leaders in the omnipotence of the strike, it now appears almost certain that sooner or later a general railroad strike will occur in the United States no matter what system of management the railroads have, and since it appears almost certain that such a strike will come, probably the best thing for the country would be to have it soon and get it over. If it must have it sooner or later, as now appears almost certain, probably we had just as well have it for the purpose of "putting over" the Plumb plan as for any other purpose.

The Kanawha & West Virginia Builds a New Line

Its Construction Involved Exceptionally Heavy Grading. Rock of Varying Formations Encountered

In September, 1916, the Kanawha & Michigan Railway acquired the Kanawha & West Virginia Railroad, consisting of 34 miles of line running from Charleston along Elk river and Blue creek in Kanawha county, W. Va., to Blakeley and four miles of line on the Gauley river in Nicholas county, W. Va., between Belva and Swiss. The



Relation of the Gauley & Eastern to the Kanawha & Michigan and the Kanawha & West Virginia

Kanawha & West Virginia also had various other surveys and rights-of-way in the Kanawha coal district of West Virginia. It was the original intention of the Kanawha & West Virginia to build a line along the Gauley river between Belva and Blakeley, connecting its existing lines, as shown on the map. To do this would have required the construction of 11 miles of line through very rough country with a tunnel 950 ft. long and three miles of 1.8 per cent grade, uncompensated, ascending to the tunnel on each side, with several 10-deg. curves on these grades.

To avoid building this line, expensive in construction, operation and maintenance, it was decided to construct the Gauley & Eastern Railway along the west bank of Gauley river, from Gauley Bridge, the southern terminus of the Kanawha & Michigan in Fayette county, W. Va., to Belva, a distance of 5.6 miles. The Gauley river along this line is about 650 ft. above sea level and the tops of the mountains are about 1,100 ft. above the river. The railroad grade is from 20 to 30 ft. above low water and is practically out of reach of high water. The line and grade on this work conforms to the standards of the Kanawha & Michigan and the Kanawha & West Virginia which it connects. It opens new coal fields and timber lands in this section, the coal consisting of the Eagle, No. 2 gas and Coalburg seams, Kanawha measures.

This line has a grade of 0.3 per cent, compensated against loaded traffic and 0.5 per cent compensated against empty movement. The ruling grade against northbound or loaded movement is 5,242 ft. long and that against southbound or empty movement 3,800 ft. long. The maximum curvature is 6 deg. and there is only one curve that sharp. The total length of line on curves is 14,897 ft. with a total central angle of 410 deg. There are three timber trestles on the line, 30 ft., 120 ft., and 105 ft. long, respectively, with an average height of about 20 ft. There is also an under crossing with the Gauley branch of the Chesapeake & Ohio at Belva. These bridges were built of timber as it was impossible to secure steel for them because of the war. Two concrete pipe culverts of 5-ft. and 4-ft. diameter were placed under the railroad and an adjacent county road. Numerous smaller culverts of cast iron pipe 12 in. to 24 in. in diameter were also installed.

The most complicated problems in the construction of the line were experienced in the grading. Because of the cliffs it was impossible, in some places, to get a loading track ahead of the shovel without great expense. In a few of these places, it became necessary to make a cast-over cut, using a short jack-arm on the shovel and then cutting the shovel back and load-

A Shovel Making a Cast-Over Cut

ing the full cut for use on the various banks. The blasting down of the cliffs formed an interesting part of the work. At one point between stations 41 and 46, shown in one of the photographs, the entire face of the cliff was blown down at one time. This shot consisted of 17 holes about 60 ft. deep and 9,000 lb. of 40 per cent dynamite was used. The shooting was so planned that practically no rock was thrown in the river except that which it was desired to place there. Some waste occurred where the cast-over cuts had to be made first, but not in appreciable quantities.

The grading of this new line involved some exceptionally heavy and difficult work. About three miles of the line is located close to the river bank, where it was necessary to shoot down and remove cliffs ranging from 60 to 100 ft. above grade. Great difficulty was experienced in shooting this material as a variety of formations were found, including soft and brittle shale and exceedingly hard sandstone, this condition leading to considerable overbreakage. It was also found

necessary to vary the quantity of explosives in the shots to get good results.

A much-traveled county road parallels the river on this location and 3½ miles of this road had to be abandoned and reconstructed on the same grade with the railroad. Construction was delayed to some extent by two floods occurring in the river and damaging the new banks at points where they had not yet been protected with rock and riprap.

At several points trouble was experienced from slides. In some cases the dirt and small rock came off the top of the

Looking Up the River from Station 33

cliffs. In one instance, at the upper end of the line at Belva, there was a cut with a maximum depth of about 40 ft. on the upper slope line which consisted of a soft yellow clay, very porous, with about 30 per cent of boulders and loose rock in it overlying a stratum of hard blue clay, impervious to water. The top of the blue clay was 6 to 10 ft. above grade and the water penetrating through the top formation to the blue clay, caused the top to break and slide off in large quantities with the result that three times the estimated yardage was moved from this slide. After the removal of this material it was found that a break had occurred about 500 ft. up the mountain side and the entire section seemed to be moving toward the track. Holes were drilled about 75 ft. back from the top of the slope through the formation to rock about 20 ft. below grade and these were shot, as finished, the idea being to permit the water to escape through the strata underneath. These holes were 120 ft. to 130 ft. deep, about 75 ft. apart and 190 ft. from the center line and have apparently given relief.

An interesting feature of the job was the installing of the contractors, equipment at the Belva end of the job. This

Moving Narrow Gage Equipment Up a 20-Per Cent Grade at Belva

equipment consisted of a standard gage grading shovel and three dinkey engines, with cars and spreader of 3 ft. gage. The shovel was taken about 1,000 ft. through a corn field, then down through Twenty-Mile creek and up a 20 per cent grade about 200 ft. long to the county road at the point where it was to be cut in. The engines and cars were then brought over and pulled up the grade by the shovel, using a block and tackle attached to trees.

Drilling from a Trestle in Preparation for a Big Shot Between Stations 41 and 46. This Entire Cliff Was Shot Down at One Time

The Gauley river furnished an excellent water supply for boilers during construction and coal was secured in the immediate vicinity. The drilling was done on the cliffs and through all the heavy work with 4-in. Cyclone gasolene drills and on the smaller cuts with tripod steam drills. All the steam shovels on the job were equipped with air pumps and furnished air for the drilling necessary in large rocks and slabs in front of shovel which it was necessary to break with explosives before they could be handled by the shovel. Approximately 132,000 lb. of dynamite and a small quantity of black powder were used in the job.

Considerable difficulty was experienced by both the contractors and the railway company during the latter part of 1917 and during 1918 in securing sufficient labor and material to carry on the work properly. The fact that a large number of coal mines, all running to capacity, are located in the immediate vicinity made the labor problem especially acute at times. The line promises, however, to be capable of operation with normal maintenance expense as most of the slides have been stopped and the fills are very solid and not likely to wash.

The grading and bridge work was started about September 1, 1917, and the line was completed in June, 1919. The grading work was done by J. B. Lindsey, of Middleport, Ohio, and C. W. Marshall, of Kansas City, Mo., and some of the county road work was done by A. Keathly, of Huntington, W. Va. A total of 357,282 cu. yd. of excavation was moved, about 80 per cent being rock, at a cost of $1.05 per yd., not classified. The track was laid with 8-ft. and 8½-ft. white oak ties and 90-lb. A. S. C. E. relay rail which had been re-sawed at the Kanawha & Michigan plant at Hobson, Ohio. The track was ballasted with pit-run gravel and some slag and cinders.

We are indebted to C. M. McVay, division engineer, of the Kanawha & Michigan, at Charleston, W. Va., for the information given above.

An Efficiency Engineer's Views on the Electrification of Railways

The following is taken from a written discussion by Harrington Emerson on the paper by W. B. Potter and S. T. Dodd, presented before the Western Railway Club, and abstracted in the *Railway Age* of May 9, 1919, page 1157:

"In the March, 1907, number of the *Railway Age* I wrote a paper whose title was: 'The Steam Locomotive More Economical Than Electric Equipment for Standard Railroad Operation.' My paper was called out by the interesting, suggestive and brilliant joint study by Majors Lewis B. Stillwell and Henry St. Clair Putnam as to the economies to be effected by the substitution of electric for steam operation.

"Twelve years have passed. I see no reason to modify convictions then expressed. Here and there under special conditions electric traction has been installed in subways, for street car service, for interurban service and here and there on mountain divisions. Electric service has been successful in all respects except one; financial. The old horse car lines made money, the electric lines are on the edge of bankruptcy.

"What are the principles underlying costs of railroad operation? Just 20 years ago James J. Hill said to me that I could write the formula for successful railroad operation on my thumb nail. He said: 'Receipts are by the ton and passenger mile, expenses are by the train mile.' He gave me 20 years to better the formula. I was continuously in railroad work for the next 20 years and continuously I tested his formula and ultimately found it wanting.

"Steam railroad receipts are indeed largely by the ton mile and the passenger mile, but expenses are not by the train mile.

"Expenses are: (1) The terminal cost of collecting and starting the traffic. (2) The terminal cost of delivery and distributing the traffic. (3) The train mile *hour* cost.

"An investigation made about 15 years ago showed that the value of the terminals of the Lake Shore in Chicago alone nearly equalled all the other investment in track and equipment. The enormous cost of New York terminal facilities is well known. Mr. Fisher 12 years ago demonstrated that terminal expenses increased by the square of the population, and that on this account all our roads serving great cities were financially doomed. Subways and urban trolleys do not have terminal expenses. They usually occupy free of charge the most costly sites in the world. Electrification does not help the terminal situation, it aggravates it, since it tempts into the centers of cities terminals that under steam conditions would have remained in cheaper suburbs.

"But it is the third division of expense that is more largely responsible for steam railroad collapse and that stands in the way of electrification. Expenses are not by the 'train mile, they are by the train mile hour.'

"All railroad expenses fall into one of the three groups of materials, salaries, investment maintenance. In 1914 per average locomotive day these expenses were:

For Materials	$ 33.00
For Personnel	55.00
For Investment	77.00
Total	$165.00

"The investment charges amount to 10 per cent on the valuation and this without adequate provision for obsolescence and unremunerative betterments. The seven capital charges are: (1) Taxes. (2) Insurance. (3) Rentals. (4) Obsolescence. (5) Unremunerative Betterments. (6) Interest. (7) Dividends. Personnel is almost wholly an hourly charge. Materials even are partly an hourly charge, both in storehouse and in use. Investment maintenance charges are wholly by the hour.

"Present railroad equipment works notoriously very few hours a day. Main tracks are occupied by moving trains about one per cent of the time, locomotives average less than three hours working service a day, cars are moving scarcely two hours a day. Pipe lines have a double advantage over railroads. They are occupied continuously by moving loads and the container does not move, there is no dead weight.

"Fifteen years ago some of my clients wanted to build a standard gage road in Alaska. I proved to them that a two foot gage could carry annually 20 times as much freight as their enterprise could provide. No wonder some of the cheaply built narrow gage roads in Alaska paid in three months their total cost of constructions as well as of operation. Charges per hour were low.

"Electrification will heavily increase investment maintenance charges, not lessen them. This is the fatal objection to electrification. It is doubtful whether in a new country, on a new enterprise, let us say the Cape to Cairo project in Africa, electric operation would not require a heavier investment per mile than steam, thus offsetting any other highly problematical savings. In our country electrification means an immense scrapping of existing equipment and an immense capital investment in new equipment. As an economical or financial proposition electrical operation is out of the question.

"It is a great pity that our two government directors-general of the Railroad Administration, as well as the Interstate Commerce Commission, have failed to realize the necessity of separate terminal charges or the effect of the hour on operating costs.

"We cannot today on the railroads reduce the gage of

our tracks or substitute little rapidly moving cars for big ones, and make them deliver twice as many ton miles per hour but the motor trucks are for short distances doing this very thing. Their terminal accommodations cost less and are greater, they work more hours each day.

"We can at least avoid giving the coup de grace to our railroads already staggering under the wound of government operation, by carefully avoiding a still further increase in the hourly investment cost which is already between 40 and 50 per cent of the total hourly cost. Under the best operations of steam and of electric roads what economies are there in materials and in labor to offset the increased hour charge due to larger investment for the same service?"

Plumb Calls Conference on Railroad Control

A CONFERENCE of "leaders of national thought," invited by Glenn E. Plumb, counsel for the organized railway employees, to discuss the railroad problem with the labor leaders at Washington, met on August 9 and adjourned on August 11, leaving its activities in the hands of an executive committee. Three sub-committees, to be composed of "experts of national reputation in their several fields," are in process of formation, to study the engineering or technical, the legal, and the economic aspects of the railroad situation in America. These committees are to report to a general conference to be held in Washington on October 6. According to the official press notice:

"While this conference of liberal thought was called before the mind of President Wilson became known on the question of a constructive policy to be pursued toward the present acute state of industrial unrest throughout the country, it falls naturally into line with his desires as since expressed, and is in this sense an interesting example of America's quickness in action.

"While no definite action toward that end was taken, the question of conferring with President Wilson, in the spirit of this statement, was discussed. It is unavoidable that a meeting with the President will be sought at an early date, when the essential principles of the Plumb plan will be presented and the state of facts outlined which lends such power to the proposals of the brotherhoods for the nationalization of the railroads."

Judge Walter Clark, chief justice of the Supreme Court of North Carolina, was elected temporary chairman. Among those who attended the preliminary conference were Gov. Henry J. Allen, of Kansas; Prof. Edward Bemis, of New York; Ex-Gov. E. F. Dunne, of Chicago; Frederick C. Howe, Commissioner of Immigration of the port of New York; Frank P. Walsh, formerly joint chairman of the National War Labor Board; J. A. H. Hopkins, chairman of the executive committee of the committee of 48, and Morris L. Cook, consulting engineer, of Philadelphia. This group met with A. B. Garretson, adviser of the Order of Railway Conductors; James J. Forrester, grand president, Brotherhood of Railway and Steamship Clerks, Freight Handlers, Express and Station Employees, and other officials of the railroad labor organizations now assembled in Washington.

The first session of the conference was devoted to a presentation of the theory of the brotherhoods' railroad plan by Glenn E. Plumb.

The conference apparently restrained any impatience it may have felt to endorse the Plumb plan at its first session, but on Sunday Chairman Clark issued a statement, saying in part:

"As a result of our deliberation upon the existing railroad situation and the various suggestions for dealing therewith, the conference declares that the following principles should control the action of the government with respect to this most important question:

"The government has resting upon it the duty and obligation to conserve and further the interest of the people as a body, particularly with respect to the conditions of their livelihood. Distribution of the products of the nation's industry and agriculture is, therefore, not only a proper but an imperative function of the government which the people have a right to insist shall be properly fulfilled. It is therefore incumbent upon the government to provide transportation (as the principal factor in distribution) at actual cost, thus insuring means whereby the products of one region may, with only the addition of actual cost of transportation, be brought to the consumers in another territory. Any plan proposed for the solution of the railroad problem must, therefore, meet the test that it will provide transportation at actual cost.

"The existing state of industrial warfare is more costly to the consuming public than to the workers or to the owners of capital. Any plan for the solution of the railroad problem which seeks the endorsement of the public should provide for a share by the workers in the management and in the profits arising from increased efficiency. We therefore welcome any well-considered movement toward democratization of the railroads as being in the interest not only of the workers but even more in the interest of the public.

"Several plans have been presented to the Congress of the United States for the future ownership and operation of the railroads. Some of these plans have been presented by the representatives of railroad security owners and other property-owning groups. One plan has been presented by the representatives of the railroad employees. These plans must be tested and analyzed in the light of the principles already enunciated. In order that this may be done in the orderly manner which befits a question of such transcendent importance to the American people, we have determined to call a national conference to meet in Washington on Monday, October 6, 1919, and we have further decided to appoint special committees to analyze the several proposals which have been offered for the solution of the railroad problem, to report their findings at that national conference."

This was followed by another statement by Edward Keating, manager of the Plumb Plan League, in which he said: "All that the railway brotherhoods asked was a fair and exhaustive examination of the railroad situation in America, and a full consideration by the country of the proposals which they advance for dealing with this situation. If the true facts of the case can be spread before the country, the brotherhoods rely on the soundness of the principles embodied in their plan to win the support of public opinion."

Photo from Underwood & Underwood, N. Y.

Hauling Freight on Electric Railways

An electric sheep train on the Ogden, Logan & Idaho. The big sheep raisers use trains of this kind for shipping their animals to market, and for shipping flocks from one grazing region to another.

Possibilities for Supply Manufacturers Abroad

Local Industries in Europe Will Have Difficulty in Meeting Demands for Railway Material

By Robert E. Thayer,
European Editor of the *Railway Age*

London, July 25, 1919.

THE SITUATION IN ENGLAND, France and Belgium regarding the sale of American railway supplies is somewhat complicated. In all of these three countries, the governments have at the present time, a lot to say as to where the purchases of railway materials shall be placed. Naturally it is their desire to place orders with the home industries, not only to give them ample business and thus provide employment for their own countrymen, but also on account of the fact that they want to keep the money in their own countries. In some cases orders have been placed with the home industries even though both the deliveries and prices of American companies have really been more attractive.

It may be stated generally that American industries can only hope for business from these countries when, first, the local industries have been amply provided with orders and cannot fill additional orders in the time desired, and when there are no local industries to provide the desired material. The credit facilities also enter very largely into the situation.

There is a vast amount of railroad work to be done in all of these countries in order to rehabilitate the railways and to reconstruct their devastated portions. American manufacturers who have gone to Europe since the war expecting to receive large orders have been quite disappointed in not being able to do a larger amount of business, but the reason that they have not done more business is that these countries have not really been able to adequately determine the amount of business that can be done by their own industries. In other words the market was not ripe. There is but little question, however, that as time goes on these countries will be obliged to go to America for railway material which they must have, and which they are not sufficiently well equipped industrially to supply. The local industries will have more than they can do to provide material for their own countries soon enough to rehabilitate the railways as promptly as they should. In fact it is believed that business will be handed to American industries on a "silver platter," due to the fact that European countries will not be able to supply all of their own immediate needs.

The labor situation in England and France particularly is in a decidedly unrestful state. The reaction of the four long years of war has by no means spent itself. Labor has become extremely independent, and to a large extent has got beyond the control of the labor leaders. Out of work gratuities, particularly to the demobilized men, has had a serious effect, and it has been difficult to get the men back into their peace-time pursuits. The attitude of labor in England in the mining industry is having untold serious effect on the industry of that country. Some of the miners have bolted from their leaders and have struck in protest of the action of the Government regarding the mines, and at the present time the consequences of their action appear to be very serious. With the cost of coal increasing six shillings per ton or about $1.50, and with the decreased output on account of a seven hour day, the English industries will find it more difficult to compete with American prices. The miners and labor in general are trying to force the government into the general nationalization of the national resources and public utilities, and the movement is so strong that the government at the present time has hesitated to take any direct stand in the matter. It undoubtedly realizes the disastrous effect of general nationalization, but at the same time hesitates to take a positive stand against it for fear of the consequences that may follow. Public opinion does not seem to have the same effect upon the laboring classes in England that is has had in the States

Situation in Belgium

It is difficult to enumerate the kinds of material which these countries will be obliged to purchase from outside sources. Belgium of course is in bad shape and will need practically everything in the railway line. At the present time it needs rails and structural steel. It was only about a month ago that its blast furnaces resumed operation. It needs rolling stock, shop equipment and signals. The rolling stock is in a deplorable state, and had it not been for the German cars and locomotives obtained from Germany on the signing of the Armistice, Belgium's railways would have had extreme difficulty in maintaining proper train service. It is the desire of the Belgian State Railways to return these German cars and locomotives and buy new, and under the terms of Peace they are given the opportunity of either accepting the German equipment, deducting its value from the amount of indemnity due Belgium, or else returning the German equipment and buying new with cash derived from the indemnity. It has not been decided yet what will be done, but the policy followed will undoubtedly be, provided proper credits can be established until the indemnity is paid, to buy new equipment. It has been stated that if this is not done, it will take the Belgian railways 30 years to get their power and rolling stock back to its pre-war condition. If the Belgian railways decide to return the German equipment and take the money for new equipment, an extensive standardization program will be formulated. This would be of great advantage to American industries, for a large amount of equipment will be required and better prices can be made and better deliveries ensured.

A vast amount of work will have to be done on the signal system of the Belgian railways. Plans are now being formulated for a system which is reported to be a combination of English and American practices and which will be simpler than that previously used in that country. There are rumors that automatic signaling is being considered, but no direct information has been obtainable, nor is it believed that any definite decision has been made in this matter. The work of reconstruction of the signal system will take about two years, and while every attempt is being made to place business with Belgian industries, it is believed that the demand for this equipment will be so great that it will be impossible for them to supply the necessary equipment.

The shop equipment of the Belgian railways is in a deplorable state. It is such that, at the present time, the shops are working from one-third to one-half their pre-war capacity. This has necessitated contracting locomotive repairs to Belgian locomotive builders, which at the same time will retard the output of new locomotives from these companies.

Regardless of the fact that Belgian railway shops need large quantities of machine tools, the situation as it stands today does not present a very encouraging outlook for Ameri-

can machine tool builders. The American government has arranged with the Belgian government through a Belgian combine for the sale of the surplus machine tools purchased for war purposes. The prices are to be those of 1914 with an increase of about 55 per cent., delivered at Belgian ports, and a credit for three years has been established to facilitate the Belgian finances. With the quantities of tools thus made available to Belgium at such advantageous prices, American manufacturers can only hope to obtain orders for special types of machines required in railway shops, and then only those which cannot be provided by the local Belgian companies.

Situation in France

The requirements of France, while not relatively as serious as those of Belgium, are believed to be so vast that it will be impossible for the French manufacturers to meet the demands of reconstruction in the devastated areas, the rehabilitation of all railways in general, and new work in the added territory of Alsace-Lorraine. It has been estimated that an expenditure of $971,000,000 will be required to finance this work. As in Belgium, the railways in the devastated areas, namely the Nord and the Est, have had to rely on German equipment to meet their needs, and this will be undoubtedly returned if proper financial arrangements can be made for the purchase of new equipment. The locomotives and cars brought over by the American Expeditionary Forces have also assisted greatly in relieving the equipment situation. These will stay in France, but with it all, there appears to still be a great demand for new equipment. Standardization programmes are being developed, which have been mentioned previously in these columns, and a large number of locomotives have been ordered to existing designs to meet the more immediate needs, but with the labor situation as it is today in France, there is a grave question as to whether the expectations of the companies delivering this new equipment in the time required will be met.

There is a large amount of work to be done in rehabilitating lines and shops. The opportunities for American manufacturers will depend upon the capacity of the French industries to supply these needs, and further upon the service the Americans give in comparison to that which can be obtained from other outside countries. During the war French railway men had a great opportunity of learning more about American railway practices, and while it seems to be the opinion of most of the railway men who served with our forces in France that but little of American practices will be absorbed by the French railways, there have been indications that this is not strictly the case. The Paris-Lyon-Mediterranean was much impressed by the telephone despatching system used by the American forces in France and is to instal that system on its lines between Dijon and Lyons. Furthermore, that road is becoming much interested in automatic signals, and it is believed that a trial will be made of them to determine their value to French railways. The engineers of that road are now making a careful study of this problem.

The locomotive design of France is approaching more and more American lines. The compound locomotive is giving place to the high degree superheater simple type of locomotive. The standard locomotives which are being designed will be simple engines. The conditions have so changed in France, particularly as regards labor, that more of the labor-saving methods which are common in America will find favor there.

The machine tool situation is somewhat the same as in Belgium. Arrangements have been made with the American government for the sale of the machine tools brought into France for the use of the American military forces, at very favorable prices, which have been reported as being 1917 prices less 25 per cent. Here again, the American machine tool manufacturers will find little encouragement, but it is understood that regardless of this arrangement, many inquiries are being received for special types of American machine tools.

Freight cars of larger capacity than have generally been used in France are coming into greater favor and undoubtedly with the increased cost of labor, greater efforts will be made to secure better train loads than have been the practice in the past. The use of the continuously braked freight train is being considered, and also the automatic coupler, but the latter presents considerable difficulties due to the interchangeability with the present type of coupling.

Situation in England

The situation in England is chiefly a matter of rehabilitation. During the war maintenance has been sadly neglected. Very little has been done pending the action of the government on the Transport Bill. There is a great need for equipment of all kinds, both track and rolling stock. New locomotives are required, and it is believed that cars of greater tonnage will be built. Sir Eric Geddes, Minister designate of railways, in speaking before the House of Lords on the Transport Bill, spoke of the advantages to be obtained with freight cars of greater capacity than are generally used in England, stating that locomotives can be loaded to greater capacity without increasing the length of trains which are now limited by the length of sidings. He called attention to the fact that about half the freight cars in England, or approximately 700,000, were privately owned, of which 500,000 were under 12 tons capacity. It is believed that English railways can use freight cars of 45 tons capacity to very good advantage. A tremendous lot of work must necessarily be done for the transportation facilities are in a bad way. The congestion at ports and industrial centers is bad, due primarily to the lack of equipment. Contrary to the conditions in the United States there was very little change in the amount of traffic hauled after the signing of the Armistice. The greatest problem presented to the railway men in England was that of readjusting themselves to the change in the flow of traffic. This has been occasioned somewhat by the unadjusted freight rates between different ports in the country, the rates of the coastwise vessels having risen to such an extent that the railroads were overtaxed in handling coastwise business, as their rates had not been changed. Any definite action on rehabilitation will be held in abeyance until the disposition of the Transport Bill which is now before the Houses of Parliament.

General Remarks

Thus in all three of the countries under discussion, it will be seen that the work of rebuilding and rehabilitation of the railways is so vast that it is hardly possible for their local industries to provide their needs, and this presents the opportunity for American railway supply manufacturers. The greatest field, however, for our companies would appear to be with the countries which before the war went to the European countries for their railway supplies. This does not mean that the European markets should be neglected. In fact many of the South American railway companies and those in other portions of the world, are financed from Europe, and orders would naturally come from there. Those of the American companies which have opened offices or established connections in Europe, will undoubtedly derive benefit from this extension of their business.

In seeking trade from European countries, or in fact any country, American manufacturers must realize that they will be obliged to conform to the desires of the countries with which they are dealing, in the matter of design, except in the case of some minor or special apparatus. It is difficult for American manufacturers to sell their standard products

except where such happen to meet the desires of the railways with which they are doing business. The railways in England, France and Belgium, go into the study of designs a great deal more than is common with the railways in America. They have an extensive staff of engineers who study design from their own point of view, with the result that in these countries the designs of the railways are far more varied than on the railways in America. With the trend towards standardization in all of these countries, however, a much more common product will be evolved, which means that a large number of articles of the same design will be purchased. This will be favorable to American manufacturers who desire business from these countries, as it will enable them to do business on a larger scale and pay them to adapt themselves to the requirements of their foreign customers.

The railways do not look with favor upon the service facilities which American railway supply manufacturers so ably render in the States. Furthermore, in the contemplation of new designs or in the adoption of new practices, the assistance of the supply companies is not sought anywhere near to the same extent as in the States. After a design is once made, bids are asked for manufacture to that specific design, with the result that the manufacturers act more as manufacturers than as engineers, and the business usually goes to the lowest bidder. This makes it quite difficult for the high grade supply companies to make the showing and reputation as engineers that is common in the States. It is this peculiarity which is difficult for the American manufacturers to understand, but it is nevertheless important that it be carefully considered. Any attempt by American manufacturers to force American designs on foreign railways is liable to meet with opposition except where these designs are in accordance with their own ideas. It may be possible to do it if the roads in question need the material so badly that they are obliged to take what they can get, but it will react against the manufacturers when future orders are contemplated. Furthermore, the methods of doing business in foreign countries are quite different from American methods, and it is necessary for the American manufacturers to consider the foreign methods and work in accordance with them if they hope to become firmly established in the country in question.

One enthusiastic Paris representative of a large American concern was heard to state: "In order for Americans to obtain business in France it would be necessary first to teach American business methods to the French." A French man commenting on this remark stated that: "Before he did that it would be necessary to make English the national language of France." Too much emphasis cannot therefore be placed on the importance of American manufacturers adapting themselves to the physiological conditions and the peculiar characteristics of the countries in which they hope to do business. As has been repeatedly pointed out it was this adaptability that so enabled the German nation to develop its extensive export trade. Now that Peace is signed and the gates are open to Geman industry, America must "watch its step" if it is to hold the export business which has and will automatically come to it as the nation best equipped at the present time to supply the needs of the rest of the world.

British trade with Brazil.—The Brazilian commercial delegates who are shortly to tour the commercial centers of Great Britain under the auspices of the Federation of British Industries were expected to arrive in England before the end of June. They include Dr. Pandia Calogeras, the ex-Minister of Finance, Agriculture and Commerce, and other eminent Brazilians. Arrangements have been made for them to visit important works in a number of different cities.

An Analysis of the Plumb Plan

Characterizing the Plumb plan as "the most vicious piece of legislation" that has been presented to Congress since he has been in the Senate, Senator Atlee Pomerene of Ohio has addressed a letter to a committee representing the Hocking Valley System Federation No. 51, affiliated with the American Federation of Labor, in reply to a letter from the committee calling attention to the plan as evidence of their interest in behalf of "the masses of the people." The Senator said in part:

In your deliberations whom did you consult who was representative of "the masses of the people" as contradistinguished from those who were personally interested in the plan, and, if you consulted such persons, did "the masses" choose them or did you choose them, and what did they say either for or against it?

You tell me that you studied this for a matter of nine or ten weeks, and on the 23d day of July (Wednesday) you concluded your task, and on the following Monday these recommendations were presented to a called meeting of representatives and delegates, who unanimously adopted the committee's report.

Who were these representatives and delegates who were able at one sitting to understand the Plumb plan and advise as to what should be done in the interest of "the masses of the people"? Were they chosen by "the masses" to represent them?

You write me that the Plumb plan is the only "ultimate solution of the 'railroad problem' that has as yet been presented to your honorable body."

Many proposed plans are pending before the Interstate Commerce Committee of the Senate, and all of them are being carefully studied with a view of the best possible solution of the situation.

Did your committee or "the representatives and delegates who unanimously adopted the Plumb plan in its entirety" examine these plans, or any of them, before passing judgment upon them?

Now, let us go a step further. The railroads of this country, in round numbers, are valued at $20,000,000,000. They are the web and woof of America's industrial, commercial, and social life. Under the Plumb plan it is proposed to take this property by purchase or condemnation from its stockholders, among whom are thousands, not to say millions, of the plain people of the country—old and young, the widows and the orphans—and to pay for them in cash payments or by the issuance to such owners of United States Government bonds. In other words, they shall be paid for by the people's cash or by their obligations. They are then to be managed and operated by the national railway operating corporation for 100 years, which shall have a board of directors to be composed of 15 men, five of whom shall be selected by the classified employees of the railways, five by their official employees, and five to be appointed by the President, not more than three of them to belong to one political party.

Suffice it to say that you and I both understand—even if we are not willing to admit it—that the 10 railway directors will have interests which will be at variance with the interests of the traveling and shipping public, who pay the bill; and while the other five appointed by the President are said to represent the public, which perhaps embraces about 100,000,000 people—I mean the people other than those who will be directly or indirectly interested either as the classified and official railway employees or their families—they will owe their appointment to a political power and, it is my judgment, may be influenced by the political purposes of the party in control of the Government.

Are you quite sure that when the Plumb plan was devised it was in the interest of "the masses"? If so, how does it happen that the bill is presented by the brotherhoods alone

and their associates? Why were not the interests of the general public consulted?

If the Plumb plan is sound economically and is for the interests of "the masses," why do you not suggest that similar legislation be adopted whereby all public utilities, including water works, electric light plans, gas and heating plants, be purchased and turned over to their employees and operatives, respectively?

If it is sound and in the interest of *the masses*, why do you not suggest that all the coal mines, iron and copper mines, be purchased by the government and turned over to the operatives in the same way?

Why do you not suggest that all the manufacturing and industrial plants of the country be purchased with government funds or by the issuance of government bonds and turned over to their operatives in the same way?

Why do you not advise that all the stores be purchased and turned over to their operatives in the same way?

Why do you not recommend that all the banks of the country be acquired by the government and turned over to their operatives?

Why do you not ask, in the interest of "the masses," that the government purchase all the farms of the country and turn them over to the employees on the farms?

And, lastly, may I suggest that if one man should happen to own two houses, one of which he rents, why do you not ask that the second house shall be bought by the government and turned over to the renter?

Where is this going to end?

My friends, permit me to say the Plumb plan has nothing akin to it outside Bolshevik Russia.

It is worse than socialism.

Socialism contemplates the public ownership of property to be controlled and operated by the public for the public. The Plumb plan contemplates the public ownership of the railroads for a class. As neither class of these employees will have any stock, their interests will be one and the same as against the public. In other words, $20,000,000,000 worth of property bought by money belonging to 110,000,000 people is to be turned over to 2,000,000 railroad men, representing, perhaps, including their families, 10,000,000.

Does this seem to be for the benefit of "the masses"?

Mr. Plumb in his testimony before the Senate Committee on Interstate Commerce in February assumed that the capital invested amounted to $18,000,000,000 approximately. In his testimony last week before the Interstate Commerce Committee of the House he estimated that all the present owners would get for their property is $13,000,000,000. So, according to his own testimony, Mr. Plumb's plan, if enacted into law, will substantially confiscate $5,000,000,000 worth of property belonging to private owners.

And what would be the result if it fails?

Invoking the principle of brotherhood—a name I love—do you not feel you ought to be consistent, and while asking for this investment of the public funds for your benefit to likewise ask for the benefit of a proportionally equal amount of government funds for every other business enterprise in the United States, and turn that over to the employees of those several enterprises?

Does not the principle of fraternity suggest this?

And by the time we get through with it there will be $240,000,000,000 of government bonds issued and on the market.

My friends, this Plumb plan spells ruin for beloved America.

In the past few years a good many people have urged federal ownership and control of the railroads, the telegraphs, and the telephones. In view of recent experiences most of them who have had no selfish purpose to serve have changed their views.

Government control of these utilities has been so complete that it does not differ materially from actual government ownership, and there is no such radical difference between the present government control and operation and that provided for in the Plumb plan as to warrant anyone in saying that while the former has been a failure the latter will be a success.

From the standpoint of operation every user of the railroads, telegraphs, and telephones knows that the service has been worse than during the private control, excepting only the condition of the railroads during the last two months of private control, which was due to war conditions.

Do you really believe that under the Plumb plan you can turn this deficit under government control either into a surplus for the account of the government or the public or into better service for the country?

I do not believe it can be done except by one increase after another in transportation rates.

Permit me to make another suggestion: Since government control was begun the wages to the employees have been increased about $1,000,000,000. The director general, on July 31, 1919, informed the President that additional increases were demanded which would aggregate, if granted, about $800,000,000 more per year.

I have no knowledge as to whether the conditions are such as to justify this increase or not, and I express no opinion with regard to it. I want the railroad men and all laboring men to be liberally paid, whether under public or private control.

But this is only an incident to the larger question to which I want to call your attention. If the conditions are such that this increase is justified, then I am for it. I await the proof before I shall decide it.

But when your representatives come to Washington and not only ask this increase but demand that the Congress of the United States shall buy these properties at a cost to the government of $18,000,000,000 or $20,000,000,000 and turn them over to the national railways operating corporation for management and operation I want to say to you as one American to another it is neither fair nor American for them to insinuate revolution, as they have before the Interstate Commerce Committee of the House, unless their demands are granted.

And let me suggest that the people at large have not expressed any desire for this plan, but members of your brotherhoods—I do not mean the chiefs—have been in Washington making their threats as to what would happen unless this legislation is enacted. As one Senator I shall always be open to conviction, but I never yet have yielded to a threat, and I never will.

Of course, I know that you do not approve these methods. Law-abiding citizens, real Americans, never do approve them. It is only men of the Bolshevik type of mind that ever resort to them.

Among the threats that have been made are threats of a nation-wide strike. I do not mean to suggest that the chiefs of the brotherhoods have suggested a nation-wide strike, but some of the members of the brotherhoods have made these threats here in Washington to Senators. I am sure that you do not give any countenance to strikes under present conditions.

I believe in the right of the laboring man to use the instrument of the strike under proper circumstances, but I do not believe the occasion is here or ever has been here or ever will be here which will justify a nation-wide strike, with all the distress it will bring, not only on the public at large but on the strikers and their families.

With a general strike on in this country, tying up all the railroads, the products of the mine and the farm and the factory could not be moved to the centers of population and in one week's time the people of our great cities would be starved, and in winter frozen. The people of these centers

of population include the wives, the children, and the babes of railway men as well as others. It is too shocking a situation to even contemplate.

A sub-committee of the Interstate Commerce Committee, of which I am a member, has been engaged for a number of weeks in preparing a bill providing for the reorganization and regulation of the railroads to present to the full committee for its consideration. I hope it will appeal to the sober sense of the public. I can give no assurances as to whether it will be approved or disapproved, but of this I am convinced, that the American public never will approve the Plumb plan or anything akin to it.

The Plumb plan is the most vicious piece of legislation that has been presented to Congress since I have been in the Senate. I would feel that I was contributing to the ruin, not only to the transportation system of the country, but to its financial and industrial breakdown, if I voted for it. It would lead not only to the ruin of the whole people but to every railroad man as well.

Notwithstanding the statement in your letter to the effect that this plan was unanimously adopted at a meeting of the representatives and delegates to whom it was submitted by you, I venture the assertion that when they understand it the vast majority of them will oppose it.

Much has been said by the brotherhood chiefs and their counsel in the last few days here in Washington about the democratization of industry, and the Plumb plan is referred to as the means of democratizing transportation. A careful study of the bill will show that it is not democracy in transportation for which it provides, but autocracy in transportation.

Mr. Plumb the other day referred to the Wall Street control of the railroads. That was true in the past. It is not true now. Wall Street has many vicious things to its credit in years gone by, but the captains of finance have never demanded $20,000,000,000 of the American people's money at one time!

The Plumb plan out-Harrimans Harriman in his palmiest days!

The public does not want to be skinned, but if it must be skinned it will make little difference whether it is by Wall Street or by the methods provided for in the proposed Plumb plan.

It was my pleasure in 1916 to support your claims for the Adamson law, because I believed that you were entitled to better working hours and to better compensation, and so long as I am in public life it will be my pleasure to do whatever can be reasonably done to advance the interests of labor, but bear in mind that it is not "every one who cries unto me, 'Lord, Lord,' shall enter the kingdom of heaven," and it is not every man who comes around declaiming in favor of labor who is labor's friend.

I am sure that a sober second thought will persuade you that this bill ought to be defeated.

Andrew Carnegie

Andrew Carnegie

ANDREW CARNEGIE, the retired steel manufacturer and great philanthropist, who has just died was superintendent of the Pittsburgh Division of the Pennsylvania from 1859 to 1865. He began his railroad work as a telegraph operator on the Pennsylvania. Thomas A. Scott, who was later president of the Pennsylvania and was superintendent of the Pittsburgh Division before Carnegie was the man to whom young Carnegie owed his start in the steel business. Later in life a difference arose between the two men and from about the time of the panic of 1873 until the time when Mr. Carnegie sold his vast steel interests to the United States Steel Corporation, he persistently fought the Pennsylvania Railroad, or, as Mr. Carnegie, himself, would have put it, the Pennsylvania fought him.

As a steel man and as a great philanthropist, Andrew Carnegie's history has been and is being discussed in newspapers all over the world; but, interestingly enough, it was his threat to enter the railroad field on a large scale which was probably the deciding factor in the decision of J. P. Morgan and the varied interests which he represented to eliminate Andrew Carnegie from the steel business by buying his steel mills at Mr. Carnegie's own price. Of course, the history of the formation of the United States Steel Corporation is far more complex than merely the decision of the Morgan banking house to buy out Mr. Carnegie.

Mr. Carnegie's career as a steel manufacturer was during the period when railroad rebates were demanded and given. With his great resources, Mr. Carnegie had an advantage in this game which he used with ruthlessness and success. He built the Bessemer & Lake Erie partly as a legitimate railroad project—he could bring ore from the Lakes south on it and could give it coal northbound—and partly as a club to hold over the Pennsylvania Lines West in his demands for lower freight rates than his competitors. At one time he threatened to build a canal from Lake Erie to the Ohio river, and quite possibly would have carried out his threat had there been water enough to fill the upper levels; but the cost of pumping water up to these levels would have been prohibitive.

When the Goulds turned an eye toward Pittsburgh in George Gould's attempt at connecting up a trans-continental Gould system, Mr. Carnegie agreed to give the projected Wabash-Pittsburgh Terminal a third of his tonnage out of Pittsburgh. As a matter of fact, the Wabash-Pittsburgh Terminal was never in a position to take advantage of this contract and its terms were never carried out.

When Alexander Johnston Cassatt decided to take a firm stand against all rebating by the Pennsylvania system, Andrew Carnegie threatened to build a railroad from Pittsburgh to Baltimore. Although Morgan & Company were not the bankers for the Pennsylvania Railroad, other important in-

terests of theirs were vitally affected by the continuous state of warfare which Mr. Carnegie maintained in the steel industry, and this threat to bring chaos into the eastern trunk line situation gave the bankers an additional and potent incentive to eliminate for once and all the too aggressive steel manufacturer. The result was the formation of the United States Steel Corporation and the retirement of Mr. Carnegie from the business of making money and the beginning of his long career as a discriminating, broad-minded philanthropist.

He was one of America's very great citizens.

Doings of the Railroad Administration

WASHINGTON, D. C.

DIRECTOR GENERAL HINES announced on August 8 that the Railroad Administration has sent inquiries to a number of steel companies asking each at what price it is ready to supply 100,000 tons of steel rail. Inquiries relate separately to Bessemer rail and open hearth rail. Replies to the inquiries have been requested by August 16. A decision as to the amount of rail to be purchased will be reached following the receipt of the proposals.

This will be the second rail order placed by the Railroad Administration since the railroads were taken over a year and a half ago. Orders for 200,000 tons were placed in May.

Railroads to Co-operate with Vocational Education Board

W. T. Tyler, director of the Division of Operation, and W. S. Carter, director of the Division of Labor, have issued the following joint circular authorizing co-operation by the railroads in the establishment of part-time schools for railroad apprentices and others:

"The Federal Government has created under the provisions of an act of Congress, approved February 23, 1917, a Federal Board for Vocational Education.

"The purpose of this act is to provide for the promotion of vocational education in the trades and industries and in agriculture in co-operation with the various states, and an appropriation by the Federal Government is available for such work.

"The value of vocational training for mechanics and apprentices in railroad shops has been recognized by many railroads which have established schools for the training of such men. It is the desire of the Railroad Administration not only to assist and encourage such training where established, but also to extend the system to roads which have not established such schools, and it is believed that this can be best accomplished by co-operation between the United States Railroad Administration and the Federal Board for Vocational Education in extending this work.

"It is therefore desired that the different railroads under control of the United States Railroad Administration co-operate with the Federal Board for Vocational Education in the establishment of part-time schools for railroad shop apprentices and others who come within the scope of the act. Where it is found necessary in order to facilitate this work, railroads will be authorized on request, to fit up suitable study or class rooms at the different shops where such schools may be held. Where such schools are established, railroads will be authorized to pay apprentices at their usual rate for the time spent in attending such schools.

"Apprentices on roads where such schools are established will be required to attend not less than 208 hours per year.

"Complete information concerning the establishment of these schools in co-operation with the Federal Board for Vocational Education may be obtained either from the board direct or from the assistant director, Division of Operation, in charge of the Mechanical Department.

"In the preparation of a course of study, due attention must be given to meet the needs of railway shop employees, and such subjects as shop practice involving the manipulation of machines used in general repair and construction work and to related science, mathematics and drawings should be fully provided for.

"To provide uniformity as far as practicable in these courses of study, the subjects embraced therein should be submitted to the assistant director, Division of Operation, in charge of the Mechanical Department, for approval."

Distribution of Stock Cars

The Car Service Section has issued the following rules to govern the distribution of stock cars on all railroads:

1. The distribution of privately owned stock cars as between railroads and as between stations on each railroad will be authorized by the owners of such cars.

2. Such privately owned stock cars as are placed for loading by direction of the owner shall count against the daily allotment of cars to the shipper.

3. The owners of so-called private stock cars will give distribution to all their equipment before calling upon the railroads for assistance in filling orders for stock cars for their shippers or for their account.

4. If the number of privately owned stock cars placed for a shipper equals or exceeds that shipper's pro rata share of the available supply, he shall not be entitled in addition to any railroad-owned stock cars.

5. If the number of privately owned stock cars placed for a shipper is less than his pro rata share based on his daily ability to load and ship, he is entitled to be allotted railroad-owned equipment in addition thereto to make up his pro rata share.

6. The railroad will distribute available railroad-owned stock cars on a pro rata basis which shall take into consideration the ability of the shipper to load and ship.

Railways and the Peace Treaty.—Articles 365 to 374 of the Peace Treaty are specially devoted to railways. Provision is made regarding rates and facilities for merchandise traffic between the Allied and Associated countries on the one hand and Germany on the other, and the Berne conventions of 1890, 1893, 1895, 1898 and 1906, dealing with the transportation of goods are renewed. Germany is also bound by any new Berne Convention which may be concluded within the next five years, and is required to co-operate in the establishment of such through passenger services as are required by the Allied and Associated Powers. Through emigrant traffic to or from Associated and Allied ports must not be impeded or delayed by any "technical, fiscal or administrative measures." Under an important technical provision, German goods wagons must be equipped so as to prevent "hampering the action of the continuous brake which may be adopted" by the Allied and Associated Powers within the next 10 years, and the wagons of these countries must be accepted on the German railways. Germany undertakes to accept within 10 years the denunciation of the Gothard Convention of 1909, which the Swiss Government has already declared its desire to abrogate. The Treaty contains provisions relative to the handing over of the railways and rolling-stock which Germany is called on to surrender under the Peace terms, and provision is also made for contingencies arising out of the construction of new railways which traverse new frontiers established by the Peace conditions. —Railway Gazette, London.

British Investments in Argentina. It is known, says the National Bank of Commerce, that British capital in railways in Argentina amounts to $1,138,756,484. This represents about ten times the railway investments of any other foreign country in Argentina.

Plumb Plan Hearing Before House Committee

Glenn E. Plumb and A. B. Garretson Sharply Questioned by Congressmen—Revolutionary Talk Soft-pedalled

WASHINGTON, D. C.

THE PLUMB PLAN has had its day in court and has relapsed into a state of propaganda. Six days of hearings before the House committee on interstate and foreign commerce were brought to a close on Tuesday, and the committee, after a brief speech by the chairman complimenting the advocates of the plan on their forensic ability, returned its attention to other phases of its search for a solution of the railroad problem, leaving the proposed sovietization of the railroads in the able and willing hands of the Plumb plan press and lecture bureau, the 14 railroad labor organizations and the American Federation of Labor, who can doubtless keep it before the public for some time to come, but who failed miserably in their first efforts to enlist support in Congress.

Glenn E. Plumb, counsel for the organized railroad employees and the author of the plan, was the principal witness before the committee. He presented a long, prepared statement, some extracts from which were published last week, on his plan, and his version of various other plans, and was subjected to a most critical examination for three days by members of the committee. He was followed by A. B. Garretson, former president of the Order of Railway Conductors, after which he returned with a series of "charges" against the railroads which he had promised in his opening statement. After having begun the hearing with thinly veiled threats of what would happen to Congressmen who fail to support the plan and of a "revolution" in the country if it is not adopted, the labor leaders toward the close adopted a less belligerent attitude. As the members of the committee plainly showed their indignation, Mr. Plumb gradually softened his interpretation of the word "revolution," and insisted that the ideas of force or threats have no part in the Plumb plan campaign, but that it is to be carried on entirely by "appeal to reason." He defined "revolution" at various times as meaning the peaceful use of the ballot, that the employees would "cease to serve"; that they would "object for all they are worth" if their plan is not adopted, or as "raising hell generally." The employees would not strike to gain the Plumb plan, he declared, but they might strike for higher wages to meet the increased cost of living, but if the plan should be adopted they would manage to get along some way until they could show a surplus from the operation of the railroads. He admitted that he would not expect Congress to adopt his plan at once, nor until after the majority of the public has indicated its support of the plan, but he declared that sentiment for it is "spreading like wildfire."

G. E. Plumb

He suggested that the present government control of the railroads be continued for a time, but with a reduction in the guaranty to the railroads so the owners will share in the deficit. Nearly all the members of the committee questioned Mr. Plumb, and with one exception indicated marked hostility to his plan in nearly all its aspects. Representative Sims, who introduced the bill by request, made a 20-minute speech to say he was not committed to the bill, but approved some parts of it, and reserved his judgment as to the plan as a whole.

Following his prepared statement, Mr. Plumb discussed the provisions of his bill section by section.

In reply to Mr. Sims, Mr. Plumb said it is not proposed to take over the railroads subject to any liens, but to take over the entire property, and that the Government would have nothing to do with the division of the purchase price as between stock and bond holders. Mr. Plumb said his plan provided for a complete amortization of capital through the sinking fund, and new capital improvements would be paid for out of surplus or new issues of bonds. He thought the surplus as it increased would be more than sufficient because the unification and pooling of facilities would make many capital expenditures unnecessary and ordinary maintenance and renewals would be all that would be required for many years. By that time the surplus fund would have accumulated so that no new capital would be necessary. He suggested that Government arsenals and other plants could furnish many supplies needed by the railways without profit and at a lower cost than if they were purchased from private concerns, and he readily adopted a suggestion by Mr. Sims that the Government might furnish food and other supplies to the employees at cost plus the cost of distribution.

When some one referred to the employees' proposed wage dividend as a "profit" Mr. Plumb preferred to define it as "a benefit in excess of their wages," which would result only from increased efficiency and without which efficiency could not be created.

Plumb Values the Railroads

Representative Barkley asked Mr. Plumb's opinion of the cost of the railroads as determined by his ideas of value. Not to exceed 12 billion dollars, and probably not more than 10 billion, represents money actually contributed to the public service by the corporations, Mr. Plumb replied. When Mr. Barkley expressed an idea that this might be a little rough on

the holders of securities that had paid par or more for them, Mr. Plumb said he was not interested in what they paid, for that was a private transaction in which the public had no concern.

"But what would become of the extra six billion," asked Mr. Barkley.

"It isn't in existence now," calmly replied Mr. Plumb. "The security owners would receive just about what they could get in the market today."

"Why do you double the wage dividend of the officials?" Mr. Barkley asked.

"Because our plan is so totally unsocialistic that we believe in recognizing that responsibility is entitled to a higher rate of reward or incentive." He would not say that the lower grade of officers should receive higher pay than the higher grade of employees.

In reply to Chairman Esch, Mr. Plumb said that while the organizations desire as prompt action by Congress as is consistent with a thorough study of the plan and did not desire forced action, but proposed to get every possible influence behind the bill, they realized that it would take some time. He insisted, however, that events move more rapidly now than formerly.

"But some railway employees are showing impatience and are striking," said Mr. Esch. "Would that be such a method as you suggest?"

"Not to secure the adoption of the plan," said Mr. Plumb, "but these disturbances have no relation to the plan. They have been brewing for months. The fact that they have occurred simultaneously with the presentation of this plan is merely due to your invitation to us to appear this week. Otherwise the bill might not have been introduced until October."

A. B. Garretson

Railroads Should Not Be Returned

Mr. Esch asked if Mr. Plumb was still in favor of a five-year extension of Federal control of the railrods, which he had advocated before the Senate committee in February.

"I do not believe now that five years or two years would be necessary," replied Mr. Plumb. "I believe there should be an extension unless there can be very prompt action, but not under the terms of the present Federal control act. We should require the owners of the railroads to share the deficit. When I spoke of a five-year extension I did not think public opinion could be brought to the point of accepting our plan within two years, but now I believe less time will be required. We are making every effort to get the approval of public opinion and hope to be able to accelerate it to some extent. I would not be surprised at almost any social development in America within 60 or 90 days."

"Do you realize the temper of the House and of the Senate and the inclination and purpose of this committee?"

"Yes, but I believe they have been greatly enlightened by the developments of the past two weeks. I have been amazed at the lack of information on the part of the Senators and Congressmen with whom I have talked during the past three months as to what has been going on. I never expected to reach the present issue in less than a year or two years, but I have been overwhelmed by the force of the sentiment of the men."

"Do you think it should force Congress to speedy legislation?"

"I think it should force Congress to a speedy consideration of these questions, perhaps to the extent of laying aside all other questions."

When Mr. Esch said the committee had been doing that for four weeks, Mr. Plumb asserted that he didn't believe the committee "had been brought into contact with the people before this week."

"Do you believe, from knowledge you have gathered recently, that you can affirm that a majority of the people of the United States will stand for the doctrine of government ownership of the railroads?" asked Mr. Esch.

"At this time I would not say so, but I feel absolutely assured that the great majority are so dissatisfied with their present condition and so turned away from their past condition that they are rapidly coming to the support of this plan, and that when given an opportunity for education they will demand it. I wouldn't ask Congress to pass it ahead of that event."

Mr. Esch asked if the organizations would favor a national referendum to ascertain the sentiment of the country.

"There are other ways; for instance, if you find through the press and from the volume of communications honestly sent to you that the great mass of the people want this plan then I think that you can consider that you have the sentiment of the country," said Mr. Plumb. He admitted that this could not be accomplished without propaganda, but he asked the committee to distinguish between the "manufactured or purchased propaganda" in favor of selfish interests represented by form letters to Congress and "spontaneous propaganda."

"Ours does not have to be purchased," Mr. Plumb said. "It is offered to us."

When Mr. Esch suggested that the committee would probably received propaganda both for and against the plan, and mentioned the farmers as possibly being opposed to it, Mr. Plumb said the committee should listen to both sides and find out which propaganda represented the people.

"I think you will find the farmers do want the plan," he said.

"What information we have received would indicate that they do not," said Mr. Esch.

When Mr. Esch pointed out that the railroads pay about $214,000,000 in taxes to State and local governments, and that many States rely to a large extent on railroad taxation, Mr. Plumb suggested that to avoid hardship the taxes might

be continued, but should be gradually reduced at the rate of 10 per cent a year.

The "Temper of the People"

Representative Barkley asked Mr. Plumb to reveal to the committee just what he had in mind as to the temper of the people. Mr. Plumb said he had come to Washington in May expecting to spend some time in the preparation of his bill, and a brief on it, but that he had not been able to keep up with the demand on him to make speeches in all parts of the country, and that in advance of any newspaper publicity his office had been overwhelmed with demands for copies of the circulars and pamphlets.

"I didn't think it was possible to interest the public so much," he declared. "It is spreading like wildfire. We are being flooded with letters from employees and even officials and security owners, saying they believe this is the only plan that affords them any safety. I wouldn't be surprised to see the majority of the people rise and demand this plan by any means in their power." He spoke of addressing a meeting at St. Louis, after which some of the men came to him and declared that if they couldn't get the Plumb plan or something like it there would be a revolution. Mr. Barkley was curious as to what he understood to be meant by the word "revolution."

"Those men feel, along with millions of others," replied Mr. Plumb, "that they have reached a point of diminishing returns which they cannot stand any more, and that rather than stand any more they will cease to serve. If we don't work this problem out quickly we will have no opportunity to work it out."

"Do you believe that the passage of this bill will to any appreciable degree solve the cost-of-living problem as to all the people?" asked Mr. Barkley.

"It will do more than anything else. We are confronted now with a demand for $700,000,000 more rates or an appropriation. Either one will increase the cost of living, especially if you increase rates. If this plan is adopted we can assure the public immediately that there will be no increase in rates, and if we can save the difference between what we are paying the railroads and what we ought to pay in the interest charges we will have a surplus to start with, and if we get rid of the friction between officers and employees and give a motive for efficiency, and unify the railroads, we ought to be able to give a 5 per cent reduction very shortly."

Mr. Plumb frequently referred to the profit on the cost of transportation and the profit on wages. When Mr. Barkley asked what this meant he said that commodities are subject to several freight movements, and each one who handles them figures his profit as a percentage on the cost to him, which includes labor and freight. He said Congress might pass a law declaring that transportation cost shall not be made an element of profit. "We have got to a basis where we calculate profit on the cost of production, not on the investment," he said.

Representative Sweet asked why, if the government was to own the roads, it was not given authority to operate them.

"Because we do not believe this great industry can be operated by a political autocracy. If we leave operation in the hands of political appointees we would place the railway system in the hands of politicians and that, we submit, cannot safely be done. Business should be left to individual initiative, and we now restore it to the individual."

Mr. Sweet read some extracts from statements made by W. G. Lee before the wage board and asked about the various demands made for increases in wages. Mr. Plumb professed ignorance, saying he had nothing to do with the wage demands and had not been consulted.

An example of "spontaneous propaganda" was called to the attention of Mr. Plumb and members of the committee, when the hearing was resumed on Friday, by Representative Webster, who had previously asserted that he did not propose to be intimidated by threats. Mr. Webster produced a pile of letters he had received from his district from members of the Brotherhood of Railway Carmen and the Brotherhood of Railway Clerks, printed in imitation of typewriting and all alike, declaring "that under government control of the railroads wages have been increased, the work day shortened and our working conditions improved, that labor and the family have had more of the necessities of life," and that "therefore he who obstructs the government in this policy of control or ownership, becomes our direct enemy and shall so be posted, and a record of his action shall be kept for future reference, and it shall be our pledged policy to remove him from whatever political line of trust the public has given into his keeping. * * * He who strives to object or demean labor, or in any political way detract from the equality of labor, shall be posted throughout the length and breath of this fair land, as an undesirable."

Mr. Plumb was asked whether he had anything to do with the censoring or preparation of propaganda letters to Congressmen. He denied that he did, saying they represented the "spontaneous combustion of the men outside."

Mr. Webster wanted to know if he endorsed such letters as part of the educational campaign. He would not say that he would endorse the form of the letter, but referred to it as an illustration of his statement that the situation is geting beyond control. He said any one had a right to write to his Congressman, and in certain instances, as when an issue arises which has not been submitted to the people at the polls, he thought threats were justified, as they meant nothing more than a declaration that the writer would not vote for the Congressman and would try to defeat him and that such letters need not worry any one unless supported by a majority of the public. He at first said he would not have advised a threat of posting a man, and later said if the letter had been submitted to him he would have advised an entirely different letter.

"Is it to be understood that your campaign of education and enlightenment is to be carried on by threats?" asked Mr. Webster.

"That is not our plan. We have tried to appeal to reason. We are presenting to this committee the best reasons we can and we are presenting the same reasons to the public through every means at our command, the press, the labor press, the magazines, our own publications and from the lecture platform, and you won't find any threats in any of our matter. But such reactions as this are inevitable, and are bound to come to you. That we can't control. It is not the method the leaders desire to have followed out, but you must make allowance for this tremendous unrest."

Representative Rayburn asked if the Plumb plan does not provide for a "soviet system." Mr. Plumb said he did not know very much about Russian affairs. Mr. Rayburn asked how the average railway employee could be expected to understand the provisions of the bill when Mr. Stone and Mr. Morrison had admitted they did not. He said he had received 200 identical letters from railway employees in his district demanding that he vote for government ownership and operation. Mr. Plumb said the employees understood the principles of the bill if not its provisions, and that "one of the major organizations" had endorsed government ownership and operation before the Plumb plan was proposed, but that later all had adopted it, at their various conventions held in May, June and July. Mr. Rayburn asked if it was not a little out of proportion to have 10 members of the proposed board of directors represent the 2,000,000 employees and only 5 to represent all the rest of the people. Mr. Plumb objected to grouping the managing officials with the employees.

"Would you consider it fair to the workers in other industries to socialize only the railway industry?"

"The employees of other industries haven't asked for it,"

replied Mr. Plumb. "I don't believe it would be wise to apply the plan to all industries at once, but I do believe it would be well to apply it to the railroads which are purely governmental in their functions."

Rates Not to Be Reduced Immediately

In reply to questions, Mr. Plumb said he would not say that rates would be reduced immediately, but thought it could be done in a year. When asked how, he said $500,000,000 would be saved by the difference between the fixed charges on the reduced capitalization and the amount now guaranteed by the railroads. No one called his attention to the fact that he was comparing his fixed charges with a guarantee, only a small part of which is being earned now and a large part of which has not been paid. He also spoke of the gains to result from the increased efficiency when the men are working for themselves instead of for the Government, and said that the railroads had steadily reduced their cost of operation up to five or six years ago, when they began the policy of increasing rates. Now, he said, any further increases in rates will not result in increased revenue.

When Mr. Rayburn remarked that "we need not be alarmed because a few people say we will have a revolution," Mr. Plumb said he had not referred to any overthrow of the government, but merely to an "overturning of the industrial system."

Representative Winslow sought to find out something about the financing of the Plumb Plan League, but did not learn much. Mr. Plumb said that individual members paid $1 a year dues and lodges paid $10, and that there had been 1,500,000 telegraphic requests for copies of the literature, but that the membership blanks had only recently gone out, and the applications had just begun to pour in during the week before the hearing. At that time, he said, the rate at which they had come in would indicate an annual income of about $125,000, but that he expected it might reach $500,000 within a year, and it might even go as high as $6,000,000. This, he said, was to be used for "publicity, pure and simple."

"Pitiless publicity?" asked Mr. Winslow.

"No more pitiless than my examination before this committee," said Mr. Plumb.

In reply to a question as to whether any shippers' organizations had endorsed the plan, Mr. Plumb replied in the negative, saying that the intermediate shipper is not interested in the amount of the rate because he passes it on to the consumer. Mr. Winslow asked how the railway dollar would be distributed under the Plumb plan. Mr. Plumb estimated 70 per cent for operating expenses, as compared with 88.7 per cent during the first six months of 1919, 20 per cent for fixed charges and 10 per cent for surplus to be divided between the employees and the government. The 1 per cent for the sinking fund would come out of operating revenues if they were sufficient. Otherwise it would be set aside from any funds in the Treasury. Mr. Plumb said he would not set aside any contingent fund for lean years and admitted that any deficit would have to be provided for by an increase in rates. Later, in asserting that the employees could not raise their wages until after they had earned a surplus, he said that if there was a deficit caused by wage increases the charter would be forfeited.

To meet the skepticism of many members of the committee as to how the government could expect to acquire the railways with 4 per cent bonds, Mr. Plumb declared that the "investment fund" is practically a fixed amount, and the present owners of railway securities would practically have no other place to put their money, and so would be glad to take 4 per cent government bonds. He asserted that these bonds would have even better security than Liberty Bonds, because in addition to the security of the taxing power they would have the security of earning power. Most railroad stock issues have been illegal, Mr. Plumb said, as in violation of State laws prohibiting the issuance of stock in excess of property and therefore he would have no hesitation about taking over the properties at a price which would allow no reimbursement for a large part of the security issues. He repeated his declaration that they had never represented value, and that his proposed method of valuation would about equal the present depressed market value.

Representative Sanders asked if the Plumb plan was not a "soviet plan" instead of a government ownership plan.

"I don't know what a soviet plan is," replied Mr. Plumb, "but I don't believe the popular misconception of it."

A Definition of "Revolution"

Mr. Sanders pressed Mr. Plumb as to the meaning to be attributed to the word "revolution" as used by the man who said there would be a revolution unless the Plumb plan or something like it were adopted. In reply to Mr. Barkley the day before Mr. Plumb had said he understood the word to mean that the men would "cease to serve." Mr. Plumb at first answered Mr. Sanders by saying revolution meant "a change in the existing order, an overturning of the industrial system."

"But that is what the Plumb plan does," insisted the Congressman. "What is the alternative?"

"Well, I wouldn't wonder if he meant that those who do not agree with his ideas shall be removed from office, by the use of the ballot," said Mr. Plumb.

"That is not revolution," insisted Mr. Sanders. "Tell us what that man's message to us means."

Mr. Plumb tried again: "It means that they are going to get liberty through constitutional and lawful forces if they can and I hope it will come that way, but if the powers of reaction prevent it, it will come in some other way."

"What other way?"

"In the way it has always come throughout history."

"Yesterday you interpreted the word to mean strike," said Mr. Sanders, "but today you interpret it differently."

On the following day Mr. Plumb volunteered a new definition of the word "revolution" by quoting from a speech by a Congressman to the students at Yale, advising them to "spread the gospel and raise hell generally." "That is about what these men mean," he said. "They mean they will object for all they are worth. It doesn't mean any overturning of the government."

Answering questions by Mr. Sanders as to the prospects of net profits, Mr. Plumb said of course they would depend entirely upon the perfection of the organization for efficiency and naturally 100 per cent efficiency could not be expected during the first year, but he thought the difference between the proposed rate of interest and the present guaranty to the railroads would produce some surplus for the first year. He said the employees had proposed to the Railroad Administration a plan for a "scientific scheme for efficiency" to be tried out on one or two divisions, but had not been given the opportunity.

When he suggested that the surplus for the first or second year might be anywhere from $50,000,000 to $400,000,000, Mr. Sanders wanted to know if the employees and officials would not be much more interested in trying to get their pay increased than in the share of a surplus. This Mr. Plumb denied by contending that neither the officials nor the employees would let the other have an increase in pay that would produce a deficit because that would result in a forfeiture of the lease and that the double dividend rate of the officials would keep them from combining with the employees.

"But would not the Interstate Commerce Commission increase rates to provide for an increase in wages?"

"The Interstate Commerce Commission has held that an increase in wages is not sufficient ground for increased rates," replied Mr. Plumb.

When Mr. Plumb said that the power of capital would be

removed from the situation, Representative Montague asked if labor would not reserve its power to strike.

"No law can be devised that will deprive them of the inherent right of revolt," declared Mr. Plumb.

"Has there ever been any repression of the railroad employees to prevent their rising to the highest offices?" asked Mr. Montague.

"There has been no great repression," Mr. Plumb admitted, "but the kind of initiative that has been rewarded has been the kind that has been able to extort the greatest profits from labor, not the kind that increases their efficiency. The officers who have come up from the ranks have been able men, but they have not come up by the impulse of the employees, but by the selection of the autocrat."

"I wish you could satisfy me that your 10 members of the board of directors could be removed from the possibility of autocracy," concluded Mr. Montague.

Representative De Walt insisted that the railroads are now owned by the public by reason of the large indirect investments of the savings of the people in railroad securities, and that both capital and labor should receive a fair return and no more. Mr. Plumb insisted that capital would get a return it would be satisfied with because of the great security afforded by his 4 per cent bonds. Mr. De Walt also pointed out the possibility of a political crisis under which the Presidirectorate men who would side with one of the other two dent might appoint as the five public representatives on the elements of the directorate and thus give it complete control of the organization. Mr. Plumb could see no ground for fear of such a possibility.

"Are you sure you are voicing the sentiments of those you represent when you say that you intend to gain your purpose only by legal or legitimate methods?" asked Mr. De Walt.

"I am sure," replied Mr. Plumb. "No one has said we intend to enforce this legislation by a strike. There has been a great deal of misrepresentation in the newspapers. The only mention of a strike has been in connection with wages. We would be blind to our own interests if we tried to get legislation by threats."

"You never said anything truer than that in your life," declared Mr. De Walt.

"But when we say there will be trouble if something isn't done we are merely stating a fact to emphasize the necessity of finding a solution because of the feeling of unrest and discontent over the country," continued Mr. Plumb.

After having been questioned by the committee regarding his plan, Mr. Plumb completed on Monday his prepared statement, making an attack on his version of the plans of the railway executives, the National Association of Owners of Railway Securities and the United States Chamber of Commerce. His principal argument was based on his assertion that these plans provide for a guaranty based on property investment, and he declared that for Congress to adopt any of them would legalize the book property accounts. To attack the property accounts he read quotations from old decisions of the Interstate Commerce Commission calling attention to the defects in the property accounts, but he did not read some of the commission's later expressions in which the commission treated of them as possessing considerable practical value. He asserted that while the bill left the decision to the courts his construction of the law would allow no value for securities issued without investment, unearned increment, surplus but back into the property or grants, aids, gifts and donations. Mr. Montague remarked that if the courts fail to sustain his position it might cost more to acquire the roads than he had estimated. Mr. Plumb admitted this, saying the railroads were left free to make their claims before the courts.

Before closing Mr. Plumb referred again to the threatening letters received by Mr. Webster, and read a telegram from the secretary of the railroad section of the Central Labor Council of Spokane, saying the letters had been sent before the Plumb plan had been adopted, and had no connection with it. Mr. Webster replied that they had all been received since he became a member of Congress in March, that the Plumb plan was made public in February, and that he knew of no other plan for Government ownership. Mr. Plumb said he had never seen the letters and that they represented no effort to coerce any one to support the plan.

A. B. Garretson, former president of the Order of Railroad Conductors, made general arguments in favor of the Plumb plan and its so-called "democratic" features, and described eloquently the State of unrest which it purports to be intended to relieve. He carefully refrained from making any threats and avoided the word "revolution" but he declared that unless something is done to relieve the conditions which cause the unrest it is "bound to find a channel of expression which is the last thing the average citizen wants to see." "The recent sporadic strikes," he said, "are only rumblings. Nine-tenths of the energy of the labor leaders is now given to sitting on the lid. We don't want to overturn the government, but we want the government to function. Unless relief is found from the unreasonable pressure of living conditions we are bound to have trouble."

Mr. Garretson declared that distribution is a national function, and that transportation should be furnished to the people at cost. Mr. Merritt pointed out that he was assuming that transportation under government ownership would be furnished at a lower cost. This must follow, Mr. Garretson said, because there would be no "profit." He denied that the experience with government ownership in other countries was evidence against his assumption. The plan does not provide for government operation, he said, because he thought operation would be more efficient under the system proposed. Asked about the application of the plan to other industries, Mr. Garretson said he believed that the employees were entitled to a voice in the management in any industry.

Mr. Sims got Mr. Garretson to admit very readily that the power of the government to issue tax-free bonds made it possible to market them at a lower interest rate than would otherwise be possible. Mr. Sims said that the first Liberty bonds issued at 3½ per cent are selling at near par, and thought this presented a great economic advantage.

"If the Government owned the railroads we wouldn't have any interests lobbying for higher rates and reduced taxes," said Mr. Sims.

"And I suppose we wouldn't have anybody lobbying to get their wages raised," added Mr. Montague.

No "Political Pull"

Mr. Garretson said the plan was intended to be "fixed so that no one would have any political pull," "but when it was suggested that there might be an opportunity for some political influence on the President regarding the appointment of directors, he said there should be a distinction between organized opposition to or influence for a man for political reasons and for other reasons. He said the opposition of railroad men to Mr. Hughes in 1916 was "an act of citizenship," not an act of railway employees, and that the brotherhoods had certain ideas and expressed them as to whom should be appointed director general after Mr. McAdoo's resignation, but that Mr. Hines was not the man they championed. It is understood that Commissioner McChord is the man referred to. Mr. Garretson insisted that there was nothing political about their action in that case. He added that he had nothing but the kindliest feelings for Mr. Hines and the highest regard for his ability.

References to the political power of the employees impelled Mr. Garretson to make a statement regarding the occasion when Congress passed the Adamson law to head off a brotherhood strike. "The four brotherhoods in being forced into Congress on that occasion," he said, "were unwilling partici-

pants. Only the power and request of the President ever got us there. We went there on his demand to settle a question which we desired to settle in our own way. No Senator or Representative overheard a demand from any of the brotherhoods as to what they should do. I told them why I would not defer the strike, and after I had given my reasons no one asked me to."

Wage demands will come under any plan that has been proposed for dealing with the railroads, Mr. Garretson said, as long as wages do not keep pace with the increased cost of living. He declared that in 1913 the freight conductor received an average of $4.10 per day and his rate is now $5.40, an increase of 32 per cent as compared with an increase in the cost of living of 82 per cent. Representative Webster pointed out that these figures represent basic rates and asked what the average monthly pay check has been. Mr. Garretson avoided answering this question, but said that in 1913 the conductors probably averaged 100 miles per day for 30 days, or $125.40 per month, whereas under the present rate the average on the same basis would be $162, but he declined to give any figures for actual earnings.

Mr. Garretson said that the wage system is only one factor in the cost of living because if every man were given $100 a day he would lose because of the percentage of profit on the cost of production exacted by capital. Limitation of profits, therefore, he insisted, is the only solution, because the fixing of wages unless the price of every commodity is also fixed, simply constitutes individual serfdom for the employees, whereas if prices are fixed without wages being fixed the financial interests would become the serfs.

Representative Sanders asked whether the final decision of the board of directors on the wage question would be binding on the employees. Mr. Garretson replied that it would be if they remained in service, but that their inalienable right to strike could not be taken away. However, he insisted that this would become of less importance under the plan, in which each man would be a partner in the enterprise. Asked if he thought there would be a profit on the first year's operations under the plan, Mr. Garretson said frankly that he doubted if there would be the first year, but he thought that by the second year the results of the practical working of the plan would be shown. Mr. Sanders insisted that with the prospect of a deficit the employees would have a far greater interest in the amount of their wages than in any possibility of a dividend, and he thought Mr. Plumb's suggestion that a deficit would be cause for forfeiture of the lease was not borne out by the provisions of the bill. Mr. Garretson insisted that the difference in the interest of the officers and the employees would be an effective check. Mr. Sanders asked if the labor organizations had any suggestions for legislation, in the event the Plumb plan is not accepted. Mr. Garretson replied that they were concentrating on this issue, and thought they had no program for any other legislation at this time.

Representative Watson made the point that the railroad employees have been able to save money to put into Liberty Bonds, but Mr. Garretson replied that every dollar came from the increase in wages they have received under Government control.

Referring to Representative Sims' repeated assertions that the ability of the Government to issue tax-free bonds at a low rate of interest and the elimination of the element of taxation from the cost of transportation represented a great economic advantage, Representative Webster asked Mr. Garretson if the expenses of government for which the taxes are now required would not have to be paid by somebody in some other way. Mr. Garretson seemed to think there would be some saving somewhere, but insisted that the saving in freight rates was of greater importance. Representative Webster also pointed out that there are probably 22,000,000 male adults in the United States, of which under the Plumb plan 20,000,000 would be represented by five members of the board of directors, while 2,000,000 would be represented by ten members. "Isn't your board a little one-sided?" he asked. Mr. Garretson replied with a trace of irritation that if it is one-sided it is time that the employees had their day in court after the other side had been in control for fifty centuries. Representative Barkley said at the rate of 1 per cent a year it would take 100 years to retire the capitalization of the roads even at Mr. Plumb's reduced valuation, and asked what would happen if the earnings were not sufficient to pay the 1 per cent into the sinking fund. Mr. Garretson replied that the surplus earnings would result in a more rapid extinction of the capitalization, but that it is unthinkable that if an operating deficit should grow sufficient to interfere with operation that the Interstate Commerce Commission would not increase rates.

Mr. Plumb's Charges

In opening his statement before the committee on August 7, Mr. Plumb said:

"During this week and since your honorable committee requested me to appear in order to present the case of organized labor with respect to its bill, there has come into the possession of the railroad brotherhoods and ten affiliated railway labor organizations a state of facts never spread before the American people or submitted to the jury of public opinion. These facts tend to show that the wrecking and looting of the New York, New Haven & Hartford, the Chicago & Alton, the Rock Island system, and the 'Frisco Lines are not sporadic examples of the highway robbery to which the American nation has been subjected as to its public transportation highways. Leading directly from Wall Street and from the banking houses controlled directly by the Morgan and Rockefeller groups, these facts show that there has proceeded a systematized plundering of virtually all of the transportation highways of the United States."

On August 12, after the completion of Mr. Garretson's testimony, Mr. Plumb presented his promised statement, in which the "new" and startling information had flattened out to the following stripped of some of the verbiage:

"That the property investment accounts of the railway lines are wholly unreliable.

"That in the five railway valuations first completed and published by the Interstate Commerce Commission the cost of reconstruction new, including the increased value of lands and real estate, is but 50 per cent. of the aggregate property investment accounts.

"That the nearly completed survey of the entire transportation area of the United States contained in the reports of the valuation division, so far as that work has now progressed, confirms the results disclosed by the valuation of these five roads.

"That where the cost of reproduction now approximates the investment account, it will be found in most instances that this approximation is due to the fact that vast expenditures have been made out of surplus and excessive earnings, expended on or ploughed into the property.

"That President Underwood of the Erie Railroad, in an interview recently given to the New York World, stated that the expense of operation under government control had been greatly increased by the employment for political purposes of unnecessary employees, and that this increase in payroll expense had been made for the purpose of building a political machine. I charge that investigation will disclose that if there has been wastefulness of money in swelling the payrolls, it has been at the instance of railway managements to make the expense account under government control appear extravagant and wasteful.

"That at the time the government took control of the operation of the railroads they were in such depleted condition as to maintenance and repairs of both roadbed and rolling stock that it has required hundreds of millions of dollars advanced

by the government to place them in effective operating condition. That in the making of such expenditures the railroads operated and controlled by men under the influence of Wall Street directorates have spent vast sums in unusual expenditures for maintenance and supplies; that such unusual expenditures have been made for the purpose of placing these properties in perfect operating condition and furnishing them with supplies for a long period of operation ahead, such supplies having been paid for out of government money at exorbitant prices.

"That the Interstate Commerce Commission was six years ago directed by Congress in the valuation act to ascertain and report the value of all aids, gifts and grants made to railway corporations. This work has not been done.

"That the records disclose that an area of land exceeding 190,000,000 acres, has been given by the United States Government and by the various state governments to railroads to aid in the construction of national highways; that of the grants made 113,000,000 acres had been patented and 35,000,000 acres had been forfeited prior to June 30, 1910, and that of the remainder the greater part is still available. That the values of the grants so made have either been appropriated to the private property of the railway promoters or capitalized.

"That from 1900 to 1910, the Chicago, Burlington & Quincy, the Chicago, Milwaukee & St. Paul, the Chicago & Northwestern, the Great Northern, the Illinois Central, and the Southern Pacific railroads gave away in bonuses to their stockholders more than $250,000,000; that the actual dividend disbursements on this excess capital for the year 1913 alone, amounted to more than $11,000,000.

"That from 1900 to 1910, 8 eastern railroads alone issued new stock for $101,000,000 less than its market value, or gave away this enormous amount in bonuses to stockholders; that the dividends paid on these fictitious stock issues in 1913 alone amounted to over $4,317,000.

"That during the same period 18 representative railroads operating in all parts of the United States as a whole, gave away stock bonuses aggregating $450,414,000.

"That these railroads are now controlled in whole or in part by the Morgan interests, the Rockefeller interests, and the Gould interests; that this control is made manifest by the interlocking directorates of the financial institutions directed by these interests, who through their directorates control the operations of these railways.

"That in the attempt of these interests to secure the adoption of any plan whereby the property investment accounts of these railways shall be recognized by law as the basis for ratemaking they are conducting a political conspiracy to procure from this government a validation of all of the illegal acts heretofore consummated by these railroad corporations, and to make into a binding obligation upon the public the exploitation through which these public highways have passed under their direction and control.

"On behalf of all of the employees of these systems of transportation and the public, we demand that Congress shall make a due and thorough investigation of the charges herein set forth, so that the American people may know to what extent it is sought to subject them to exploitation under the plans proposed to this committee of Congress, plans which would make lawful the fixing of rates based on the now unlawful aggregate property investment accounts of these systems."

Chairman Esch, in a few brief questions, indicated a belief that most of the subject matter of the charges had been thoroughly investigated by the Interstate Commerce Commission and that to spend any further time on them would be to travel over old ground. No other member of the committee asked any questions.

Plans for protection of transportation from interruption through labor disputes were presented to the committee in a statement by Stephen C. Mason, president of the National Association of Manufacturers.

Asserting that no program of railroad regulation is complete that does not protect the paramount public interest in uninterrupted transportation by rail, proposal was made that appropriate legislation be enacted to provide, first, whenever in the opinion of the President of the United States a dispute over hours, wages or working conditions threatens the interruption of a carrier essential to civil or military governmental needs or the free movement of commerce between the states or with foreign nations, he shall appoint a commission to investigate and decide upon the merits of the controversy, and until such finding is made any strike or lockout shall be unlawful; second, that, under the authority established by the decision of the Supreme Court in the Adamson case, whenever a labor dispute threatens the operation of an instrumentality of interstate commerce, the President shall have the power to appoint a commission which would write a contract for the parties in dispute, to be binding upon them until they reach a voluntary agreement by themselves, in which event their agreement would supersede that of the commission. Through this method, he said, freedom of contract would be left unimpaired unless and until the parties are unwilling or unable to agree, in which event the supreme interest of the public is asserted through its representatives.

The people of the country, Mr. Mason asserted, are now confronted with the proposition that they must either assent through their representatives, in social self-defense, to the control of Congress over commerce between the states or submit to its control and regulation by organized railway labor under the threat, by concerted action, of paralyzing that commerce upon which the life of the nation depends.

Urging that a declaration of a great constructive policy of transportation would clarify public thought and stimulate aggressive business activity, Mr. Mason asserted the belief of the members of the National Association of Manufacturers that the railroads should be returned to their owners; that Congress should, during the period of government administration, provide adequately for upkeep, betterment and expansion; that the rule of rate-making should be clearly defined by statute; that consolidation and co-operation among lines be authorized in the same manner as under present operation and administration; that the duties and functions of the Interstate Commerce Commission be modified and a Transportation Board be established.

It is the duty of Congress, he maintained, now to exert its full authority to define in the interest of the public the limits to which employers or employees, capital or labor, may go in threatening the facilities of commerce as a means of compelling the acceptance of economic demands or political policies.

National Grange Opposes Plumb Plan

Thomas C. Atkeson, Washington representative of the National Grange, has filed a statement with the House committee, saying in part:

"The National Grange is opposed to government ownership of the railroads, especially opposed to this plan, the so-called Plumb plan, which seeks not only to have the government acquire the railroads, but then turn them over to be operated by a management in which the men who draw wages will name two-thirds of the directors.

"If the railroad wage and salary workers can force this bill through Congress they can control the appointment of the other third of the management, and thus control it all. The government, or the public, will then pay the interest, the maintenance charges and whatever wages and rates are asked, as well as any deficit which may result.

"This matter is of such fundamental importance as a question of orderly government that I trust all farmers and farmer organizations, as well as all good citizens who respect

and appreciate our democratic form of government, will unite in opposition to this or any similar plan."

Plumb Plan Criticized in Congress

The Plumb plan, and more particularly the matter of its presentation, has aroused intense criticism in both houses of Congress and several speeches criticizing it most severely have been made. If any of the members of Congress are in favor of the plan they have been careful not to make the fact public within the last week. Representative Blanton of Texas, speaking in the House on August 8, declared that the brotherhoods caused the Adamson law to be passed by threats of strike, and are now repeating their threats to secure the adoption of the Plumb plan and another large increase in wages. This led to a general discussion of the events that led up to the passing of the Adamson law, in which several Representatives took the side of the brotherhoods in defending them against the charge that Congress was "held up" on that occasion, but they did not go so far as to say anything for the Plumb plan. Representative Black of Texas criticized the course of the brotherhoods on that occasion and declared himself in favor of a commission with full power to settle the differences which arise between the railroads and their employees.

In the Senate on August 11 Senator Myers of Montana declared that one of the greatest crises that ever confronted the people of the United States now confronts them. "I am not in favor of any increase in wages for railroad employees at this time," he said. "The railroads are being operated by the government at a tremendous loss and I think under those circumstances it would be wholly unjustifiable to increase the pay of railroad employees. That demand is also accompanied simultaneously with a demand that the industries of this country be sovietized and a vast propaganda has been started to back up this demand. It is also accompanied by threats of revolution, of force and of serious and dire disaster to the people if the demand is not granted by Congress. The Plumb plan is simply a bold, bald, naked attempt to sovietize the railroads of this country. If the railroads were sovietized it would merely be an entering wedge to conducting the industries of this country for the benefit of a favored few. The employees would fix their own wages; they would have the power to fix rates for passenger travel, to fix all freight rates and to regulate the amount of money to be taken from the people for the operation of the railroads. They would be absolute monarchs. The American public would be thoroughly Russianized. I am sorry to say it falls to the leaders of the railroad brotherhoods to present to the people of this country a concrete test of Bolshevism against Americanism."

Heat Treatment As Applied To Railway Materials*

By C. B. Bronson

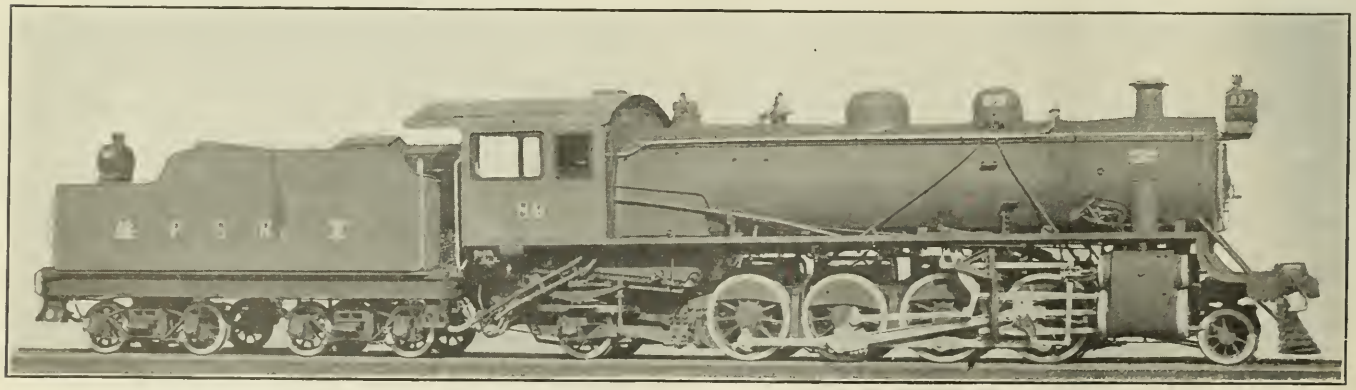
THE RAPID PROGRESS and advancement made in the science of heat treatment of steel during the war and subsequent thereto is of especial interest to railway officers, engineers and investigators. The knowledge gained from the recent developments in this art will be valuable to metallurgists and engineers in the design, specifications and treatment of steel for superior service. Railway people must search constantly for the highest grade of steel to meet the increasing demands of traffic and operation, which necessitates larger structures, larger power units, and high speeds.

The fundamental basis for successful heat treatment is sound steel. This implies not only structural soundness and freedom from blow holes, pipes, and inclusions, but chemical and physical homogeneity as well. Perhaps this seems axiomatic to all of us, yet a number of violations are frequently encountered, when investigations are made of service failures. Heat treatment of unsound steel probably does more harm that good, for even the best steel is put to a severe test during the quenching operation, while unsound or segregated metal may be easily fractured or weakened. Much discussion has appeared recently on the "notch effect" in rotating shafts and other parts, which brings out the fact that internal or external defects are in effect notches, or potential sources of failure, and may develop into such after a relatively short period of service. The question of soundness in steel cannot be too strongly emphasized.

Of the great number of steel materials used on railroads, perhaps none has been more widely discussed than the rail. The development of the rail section is an intensely interesting story of evolution and improvement, and it is therefore only natural that many researches have been conducted to improve its quality by heat treatment. Most of the work attempted has been experimental in nature on short length pieces, and not on full length rails. Many influences have retarded development of the latter, chief of which is the outlay and expenditure required to produce large tonnages, especially when it is recalled that present rail mills produce from one to three thousand tons of untreated rails daily. Furthermore, there is the question of higher cost, as well as the relative efficiency and reliability of treated versus untreated rails.

Probably for general service requirements, where properly designed sections are used, it will be a long time before the

*Abstracted from a paper presented at the June meeting of the New York chapter, American Steel Treaters' Society.



Mikado Locomotive Recently Built by the American Locomotive Company for the Pekin-Kalgan Railway of China

This locomotive has 20 by 28 in. cylinders; a weight on drivers of 139,000; a total weight in working order, engine only, of 187,500 lb.; a tractive effort of 34,300 lb. It is of standard gage and is superheated.

present efficient plain carbon basic open hearth steel rails will be replaced as standard for most of the roads in this country. Basic open hearth rail, under our present elongation and exhausted ductility test, making it possible to obtain nearly all the ductility due to the chemical composition, is a wonderfully efficient product with a low rate of failure, and moderate rate of wear.

The simplest process for heat treatment of rail steel, of course, is the air-cooling method introduced by one manufacturer. This consists of an air blast blown from numerous small openings in a straight pipe, and directed against the top surface of the rail head; the blast being maintained for about two minutes, after which the rail is allowed to anneal in air. The head surface metal becomes sorbitic for a depth of about one inch, and shows a Brinnell hardness of 300-350; elastic limit, 90,000 lb.; tensile strength, 140,000 lb.; and 8 per cent elongation. The balance of the head metal is pearlitic in structure with a Brinnell hardness of 240; elastic limit, 60,000 lb.; tensile strength, 125,000 lb.; and 10 per cent elongation. The carbon runs from 0.50 to 0.65 in this steel which is made from Mayari ores.

A number of patents have been issued to one company covering a combined oil and water treatment. The treatment consists in passing the finished hot rails, head down, into a series of quenching vats so constructed and regulated that the head only is treated in the first oil bath; passing them to the second vat where the head is immersed in water and the web in oil. In the third vat, both head and web are in water which completes the treatment. One modification of the process provides a spray to force the water against the rail head, instead of merely drawing it through the bath. A troostitic structure is obtained on three sides of the head, which tapers off into martensite for the balance of the head section. Drop and hammer tests on rails so treated indicate great toughness and ability to withstand severe shocks without failure.

The composition, and physical properties obtained after treatment are about as follows:

Carbon	0.40	Tensile strength	190,000 lb
Manganese	0.50	Elongation—2 in.	11 per cent
Silicon	0.25	Red. of area	30 per cent
Sulphur—max.	0.04	Brinnell—head	420 per cent
Phosphorus—max.	0.04	Brinnell—web and flange	200 per cent
Elastic limit	120,000 lb.		

One manufacturer found it necessary to redesign the standard section to heat-treat successfully rails made of Mayari steel. A section, similar to the present "B" type 100-lb. rail was used as a basis, and to this was added 21 lb. by providing very generous fillets between head, web and base and also increasing the thickness of the latter. The mechanical properties were apparently not given precedence in the design, as they are low for this weight of rail. The design was adopted to obtain uniform physical properties, provide relief and reduction of cooling stresses, and to utilize a set of rolls which were on hand.

The treatment used was experimental, and therefore the details are not generally known.

The composition and physical properties obtained after treatment were as follows:

Carbon	0.33	Elastic limit	115,000 lb.
Manganese	0.33	Tensile strength	140,000 lb.
Nickel	1.30	Elongation 2 in.	8 per cent
Chromium	0.50	Red. of area	15 per cent

Under the drop the test pieces withstood from 6 to 12 blows before fracture, when a 2,000-lb. tup was dropped 25 ft. on supports 3 ft. apart.

One or two of the eastern roads with very heavy traffic conditions secured several of these rails, and will probably be in a position in the very near future to report upon the success of the experiment.

The only alloy heat treated rails which have been made and purchased in large numbers are manganese steel rails. Those of early manufacture developed breakages with great frequency but this difficulty has since been overcome as a number of changes in manufacture were introduced. The New York Central purchased several hundred tons of these rails four years ago, and since that time they have carried over 100,000,000 tons of traffic without one failure and at a remarkably low rate of wear—an exceptionally good record. From present indications, they should outlast plain carbon steel rails in the ratio of ten to one.

The wonderful toughness inherent in manganese steel makes its use particularly inviting for rails on curves. Our present practice is to place them on the high side of curves with plain carbon rails opposite, generally reversed, curve worn high rails which make the best combination. The susceptibility to flow prohibits their use on the low side of curves, especially where the tendency to widen and flatten under the wheels of present improper contour is very great.

The 6-in., 105-lb. Dudley type rail is the only one which the New York Central has had rolled in manganese steel. This is a broad head, stiff section, possessing high mechanical properties which are necessary when using metal with such low elastic limits. Any road contemplating the purchase of manganese rails is advised against ordering them rolled in light sections, for the combination of the low elastic limit and deficient mechanical properties make it easy for them to acquire permanent sets in service, creating rough riding track, and may eventually be the cause of derailments. Manganese rails injured by truck derailments from causes other than roughness of track, are badly bent out of shape, although they remain unbroken. It is necesary to scrap the rails, as they can not be straightened by any known method.

The manufacture of manganese rails calls for several departures from the ordinary practice in the mill. Hot tops must be placed on the ingot molds to reduce the pipe and fill the cavity due to shrinkage, while great care is required in heating and soaking the ingots in the pits for proper rolling. The rails are rolled in the usual manner, and after sawing, are quenched at 1050 deg. C. by plunging them immediately into a cold water bath. They are then drawn through the bath by means of dogs on endless chains. The quenching is necessary for suppressing the transformation range, and to retain the structure in the austenitic condition, as otherwise the rails would be as brittle as glass.

The composition specified for rail steel is as follows:

Carbon	1.00 to 1.35	Phosphorus, max.	0.10
Manganese	10.50 to 15.00	Sulphur	Not specified

Tests for the physical properties are made by the usual drop test; the toughness and tenacity of the material being so great that several blows of the 2,000-lb. tup falling 20 ft. are required to exhaust the ductility, which frequently runs as high as 25 to 30 per cent per in. A load deflection test is made upon a full length rail supported at the ends and loaded by means of a scale pan at the center. Elastic limits found in this manner are close to 55,000 lb. per sq. in., which is a more reliable index than can be secured from tensile test specimens burned out of the rail section and ground to size. The results are always high by the latter method and therefore are not used.

The return of normal conditions should see an increasing amount of manganese steel rails placed in service, for there is no question about their superiority for overcoming curve wear to which our present rails quickly succumb.

It is well to mention, in passing, the successful use of manganese steel for frogs, crossings, and switch point tips. Their resistance to wear is similar to that of manganese rails, and they are used quite extensively. The tendency to breakage, however, is somewhat greater in the cast steel parts than for rolled rails.

Two heat treated track materials purchased in large quan-

tities, are rail splice bars, and track bolts. Splice bars are made to the following chemical and physical requirements:

Carbon	0.45 to 0.55	Elastic limit	65,000 to 72,000
Manganese	0.30 to 0.50	Elong. in 2 in.	12 per cent min.
Phosphorus, max.	0.04		

In manufacture, the bars are sheared to length, reheated to about 800 deg. C., hot punched and quenched at 700 deg. C., or over, then subsequently reheated or withdrawn from the oil bath for tempering. The high elastic limits obtained place them on the same level as rail steel so far as physical strength is concerned, and increase their resistance against permanent sets, and sagging at the joints.

Track bolts when heat-treated show elastic limits of 70,000 lb. and over when made of about 0.30 carbon steel. These high limits provide additional strength against stretching when tightened with the trackman's wrench, and becoming loose due to the transmission of stress at the rail ends, and the impacts from wheel loads. The usual process for heat treating consists in rolling the threads hot, then allowing the bolts to drop into a bath of oil and finally discharged into a hopper from an endless chain. Heat treated bolts are in extensive use and giving satisfactory service.

Orders of the Regional Directors

TWO-DAY-FREE-PER-DIEM-ALLOWANCE. — Circular 235 of the Southwestern regional director contains regulations covering the free-time allowance in the freight-car clause (section 6) of the Short Line contract.

Capital Expenditures for Replacing Fire Losses.—Circular 237 of the Southwestern regional director states that as only the smaller railroad structures destroyed by fire can be rebuilt before January 1, 1920, it does not seem necessary to rebuild or restore any buildings so destroyed, except where necessary for safety or the protection of the public; or where delay in restoration might work a serious hardship upon employees. In each case in which it is determined that one or more of the above conditions will require rebuilding or restoration, the proper form should be submitted to the regional director's office for any capital expenditure in excess of $1,000. If it is decided not to rebuild or restore the building, the procedure should be in accordance with the fourth paragraph of the director general's Circular 67 of December 5, 1918.

Embargo Notices.—The Southwestern regional director in Order 229 instructs that in cases where cars are partially loaded, but bill-of-lading has not yet been signed, at the time the agent receives notice of an embargo, shippers are to be permitted to complete the loading. The agent will forward these cars, making suitable notation on the way-bills.

Use of Telegraph Wires by Express Agents.—Circular 236 of the Southwestern regional director, canceling Circular 205 deals with Article 14 of the Agreement with the American Railway Express Company, concerning telegraph and telephone messages. Where the telegraph lines are operated by the railroads the messages of the express company can properly be transmitted without charge, as provided in the agreement; but it is not proper for an agent of the express company at a point on one railroad to send a message over railroad wires to a representative at a point on a second railroad, the word "railroad" meaning any road operated as a unit under the supervision of a single federal manager.

Numbering Railroad Messages.—The Southwestern regional director in Order 228 prescribes a method of numbering messages sent over railroad wires:

1. Allow one number for the first three lines of messages and an extra number for each three additional lines, the address and signature not to be counted. If a message contains six lines, two numbers should be allowed; if a message contains eleven lines, four numbers, etc. Joint messages addressed to two or more persons are to be allotted numbers as if they were separate messages.

2. The preceding rule is based on a typewritten message and assumes ten words per line. In other words, it is proposed to have one number for each thirty words.

3. In counting figures the same general plan should be followed. In the case of irregular forms where figures are not conveniently arranged in lines, the assumption of five figures per word will be satisfactory. In case an operator is spending considerable periods of time in sending and receiving forms, the assumption of forty numbers per hour will be satisfactory.

Freight Car Distribution—Circular 27.—The Southwestern regional director in Circular 234 states that the provisions of Division of Operation Circular 27 with respect to returning cars to owners for repairs appear to have been more broadly construed than was intended. Cars have been sent long distances home for comparatively light repairs. The purpose of this circular was to put into effect former M. C. B. requirements for the return of cars to owning lines for repairs and in addition the circular was intended to provide a means for the owners to get their cars home when desired for rebuilding or for the application of betterments. It was not desired that the cars should be sent home involving an intermediate line haul except for "rebuilding or for the application of betterments" as provided in paragraph C of the circular, in which case arrangements should be made for this movement in accordance with paragraph 6.

Roadmasters' Convention.—A. T. Hardin, regional director, Eastern region, by Circular 102-42, promulgates a letter from the director of the Division of Operation recommending that members of the Roadmasters' and Maintenance of Way Association be allowed to attend the convention of the association, at Chicago, September 16-19, so far as practicable. Roadmasters and supervisors who are not members may also be encouraged to go, where that is their wish and they can be spared. Some of the higher officers of the maintenance of way department might also attend with profit. Men who attend the convention should take notes so as to report their observations when they return home.

Transportation of Liquors.—The regional director, Eastern region, by circular 600-190, supplements previous instructions regarding the transportation of intoxicating beverages, with advice that such goods may be legally transported from one bonded warehouse to another; in such cases the liquor remains in the custody of the government; the Internal Revenue Department will not release liquors for unlawful purposes.

Passenger Traffic on Labor Day.—A. T. Hardin, regional director, Eastern region, by circular 1600-204, promulgates instructions from the director of the Division of Traffic reminding federal managers to take all suitable measures for moving a large passenger traffic on Labor Day. Special care must be taken in handling baggage as many families will be returning from the summer resorts. It is not expected that troop movements will interfere materially wih Labor Day traffic.

Color of Locomotives. "Speaking of Chinese railroads reminds me of the failure of an American manufacturer to obtain a contract for locomotives because his European competitors made a more careful study of Chinese peculiarities," writes Lynn W. Meekins in the Scientific American. "One locomotive was ordered from each of the competing companies. In every respect save one the American product was unmistakably superior. However, it had been painted black before shipment from the works, and on the way across the Pacific it became more or less rusted. Its appearance, therefore, was far less attractive than that of the European locomotives, which were painted in accordance with Chinese preference, and had been touched up by the manufacturers' agents after arriving in China. Don't get your colors mixed if you want to sell goods to the Chinese."

Carolina, Clinchfield & Ohio Freight Locomotives

Built to the Roads' Specifications, Permitting the Use of Exceptionally Liberal Clearances

DURING THE EARLY part of the summer, the Carolina, Clinchfield & Ohio received eight heavy 2-8-2 type locomotives and seven heavy 2-8-8-2 type Mallet locomotives from the Baldwin Locomotive Works. The order for these locomotives was placed with the builders in the spring of 1917 and they have been built to specifications prepared by the railroad company.

The Mikado type locomotives are for use in handling the heavy merchandise business from Elkhorn City, Ky., to Spartanburg, S. C., and have proved highly satisfactory in this service. The character of the Carolina, Clinchfield & Ohio, with its long easy grade, provides ideal conditions for the operation of Mallet type locomotives and heavy tonnage trains and the new Mallets are handling coal traffic originating at the mines of Virginia for delivery to the railroads and industries of the south.

On account of the generous clearances which were provided when this line was built, it has been possible to employ large limiting dimensions in the design of these locomotives. For the Mikado type the clearance width is 11 ft., while for the Mallet type locomotives the clearance width is 11 ft. 6 in., and the maximum height for both designs is 16 ft. 8 in. The liberal width clearance has allowed considerable latitude in the design of details to avoid cramping on both locomotives and on the Mallet type has permitted the use of low-pressure cylinders of sufficient size to prevent the necessity of using a high boiler pressure. On the Mikado type the spread of the cylinders is 91 in., while on the Mallet type it is 90 in., in both cases permitting the design of crankpins of good proportions.

The Mikado type locomotive, which develops a tractive effort of 56,000 lb., has a total weight of 311,400 lb., of which 230,000 lb. is on the drivers. The cylinders are 27 in. in diameter, and have a stroke of 30 in. Reference to the table comparing the C. C. & O. locomotives with the Railroad Administration designs of the same type shows that the Mikado type has 4,000 lb. less tractive effort than the Standard heavy Mikado and has 13,600 lb. less weight in working order. The reduction in tractive effort is due to the shorter piston stroke of 30 in.

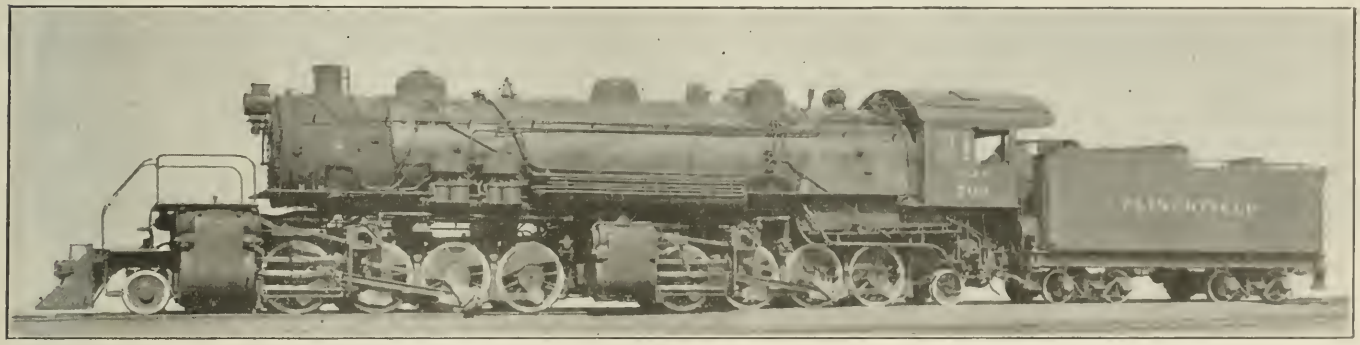
COMPARISON OF C. C. & O. AND U. S. R. A. LOCOMOTIVES

	Mikado		Mallet	
	C. C. & O.	U. S. R. A.	C. C. & O.	U. S. R. A.
Tractive effort, lb.	56,000	60,000	{103,560* / 111,300†}	{101,570* / 109,840†}
Weight, total, lb.	311,400	325,000	523,600	531,000
Weight on drivers, lb.	230,000	240,000	467,000	478,000

Cyl's, dia. and stroke, in.	27 by 30	27 by 32	28 and 42 by 32	25 and 39 by 32
Diameter of drivers, in.	63	63	57	57
Boiler pressure, lb. per sq. in.	190	190	200	240
Evaporating heating surface, sq. ft.	4,128	4,297	6,125	6,120
Superheating surface ,sq. ft.	1,035	993	1,510	1,475
Grate area, sq. ft.	78	70.8	96	96
Weight on drivers ÷ tractive effort	4.1	4.0	4.5*	4.7*
Tractive effort × dia drivers ÷ equiv. heat. surface	621.0	653.2	704.0*	695.0*
Equiv. heat. surface ÷ grate area	72.8	81.7	87.5	86.6

* Baldwin Locomotive Works' formula for tractive effort.
† American Locomotive Company's formula for tractive effort.

The Mallet locomotive has a tractive effort about 2,000 lb. greater than the U. S. R. A. heavy Mallet type, with a weight in working order of 523,600 lb. and 467,000 lb. on the drivers, these weights being 4,700 lb. and 11,000 lb. less respectively than the weights of the standard locomotive. The cylinders are 28 in. and 42 in. in diameter by 32 in. stroke, and the boiler carries a working pressure of 200 lb. per sq. in. as compared with the smaller cylinders and boiler pressure of 240 lb. used on the standard locomotive.

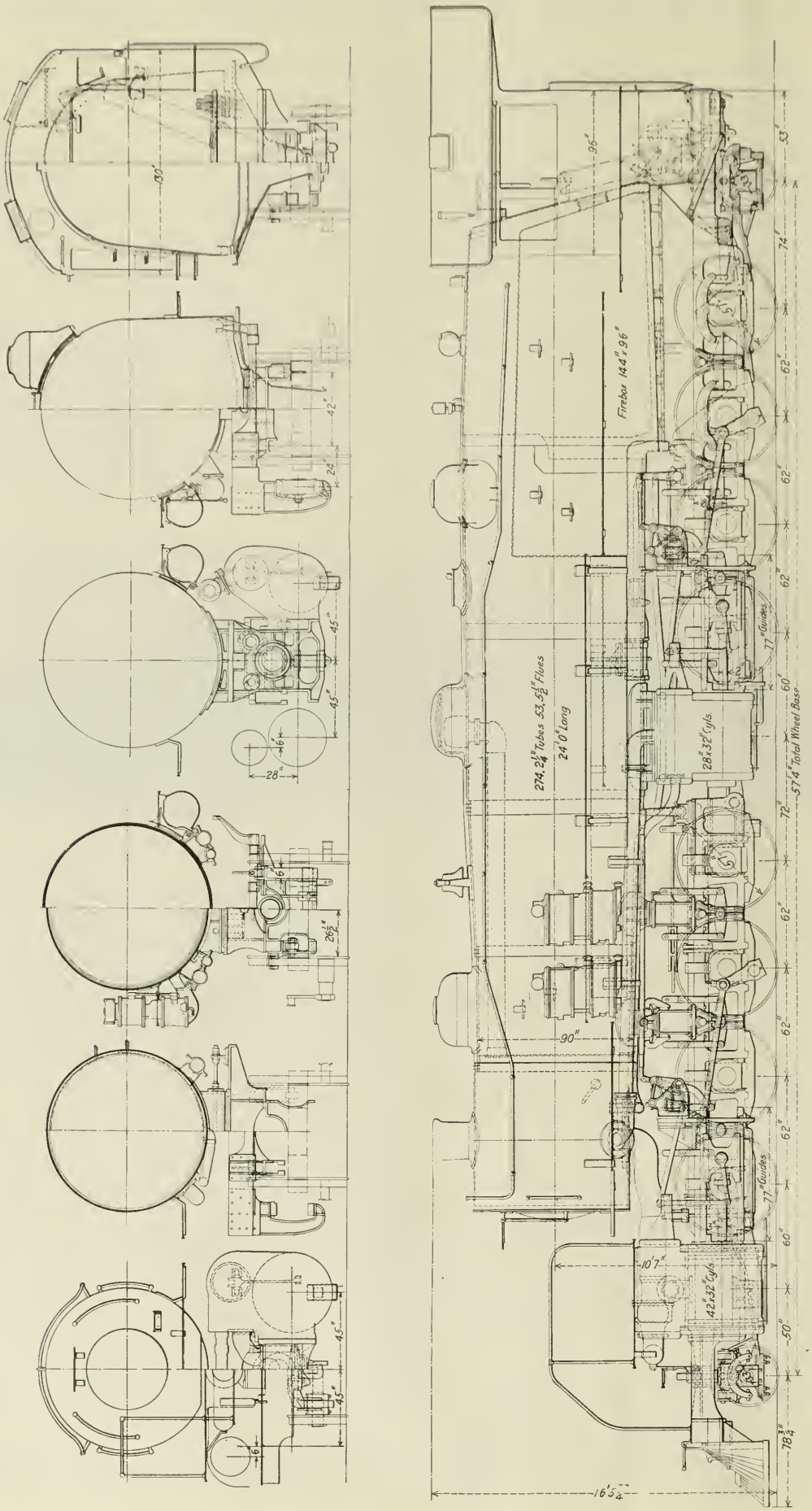


C. C. & O. 2-8-8-2 Type Locomotive

The boilers of the Mikado locomotives are of the straight type with three barrel courses, telescopically arranged, with an outside diameter at the front course of 82 in. The firebox has a throat-sheet approximately 2 ft. deep below the forward end of the arch tubes. The tubes and flues are 21 ft. long and no combustion chamber is included. Comparing the boiler with that of the standard heavy Mikado type, it will be found that a larger grate area has been obtained by designing the firebox approximately 12 in. wider. On the other hand the number of tubes is 38 less and they are two feet longer, while the firebox heating surface is reduced by the omission of a combustion chamber. The net result is a reduction in total heating surface, as shown in the table, and a less effective heating surface distribution on the basis of the principles most generally accepted in boiler design.

The boiler of the Mallet type locomotive is of the conical type with a diameter outside of the first ring of 90 in. The boilers of these locomotives have a firebox 144 in. long, and a barrel combustion chamber extends forward 66 in. from the throat-sheet. The tubes and flues are 24 ft. long. The boilers of these locomotives are quite closely comparable in their proportions with those of the standard Mallet type locomotives.

On both types of C. C. & O. locomotives the inside fireboxes are welded throughout, no riveted joints being employed. The joints are butt welds located on the straight por-



Elevation and Sections of the Carolina, Clinchfield & Ohio Mallet Type Locomotive

tions of the sheets well back from the corners. The tubes and flues are also welded in the back tube sheets. All of the locomotives are equipped with Duplex stokers and Franklin grate shakers.

Both types of locomotives have vanadium cast steel frames and heat-treated, hollow-bored axles. The journals are the same on both types, the main having a diameter 11½ in. while the others are 11 in. in diameter. They are all 13 in. in length. The Mikado locomotive is equipped with the Commonwealth rear cradle casting and the K. W. trailing truck. The frames of the two units on the Mallet type are fitted with the Baldwin flexible type articulated connection.

They are equipped with Baker valve gears, controlled on the Mallet locomotives with the Ragonnet power reverse gear, and on the Mikado locomotive with the Lewis power reverse gear. The Mallet locomotives are equipped with reducing and intercepting valves and have auxiliary high-pressure exhaust nozzles discharging into the stack. Both locomotives are fitted with outside connected throttles.

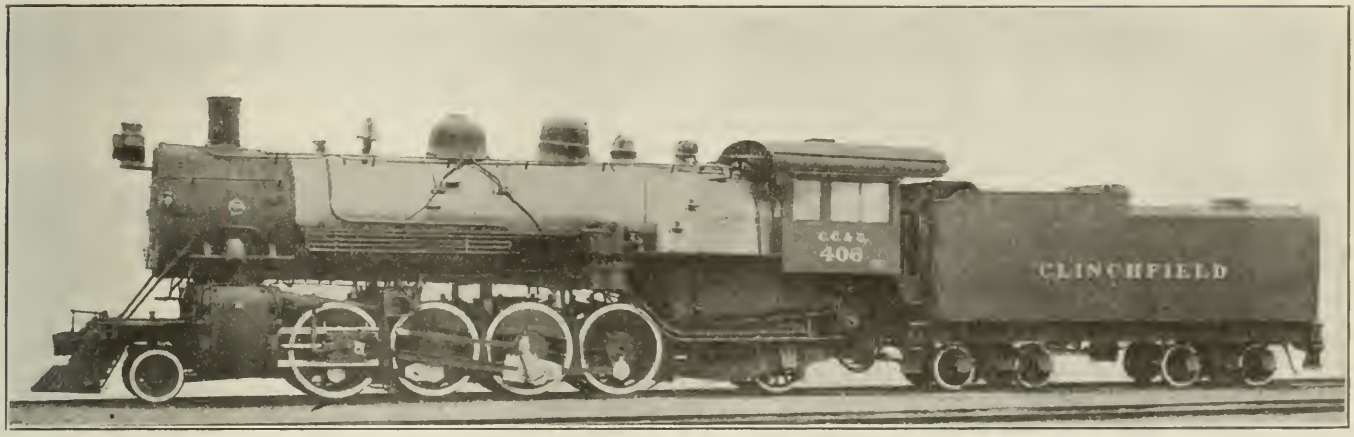
The principal data and dimensions of the two types are as follows:

	Mikado	Mallet
General Data		
Gage	4 ft. 8½ in.	4 ft. 8½ in.
Service	Freight	Freight
Fuel	Bit. coal	Bit. coal
Tractive effort	56,000 lb.	{ 103,560 lb.** / { 111,300 lb.†
Weight in working order	311,400 lb.	523,600 lb.
Weight on drivers	230,000 lb.	467,000 lb.
Weight on leading truck	28,400 lb.	28,600 lb.
Weight on trailing truck	53,000 lb.	28,600 lb.
Weight of engine and tender in working order	490,600 lb.	704,000 lb.
Wheel base, driving	16 ft. 6 in.	42 ft.
Wheel base, rigid	16 ft. 6 in.	15 ft. 6 in.
Wheel base, total	35 ft. 8 in.	57 ft. 4 in.
Wheel base, engine and tender	67 ft.	85 ft.
Ratios		
Weight on drivers ÷ tractive effort	4.1	4.5**
Total weight ÷ tractive effort	5.6	5.1**
Tractive effort × diam. drivers ÷ equivalent heating surface*	621.0	704.0**
Equivalent heating surface* ÷ grate area	72.8	87.5
Firebox heating surface ÷ equivalent heating surface,* per cent	5.0	5.3
Weight on drivers ÷ equivalent heating surface*	40.5	55.5
Total weight ÷ equivalent heating surface*	54.8	62.7
Volume equivalent simple cylinder	19.9 cu. ft.	31.6 cu. ft.
Equivalent heating surface* ÷ vol. cylinders	285.4	265.8
Grate area ÷ vol. cylinders	3.9	3.0
Cylinders		
Kind	Simple	Compound
Diameter and stroke	27 in. by 30 in.	28 in. and 42 in. by 32 in.
Valves		
Kind	Piston	Piston
Diameter	15 in.	15 in. and 17 in.
Wheels		
Driving, diameter over tires	63 in.	57 in.
Driving journals, main, diameter and length	11½ in. by 13 in.	11½ in. by 13 in.
Driving journals, others, diameter and length	11 in. by 13 in.	11 in. by 13 in.
Engine truck wheels, diameter	33 in.	33 in.
Engine truck, journals	6½ in. by 12 in.	6½ in. by 12 in.
Trailing truck wheels, diameter	45 in.	33 in.
Trailing truck, journals	8 in. by 14 in.	6½ in. by 12 in.
Boiler		
Style	Straight	Con. wag. top
Working pressure	190 lb. per sq. in.	200 lb. per sq. in.
Outside diameter of first ring	82 in.	90 in.
Firebox, length and width	117 in. by 96 in.	144 in. by 96 in.
Tubes, number and outside diameter	209—2¼ in.	274—2¼ in.
Flues, number and outside diameter	42—5½ in.	53—5½ in.
Tubes and flues, length	21 ft.	24 ft.
Heating surface, tubes and flues	3,845 sq. ft.	5,685 sq. ft.
Heating surface, firebox, including arch tubes	283 sq. ft.	440 sq. ft.
Heating surface, total	4,128 sq. ft.	6,125 sq. ft.
Superheater heating surface	1,035 sq. ft.	1,510 sq. ft.
Equivalent heating surface*	5,680 sq. ft.	8,390 sq. ft.
Grate area	78 sq. ft.	96 sq. ft.
Tender		
Tank	Water bottom	Water bottom
Frame	Struct. steel	Struct. steel
Weight	178,600 lb.	180,400 lb.
Water capacity	10,000 gal.	10,000 gal.
Coal capacity	15 tons	15 tons

*Equivalent heating surface = total evaporative heating surface + 1.5 times the superheating surface.

**Baldwin Locomotive Works' tractive effort formula.

†American Locomotive Company's tractive effort formula.



Mikado Type Locomotive Built for the C. C. & O.

Misfits Under State Control.—In a very large concern, as any state-controlled undertaking is bound to be, it is exceedingly difficult to prevent square men from being forced into round holes. Certain positions are paid at certain rates based originally on the relative importance of each position. In course of time this pay became stereotyped, and cannot well be altered without dislocating the whole machine. What are the consequences? Owing to long and faithful service in one department in which he has become singularly efficient, a man is entitled to better pay; owing, however, to there being no vacancy in his department he cannot be advanced therein. In some other department, more or less (often less) in touch with his office, there happens to be a vacancy which, if he be appointed to it, would give him the extra emoluments to which he is justly entitled. It therefore saves the higher authorities much trouble and worry to fill the vacancy accordingly, although the newcomer is absolutely strange to the work. This occurs even in the Army, and the action vulgarly called "kicking a man upstairs" is often the only way to remove a man from a position in which he has been an utter failure—or to give his duty to another man who has well earned it. It is, indeed, difficult to see how this necessary evil can be avoided entirely, although gross cases might often be avoided by a little more tact, or by taking of a little more trouble in assorting. Favoritism and nepotism, also, are all too often to blame in these matters.—*Railway Gazette, London.*

Railroad Administration to Consider Wage Demands

Shop Employees Gradually Return to Work and Other Organizations Prepare Specific Proposals

WASHINGTON, D. C.

THE NEW CYCLE of general advances in railroad wages seems to have been definitely opened.

The committee of 100 representing the six shop craft unions comprised in the Railway Employees' Department of the American Federation of Labor was expected to resume negotiations this week with Director General Hines and his assistants in the Railroad Administration on their demands for increased wages on which the Board of Railroad Wages and Working Conditions on July 16 submitted to Mr. Hines a divided report. Large numbers of the shop employees had gone on strike on August 1 and following days because Mr. Hines had not rendered a decision on their demands, but instead had written a letter to the President recommending legislation for the creation of a special wage tribunal. They returned to work gradually after the President had instructed Mr. Hines to deal with them only on condition they called off the unauthorized strike.

The Railroad Administration is now confronted also with a general demand by all of the 14 organizations of railroad employees for increases in pay "to at least re-establish the pre-war purchasing power of their wage," but the specific demands have in most cases not yet been presented. The case of the shop employees was fully heard by the wage board during March and April, and is now before the director general for decision, the three labor members of the board having recommended an increase from 68 to 80 cents an hour for the principal classes and the three official members having recommended no increase at this time. The demands of the Brotherhood of Railroad Trainmen have also been given their hearing before the board.

The Brotherhood of Railway Clerks, Freight Handlers, Station, Express and Steamship Employees, claiming to represent 450,000 men, had announced through its president, J. J. Forrester, that strike votes would be sent out at once to enforce its demand for an increase of 20 cents an hour and a 44-hour week.

Mr. Hines has estimated that to grant the increases recommended by the shop employees would require a general increase to all employees that would amount to approximately $800,000,000 a year on the same basis. Neither he nor the President has indicated definitely the extent by which it is proposed to meet the resulting increase in expenses from rates or by a request for a further Congressional appropriation. It has been estimated in the Railroad Administration that without any further increases in rates the situation called for at least a 10 per cent increase in rates and an addition of $800,000,000 a year to expenses would amount to an additional 23 per cent in freight revenues. The employees have suggested that the increased wages be paid for first by an appropriation pending an investigation by the rate-making body as to what increases, if any, should be made in rates.

Strikers Ordered Back to Work

Congress having declined to take from President Wilson and Director General Hines the responsibility for dealing with the wage demands being pressed by the organized railroad employees, the President on August 7 directed Mr. Hines to take up and consider on their merits the demands of the shop employees as soon as they should recognize the authority of their central officers and return to work. Mr. Hines thereupon addressed a letter to B. M. Jewell, acting president of the Railway Employees' Department of the American Federation of Labor, enclosing a copy of the President's letter and saying: "It is obvious that it is of the highest importance, not only in the interest of the public, but in the interest of the employees themselves, that they shall immediately return to work. The situation having been clarified by the definite indication that Congress does not wish to take action in the premises, the Railroad Administration stands ready to take up the wage question on its merits with the duly accreditted international officers and their authorized committee as soon as the employees return to work."

About midnight Mr. Jewell sent a message to the officers and members of the six shop craft unions ordering those out on strike to return to work and saying that the failure of the membership to comply with his instructions would have a detrimental effect on the entire labor movement.

Senate Committee Says President Has Plenary Authority

As stated briefly in last week's issue, the Senate committee on interstate commerce at its meeting on August 6 had decided not to accept the President's recommendation for the creation of a special wage tribunal and authorized Chairman Cummins to write a letter to the President, saying he already had full authority. This action was unanimous, representing the opinions of the Democrats and Republicans alike. The letter was delivered to the President on the following day. Senator Cummins said the committee recognized the gravity of the situation and desired to co-operate in bringing about the proper solution, but felt that Congress has already given the President "complete and plenary authority, and that additional legislation could add nothing to his power in the premises. The letter continued.

"The director general can fix the wages of all men employed in the transportation service, and it seems to be clear that it is for him to say whether the compensation of these men should or should not be increased. He has all the available information which can possibly be secured, and it is the view of the committee that he should act in accordance with the public interest and his own judgment. He can be advised upon the subject by any board or tribunal which you may select for that purpose.

"The director general has also the absolute right to initiate rates for transportation and can advance or lower them as he may think necessary or wise to meet the requirements of the transportation systems in his charge, and, moreover, he can put the new rates into effect whenever, in his judgment, they should become effective.

"At the present time the Interstate Commerce Commission has not the authority to suspend for examination or approval the rates initiated by the director general; but even if the act which lately passed the Senate and which has not yet passed the House shall become a law and the authority of the Interstate Commerce Commission to suspend rates be restored, it will still be true that the director general must initiate the rates and it is entirely impossible to believe that the commission would suspend rates that are necessary in order to pay any increased wages of railway operatives.

"The committee is now diligently engaged in the preparation of a bill for the general reorganization of our system of regulation and control. One common phase of the many plans which have been submitted relates to the further direction which ought to be given to the Interstate Commerce Commission for its guidance in determining the reasonableness of rates. Upon that phase of the subject diverse opinions have

been developed, and it is thought to be unwise to bring forward for action by Congress any further legislation in that respect until it can be associated with the general plan of reorganization.

"If the committee felt that there was any lack of power on your part or on the part of the director general it would be quick to act; but inasmuch as it can perceive no want of authority, it has reached the conclusion that no additional legislation is required to meet the particular emergency which you have pointed out."

Action on the part of the President came later in the day, when Mr. Hines called at the White House and informed him regarding the number of men that had gone on strike regardless of the instructions of the officers of their national organization in Washington and showed him the statement signed by the 14 railroad labor organizations which he had received on August 4. The House had taken no action on the President's recommendations pending receipt of a draft of a bill which Mr. Hines was having prepared, but President Wilson accepted the decision of the Senate committee as final and wrote Mr. Hines a letter saying that Senator Cummins' letter had set him free to deal as he thought best with the wage question.

"I thought it my duty to lay the question in its present pressing form before the committee of the Senate," he said, "because I thought that I should not act upon this matter within the brief interval of Government control remaining, without their acquiescence and approval. Senator Cummins' letter, which speaks the unanimous judgment of the committee, leaves me free and indeed imposes upon me the duty to act."

The letter then referred to the proceedings before the Board of Railroad Wages and Working Conditions, saying: "The board having now apprised us of its inability, at any rate for the time being, to agree upon recommendations, it is clearly our duty to proceed with the matter in the hope of disposing of it."

"You are therefore authorized to say to the railroad shop employees that the question of wages they have raised will be taken up and considered on its merits by the director general in conference with their duly accredited representatives. I hope that you will make it clear to the men concerned that the Railroad Administration cannot deal with problems of this sort, or with any problems affecting the men, except through the duly chosen international officers of the regularly constituted organizations and their authorized committee. Matters of so various a nature and affecting so many men cannot be dealt with except in this way. Any action which brings the authority of the authorized representatives of the organizations into question or discredits it must interfere with, if not prevent action altogether. The chief obstacle to a decision has been created by the men themselves. They have gone out on strike and repudiated the authority of their officers at the very moment when they were urging action in regard to their interests.

"You will remember that a conference between yourself and the authorized representatives of the men was arranged, at the instance of these representatives, for July 26 to discuss the wage question and the question of a national agreement, but before this conference took place or could take place, local bodies of railway shopmen took action looking toward a strike on the first of August. As a result of this action, various strikes actually took place before there was an opportunity to act in a satisfactory or conclusive way with respect to the wages. In the presence of these strikes and the repudiation of the authority of the representatives of the organization concerned, there can be no consideration of the matter in controversy. Until the employees return to work and again recognize the authority of their own organizations, the whole matter must be at a stand still.

"When federal control of the railroads began, the Railroad Administration accepted existing agreements between the shopmen's organizations and the several railroad companies, and by agreement machinery was created for handling the grievances of the shopmen's organizations of all the railways, whether they had theretofore had the benefit of definite agreements or not. There can be no question, therefore, of the readiness of the Government to deal in a spirit of fairness and by regular methods with any matters the men may bring to their attention.

"Concerted and very careful consideration is being given by the entire Government to the question of reducing the high cost of living. I need hardly point out how intimately and directly this matter affects every individual in the nation, and if transportation is interrupted, it will be impossible to solve it. This is a time when every employee of the railways should help to make the processes of transportation more easy and economical rather than less, and the employees who are on strike are deliberately delaying a settlement of their wage problem and of their standard of living. They should promptly return to work, and I hope that you will urge upon their representatives the immediate necessity for their doing so."

The refusal of the Senate committee to take over the responsibility for dealing with the wage question and the related qustion of rate advances leaves the responsibility for a decision with Mr. Hines, where it was before, but it leaves him in a stronger position. If he had granted additional wages and had attempted to offset them with further increases in rates under the broad powers conferred on the President and the director general during the war he would undoubtedly have been subjected to violent criticism in Congress, and he would have had no assurance that his rates would have been allowed to remain in effect whether or not the Cummins bill is passed. Congress and others may yet criticize whatever he does, but at any rate he has been given such clear instructions to go ahead and use his judgment that it is believed the commission could hardly fail to recognize his wages in relation to a rate increase. Nor can Congress accuse him of acting without authority if he goes before it with another request for an appropriation, although there would probably be some discussion as to whether any further increase in wages at this time should be charged to the taxpayers, as a part of the cost of the war, instead of to the patrons of the railways, as a part of the cost of transportation.

Director General Hines has authorized the following:

"The shop men who have been on unauthorized strikes in various parts of the country are rapidly returning to work and already conditions are practically normal in most parts of the country. It is anticipated that at a comparatively early date the strikes will have entirely terminated whereupon the Railroad Administration will promptly take up and deal with the wage questions now pending.

"Ever since it was made clear by the action of the Senate committee that Congress does not wish to deal with the grave wage problems now pending, and the rate problem which is also inextricably involved, and also will offer no objection to the Railroad Administration exercising the powers conferred by the federal control act to deal at this late date in federal control with this great subject (the issue involving hundreds of millions of dollars) I have been giving my continuing attention to the study of the matter with a view to making a just and reasonable exercise of the heavy responsibility which thus rests upon me.

"In this connection I would like to make it clear to the public and the railroad employees alike that the situation now existing could not have been dealt with until this time.

"It is true that in February, 1919, the shopmen submitted their proposals to the Board of Railroad Wages & Working Conditions, but when this was done it was clearly understood that since the original proposals of the shop employees had been dealt with in July, 1918, while other classes of em-

ployees making similar proposals had received no consideration at all, these other classes of employees must first be dealt with. Another circumstance of importance was that the shopmen were also pressing proposals for uniform rules and working conditions involving a great many points of difference and difficulty. The result was that despite the most earnest desire on the part of all the members of the wage board to deal promptly with these matters, no members of the board, either the labor members or the management members, were in position to submit their final suggestions until July 16, before which time the date of July 28 had been fixed upon by agreement with the representatives of the shop employees for a discussion of the rules and working conditions and wage matters.

"By July 16 the situation had assumed a wholly different shape. Practically every class of railroad employees had come forward urging either an increase in wages or a reduction in the cost of living.

"Therefore by the time the conference with the shop representatives took place on July 28 the Railroad Administration was confronted with a situation involving practically all of the 2,000,000 railroad employees and necessarily had to obtain a clear understanding as to the powers it ought to exercise in this regard so near the termination of federal control. I therefore proposed to the President, and he forwarded to the Interstate Commerce Committees of the Senate and House, the recommendation that Congress establish a wage board to deal with these matters and provide that the Interstate Commerce Commission should make such rates as might be necessary to meet any wage increases so made. When the Senate Committee unanimously decided against this course and indicated its view that the matter could properly be handled through the powers created by the federal control act, the situation was clarified in such a way as to admit of my assuming the responsibility incident to such far reaching action."

Director General Hines has sent a reply to a telegram from James Hamilton Lewis of Chicago, saying that he cannot consistently comply with the suggestion to deal directly with the local representatives of the striking shopmen in Chicago. The Railroad Administration, he says, cannot deal with these problems except through the duly chosen international officers of the regularly constituted organizations and their authorized committee. The Railroad Administration has pursued a consistent policy in this respect and has dealt with these duly chosen representatives from the beginning of federal control. The strikes which have taken place have not been authorized according to the laws of the shopmen's organizations with which at all times the Railroad Administration has dealt and these strikes have had the effect of repudiating the established organizations and of bringing the consideration of the matter to a standstill.

Shop Employees Return to Work

Reports began to arrive on Friday from all over the country that the striking shopmen were returning to work, although some of the men, including the employees of the Washington Terminal Company, refused to do so until their demands had been met. The strike had been in progress long enough to hamper the work of many of the roads considerably, and to interfere with the vigorous efforts that had been ordered to reduce the number of bad order cars that had accumulating during the spring months. On some roads it had been necessary to curtail some train service. Union officials in Washington said that about 40,000 men had walked out, although local officials of the unions had claimed from 100,000 to 250,000 had gone out.

In connection with the new wage demands it is understood that Mr. Hines considers the two main points to be ascertained are: First, how much the cost of living has increased as compared with the increases in wages allowed last year, and by supplemental orders during the first part of this year, and, second, comparisons with wages being paid in other industries for similar or comparable classes of work.

Fourteen Organizations Demand More Wages

The statement presented to Mr. Hines on August 4, by the 14 organizations, as briefly noted in last week's issue, is as follows:

"After having given careful thought to all that was said at our conference with you and your associates August 4, 1919, we present the following for your consideration:

"Railroad employees have loyally co-operated in the operation of the railroads and are entitled to compensation which will at least re-establish the pre-war purchasing powers of their wage.

"We do not agree that rates of pay to employees and transportation charges are in any way so related. Minimum rates of pay should be sufficient to guarantee to the most unskilled employee an adequate living wage, with such additional amounts as will meet the necessities incident to old age, injury, sickness, and death, and higher rates based upon the skill, responsibility, and hazard required and involved. Also these wage rates should be such as will compare favorably to the wages paid for similar service in other industries.

"Transportation rates should be sufficient to guarantee:

"First—To all employees this just and equitable wage.

"Second—Maintain the properties in condition to render adequate service to the public.

"Third—Equitable returns upon the money actually invested.

"We cannot approve of the plan proposed by you for a congressional committee, for the reason that it means months of delay at a time when the questions involved require immediate settlement.

"You already have in the Board of Railroad Wages and Working Conditions the necessary machinery to dispose of these questions, and we ask that their function be restored and they be allowed to pass upon the questions submitted to them and that their findings be placed before the representatives of the recognized organizations for their consideration and be mutually agreed upon before being issued.

"The moneys with which to pay these increases should, in our opinion, be raised by an appropriation by Congress. This appropriation should be of a sufficient amount temporarily to take care of immediate deficits. In the meantime let the proper rate making body make a careful study as to what, if any, increases should be made in passenger and freight rates, prompt action in this regard being both essential and desirable. This will only give temporary relief and must be accompanied, or immediately followed, by a determined effort not only to prevent a further increase in the cost of living, but to secure a reduction therein.

"Any permanent solution of the railroad problem must necessarily remove the element of returns to capital as the sole purpose of operation. Therefore, we ask that you urge upon the President the necessity for the prompt passage by Congress of the required appropriation bill to meet the emergency now existing.

"Also that you indorse the Sims bill (H. R. 8157) now before the House of Representatives, and recommend to the President that he use all his influence to secure its immediate passage by Congress as the permanent solution.

"The Sims bill, if enacted into law, will give to the Interstate Commerce Commission its original authority over transportation rates, and employees cannot hope for increases in rates of pay except as they result from economy and efficiency in operation due to their own collective effects. Any increases to employees under this bill guarantees to the public equal benefits in reduction of transportation charges.

"Capital will be fully reimbursed for all money actually invested. Therefore no one can possibly suffer by the enactment

of this bill, unless it be the employees themselves, and they are willing to risk their future."

President Wilson's Address

In his address to Congress on August 8, in which he urged an active campaign to reduce the cost of living, the President referred to the wage question and the "vicious circle" as follows:

"It is a matter of familiar knowledge, also, that a process has set in which is likely, unless something is done, to push prices and rents and the whole cost of living higher and yet higher, in a vicious cycle to which there is no logical or natural end. With the increase in the prices of the necessaries of life come demands for increases in wages—demands which are justified if there be no other way of enabling men to live. Upon the increase of wages there follows close an increase in the price of the products whose producers have been accorded the increase—not a proportionate increase, for the manufacturer does not content himself with that, but an increase considerably greater than the added wage cost and for which the added wage cost is oftentimes hardly more than an excuse. The laborers who do not get an increase in pay when they demand it are likely to strike, and the strike only makes matters worse. It checks production, if it affects the railways it prevents distribution and strips the markets, so that there is presently nothing to buy, and there is another excessive addition to prices resulting from the scarcity."

He also referred very pointedly to the present situation in the railroad field when he said:

"I believe, too, that the more extreme leaders of organized labor will presently yield to a sober second thought and, like the great mass of their associates, they will think and act like true Americans. They will see that strikes undertaken at this critical time are certain to make matters worse, not better—worse for them and for everybody else. The worst thing, the most fatal thing that can be done now is to stop or interrupt production or interfere with the distribution of goods by the railways and the shipping of the country. We are all involved in the distressing results of the high cost of living and we must unite, not divide, to correct it. There are many things that ought to be corrected in the relations between capital and labor, in respect of wages and conditions of labor and other things even more far-reaching, and I, for one, am ready to go into conference about these matters with any group of my fellow countrymen who know what they are talking about and are willing to remedy existing conditions by frank counsel rather than by violent contest. No remedy is possible while men are in a temper, and there can be no settlement which does not have as its motive and standard the general interest. Threats and undue insistence upon the interest of a single class make settlement impossible. I believe, as I have hitherto had occasion to say to the Congress, that the industry and life of our people and of the world will suffer irreparable damage if employers and workmen are to go on in a perpetual contest, as antagonists. They must, on one plan or another, be effectively associated. Have we not steadiness and self-possession and business sense enough to work out that result? Undoubtedly we have, and we shall work it out."

Labor Leaders Deny Intimidation

Whether or not it was influenced by the President's statements regarding strikes or whether it was considered that the impressions created by the various previous statements made by the labor leaders had had their effect, the executives of the 14 labor organizations embraced in the Plumb Plan League issued a statement on August 9 denying any purpose of intimidation.

"To prevent any misunderstanding as to the policy of the organized railroad employes," said the statement, "we united in a definite assertion that we have no desire and have had none to impress upon the public, by violence or by threat, our proposal that the railroads be nationalized under 'tripartite control.'

"Two distinctly separate considerations now confront the the people, the wage requirements of the railroad employes and the Sims bill (embodying the railway employes' plan for reorganization of the railroads).

"In the matter of wages we have submitted an eminently just proposition. We have said that if we are to continue to live as Americans should live, and are to care for our families as American families should be cared for, the profiteers must be restrained and our wages increased. Every fair-minded man, and every intelligent housewife, will recognize the reasonableness of this request. If Congress and the President cannot meet this request, it is still a living question and we shall have to try to find another solution.

"This, however, bears in no way upon our sponsorship of the Sims bill. We do hold to our conviction that the railroad employes are in no mood to consign themselves finally to the autocratic control of financial dictators, but in proposing the elimination of capital and the tripartite directorate, we have no purpose of intimidation. We appeal to the statesmanship of America and to the common sense of American manhood and womanhood. We believe in the native ability of American labor. What we ask is the Americanization of the railroads."

Rumors regarding plans of the labor leaders to threaten strikes either as an incentive to Congress to look with favor upon the Plumb plan or in connection with wage demands have been current for several months. As long ago as July 10 the following was distributed confidentially among the members of a prominent business association in a circular letter based on the association's advice from Washington:

"The bill above mentioned will be introduced in both houses of Congress simultaneously and almost immediately thereafter national propaganda in favor of the bill will appear. Paid lecturers will be sent into all parts of the country, invading even the smallest villages. There will be also a well-organized publicity bureau, which will flood the newspapers of the country with material favoring the bill.

"In the event that the Plumb plan is not given the fullest consideration by Congress, and if Congress permits the return of the roads on January first next instead of permitting the question to lie open so that it can be made an issue in the presidential campaign, there is said to be an understanding among the leaders of the brotherhoods that a general strike shall be called for January 1. The strike will occur in any case unless there is assurance of wage increases.

"Ample funds have been secured for the organization behind the Plumb Plan, and it has the full power of labor at the Capitol. It seems therefore certain that the railroad issue will be thrown bodily into politics. It is the Plumb contention that it ought to be in politics, and that no decision should be made as to the roads until the people have had a chance to register their opinion.

"This confidential information is given members of this Association in order that they may anticipate possible transportation difficulties at a later date in the handling of their transcontinental and interstate business."

Senator Smoot has made a protest in the Senate against the appointment of former Representative Edward Keating as "business manager" of the Plumb Plan League, at the same time that he is drawing a salary of $7,500 from the Government as a member of a commission created by Congress for the purpose of reclassifying the salaries of Government employees. Mr. Keating was quoted in the newspapers as saying he did not intend to devote much time to the league until after January 1, when his work for the Government would be completed.

The latest reports on the number of shopmen on strike throughout the United States show a decided improve-

ment in the situation. In the East, Southwest and West, where the largest numbers of men have walked out, the situation seems to be clearing, with many men returning to work and traffic as a consequence gradually returning to normal. However, the situation in Boston and Atlanta, Ga., and especially in Chicago remains practically the same with both freight and passenger traffic seriously impeded by the gradual withdrawal of engines and cars needing repairs.

The striking shopmen on the Seaboard Air Line have practically all returned to their work as have the shop and car men on the Norfolk Southern. Approximately 3,000 men employed by the Baltimore & Ohio in the Baltimore shops have returned to their work and at Columbus and Cleveland conditions are rapidly approaching normal. The Louisville & Nashville also reports that large numbers of men are returning to work.

In the Central Western region there is little change from last week, in the number of men at work. Approximately 3,800 men employed on the Chicago, Rock Island & Pacific System have returned to their work and the conditions at Denver, Colo., where practically all of the shopmen have been on strike are again normal. The Chicago & Alton has reported that approximately 550 men have returned to the shops of that road. The situation on the other lines in the Central Western region is practically the same as previously reported, but the total number of men out has decreased, as a result of the defections in the ranks of the strikers, to approximately 13,000. Freight has been kept moving through this region despite difficulties; and with the return of some of the men conditions are gradually returning to normal. It was not found necessary to curtail passenger train service. The strike was most seriously felt in the grain states where the movement of grain to the markets, already partially crippled by a shortage of cars, was further curtailed by the necessity for taking cars out of service.

Northwestern regional officers handling the strike situation have prepared the following summary of conditions in the West which gives the situation on these roads, on Tuesday, August 12.

Atchison, Topeka & Santa Fe.—No men have returned to work. No accumulation. Passenger and freight business being handled. Approximately 1,100 men on strike.

Baltimore & Ohio, Chicago Terminal.—No men have returned to work. Nine engines out of service. No accumulation. Freight and passenger business being moved.

Chicago Belt.—Four car inspectors returned to work. No other change in labor situation. Handled 2,600 cars August 11. Have moved all business offered, and delivered everything that connections can take. No accumulation that interferes with operation. Expect to return three engines that have been out of service. Approximately 260 men out.

Chesapeake & Ohio of Indiana.—No men have returned to work. Have made some deliveries of freight and also received some.

Chicago & Eastern Illinois.—Freight and passenger business slowing up. All men (2,800) remain out.

Chicago & Alton.—No change in labor situation at Chicago. At a number of the terminals on the line all of the men have reported back for work, making total of 550 men returned. Passenger business being handled, and some freight.

Chicago & North Western.—No men have returned to work. Understand that all men at points other than Chicago have returned to work with one exception. More suburban trains have been taken off. Accumulation of freight for points west of Clinton, Iowa, have been somewhat reduced. Expect improvment on Iowa business today.

Chicago and Western Indiana.—No men have returned. Handling all business. Approximately 150 men out.

Chicago, Burlington & Quincy. No men have returned. Handling all business. Freight busines very heavy, and being moved with practically no delay. Total shopmen out, 500.

Chicago Great Western.—No men have returned to work. Freight and passenger business being moved without delay.

Chicago, Indianapolis & Louisville.—Ten men employed in Chicago roundhouse. All men at Lafayette, Ind., have returned to work. All freight and passenger business being moved.

Chicago Junction.—Ten car men have returned to work, leaving 270 men still on strike. No accumulation for any connection. Received 1,162 cars of live stock; 929 sent before 8 a. m. (Stock receipts last year for the same day 1,077).

Chicago, Milwaukee & St. Paul.—No men have returned to work. Freight and passenger business being moved with very little delay. Approximately 7,750 men out.

Chicago, Rock Island & Pacific.—Approximately 3,800 men have returned to work. Freight and passenger business being moved with very little delay.

Elgin, Joliet & Eastern.—No men have returned to work. Are moving some freight business, but not much improvement over day before yesterday. Total of 2,310 men still on strike.

Erie.—No men have returned to work. Passenger business on time. Moving very heavy freight business with very little delay.

Grand Trunk.—No men have returned. No accumulation. Freight and passenger business being moved.

Illinois Central.—No men have returned. No accumulation. Everything being moved.

Indiana Harbor Belt.—No men have returned to work, 550 still being on strike. 4,010 cars handled August 11. No accumulation for connections.

Michigan Central.—Twelve car repairers at Randolph St., Chicago, left the service yesterday. Both freight and passenger business being handled without delay.

Minneapolis, St. Paul & Salt Ste. Marie.—No men have returned to work. No accumulation. Passenger and freight business being moved. Approximately 1,540 men still out.

New York Central.—Twenty-three men returned to work yesterday, making a total of 53 men who have returned. Passenger and freight business being handled, and there is no accumulation.

New York, Chicago & St. Louis.—No men have returned to work. Passenger and freight business being moved without delay.

Pittsburgh, Cincinnati, Chicago & St. Louis and the Pittsburgh, Fort Wayne & Chicago.—No men have returned. Handled about 800 cars, mostly empties, which cannot be moved on account of conditions east of here. On Fort Wayne, business is being moved currently. No accumulation.

Pere Marquette.—Practically no change in labor situation. Business is being handled currently.

Wabash.—No men have returned to work. Passenger business being moved, and some freight business.

Car Interchange Bureau, Chicago.—Forty-two men who left service August 9 have returned to work.

The Chicago & North Western took off 21 Chicago suburban trains. This road reported serious difficulty also in handling its heavy grain, ore and coal traffic; and in many places, especially in the ore and coal regions the freight movement was practically stopped by the shortage of cars. However, food, ice, milk and some non-perishable freight was moved daily, officers in many cases performing the work previously done by the striking men.

The situation in New England remains very uncertain. About 13,000 men went out altogether, and it is estimated that 1,000 of these have been re-employed. The strike at once imposed serious restrictions on all traffic as the roundhouse men, terminal car inspectors and other workmen connected immediately with train operation, very generally left their jobs. Large numbers of suburban runs were discontinued by the New York, New Haven & Hartford, both in the New York and the Boston territories. Most of the dining cars were taken off and many sleeping cars, the shortage of locomotives being the most immediate difficulty. As we go to press, it is estimated the New England roads are moving about 65 per cent of their normal freight traffic.

The passenger traffic of the New Haven has been heavy for several months and the pressure is now severe on both through and suburban trains. For distances within a few

miles, suburban passengers have to a considerable extent made their way to and from their places of business by other conveyances, but the suburban trains have been able to carry their passengers by packing 100 or more in each car. The New Haven reported the total number of trains taken off as 102, including both long distance and short distance runs. In many cases six-car trains had to take the place of two ten-car trains.

On the Harlem River branch of this road, 11 miles long, from New Rochelle, N. Y., to a connection with the New York city railroads at Harlem River, normally run about 20 local passenger trains each way. All local passenger traffic was discontinued on Sunday the 10th. The passenger traffic on this branch is largely coast resort and week-end traffic. On Monday a part of these trains were restored. Between Providence, R. I., and Fall River, Mass., the local electric trains were discontinued, and later a part of the service was resumed with steam locomotives. The shopmen on the New Haven and the Boston & Maine are understood to be still discussing the appeal of President Wilson and the orders or appeals of their leaders; and they are expected to have some definite answer for the Railroad Administration by today (Friday).

Embargoes on all freight but live stock and perishables were placed last week by the New Haven, the Boston & Maine and the Boston & Albany; but this week these were modified so as to allow agents to accept food, feed, railroad coal and a few other commodities. Of freight of all kinds about 2,000 cars are being moved into New England daily, even under strike conditions.

Practically no change was reported in the status of the shop men's strike in the Central Western and Northwestern regions on Wednesday, August 13. In the Central Western region the latest reports indicate that a total of approximately 4,900 men have returned to work on the lines of the Chicago, Rock Island & Pacific and that approximately 4,100 still remain out. Unconfirmed reports also indicated that the striking shop men on the Wabash would return to work. Traffic conditions in this region are gradually improving and no further serious trouble is expected as a result of the shop men's walkout.

In the Northwestern region the latest reports indicated that small groups of shop men at minor points in the region were returning to their work; however, the majority of the men are standing firm in their request for wage increases.

Due to the splendid work on the part of superintendents, trainmasters, and other subordinate executives in both of these regions, the movement of freight and perishables has been maintained throughout the strike, although seriously curtailed at many points.

House Committee Hearings on Railroad Regulation

LEWIS H. HANEY, director and chief economist of the bureau of research and publicity, of the Southern Wholesale Grocers' Association, testified before the House committee on interstate and foreign commerce on August 11, proposing amendments to the Esch-Pomerene bill to extend the jurisdiction of the Interstate Commerce Commission over private car lines. Mr. Haney asserted that through ownership of refrigerator cars, packers enjoy many special privileges which are discriminatory against the wholesale grocers, who, he said, have been the first to feel the growth of the "great food trust which has been more in evidence during the war." The packers, he said, have come to dominate the meat business and are now extending their control over the chief items of canned foods and hold themselves out as distributors of full lines of food products and they have been able to make these inroads on the food distribution business through their special advantages in transportation. Among these he mentioned the special service given refrigerator cars, the practice of including packing house products and other food products that do not require special service in peddler and refrigerator cars, which furnish to the packer a storehouse on wheels and give him a great advantage in competition with the wholesale grocer. He read a long list of food products which are so handled. He also mentioned the large organization of the packers which keep check on the movements of the cars and obtain especially prompt handling, whereas the jobber does not have refrigerator car service and cannot get the schedule package cars unless sufficient tonnage is available. The packers are thereby enabled to give more frequent service and to supply goods in better condition to the retailer. The railroads, he said, take the position that they cannot furnish special types of cars such as refrigerator and tank cars, but it is inconsistent with their function as a common carrier that 90 per cent of the refrigerator cars should be owned and controlled by the packers as this operates against the providing of an adequate supply of such equipment. He proposed that the commission's jurisdiction be extended over all cars, irrespective of ownership so that under the provisions of the Esch bill the commission could require the furnishing of an adequate supply of cars and also that special cars should not be used for freight not requiring special service unless made available to all shippers on equal terms.

Martin H. Decker, formerly of the New York Public Service Commission, testified before the committee on August 12, supporting in general the provisions of the Esch-Pomerene bill but expressing opposition against giving the commission jurisdiction over port to port rates. He also proposed that the commission's powers over car service be exercised in ordinary times instead of merely in times of emergency, the establishment of six regional commissions, and an extension of a plan similar to that of the farm loan bank act to the railroads. Mr. Decker said he thought nearly all the people are convinced that continued government ownership under any theory would mean wretched service and enormous deficits and he urged that the railroads be returned free of any government orders put in effect during the period of government control which would prevent the free exercise of judgment of their officers in order that "this railroad game may be started over again with a new pack of cards."

B. Gilham, traffic manager of the Macon, Ga., Chamber of Commerce, supported the Esch-Pomerene bill in general and urged the committee to disregard for the present the various new plans for dealing with the railroads, but to make every effort to get back to something like pre-war conditions before plans contemplating radical changes are taken up. Mr. Gilham said that most people familiar with the situation were convinced that a substantial increase in railroad rates would have been necessary even if there had been no war.

Luther M. Walter, counsel for the National Association of Owners of Railroad Securities, and Samuel H. Beach, president of the Savings Banks Association of the State of New York, were expected to testify before the committee later in the week on the Warfield plan. On Wednesday, a report by the House committee on interstate and foreign commerce recommending the passage of the Cummins bill was filed by Representative Sanders for the committee.

Although lines of the Great Northern, the Chicago, Milwaukee & St. Paul and the Northern Pacific pass through or near areas recently burned over by huge forest fires in the states of Idaho and Montana, practically no loss was sustained by the railroads as a result of these fires. In Montana 45,064 acres were burned over and approximately 135,189,000 ft. b. m. of lumber was destroyed, and in Idaho 41,140 acres were burned over, destroying approximately 126,122,000 ft. of lumber. Though no damage was done to the railroads, the fire in many places came within two miles of the tracks.

General News Department

The Governor of West Virginia, John J. Cornwell, has sent letters to the governors of other states calling attention to the loss of revenues from taxation which would fall on the states if the Plumb plan of railroad operation should be adopted. He estimates that federal ownership would mean, to West Virginia, a loss of $3,000,000 in taxes yearly.

Wages of street car employees are to be increased 12 per cent on a dozen railroads, city and interurban, in accordance with an award by the War Labor Board, announced last Tuesday. William Howard Taft, head of this board, says that the cost of living was the element that decided the board in its decision; the ability or the inability of the employers to pay the wages prescribed was not considered.

Tentative valuation reports have been issued by the Bureau of Valuation of the Interstate Commerce Commission on the New Mexico Midland, the Ray & Gila Valley, the Quincy Western, the Tonopah & Tidewater, the Bowdon Railway, the Georgia Southern & Florida, the Georgia Northern, the Death Valley, the Dover & Southbound, the Carolina Railroad, the Hampton & Branchville, the Arizona Southern and the Sylvania Central.

A "Red" July is the term used by H. M. Mayo, Superintendent of Safety of the Southern Pacific and other lines in Texas, in his comment on the accident record of that month, showing fatal accidents to five valued employees, killed in the performance of their duties. In his Bulletin, No. 24, describing these accidents, he says: "This series of unfortunate casualties illustrates what the management has been earnestly endeavoring to impress upon its employees—the urgent necessity for individual caution. The exercise of proper forethought would probably have prevented these accidents. They were each avoidable, but the avoidance was in the employe. The only criticism we can offer is, that the element of individual safety was disregarded or, unfortunately omitted. Men learn through the misfortune or experiences of others. May we not hope that the sad lessons contained in the above, may be heeded by our men generally. Sometimes a man dies that those that come after him may live. If this be so here, then you who live have an obligation which you may not side-step with justice to those who have 'passed.'"

Illinois Manufacturers' Association Meeting Will Consider Railroad Problem

The Illinois Manufacturers' Association has issued a call for a meeting of representatives of all classes of industry interested in the solution of the present railway problem, including manufacturers, farmers, railroad men and industrial interests, on September 8 and 9 at the Congress Hotel, Chicago. It is expected, however, that the meeting will be so large as to necessitate transferring the conference to the Auditorium.

Addresses on the Plumb plan and other proposed solutions of the railroad problem will be given by representatives in various fields. A permanent organization to combat all such Socialistic moves as the Plumb plan will probably eventuate as a result of the conference.

A National "Drive" for Safety

Walker D. Hines, director general of railroads, announces that a "National Railroad Accident Prevention Drive" will be started on October 18 at 12:01 a. m. and will be continued until October 31 at midnight, to be conducted under the supervision of the Safety Section. A circular, sent to the regional directors, calls for their co-operation. All officers and employees are expected to give their hearty support.

This section follows the very satisfactory results of certain "no accident campaigns" already carried out. The results of these campaigns are summarized as follows:

Region	Tot. Num. of Employees	Casualties 1919	Casualties 1918
Southern, Jan. 19-25	230,000	77	466
Southwestern, May 1-31	174,884	646	1,475
Central Western, June 22-29	327,000	100	456
Northwestern June 22-29	274,234	119	481

In the Southern region 28 out of 45 railroads reported no accidents; in the Southwestern region 12 roads were in this class, and in the Central-Western 47 out of 67 showed clear records. In the Northwestern region this was true of 50 out of 63.

Chamber of Commerce Opposes Government Ownership

The board of directors of the Chamber of Commerce of the United States has issued a formal statement regarding the demand of railroad labor organizations for government ownership. "To increase the present public debt from 30 billion dollars to 50 billion dollars in order to acquire the roads," it says, "would severely strain the credit of the nation and depress the value of the Liberty and Victory bonds held by millions of people. The public as a whole through the government would be asked to assume the burden and financial risks of railway capital, while the roads would be run by and for the managers and employees. The suggestion of possible reduction of costs of transportation and betterment of service under such a system is purely theoretical and has not been established in practice by the government operation of the railroads. On the contrary, in this country as elsewhere the very opposite results have been shown.

"Government ownership means a retarded development of the railroads. Because of the war the country is sadly behindhand in railroad construction. Additional facilities must be added at once and enormous railway extension must be made during the next few years to meet the actual demands of our country's growth. This calls for the highest type of individual initiative and enterprise. Politics must be kept out of the railroad business. To make the railroads public property and those who operate them government employees is to throw the railroads into the arena of party politics. In such an event there would be serious danger of autocratic control of the government by government employees.

"The overwhelming trend of public sentiment throughout the United States is opposed to government ownership of the railroads. The Chamber of Commerce of the United States believes in the maintenance of that most vital principle of our American institutions—private initiative."

Track Supply Association Exhibit

Fifty firms have already arranged for space in the exhibit of the Track Supply Association which will be presented at the Auditorium Hotel, Chicago, at the time of the thirty-seventh annual convention of the Roadmasters' and Maintenance of Way Association on September 16-19 inclusive. This is the largest number of firms which have ever arranged for exhibits at this early date.

The following is a list of those companies which have already arranged to exhibit.

List of Exhibitors of the Track Supply Association

Air Reduction Sales Company New York.
American Hoist & Derrick Company, St. Paul, Minn.
American Steel & Wire Company, New York.
American Valve & Meter Company, Cincinnati, Ohio.
Anchor Company, New York.
Balkwell Manganese Crossing Company, Cleveland, Ohio.
Bethlehem Steel Company, Bethlehem, Pa.

Carbic Mfg. Company, Duluth, Minn.
Chicago Malleable Castings Company, Chicago.
Crerar, Adams & Company, Chicago.
Dressel Railway Lamp Works, New York.
Duff Mfg. Company, Pittsburgh, Pa.
Fairbanks, Morse & Co., Chicago, Ill.
Fairmont Gas Engine & Railway Motor Car Company, Fairmont, Minn.
Hauck Mfg. Company, New York.
Hayes Track Appliance Company, Richmond, Ind
Ingersoll-Rand Company, New York.
Kalamazoo Railway Supply Company, Kalamazoo, Mich.
Lackawanna Steel Company, Buffalo, N. Y.
Lundie Engineering Corporation, New York.
Luther Grinder Mfg. Company, Milwaukee, Wis.
Madden Company, Chicago, Ill.
Milburn Company, Alexander, Baltimore, Md.
Mudge & Company, Chicago, Ill.
National Lock Washer Company, Newark, N. J.
National Malleable Castings Company, Cleveland, Ohio.
Oxweld Railroad Service Company, Chicago, Ill.
P. & M. Company, Chicago, Ill.
Pocket List of Railroad Officials, New York.
Positive Rail Anchor Company, Marion, Ind.
Q. & C. Company, New York.
Rail Joint Company, New York.
Railroad Supply Company, Chicago.
Railway Review, Chicago.
Ramapo Iron Works, Hillburn, N. Y.
Reading Specialties Company, Reading, Pa.
Rodger Ballast Car Company, Chicago.
Simmons-Boardman Publishing Company, New York.
Sellers Mfg. Company, Chicago.
Southern Railway Supply & Equipment Company, St. Louis, Mo.
Track Specialties Company, New York.
Union Switch & Signal Company, Swissvale, Pa.
United States Switch Company, Eau Claire, Wis.
Verona Tool Works, Pittsburgh, Pa.
Wharton, William, Jr., Company, Inc., Easton, Pa.
Wyoming Shovel Works, Wyoming, Pa.

Automobile Accidents at Grade Crossings

The large number of automobile accidents at grade crossings has brought forth the following interesting comment by R. J. Clancy, assistant to the general manager of the Southern Pacific, the Western Pacific and the Tidewater Southern:

"When running at maximum permissible speed on unrestricted track, the average passenger train obstructs a crossing less than seven seconds, yet, judging from crossing accidents, there are many drivers of automobiles who misjudge the speed of passenger trains or are too impatient to wait that long and as a consequence run into or are struck by trains, resulting in serious injury or death.

"During the first six months of 1919, 18 people were killed, 81 were injured and 233 automobiles were damaged or destroyed in grade crossing accidents, compared with 26 killed and 110 injured during a corresponding period in 1918, a decrease in 1919 of 30.8 per cent in the number killed and of about 36 per cent in the number injured, which, in view of the increase in the number of automobiles in 1919 over 1918, indicates that some progress is being effected in the prevention of such accidents.

"Of these 233, 30 stalled on the crossing and were struck by trains; 111 attempted to cross almost immediately in front of and were struck by trains; 59 ran into trains; 1 skidded into train; 19 ran into and broke down crossing gates lowered to protect them from passing trains; 3 ran into and injured crossing flagmen; 4 ran into cattleguards or crossing signs; and 6 ran over end of track or were not sufficiently into clear. In the two latter instances the accidents resulted in attempts to escape being struck by train after it was observed that the crossing could not be effected.

"Most of these accidents involved passenger trains, which would seem to indicate either that some automobile drivers do not exercise necessary precaution or they misjudge the speed of passenger trains and fail to realize that on unrestricted track a passenger train running at maximum permissible speed covers half a mile in three-fifths of a minute. This is short time to get out of the way, especially if necessary to shift gears or if anything goes wrong with the mechanism of a machine. On single track by waiting about three-fifths of a minute for train to approach and pass all danger would be eliminated, and there certainly can be few if any instances where the circumstances occasioning haste are so compelling as not to permit of a life-saving wait of a fraction of a minute.

"In some instances drivers of automobiles raced with trains and were either struck on the crossing or ran into the train, evidently failing to realize that the speed of their machine, though thought greater than that of the train was in reality considerably less, as is usually the case. That misjudgment of the speed of passenger trains enters into such accidents appears quite clear from the fact that accidents of this character involving freight trains are relatively much less.

"Abatement of such accidents is not a question of obstructed vision, for accidents are occurring where vision is unobstructed in no less proportion than where restricted. It is not a question of flagmen, gates, or warning signals at crossings, for our flagmen have been run down and injured, our gates run into and broken, and warning signals have been disregarded. It is purely a question of drivers of automobiles exercising reasonable judgment and precaution."

Car Shortage in Western Territory

A shortage of freight cars with which to move grain and coal in western territories has become serious according to protests made to the Railroad Administration by numerous organizations of producers and shippers. The situation is especially acute in central and southern Illinois, central Iowa and in producing regions east of the Missouri river.

Grain dealers in Springfield, Ill. and other points in central Illinois recently informed the Railroad Administration that disaster was impending unless cars could be had for loading immediately. According to these protests the activities of threshing crews in these districts have ceased because of the congested elevators and the car movement is slow with no prospect of relief. Aid has been promised by the Railroad Administration and every effort is being made to relieve the congestion as soon as possible. Practically the same conditions prevail in Ohio, central Iowa and other producing points in the middle west.

Officers of the Railroad Administration reply that the car shortage this year is much the same as has been reported every year during the corresponding season. In answer to the charge that new cars are lying idle in yards because of the disagreement between railroads and the administration over the purchase of these cars, it is stated that they are being stenciled as rapidly as possible and placed in service. Approximately 10,000 cars of this type have been promised to the Northwestern region to relieve the situation in that district. Every effort is also being made in the Central Western region to obtain cars for the congested districts and it is expected that within a short time the loadings in that region will relieve the country elevators.

Anthracite Shipments for July, 1919

The shipments of anthracite for July as reported to the Anthracite Bureau of Information at Philadelphia, show a substantial increase over the preceding month and exceeded a total of 6,000,000 tons for the first time since October, 1918. The tonnage sent out last month amounted to 6,052,334 tons, an increase over June of 432,743 tons, or 7.7 per cent. Compared with July, 1918, when production was abnormally stimulated by war conditions, the shipments last month showed a decrease of 1,032,441 tons. A large part of this decrease, however, was in the production of steam sizes from washeries that are not in operation this year. Washery production in 1918 averaged 550,000 tons a month, whereas in recent normal years the washery output has amounted to between 150,000 and 250,000 tons a month. Compared with July, 1916, the latest normal year in anthracite production, the shipments last month showed an increase of 619,456 tons. The shipments for the first four months of this coal year, beginning April 1, have amounted to 22,608,555 tons, as compared with 21,146,536 tons for the corresponding period in 1916, an increase of nearly one and a half million tons.

Telephones in England. In 1918 there were approximately 130 telephones per 1,000 inhabitants in the United States and only 19 per 1,000 inhabitants in the United Kingdom

REVENUES AND EXPENSES OF RAILWAYS

FIVE MONTHS OF CALENDAR YEAR 1919

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses						Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
					Maintenance of										
		Freight.	Passenger.	Total (inc. misc.)	Way and structures.	Equipment.	Traffic.	Transportation.	General.	Total.					
Northwestern Pacific	507	$1,103,672	$800,633	$2,128,597	$502,990	$335,041	$23,697	$1,009,371	$62,173	$1,940,917	91.18	$187,679	$110,338	$77,005	—$401,256
Norfolk & Western	2,087	24,250,139	4,153,137	29,891,394	4,134,660	8,733,885	172,747	11,090,547	516,846	24,740,904	82.76	5,150,491	1,300,000	3,849,693	—1,825,099
Oahu Ry. & Land Co.	114	392,758	131,207	578,209	77,574	77,472	202,437	202,047	27,665	385,964	66.75	192,244	50,000	142,244	—75,458
Oregon Short Line	2,347	10,498,683	2,561,983	14,003,775	2,982,211	2,370,872	77,771	4,360,012	430,900	10,494,659	74.94	3,509,115	889,818	2,618,638	—1,371,814
Oregon-Wash. R. R. & Nav.	2,069	7,063,618	2,508,930	10,480,044	2,218,184	1,714,145	133,532	4,295,168	471,990	8,983,272	85.71	1,496,773	569,904	925,384	—811,340
Panhandle & Santa Fe	772	1,491,463	399,550	1,994,600	586,508	756,278	18,047	1,121,782	7,605	2,549,951	127.84	—555,351	79,560	—635,419	—1,173,160
Pennsylvania R. R. Western Lines	1,754	27,049,770	7,978,321	38,384,844	5,546,997	11,000,085	357,926	17,982,905	919,004	36,059,324	93.94	2,325,520	1,482,460	841,718	1,229,440
Pennsylvania R. R. East	5,631	92,224,684	38,661,055	143,497,157	19,560,812	40,435,669	1,211,453	66,850,874	3,658,496	134,381,989	93.64	9,115,168	4,405,483	4,705,330	—368,273
Perkiomen	155	365,760	35,410	418,161	27,518	24,543	55	183,382	1,518	237,123	56.70	181,038	9,000	172,038	90,367
Peoria & Pekin Union	19	166,874	22,429	492,892	85,911	178,856	3,851	359,423	26,576	654,617	132.81	—161,726	47,500	—209,226	—183,631
Pere Marquette	2,232	9,841,022	2,012,555	12,794,694	1,812,261	2,659,709	126,844	5,640,062	358,504	10,632,867	83.10	2,161,828	247,980	1,913,021	438,496
Phila. & Reading	1,126	20,561,166	4,343,835	26,659,742	3,056,141	7,943,823	177,942	14,898,478	658,929	26,819,783	100.60	—160,041	716,140	—876,275	—5,239,254
Pitts. & Lake Erie	224	9,498,559	992,797	11,480,253	2,515,006	3,342,143	72,173	4,154,483	213,198	10,303,553	89.75	1,176,700	377,560	798,967	—2,214,311
Pitts. & W. Va.	63	412,712	48,101	529,159	322,405	189,322	5,983	244,564	25,720	830,178	156.88	—301,019	59,293	—360,312	—370,511
Phila. Bethlehem & N. England	71	412,712	48,101	529,159	322,405	189,322	1,468	214,919	6,123	328,468	91.99	28,577	7,383	21,194	—54,455
Pitts. & Shawmut	103	416,700	22,113	446,794	164,478	189,541	8,936	178,626	15,528	557,109	124.69	—110,315	4,863	—115,177	—142,366
Pitts. Cin. Chgo. & St. Louis	2,383	23,906,799	8,173,118	35,889,446	4,498,741	11,033,637	413,868	17,144,325	846,489	34,270,430	95.48	1,619,016	1,187,502	430,243	—1,542,609
Pitts. Shawmut & Northern	204	360,039	31,491	406,110	107,567	231,140	4,890	178,240	37,158	359,010	137.64	—152,900	9,194	—162,112	1,228
Port Reading	21	618,728	.....	1,055,598	85,974	85,198	74	482,384	3,594	657,221	62.26	398,377	45,000	353,377	227,731
Rich., Fred. & Pot.	81	1,631,792	1,413,153	3,293,059	307,774	422,359	21,926	1,066,862	62,997	1,931,344	58.64	1,361,715	63,855	1,297,788	478,548
Quincy, Omaha & Kansas City	255	272,185	122,577	418,771	149,989	65,960	1,525	213,153	6,940	436,597	104.25	—17,826	14,922	—32,812	—3,483
Rutland R. R.	415	1,005,323	486,872	1,793,499	3,341,961	482,579	36,221	900,305	54,619	1,816,872	101.30	—23,372	93,960	—117,366	209,979
St. Joseph & Grand Island	258	809,648	191,639	1,062,246	251,778	147,374	9,196	667,651	58,823	1,141,795	107.49	—79,549	44,055	—123,666	—231,986
St. Louis, Brownsville & Mex.	548	1,340,420	576,093	2,034,216	336,844	358,998	24,749	623,829	77,561	1,421,981	69.90	612,234	50,000	561,967	96,980
St. Louis Merchants Bridge Terminal	9	.....	3,476	1,087,712	285,156	255,010	3,789	860,721	29,980	1,434,656	131.99	—346,944	40,000	—386,944	—459,939
St. Louis-San Francisco	4,761	19,609,856	8,069,163	29,220,478	4,878,553	6,264,538	239,141	11,903,037	898,601	24,062,661	82.34	5,517,817	1,181,349	3,964,346	210,025
St. Louis San Fran & Texas	134	418,232	58,932	513,623	110,509	99,481	7,283	331,016	29,592	577,881	112.51	—64,250	7,384	—71,703	—243,896
St. L., Southwestern	939	4,084,311	783,213	5,073,427	1,021,456	1,181,925	84,540	1,610,626	188,054	4,122,768	81.26	950,658	207,377	741,675	—1,318,355
St. Louis, Southwestern Ry. of Texas	814	1,678,354	528,974	2,361,124	682,876	897,058	34,699	1,204,006	118,191	2,930,433	124.11	—569,309	105,000	—674,462	—788,276
San Ant. & Aransas Pass	732	1,100,041	405,863	1,615,810	472,468	532,919	29,955	950,043	89,696	2,072,896	128.28	—457,086	75,000	—532,257	—587,145
Seaboard Air Line	3,563	10,564,422	5,005,081	17,093,275	2,575,820	3,789,091	306,516	8,431,028	530,694	15,762,569	92.22	1,330,706	675,000	653,147	—1,918,732
St. Louis Transfer	6	.....	.....	397,946	63,224	74,144	1,019	209,208	10,430	358,025	89.96	39,922	500	39,422	—22,995
South Buffalo	11	183,593	.....	496,532	24,401	81,036	1,491	271,227	8,265	386,419	77.82	110,114	12,750	97,364	—90,926
Southern Ry.	6,982	30,895,732	14,403,470	49,182,856	8,718,036	12,111,490	629,231	21,765,754	1,359,684	44,924,045	91.34	4,258,811	1,608,815	2,617,740	—9,941,367
Southern Ry. in Mississippi	278	411,827	231,954	691,950	184,871	96,967	11,651	382,582	21,139	697,207	107.59	—5,257	45,000	—50,392	—104,001
Southern Pacific	7,049	41,407,166	16,048,844	62,046,809	11,713,075	13,169,597	545,347	24,741,150	1,435,304	52,774,097	85.06	9,272,713	3,057,681	6,198,619	—5,070,796
Spokane Intercontinental Ry.	156	286,046	74,386	370,306	73,296	36,180	7,955	137,822	21,615	275,614	74.42	94,691	23,982	70,709	—60,477
Southern Pacific Steamship Lines	....	3,921,605	223,223	4,366,093	48,124	834,470	57,005	3,287,956	129,692	4,357,248	99.79	8,845	56,741	—47,896	—221,282
Spokane, Portland & Seattle	554	1,966,642	593,323	2,768,369	575,754	470,541	29,726	1,002,350	96,357	2,183,241	78.86	585,129	296,000	288,891	—855,771
Staten Island Rapid Transit	23	397,828	345,318	863,035	129,711	127,934	4,589	475,755	44,720	782,710	90.69	80,327	53,000	27,284	77,176
Tennessee Central	293	773,125	212,356	1,052,796	405,420	270,011	14,733	513,538	33,020	1,235,736	117.37	—182,940	25,675	—208,736	—340,002
Terminal R. A Assn. of St. L.	36	.....	16,515	1,477,412	374,661	335,253	4,038	712,983	30,663	1,474,299	99.78	3,113	141,250	—138,138	—348,127
Texas R. R. & Ft. Smith	87	414,425	79,532	540,568	102,467	98,309	6,194	231,459	16,290	470,291	86.99	70,277	33,601	36,633	—75,512
Texas & New Orleans	469	2,049,737	801,846	3,072,707	620,197	939,543	25,512	1,170,823	71,082	2,928,294	95.29	144,504	106,778	34,838	—768,629
Texas & Pacific	1,946	9,312,388	3,471,109	13,437,434	2,156,114	2,857,148	124,031	6,589,109	357,314	12,184,629	90.67	1,252,805	424,853	826,236	—1,293,347
Toledo & Ohio Central	435	2,660,002	317,838	3,123,757	631,671	1,041,636	29,896	1,418,005	80,085	3,212,458	102.84	— 88,700	157,617	—246,352	—268,618
Toledo, Peoria & Western	247	370,775	239,605	640,702	134,300	185,639	11,063	326,131	28,941	683,889	106.74	—43,188	42,500	—85,688	—34,978
Toledo, S. L. & Western	454	2,578,189	147,027	2,853,520	488,864	628,313	25,802	1,227,004	59,027	2,428,347	85.10	425,173	130,000	295,069	—321,859
Trinity & Brazos Valley	368	386,285	90,667	501,353	187,941	210,236	8,794	296,094	37,135	740,198	147.64	—238,844	28,573	—267,487	—158,296
Ulster & Delaware	128	237,720	51,204	378,473	55,373	93,108	6,191	307,728	21,854	486,939	128.65	—108,467	24,000	—132,519	—109,181
Union R. R.	35	.....	.....	3,088,564	305,954	821,977	1,325	1,582,276	38,370	2,748,846	89.00	339,719	32,140	307,579	681,208
Union Pacific	3,614	30,091,864	8,158,813	41,205,957	6,417,672	7,674,699	223,157	12,281,082	1,124,769	28,650,573	69.53	12,555,384	1,052,166	11,499,468	1,411,227
Utah Ry.	98	421,122	2,556	428,978	48,382	105,200	1,158	89,970	9,954	254,664	59.36	174,315	20,387	153,928	—92,826
Vicksburg, Shreveport & Pacific	171	809,606	361,596	1,263,641	237,302	285,693	13,553	505,240	39,676	1,071,912	84.82	171,729	46,909	124,570	—160,043
Virginian Ry.	527	3,312,609	257,903	3,973,434	741,403	1,122,686	24,153	1,636,366	77,580	3,590,384	90.35	383,050	182,600	200,442	—724,147
Wabash	2,519	13,831,329	3,686,313	18,721,068	2,681,521	3,605,652	256,537	10,069,551	557,852	17,274,490	92.27	1,446,578	536,977	909,024	—657,754
Washington Southern	35	658,379	987,488	1,867,146	178,225	200,468	13,574	585,173	32,370	1,031,633	55.25	835,514	33,224	862,258	295,535
West Jersey & Seashore	361	1,345,900	2,246,266	3,890,657	928,741	828,163	37,841	2,289,515	107,239	4,215,844	108.35	—325,187	221,681	—547,329	300,440
Western Ry. of Alabama	133	632,713	416,936	1,123,134	136,441	227,426	14,058	417,088	31,828	843,668	75.11	279,466	37,500	241,964	—28,968
Wheeling & Lake Erie	511	3,674,389	249,690	4,317,291	927,300	1,106,672	50,847	1,955,706	123,496	4,156,090	96.26	161,200	272,900	—112,471	—523,425
Wichita Falls & N. W.	328	528,828	169,764	738,317	233,573	122,388	5,911	401,047	35,331	798,251	108.11	—59,933	46,094	—106,141	25,376
Western Maryland	707	4,803,324	389,576	5,637,361	1,174,183	1,882,978	91,281	2,435,502	208,596	5,846,901	103.71	—209,541	216,000	—425,541	—596,996
Western Pacific	1,011	3,477,663	575,030	4,222,540	1,210,097	896,189	58,914	1,526,451	112,243	3,883,057	91.96	339,483	230,488	108,677	—966,314
Yazoo & Miss. Valley	1,382	6,789,426	2,101,190	9,297,937	1,592,168	2,000,527	76,515	3,779,023	245,301	7,560,618	81.31	1,737,319	269,902	1,466,938	—567,432

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF JUNE, 1919

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses						Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
					Maintenance of										
		Freight.	Passenger.	Total (inc. misc.)	Way and structures.	Equipment.	Traffic.	Transportation.	General.	Total.					
Ala. & Vicks	141	$147,993	$62,045	$227,154	$76,007	$44,700	$1,863	$86,314	$8,763	$219,802	96.76	$7,350	$11,317	—$4,010	$78,745
Ala. Great Sou	312	595,983	226,498	871,577	133,145	191,309	15,772	354,864	21,090	730,234	83.78	141,344	22,343	118,354	78,135
Ann Arbor	301	255,396	56,785	332,416	35,289	65,688	5,806	173,701	10,702	291,303	87.63	41,114	16,700	24,356	74,136
Arizona Eastern	377	252,880	43,080	314,391	57,819	40,288	3,746	93,234	209,759	209,237	66.55	105,154	16,282	88,846	26,257
Atch., Topeka & Santa Fe	8,634	8,590,736	3,944,208	13,679,381	1,824,003	3,515,386	141,843	5,117,108	254,026	10,782,348	78.82	2,897,032	560,925	2,333,133	1,057,381
Atlanta & West Point	93	90,574	85,189	200,230	30,260	43,678	3,174	92,417	6,358	179,403	89.59	20,828	8,500	12,323	—8,544
Atlanta, Birm. & Atlantic	639	295,340	71,686	401,058	107,578	125,435	7,886	273,525	11,972	526,460	131.26	—125,401	16,000	141,701	70,986
Atlantic City	177	78,913	299,023	394,949	39,543	66,897	1,540	175,323	3,856	287,248	72.73	107,701	12,000	95,700	42,058
Atlantic Coast Line	4,875	3,146,031	1,467,921	4,903,597	748,603	1,135,726	57,823	2,152,119	117,127	4,240,215	86.47	663,382	210,000	450,275	1,558,412
Balto. & O. Chicago Term	90	.....	.....	175,465	31,192	38,441	1,416	118,553	7,400	201,871	115.04	—26,406	26,543	—53,353	—68,172
Balto. & Ohio	5,151	11,078,544	5,086,983	15,233,217	1,998,361	4,343,537	157,966	6,015,367	361,865	12,988,940	85.26	2,244,276	403,899	1,839,673	3,945,956
Balto., Ches. & Atlantic	87	85,599	47,713	138,853	29,319	39,119	1,231	80,287	3,371	153,326	110.42	—14,473	3,160	—17,633	—21,543
Bangor & Aroostook	632	278,534	70,330	373,400	86,708	126,173	3,734	119,884	11,952	355,372	95.17	18,028	21,000	—3,012	134,170
Beaumont, Sour Lake & Western	118	51,321	23,829	80,845	24,845	25,670	1,680	51,790	4,918	108,688	134.43	—27,843	2,700	—30,554	—21,520
Belt Ry. Co. of Chicago	31	.....	.....	319,266	21,638	51,977	329	179,943	6,850	260,736	81.67	58,530	14,162	44,368	118,041
Bessemer & Lake Erie	217	1,313,226	32,719	1,368,752	165,674	311,105	11,686	345,289	18,390	857,874	62.67	510,878	14,500	496,371	91,515
Bingham & Garfield Ry	37	70,346	1,163	74,796	64,206	33,836	1,164	21,544	3,913	128,226	171.43	—53,430	6,232	—59,662	—166,052
Birmingham Southern	29	29,603	.....	38,648	4,792	4,213	717	19,991	3,333	33,046	85.50	5,603	1,863	3,739	—7,829
Boston & Maine	2,258	3,688,153	1,823,173	6,120,308	948,492	1,032,598	41,121	2,968,282	154,709	5,177,051	84.58	943,256	180,086	762,931	2,057,004
Buff., Rochester & Pitts	589	865,583	126,796	1,042,582	250,367	404,796	14,764	598,856	32,272	1,304,051	125.07	—261,470	27,000	—288,473	68,098
Buff. & Susq	296	154,362	6,238	178,500	44,330	104,079	1,803	37,899	8,277	216,388	121.23	—37,888	3,250	—41,138	10,670
Canadian Pacific Ry. Lines in Maine	233	92,901	32,200	136,903	71,520	30,077	2,740	92,667	3,538	200,544	146.48	—63,642	11,000	—74,642	—47,724
Charleston & Western Carolina	342	128,886	40,006	180,091	40,139	29,128	5,192	147,236	4,129	225,824	125.39	—45,733	8,500	—54,233	—10,532
Central New England	301	444,542	22,499	483,024	142,840	91,697	2,876	237,169	13,006	487,608	100.94	—4,585	16,000	—20,590	145,201
Central of Georgia	1,918	1,067,613	571,878	1,730,101	292,411	321,999	33,586	818,284	57,006	1,520,295	87.87	200,806	15,580	142,137	495,418
Central of New Jersey	685	2,595,076	729,501	3,555,595	332,938	810,514	20,980	1,569,888	82,251	2,817,171	79.23	738,423	157,429	580,997	1,020,235
Central Vermont Ry	411	370,836	82,481	507,855	146,411	112,614	7,767	290,530	17,438	577,202	113.65	—69,347	17,400	—86,747	67,424
Carolina, Clinchfield & Ohio	282	444,923	34,393	487,641	60,923	123,373	5,356	162,869	13,496	365,918	75.03	121,723	16,300	105,419	167,410
Chesapeake & Ohio	2,506	4,714,050	1,559,651	6,711,915	1,167,430	1,182,329	34,471	2,899,647	99,767	5,325,754	79.34	1,386,160	172,000	1,212,740	2,363,930
Chicago & Alton	1,050	1,478,544	586,671	2,188,104	384,530	155,548	25,125	892,032	49,464	2,010,656	91.89	177,448	55,496	171,720	341,859
Chicago & Eastern Ill	1,131	1,453,306	400,809	2,003,522	309,164	708,243	20,757	825,446	47,963	1,911,569	95.41	91,952	79,506	11,779	408,236
Chicago & Erie	269	611,022	122,820	808,418	145,441	130,266	10,163	387,513	27,734	703,457	87.01	104,961	27,678	27,275	296,072
Chicago & North Western	8,690	9,130,066	3,259,312	12,480,377	2,032,587	2,282,113	66,493	5,088,236	241,394	9,768,057	78.27	2,712,320	475,000	2,236,843	3,993,654
Chicago, Burlington & Quincy	9,573	8,048,506	3,146,188	12,219,535	2,038,225	2,808,659	82,338	4,934,358	323,345	10,307,957	84.35	1,911,578	464,855	1,445,899	3,075,214
Chicago Great Western	1,496	1,084,506	567,328	1,785,433	305,984	343,359	21,103	784,741	43,585	1,510,930	84.62	274,503	60,528	213,595	715,918
Chicago, Indianapolis & Louisville	657	705,056	265,682	1,081,445	118,545	266,492	15,520	427,675	27,431	869,479	80.39	211,967	37,399	174,555	123,259
Chicago Junction Ry	12	.....	.....	310,094	57,548	43,080	86	245,387	6,537	352,638	113.71	—42,543	2,129	—44,671	58,984
Chicago, Milwaukee & St. Paul	10,648	8,862,648	2,761,962	12,883,511	2,536,926	3,205,969	76,864	5,595,382	299,520	11,717,943	90.95	1,165,568	539,620	624,160	3,716,788
Chicago, Peoria & St. Louis	247	99,213	23,909	131,898	26,916	66,292	5,381	99,583	7,724	203,895	154.58	—71,997	7,400	—79,397	24,098
Chicago, Rock Island & Gulf	474	242,379	84,263	347,162	62,048	73,314	8,133	176,769	12,298	333,762	96.14	13,400	13,155	—242	23,175
Chicago, Rock Island & Pacific	7,594	5,308,897	2,935,006	8,787,316	901,804	1,906,185	101,816	3,717,104	205,090	6,866,305	78.13	1,921,010	350,672	1,569,967	3,326,482
Chicago, St. Paul, Minn., & Omaha	1,749	1,423,796	707,929	2,285,648	437,688	444,284	15,985	1,129,310	61,456	2,102,979	92.00	182,668	105,938	76,573	561,615
Chicago, Terre Haute & S. E	374	263,683	20,265	291,829	50,926	152,105	3,154	136,661	8,842	352,518	120.79	—60,689	14,500	—75,189	—97,616
Cin., Indianapolis & Western	321	167,742	57,902	248,046	52,760	74,983	4,711	146,281	14,031	293,927	118.49	—45,881	10,243	—56,124	—91,343
Cin., New Orl. & Texas Pac	337	979,651	337,770	1,380,962	161,565	357,913	29,352	544,951	40,109	1,145,522	82.95	235,440	36,404	198,967	261,324
Cin. Northern	251	221,080	17,411	245,739	29,470	49,840	2,053	98,396	4,745	184,504	75.08	61,235	8,500	52,736	115,573
Cleveland, Cin. Chicago & St. L	2,395	4,021,915	1,532,820	6,040,730	602,985	1,056,778	77,296	2,652,999	108,666	4,552,379	75.36	1,487,851	185,000	1,301,936	2,578,810
Colorado & Southern	1,099	749,605	211,522	1,019,405	229,148	232,650	11,516	407,049	35,844	924,009	90.64	95,396	47,000	48,367	144,749
Colorado & Wyoming Ry	41	23,404	1,089	95,864	12,820	16,832	191	41,485	3,634	74,962	78.19	20,902	4,000	16,902	12,412
Cumberland Valley	163	355,183	72,831	459,418	56,444	145,192	5,970	190,825	12,798	412,013	89.68	47,406	7,285	40,094	36,676
Delaware & Hudson Co	875	2,465,197	349,620	2,875,039	231,415	793,378	20,133	1,195,733	103,721	2,363,204	82.19	511,835	60,000	451,351	91,250
Del., Lackawanna & Western	955	4,571,060	994,158	6,230,382	717,727	1,332,722	37,877	2,439,672	114,489	4,702,906	75.48	1,527,477	318,427	1,199,066	1,066,538
Denver & Rio Grande R. R	2,594	1,843,888	547,508	2,569,432	496,089	528,284	21,419	951,293	69,398	2,121,399	82.56	448,033	115,000	322,673	638,264
Denver & Salt Lake R. R	255	254,433	42,392	304,405	97,982	82,843	893	141,465	3,802	326,988	107.41	—22,583	9,000	—31,593	—24,750
Detroit & Mackinac	381	98,396	29,746	136,489	23,604	32,890	2,129	62,431	5,224	126,278	92.51	10,212	10,332	—120	24,492
Detroit, Tol. & Ironton	459	238,922	11,593	269,601	101,495	75,995	2,544	117,481	12,609	309,924	114.95	—40,323	8,505	—48,862	141,493
Detroit & Tol. Shore Line	91	202,850	.....	210,076	26,122	19,242	1,698	61,536	3,861	112,458	53.53	97,617	8,250	89,367	73,679
Duluth & Iron Range	292	1,178,769	20,587	1,287,087	125,412	105,613	464	247,645	12,899	492,544	38.26	794,542	64,152	730,342	238,336
Duluth, Missabe & Northern	410	3,101,061	47,596	3,209,798	225,127	136,574	1,580	478,263	21,426	864,046	26.91	2,345,752	—30,941	2,376,693	910,908
Duluth, South Shore & Atlantic	599	294,935	106,476	431,798	100,465	67,589	6,068	184,663	9,064	373,578	86.51	58,220	28,000	30,196	183,785
Duluth, Winnipeg & Pac	178	102,024	21,005	129,356	40,110	25,475	2,184	58,310	7,398	133,540	103.23	—4,184	6,526	—10,711	—15,568
East St. L. Connecting	3	.....	.....	94,951	14,720	7,676	265	74,050	3,891	100,602	105.95	—5,651	2,000	—7,651	—63,161
El Paso & S. W	1,027	744,207	207,470	1,005,584	182,076	227,791	10,209	334,628	24,039	787,408	78.30	218,176	48,364	169,809	39,215
Elgin, Joliet & E	83	1,250,036	4	1,462,386	146,688	459,557	8,087	683,539	24,916	1,322,763	90.45	139,622	53,250	86,372	—12,898
Erie R. R	1,989	5,644,683	1,198,012	7,531,200	1,102,380	2,227,310	54,106	3,345,074	197,002	6,960,785	92.43	570,416	269,475	296,766	3,471,797
Fla. East Coast	764	507,399	145,981	734,142	118,783	136,004	7,853	356,212	—149	625,755	85.23	108,388	16,681	91,085	231,173
Fonda, Johnstown & Gloversville	88	40,092	62,651	108,331	11,571	8,936	599	55,325	4,501	60,931	56.24	47,399	4,900	42,499	9,082
Ft. Smith & Western	253	75,536	25,988	109,381	23,454	32,486	3,635	41,254	6,707	108,349	99.05	1,036	5,000	—4,121	13,920
Gin., Lebanon & Nor	76	71,037	8,260	93,302	22,948	19,007	1,320	56,482	876	100,634	107.85	—7,332	4,403	—11,735	—51,381
Ft. Worth & Denver City Ry	454	517,155	297,339	843,423	85,304	152,380	2,967	323,802	23,388	590,105	69.98	253,318	19,250	233,996	384,655

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF JUNE, 1919—CONTINUED

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses						Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
					Maintenance of									
		Freight.	Passenger.	Total (inc. misc.)	Way and structures.	Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.			
Ft. Worth & Rio Grande Ry.	235	$66,047	$52,117	$126,904	$21,799	$20,625	$1,563	$59,608	$5,583	$109,178	86.03	$17,726	$2,983	$14,742	$39,961
Galveston, Harrisburg & San Ant.	1,381	1,219,194	522,209	1,820,465	269,580	452,204	15,329	654,207	54,593	1,461,983	80.30	358,483	52,892	305,163	194,777
Galveston Wharf Co.	13	.....	.....	77,240	15,586	1,164	43	30,418	1,753	57,441	74.36	19,799	12,306	7,499	—3,481
Georgia R. R.	328	256,910	115,146	397,203	41,670	74,395	11,240	238,891	17,955	384,228	96.73	12,975	5,950	7,025	—45,665
Georgia Southern & Florida	402	208,251	70,665	308,457	41,801	83,623	5,840	174,211	10,096	317,686	102.99	—9,229	14,102	—23,573	33,872
Georgia & Florida	348	43,572	19,111	63,243	21,570	23,784	1,727	51,194	5,228	103,503	163.65	—36,260	4,202	—40,461	—21,378
Grand Rapids & Ind.	569	445,805	168,556	657,674	63,107	160,483	9,264	291,728	21,343	547,901	83.31	109,773	25,951	83,822	177,311
Grank Trunk Western Lines	1,001	1,420,152	362,534	1,955,494	246,127	281,026	25,052	835,547	61,966	1,452,759	74.29	502,735	49,375	453,342	443,934
Great Northern Ry.	8,244	6,295,889	1,784,535	8,931,274	1,607,487	1,651,124	49,744	3,794,804	151,378	7,370,607	82.61	1,560,667	523,130	1,036,862	2,329,353
Gulf & Ship Island R. R.	307	146,012	45,875	204,017	40,045	45,142	3,992	109,995	8,649	208,171	102.03	—4,155	11,409	—15,576	9,808
Gulf Col. & Santa Fe.	1,937	991,330	442,210	1,530,034	362,218	304,090	17,525	777,888	50,180	1,504,639	98.34	25,395	71,168	—45,931	163,022
Grand Trunk Lines in New England	172	285,552	42,026	362,612	86,045	35,075	2,602	151,969	15,967	312,189	86.09	50,426	11,500	38,928	174,264
Gulf, Mobile & Northern	424	168,093	44,111	223,778	46,336	46,973	6,292	116,493	9,156	224,130	100.15	—353	11,636	—12,023	44,823
Hocking Valley	350	1,016,795	88,355	1,188,961	112,821	343,394	5,984	372,131	21,234	855,328	71.93	333,633	47,667	285,966	296,143
Houston & Texas Central	847	459,121	238,210	739,713	137,925	112,272	4,824	292,304	19,799	567,105	76.66	172,608	34,458	137,528	134,006
Houston, East & West Texas	190	125,273	46,649	180,847	33,052	22,097	1,199	99,177	3,990	159,575	88.23	21,332	6,249	14,894	15,829
Illinois Central	8,787	5,910,809	2,021,928	8,579,161	1,334,156	2,317,221	82,731	3,358,101	230,202	7,346,416	85.63	1,232,745	408,900	823,203	3,655,848
Indiana Harbor Belt.	116	.....	.....	532,420	99,447	69,169	1,764	304,969	15,014	490,863	92.19	41,557	9,955	31,603	227,330
International & Great Northern.	1,159	872,754	304,084	1,251,253	250,544	239,271	9,016	592,397	44,332	1,140,849	91.17	110,404	30,000	80,371	470,697
Kanawha & Michigan	176	365,871	51,511	429,322	57,766	135,338	2,799	153,286	13,546	362,735	84.49	66,587	17,885	48,702	—66,826
Kansas City, Mexico & Orient	272	55,365	20,335	80,288	57,350	42,378	1,472	58,862	7,040	167,102	208.12	—86,814	6,250	—93,063	—13,382
Kansas City, Mexico & Orient of Texas.	465	61,068	14,895	82,127	37,785	44,397	1,816	56,126	7,768	147,903	180.09	—65,777	5,000	—70,777	—52,358
Kansas City Southern	774	786,772	201,909	1,060,755	212,898	260,558	20,213	475,066	46,526	1,014,375	95.62	46,381	61,255	—15,498	—94,721
Kansas City Terminal	27	.....	.....	108,244	17,868	22,931	.....	59,012	1,277	82,523	76.23	25,721	20,150	5,571	21,119
Lake Erie & Western	902	644,080	63,987	747,742	172,581	239,459	11,273	381,021	26,464	830,791	111.11	—83,049	28,500	—111,620	—25,082
Lehigh & Hudson River	96	201,298	3,167	212,543	34,966	42,472	1,635	99,566	5,707	184,346	86.73	28,197	5,400	22,797	30,295
Lehigh & New England	234	295,633	1,509	309,659	47,371	58,719	3,020	103,073	9,483	221,665	71.58	85,994	7,380	78,614	—41,001
Lehigh Valley	1,435	4,349,753	664,342	5,484,902	998,453	1,500,142	49,666	2,305,291	119,816	4,993,261	91.03	491,641	146,725	344,723	1,326,525
Long Island R. R.	398	503,894	1,799,102	2,520,876	309,912	351,678	12,826	966,854	49,841	1,703,972	67.55	817,804	97,853	719,611	398,511
Louisiana & Arkansas	362	104,227	37,336	146,540	52,381	35,407	2,663	86,966	5,793	182,609	124.61	—36,070	11,501	—47,597	—19,882
Louisiana Ry. & Nav. Co.	349	223,650	35,474	279,088	79,576	55,290	3,876	107,808	7,513	254,063	91.03	25,025	14,000	11,022	84,712
Lou. Western	267	223,871	119,989	358,383	37,067	62,909	3,583	96,216	10,873	212,987	59.42	145,397	9,076	136,302	61,499
Lou. & Nashville	5,013	5,958,339	2,024,983	8,441,163	1,158,242	2,789,630	118,678	4,232,005	202,328	8,538,761	101.15	—97,598	260,783	359,560	541,314
Lou. Henderson & St. L.	199	155,526	71,278	239,561	44,963	39,604	4,592	87,866	7,935	184,960	77.20	54,601	4,000	50,588	26,498
Maine Central	1,216	916,168	404,909	1,439,469	287,934	275,152	12,240	836,758	33,854	1,448,468	100.63	—8,999	75,999	—84,631	454,988
Md., Del. & Va.	82	64,510	41,562	108,823	9,702	25,097	590	71,186	2,183	108,758	99.94	65	1,733	—1,668	—36,107
Michigan Central	1,861	4,003,212	1,821,489	6,395,813	821,250	1,423,635	55,209	2,245,485	122,587	4,743,985	74.17	1,651,828	180,000	1,471,634	1,810,167
Mineral Range R. R.	101	36,242	280	39,621	9,887	18,603	388	30,286	957	60,189	151.91	—20,567	5,000	—25,567	—24,180
Minneapolis & St. Louis R. R.	1,646	847,828	272,588	1,160,654	207,708	262,739	8,914	520,630	29,237	1,029,382	88.68	131,272	48,557	82,586	449,818
Minneapolis, S. P. & S. Ste. Marie	4,243	2,555,031	741,854	3,535,574	601,488	634,713	20,930	1,483,685	75,423	2,638,054	74.61	697,320	187,561	509,410	1,343,840
Mississippi Central	164	45,952	27,006	76,684	14,765	31,542	1,019	30,943	7,163	85,433	111.46	—8,749	3,325	—12,074	—19,212
Missouri & N. Ark.	365	66,272	39,497	112,672	71,248	38,649	1,774	67,927	10,762	190,261	168.86	—77,589	6,241	—83,931	—86,279
Mo. Kans. & Tex. R. R.	1,713	1,912,881	738,928	2,803,978	495,042	693,862	32,529	939,605	81,611	2,250,605	80.26	593,373	89,799	453,417	1,262,808
Mo. Kans. & Tex. of Texas.	1,796	1,217,688	688,742	2,031,913	314,595	201,871	24,618	918,785	75,275	1,552,574	76.40	479,339	47,828	430,882	949,272
Missouri, Okla. & Gulf.	532	84,212	16,873	107,328	50,764	41,469	2,299	62,874	7,356	165,049	153.78	—57,721	8,500	—66,271	—58,175
Mo. Pacific	7,108	5,132,687	1,732,989	7,373,212	1,313,071	1,643,726	86,569	3,229,034	203,835	6,522,376	88.46	850,835	262,745	585,058	2,374,257
Montour R. R.	54	107,843	1,107	113,544	30,903	70,747	934	27,339	6,336	136,278	120.02	—22,735	2,286	—25,026	—31,785
Mobile & O.	997	927,359	160,202	1,159,741	172,206	439,350	28,902	644,992	40,509	1,321,217	113.92	—161,476	55,175	—216,729	226,529
Monongahela Ry.	108	260,900	20,992	275,936	48,416	39,189	1,805	97,671	8,583	195,664	70.91	80,272	5,000	75,272	55,077
Monongahela Connecting	6	.....	.....	98,485	18,920	38,073	511	44,477	7,766	109,685	111.37	—11,200	1,747	—12,448	7,603
Morgan's Lou. & Texas R. R. & SS. Co.	400	431,269	185,098	661,249	86,023	150,599	7,096	226,166	20,214	491,732	74.36	169,517	31,034	138,346	109,742
Nash. Chatt. & St. L.	1,247	949,123	419,493	1,460,370	218,457	358,968	32,099	719,015	41,764	1,375,528	94.19	84,842	50,000	34,502	170,236
Nevada Northern	168	180,724	7,984	145,463	25,544	23,376	859	37,292	4,166	91,390	62.82	54,072	18,323	35,748	—36,461
New Orleans & N. E.	399	317,810	131,270	554,681	116,749	53,420	10,130	253,865	18,976	460,006	82.93	94,674	28,357	66,317	176,598
New Orleans Great Northern	284	118,482	47,264	173,108	33,938	48,607	2,938	106,287	9,539	201,778	116.56	—28,670	9,000	—40,074	—45,498
New Orleans, Texas & Mexico	191	99,208	39,390	144,974	34,048	39,141	2,720	65,285	6,279	150,076	103.51	—5,102	10,000	—15,102	26,531
New York Central	6,095	14,925,016	8,053,529	26,340,827	3,314,484	5,703,747	218,944	10,008,699	621,237	20,250,994	76.88	6,089,833	—191,621	6,280,703	11,189,363
New York, Chicago & St. L.	574	1,522,812	209,595	1,792,579	237,490	324,779	23,438	758,026	53,051	1,401,036	78.15	391,543	55,906	336,479	373,537
New York, N. H. & Hart.	1,965	4,050,770	3,835,623	8,964,901	1,292,203	1,674,193	40,278	4,272,304	284,922	7,726,390	86.18	1,238,511	268,000	968,967	2,888,279
N. Y., Ont. & Western.	569	530,567	256,034	947,793	165,140	206,383	8,275	455,360	23,643	858,801	90.61	88,992	27,000	61,993	179,562
N. Y., Phila. & Norfolk	121	468,505	115,496	631,309	27,678	194,078	8,923	332,478	12,292	595,026	94.25	36,283	16,521	19,763	47,922
N. Y., Susq. & Western.	135	224,192	56,292	309,539	37,024	53,074	1,561	183,952	7,445	283,031	91.43	26,508	37,111	10,717	132,249
Newburgh & South Shore	7	.....	.....	136,365	24,853	31,632	.....	67,848	3,972	128,305	94.08	8,063	8,816	—753	—20,987
Norfolk & Western.	2,088	4,198,964	1,009,301	5,467,401	669,389	1,425,796	38,394	2,243,017	107,588	4,493,897	82.19	973,504	260,000	713,457	1,609,817
Norfolk Southern	907	283,869	150,799	461,266	80,675	43,057	7,548	322,643	19,999	473,922	102.74	—12,657	15,969	—28,681	25,995
Northern Pacific	6,567	5,721,082	1,724,318	8,045,788	1,817,675	1,290,456	63,502	3,343,328	175,639	6,803,426	84.55	1,242,362	601,371	638,747	1,407,188
Northern Alabama	112	61,603	11,320	79,346	10,309	—1,354	781	59,099	2,419	71,254	89.80	8,091	3,400	4,692	18,841
Northwestern Pacific	507	305,078	246,360	612,903	100,021	75,646	5,763	280,390	12,233	475,768	77.62	137,135	21,972	115,117	66,176
Oregon Short Line.	2,347	2,200,090	652,616	3,052,168	731,166	680,030	15,071	918,655	88,180	2,500,673	81.93	551,496	75,751	475,396	228,217
Ore-Wash. R. R. & Nav.	2,070	1,509,202	607,288	2,285,108	415,580	307,690	29,824	1,019,630	91,034	1,884,739	82.47	400,369	113,614	286,650	148,356

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF JUNE, 1919—CONTINUED

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses						Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
		Freight.	Passenger.	Total (inc. misc.)	Maintenance of—Way and structures.	Maintenance of—Equipment.	Traffic.	Transportation.	General.	Total.					
Panhandle & Santa Fe	772	$390,625	$91,282	$506,688	$77,775	$195,870	$4,197	$232,875	$13,144	$520,559	102.73	—$13,871	$16,605	—$30,606	$82,819
Penn. R. R. West	1,754	6,710,623	1,864,230	9,235,511	1,146,197	2,327,573	69,702	3,628,611	187,729	7,435,495	80.51	1,800,016	328,643	1,471,262	2,095,044
Penn. R. R. East	5,361	18,939,797	9,745,161	31,129,117	6,221,164	9,088,151	263,083	12,568,246	719,115	29,434,993	94.55	1,694,125	941,666	750,575	8,078,258
Perkiomen	41	82,024	8,084	93,031	5,082	3,503	65	34,009	383	43,062	46.28	49,969	1,800	48,169	—7,518
Peoria & Pekin Union	19	26,419	2,487	93,888	10,938	54,680	1,213	110,566	.....	183,388	195.31	—89,500	9,590	—99,000	—1,868
Pere Marquette	2,232	2,128,148	480,103	2,843,382	268,647	553,520	36,956	1,128,192	74,289	2,082,862	73.25	760,520	49,822	709,950	876,358
Phila. & Reading	1,127	5,823,455	899,098	6,989,862	559,043	1,309,161	36,755	2,602,467	134,103	4,657,625	66.63	332,238	143,228	2,189,009	2,688,589
Pitts. & L. Erie	244	1,708,000	208,717	2,077,859	375,370	767,602	14,272	753,612	47,989	1,959,840	94.32	118,019	75,500	42,519	—139,301
Pitts. & W. Va	66	90,685	9,692	113,031	48,519	49,848	1,383	59,529	5,695	174,198	154.11	—61,167	11,268	—72,539	—36,168
Phila. Bethlehem & N. E.	71	.....	.....	56,444	6,800	12,133	370	37,244	852	57,400	101.69	—956	1,050	2,006	—30,005
Pitts. & Shawmut	103	84,966	3,527	89,180	16,534	64,793	965	32,845	2,914	118,052	132.37	—28,872	956	—29,828	—15,881
Pitts., Cinc., Chicago & St. L.	2,383	4,979,053	2,138,248	7,753,968	1,082,811	2,333,559	86,749	3,230,121	180,594	6,987,101	103.00	766,867	241,029	525,140	2,310,005
Pitts., Shawmut & Northern	204	25,318	4,463	82,008	29,226	54,784	978	35,138	4,933	125,062	152.49	—43,054	1,808	—44,163	20,884
Port Reading	21	139,017	.....	203,993	16,286	6,350	18	108,218	3,850	134,723	66.04	69,271	9,000	60,271	42,985
Rich. Fred. & Pot.	81	338,269	288,711	696,725	38,855	94,351	3,812	241,523	12,916	410,147	58.86	286,578	11,810	274,767	71,268
Quincy, Omaha & Kansas City	255	52,524	25,541	85,252	43,749	22,784	274	47,619	1,220	114,916	134.78	—29,658	3,303	—32,961	23,241
Ratland	415	220,855	107,069	407,933	46,339	91,454	7,032	186,584	12,757	345,709	84.74	62,224	19,558	42,664	197,674
St. Joseph & Grand Island	258	255,889	66,444	334,543	39,207	40,485	1,908	131,690	9,966	223,256	66.73	111,287	8,810	102,476	169,806
St. L. Brownsville & Mex.	548	257,372	142,551	425,953	65,916	75,916	4,544	141,523	15,327	303,027	71.14	122,927	10,060	112,827	238,571
St. L. Merchants Bridge Term.	9	.....	435	211,624	54,273	19,886	725	215,051	6,306	296,242	139.98	—84,618	8,100	—92,618	—38,029
St. L.-San Francisco	476	3,954,595	1,977,975	6,260,190	918,713	1,228,957	48,267	2,285,209	165,743	4,641,968	74.15	1,618,223	271,556	1,344,776	1,860,363
St. L. San Fran. & Tex.	134	131,164	15,659	143,728	20,806	17,427	1,765	59,241	5,696	104,935	73.01	38,795	1,629	37,161	51,128
St. L. Southwestern	939	818,561	193,759	1,055,319	91,816	227,951	15,952	351,553	43,401	734,462	69.59	320,857	37,770	282,988	390,661
St. L. Southwestern of Texas	814	406,090	125,578	564,170	122,859	173,231	10,836	346,648	23,351	675,431	119.72	—111,260	21,000	—132,870	151,941
San Ant. & Aransas Pass Ry.	732	204,215	98,960	325,045	160,384	107,291	5,739	193,105	16,487	428,743	131.90	—103,695	15,900	—119,008	164,653
Seaboard Air Line	3,563	1,886,869	1,205,622	3,356,090	380,983	640,169	54,420	1,537,410	100,261	2,746,298	81.83	609,792	135,000	474,136	959,739
St. L. Transfer	6	.....	.....	73,452	8,802	4,078	180	38,359	2,341	53,763	73.19	19,689	100	19,588	48,947
South Buffalo	11	26,854	.....	57,994	3,785	15,595	284	40,189	1,462	61,315	105.72	—3,321	9,750	—13,071	—34,286
Southern	6,992	5,785,769	3,295,905	9,869,258	1,874,291	1,890,666	92,291	5,192,886	208,727	9,374,126	94.98	495,132	338,672	148,730	649,465
Southern Ry. in Mississippi	278	78,627	37,342	126,091	37,764	27,424	2,284	88,588	3,659	159,719	126.66	—33,629	9,000	—42,645	35,923
Southern Pacific	7,049	9,184,591	3,692,046	13,955,118	2,218,313	2,483,411	156,583	5,025,938	—64,205	10,083,276	72.26	3,871,843	644,607	3,225,202	4,842,464
Spokane, Portland & Seattle	554	415,209	154,717	609,834	83,455	75,753	5,804	212,103	18,484	398,725	65.38	211,110	59,200	151,905	64,647
Southern Pacific Steamship Lines	.....	677,556	63,169	785,491	7,124	117,768	10,469	580,235	22,420	738,015	93.95	47,475	10,841	36,635	105,822
Spokane International	156	75,136	16,212	94,824	19,776	8,846	1,731	31,073	4,305	65,432	69.00	29,391	4,012	25,380	27,183
Staten Island Rapid Transit	23	92,395	93,308	210,244	23,443	30,973	1,533	108,785	9,154	173,688	82.61	36,556	17,000	19,556	30,259
Tennessee Central	292	118,650	60,913	181,164	65,732	58,085	2,642	90,925	6,827	224,374	123.85	—35,211	5,135	—40,365	—6,414
Terminal R. R. Ass'n of St. Louis	36	.....	3,409	291,109	77,675	29,251	731	136,949	5,155	253,257	86.99	37,852	16,204	21,647	172,669
Texarkana & Ft. Smith	87	92,657	18,164	130,316	16,833	17,356	674	40,652	3,294	78,806	60.47	51,510	6,458	45,052	44,458
Texas & New Orleans	469	426,821	175,906	667,453	97,412	155,628	3,419	354,450	13,610	557,535	83.48	110,218	21,256	88,323	55,423
Texas & Pacific	1,946	1,897,240	856,105	2,907,538	296,320	593,636	21,674	1,325,165	68,715	2,226,777	80.02	580,761	84,971	495,063	955,336
Toledo & Ohio Central	435	748,156	56,041	846,700	98,322	201,888	7,315	357,709	19,797	688,036	81.26	158,664	33,154	125,513	337,847
Toledo, Peoria & Western	247	85,918	48,731	144,863	44,630	36,740	2,273	83,714	5,081	172,185	118.86	—27,322	8,500	—35,822	16,359
Toledo, St. L. & Western	454	516,330	51,304	599,358	131,564	140,584	7,348	279,129	12,129	569,806	95.06	29,552	26,000	3,552	120,898
Trinity & Brazos Valley	368	61,845	20,318	86,211	35,026	50,459	1,349	55,000	6,304	148,144	171.83	—61,932	5,715	—67,649	—13,554
Uister & Delaware	128	53,124	8,451	83,246	18,043	18,011	1,578	64,096	4,781	166,881	128.39	—83,635	4,800	—88,435	19,651
Union R. R. of Penna.	40	.....	.....	669,072	165,620	226,188	279	434,824	7,693	834,605	124.74	165,533	10,428	175,961	168,934
Union Pacific	3,614	5,497,059	2,098,719	8,246,299	1,172,218	1,548,392	42,459	2,277,938	256,867	5,530,253	67.06	2,716,046	280,965	2,434,702	1,011,510
Vicks., Shreve. & Pacific	171	168,606	82,385	269,062	42,939	60,320	2,226	92,777	8,575	209,451	77.84	59,611	9,242	50,368	121,157
Virginian Ry.	523	963,971	60,227	1,136,425	125,920	183,363	4,616	394,244	19,066	729,350	64.17	407,095	35,700	371,395	390,135
Wabash	2,503	2,747,163	1,010,558	4,009,783	690,030	669,696	55,649	1,936,232	118,282	3,493,303	87.11	516,480	107,829	405,808	750,538
Washington Southern	35	138,562	196,771	519,382	35,374	40,490	1,862	154,123	6,240	226,453	43.60	292,929	6,379	286,545	136,972
West Jersey & Seashore	361	277,300	716,488	1,056,493	292,398	218,085	8,788	444,775	20,651	990,425	93.74	66,068	49,888	16,168	216,674
Wichita Falls & N. W.	328	144,708	35,609	188,196	30,096	28,397	754	114,024	6,056	179,527	95.39	8,869	9,541	—671	68,840
Western Md.	707	931,974	89,776	1,125,802	161,338	373,258	16,003	429,867	46,530	1,039,166	92.30	86,637	43,200	43,437	533,542
Western Pacific	1,011	891,381	204,699	1,135,845	248,809	202,133	12,745	325,535	25,797	835,485	73.55	300,360	48,415	251,694	183,525
Western Ry. of Alabama	133	83,872	78,167	178,942	24,178	38,848	3,248	41,295	5,917	156,994	87.73	21,949	7,500	14,449	18,824
Wheeling & Lake Erie	511	1,194,283	50,585	1,368,987	216,863	246,675	5,581	435,702	28,278	935,722	68.35	433,265	55,000	378,209	472,805
Yazoo & Miss.	1,381	1,274,014	377,968	1,737,320	291,056	437,023	15,975	646,265	48,323	1,436,754	82.69	300,567	63,990	235,764	822,562
Minn. & International	194	53,321	24,806	86,276	22,227	17,819	462	43,269	3,421	97,199	112.66	—10,923	4,155	—15,079	—2,137
Lake Superior & Ishpeming	34	123,726	167	138,023	22,541	18,112	224	23,048	2,754	65,669	.....	72,354	3,872	68,482	—23,550
SIX MONTHS OF CALENDAR YEAR, 1919															
Ala. & Vicks.	141	889,526	356,405	1,331,731	263,428	333,808	10,638	568,924	50,914	1,237,214	119.91	94,520	65,188	29,198	—82,199
Ala. Great Sou.	312	3,575,504	1,098,359	4,947,457	632,486	1,330,294	81,804	2,059,152	109,690	4,245,285	85.80	702,172	145,234	556,044	305,269
Ann Arbor R. R.	301	1,506,606	318,064	1,931,130	361,097	341,683	30,499	950,350	68,875	1,732,935	89.73	198,195	93,000	104,876	129,573
Arizona Eastern	327	1,472,799	273,910	1,875,672	481,453	290,628	12,839	610,864	39,613	1,458,021	77.73	417,651	97,692	319,821	428,743
Atch., Topeka & Santa Fe	8,635	53,515,124	20,919,676	78,416,846	11,604,404	19,069,732	837,476	29,546,861	1,553,722	62,376,150	79.54	16,040,697	3,253,363	12,769,078	5,292,441
Atlanta & West Point	93	652,668	550,377	1,335,317	163,699	250,991	17,553	509,787	37,494	992,452	74.29	343,295	51,000	292,256	8,092
Atlanta Birm. & Atlantic	639	1,825,810	421,431	2,403,258	703,539	808,862	41,448	1,486,455	74,591	3,115,419	129.63	—712,161	96,000	—809,401	—553,790
Atlantic City	177	790,816	1,025,066	1,925,886	266,422	284,721	7,330	982,603	8,375	1,549,402	80.45	376,484	72,000	304,484	181,521
Atlantic Coast Line	4,857	20,868,648	9,997,429	32,858,909	4,672,983	6,916,224	351,453	14,259,935	674,743	27,065,814	82.36	5,793,094	1,240,000	4,542,428	—409,006
Balto. & O. Chicago Term	90	.....	18	796,656	204,345	262,933	6,708	742,995	58,509	1,304,276	163.71	—507,620	169,923	—677,981	—107,097

Traffic News

The grain elevator at Port Colburne, Ont., owned by the Canadian Government, was destroyed by fire on August 9, with the loss of 8 lives. The capacity of the elevator was 2,000,000 bushels; estimated loss $1,800,000.

The executive committee of the National Industrial Traffic League will appear before the House committee on interstate and foreign commerce in behalf of the principles embodied in the Esch-Pomerene bill and to urge the passage of the Cummins bill restoring rate making power to the Interstate Commerce Commission.

The Traffic Club of Cleveland, (Ohio), has endorsed the resolutions with respect to the solution of the railroad problem which were recently adopted by the traffic clubs of Chicago, except as to those clauses of the Chicago resolutions which recommend that the Esch-Pomerene bill be amended so that the Interstate Commerce Commission will not have jurisdiction over traffic wholly water-borne.

Car loading reports compiled for the Central Western region during the month of July show that 57,706 cars of grain were loaded as compared with 58,842 cars during the corresponding month last year, or a decrease of 1.9 per cent. During the month of July the lines serving this region also loaded 80,579 cars of coal as compared with 123,002 cars during the corresponding period last year, a decrease of 34.5 per cent. During the same period 41,443 cars of live stock were loaded as compared to 42,600 cars during the corresponding month last year making a decrease of 2.7 per cent.

The National Lumber Manufacturers' Association, composed of 12 regional lumber manufacturing groups and comprising practically the entire lumber manufacturing industry, recently sent a statement to the House Committee on Interstate and Foreign Commerce advocating the passage of the Cummins' bill, providing for the return to the Interstate Commerce Commission of the power over freight rates which it possessed prior to government control. The statement also advocates the considering of this measure apart from any general plan for the solution of the railway problem which may be adopted.

Many rates, obsolete and no longer in use, are included in various individual and agency freight tariffs and should properly be canceled, according to the Kansas City (Mo.) District Freight Traffic Committee. Accordingly consideration is to be given to the cancelation of 572 of these obsolete rates by this committee on September 2. An investigation has recently been conducted and it was found that this number of tariffs have not been in use for the past 12 months, and that there is no apparent prospective use for them in the future. However, the applications seeking authority to cancel any or all of these rates will provide that they are to be restored by publication on one day's notice (subject to any advances or reductions which may be made in the meantime) should any movement develop thereunder within one year from the date of cancelation.

J. H. Dyer, general manager of the Southern Pacific and the Western Pacific, has issued an appeal to shippers to resume at once the full loading of cars, so as to enable the carrier to move the crops. Peace products exceed those of the war period, and the world is in need of all these commodities just as badly as it needed the crops last year, or the year before. Shippers are relaxing their efforts, believing apparently that the railroads have a surplus of cars. This is not the fact. New cars have not been available during the war. The demands of peace equal, if not exceed the necessities of war. About 500,000 tons of barley is being moved out of California now. The fruit crop is one of the heaviest in history; and 28,000 cars will be needed to move the wine grapes. In the month of June Mr. Dyer found that if all freight cars had been loaded to 10 per cent above their marked capacity, the traffic of the month could have been carried in 2,000 fewer cars than were actually used.

According to the Railroad Administration a report on overseas traffic to the Director General of Railroads, 6,223 cars of commercial export freight were received at North Atlantic ports for the week ended August 6, 1919, as compared with 1,345 cars for the same week in 1918. This shows an increase of 4,878 cars or 363 per cent for the first week of August, 1919, as against the corresponding period last year. The deliveries to ships for the week ended August 6, 1919, increased 5,291 cars or 354 per cent. On August 6, 1919, there were 10,013,658 bushels of grain in elevators at North Atlantic ports or 50.7 per cent. of the total elevator capacity. During the week there were received 4,854,894 bushels of grain, while 5,509,240 bushels of grain were cleared. This shows an excess of deliveries over receipts of 654,346 bushels. At South Atlantic and Gulf ports there were 4,408,104 bushels of grain in elevators as of August 5, representing 36.7 per cent of the total elevator capacity, as against 31.5 per cent of capacity for the previous week.

Prince of Wales in Canada

The Canadian Pacific, which is preparing a special train for the use of His Royal Highness, the Prince of Wales, in his tour through Canada, announces the Prince's probable itinerary from August 21 to October 30. He will occupy the private car "Killarney" of Lord Shaughnessy, chairman of the Canadian Pacific. The other cars in the train will be the "Cromarty," the private car of Commander J. K. L. Ross; the compartment car "Empire," and the dining car "Canada"; sleeping cars "Carnavan" and "Chester," tourist car "Chinook" and two baggage cars. The condensed itinerary is as follows:

Quebec, August 21-24
Toronto, August 27
Ottawa, September 1
North Bay, September 1
Cobalt, September 2
Timmens, September 3
Sault Ste. Marie, September 4
Nipigon
Port Arthur, September 8
Winnipeg, September 9
Saskatoon, September 11
Edmonton, September 12
Calgary, September 13
Banff, September 17
Lake Louise
Field
Revelstoke, September 20
Vancouver, September 22
Victoria, September 23
Vancouver, September 29
New Westminster
Kettle Valley R. R.
Penticton, September 29
Nelson, October 1
Lake Kootenay
Crow's Nest Pass
Macleod, October 2
Medicine Hat, October 3
Moose Jaw, October 4
Regina, October 4 (duck shooting)
Qu'Appelle, October 10
Portage La Prairie, October 10
Winnipeg, October 10
Fort William, October 11
Biscotasing (moose hunting)
Toronto
Hamilton, October 18
Niagara Falls, October 20
Brantford, October 20
Stratford, October 21
Woodstock, October 22
Chatham, October 22
London, October 22
Windsor, October 23
Galt, October 22
Toronto, October 25
Kingston, October 27
Brockville, October 27
Montreal, October 27
Ottawa, October 31

The length of the journey outlined is about 8,800 miles. In deference to the implied wish of the King that there should be no undue ostentation during any part of the trip, the cars, with the exception of the two first named, will be ordinary Canadian Pacific stock; though some of them will be brand new and as spotless and beautiful as the car-builders can make them.

Division of Labor on the P. R. R.

"Pick handle" Mulcahey, who has been a frequent visitor to the Curb Market since the Director-General took over operation of the railroads, made one of his regular trips yesterday from Jersey City, where he is a car inspector for the Pennsylvania Railroad.

Having in mind the inspector's advanced age and rapidly failing strength, his broker remarked:

"Mul, you're getting pretty old and feeble, aren't you, to be bending over and hammering wheels all day."

"Shure, me hearin' is still good," replied Mul.

"Your hearing?" What's that to do with hammering wheels?"

"Uncle Sam showed 'em how to run the railroads. I've got a helper now to do the hammerin'."

"What do you do?"

"I do the listenin'," answered Mul.—*Wall Street Journal.*

Commission and Court News

Interstate Commerce Commission

Wasteful Service by Tap Lines

The commission, in a decision issued June 30, 1919, on two cases submitted May 1, 1918, condemns certain tariffs by which short railroads, called "tap lines," carrying lumber shipped by affiliated mills, were allowed proportions of through freight rates based on long hauls, made for the very purpose of increasing the short line's proportion, when the actual necessary haul was only about one mile. The "tap lines" involved were the Prescott & Northwestern and the Ouachita & Northwestern, situated in Arkansas and Louisiana; and the trunk line was the Missouri Pacific. The decision is by Commissioner Eastman.

The first case had to do with shipments from a mill at Prescott, Ark., about 48 miles north of Texarkana. The mill is about one mile from the Missouri Pacific; but the lumber was shipped 29 miles northwest to Tokio, then a short distance southwest by the Memphis, Dallas & Gulf and there delivered, at Nashville, Ark., to a branch of the Missouri Pacific; and then (if the car were destined northward) it was hauled by the Missouri Pacific back through Prescott to destination. The total side-line haul was 76 miles, constituting a waste of 75 miles.

The other case was that of the Ouachita & Northwestern, which had mills at Clarks, La., on the Missouri Pacific and at Standard, La., 10½ miles south of Clarks. In this case the tap line had a track parallel to the Missouri Pacific between Clarks and Standard; and the custom was to send all shipments over this "tap line" when thereby a ten-mile haul could be secured; shipments from Clarks going northward were hauled about 21 miles unnecessarily, and those going southward from Standard were hauled a similar unnecessary distance.

According to decisions of the commission in "tap line" cases heretofore considered, the proper allowance to the tap line for a haul of one mile is held to be $2.50 a car, whereas on the 76-mile haul a carload of 30 tons gave the tap line $21; and on the 10½-mile haul $18 was taken.

It appears that while the Missouri Pacific is in the hands of the Government, the wasteful practices here described are suspended; but the tariffs are still in force, and so the commission deems it proper to issue this decision, preparatory to the discontinuance of federal control.

The decision holds that a "tap line" is entitled only to just compensation for the actual and reasonably necessary services performed by it; and the distances must be measured by the direct route of the movement toward the final destination.

As to the 10½-mile side line between Clarks and Standard, no objection is made to the sending of lumber over that line if it is in the direction of its final destination; as for example, shipments from Clarks, going south, or from Standard, going north.

Court News

Injury to Passenger by Baggage in Aisle

A railroad permitted baggage to remain in the aisle of a car, which was so crowded that many passengers were standing in the aisle. A woman, making her way through the crowd, fell over the baggage and was injured. It did not appear that the railroad was unable to place the baggage where it would not endanger passengers. The Minnesota Supreme Court holds that it could not say that it conclusively appeared that the railroad was free from negligence, although the amount of travel on this day was so unprecedented that it could not have been foreseen or properly provided for.—Pletzky vs. Great Northern (Minn.) 169 N. W. 715. Decided December 13, 1918.

Foreign Railway News

French Plan Two Railroads in Vosges Mountains

A Havas despatch from Paris, dated August 10, says that Albert Claveille, minister of public works, has introduced a bill in the Chamber of Deputies providing for the construction of two new railroads through the Vosges Mountains.

Franco-Spanish Railroad

The first section of the Trans-Pyrennean Railroad, between Ripoll and Ribas, about five miles south of the Franco-Spanish border, was inaugurated recently. The ceremony was attended by Francisco Cambo, former Minister of Public Works, and Senor Cayera, representing the Spanish Ministry of Development, and the French Deputy Emmanuel Brousse.

South Australian Railway Extension

The Railways Commissioner of South Australia at Adelaide advertised for bids to be received not later than May 20 for the construction of a line of 5 ft. 3 in. gage railway from Long Plains to Snowtown, South Australia, a distance of 41 miles. The work is to be completed within 18 months from the date of contract.

Although the time was too short for American railway contractors to bid on the actual construction of the line, Commerce Reports suggests that American manufacturers of railway supplies and equipment should send their catalogues and export price lists to C. J. Boykett, Secretary, Railways Commissioner, Adelaide, South Australia.

British Railroad Owners Organize

Press despatches to the Journal of Commerce, New York, report that the various associations of English railway stockholders are merging into the English Railway Stockholders' Protective Association, which will be maintained by nominal subscriptions on a pro rata basis according to members' holdings. The association will take an unbiased stand, neither in favor of nor against nationalization, its purpose being the safeguarding of stockholders' interests in the final settlement of matters arising from Government control.

The main questions to be dealt with are the depreciation of road and rolling stock and the greatly enhanced costs of operation.

The total holdings of railway stocks in the United Kingdom represent a face value of 1,350,000,000 distributed among 1,500,000 stockholders.

Exports of Locomotives in June

Exports of locomotives in June were considerably less than in May, but slightly greater than the totals for April. The exports in June totaled 78 of a value of $2,356,909, of which over half in point of value were consigned to Russia in Asia. The figures as compiled by the Division of Statistics of the Bureau of Foreign and Domestic Commerce are as follows:

Countries	Number	Dollars
France	3	82,184
Russia in Europe	20	265,065
Spain	1	6,800
Canada	11	68,510
Cuba	2	29,650
Brazil	6	331,450
China	4	200,400
British India	1	22,850
Russia in Asia	30	1,350,000
Total	78	2,356,909

Exports of Cars in June

Exports of freight cars in June were double those of May and several times in excess of those of any previous month of 1919. The June exports totaled 5,055, valued at $13,675,186, as compared with 3,008 freight cars exported in May, valued

at $6,268,078. The totals in detail, as well as figures of passenger car exports, compiled by the Division of Statistics of the Bureau of Foreign and Domestic Commerce, are as follows:

Countries	Passenger Number	Passenger Dollars	Freight and other Number	Freight and other Dollars
France	..	..	3,549	11,085,700
Italy	..	..	1,050	1,801,800
Russia in Europe	..	..	200	320,000
Canada	7	168,329	121	104,159
Mexico	..	..	29	16,905
Cuba	4	5,600	4	10,982
China	..	..	100	325,000
British India	..	..	2	10,640
Total	11	173,929	5,055	13,675,186

Railway Electrification in Switzerland

The Engineer of London states that Swiss engineering experts are pressing for the immediate electrification of the railways. The Swiss Minister of the railways has stated that it is not wise to wait the return of normal conditions before electrifying the Swiss railways, because the coal scarcity will probably last for many years. There is available in Switzerland about 4,000,000 hp. electric energy calculated on a basis of an average working day of fifteen hours. On January 1, 1914, not more than about 500,000 hp. were actually used. The new power stations built or in process of construction from January 1, 1914, to December 31, 1918, would supply another 200,000 hp. Thus there were at the beginning of this year about four-fifths of the total available water supply still undeveloped. The electrification of the Gothard railway is still going on, an extra credit of 4,500,000 francs having been voted for it by the Swiss Parliament. The line between Berne and Brigue is already worked by electricity.

Exports of Car Wheels and Axles in June

Exports of car wheels and axles in June were more than 3½ times as large as in May and nearly three times as large as in April, the best previous month this year. The June exports totaled $2,740,479, as compared with $769,733 in May and $946,304 in April. Of the June total over half represented shipments to Italy, while large shipments were made also to Japan, Russia, in Asia and France. The detailed figures as compiled by the Division of Statistics of the Bureau of Foreign and Domestic Commerce are as follows:

Countries	Dollars	Countries	Dollars
France	261,920	Peru	5,059
Italy	1,368,778	Uruguay	1,825
Netherlands	2,523	Venezuela	160
Canada	10,559	China	1,644
Panama	7,990	Japanese China	164,874
Mexico	18,714	British India	15,250
Jamaica	230	Dutch East Indies	1,985
Other British West Indies	420	Japan	486,910
Cuba	8,647	Russia in Asia	356,647
French West Indies	704	Australia	16,085
Dominican Republic	71	Philippine Islands	1,309
Argentina	243	British South Africa	500
Bolivia	252		
Brazil	238	Total	2,740,479
Chile	7,551		

Railway Problem Disturbing Chile

The reported resignation of the Minister of Public Works is the first news received in this country of the recent Cabinet crisis which has taken place in Chile, says Osgood Hardy in an article in the Latin-American section of the New York Sun. It is rather difficult at this distance to know just what is the crux of the situation, but according to the meagre reports that have arrived this action was due to differences with other members of the Cabinet over plans for solving some of the problems of railway administration. These have arisen from a congestion of traffic which the railroads are suffering, a congestion so severe that the Government has been compelled to place an embargo on the export of foodstuffs.

During the war Chile was unable to secure the materials necessary to keep her railroads in good condition, and now that steel can once more be obtained, she is considering various means of rehabilitating her lines. Disagreements as to the best methods of bringing this about have caused what seems to be a ministerial crisis which may result in the resignation of the entire Chilean Cabinet, for as the greater part of Chile's railways are operated by the Government, railroad troubles are immediately reflected in Government circles.

Shortage of German Rolling Stock

The Technical Supplement to the Review of the Foreign Press (London) publishes an extract from the Kolnische Zeitung of June 15, giving an account of the causes for the shortage of German rolling-stock.

"In the Ruhr district there are renewed complaints as to the 'shortage of wagons.' This expression is generally used to express a state of things for which it is not really appropriate. There seems rather to be a shortage of locomotives to bring the wagons to the places where they are required rather than a shortage of wagons themselves. The terms of the armistice, requiring the surrender of so many locomotives, are responsible for this.

"The Prussian Railway Administration meanwhile has given orders for 2,463 new locomotives, and the engine works are doing their best to deliver them. On the whole they have executed the orders satisfactorily. The reason why the stock of locomotives is not increasing is explained by the bad condition of the old engines, the result being that every week as many come to be repaired as have been sent out from the repairing shops. There is an incontestable shortage of passenger carriages. The Railway Administration has consequently ordered 2,896 coaches and 45,000 freight cars. The total orders given amount to 2,000,000,000 marks. But even by these orders the stock of locomotives and wagons is brought to its proper level, the whole difficulty is by no means solved. There is not a trained personnel available to enable such a stock of wagons to be utilized as fully as necessary. This problem is rendered more acute by the eight-hour day difficulty, while the abolition of piece-work delays the repairs to the rolling stock. Then there are the constant interruptions to work by elections, meetings and councils. The unsatisfactory state of things in the railway world is another of the 'achievements' of the Revolution."

Condition of Russian Railways

The Technical Supplement to the Review of the Foreign Press (London) publishes an extract from an article by L. Kaplan published in the Wirtschaftdiens of May 16, in which Mr. Kaplan described the present condition of Russian Railways.

"At the outbreak of war Russia possessed about 83,000 km. of railway line, of which 7,500 km. were in Finland and Poland. There was 30,000 locomotives and 570,000 wagons, or 1 locomotive and 19 wagons to each 2.5 km. of line. According to the statistics published by the transport Commissioner in the Severnaya Communa (January 17), there were on December 1, 1918, only 6,200 locomotives and 120,000 wagons in a serviceable condition, while a further 3,600 locomotives and 145,000 wagons were in need of repair. In the following three months these numbers were considerably reduced, and when Krasin, the new transport commissioner, entered office it transpised that the railways in Russia in Europe possessed only 4,000 locomotives and 95,000 wagons for 60,000 km. of line, or one locomotive and 19.5 wagons for each 15 km. The uninterrupted military operations are using up this small remainder, and unless the general situation changes by July 1, an entire cessation of railway traffic in Russia in Europe may be anticipated owing to the complete destruction of all the rolling-stock.

"Russia is not without means of re-establishing her railway system, or at all events of repairing it in part; but M. Kaplan relates that he has recently visited the railway shops in Moscow, Kursk, Kharkoff, and Melitpol, and found hardly any work going on. In 1914, Russia produced about 800 locomotives in her own shops, but in 1917 this number fell to 170, and in 1918 to about 20. Repairs have completely ceased owing to the lack of suitable tools, material and skilled workmen. The three largest repairing shops during the last four months of 1918 only put 44 locomotives in working order; while in January and February of this year all the shops in Russia only repaired 40 engines, while no repairs of the wagons took place."

Exports of Railway Track Material in June

The exports of rails and switches, frogs, etc., in June were not as great as in May. Of rails, 67,028 tons, valued at $4,208,872, were exported in June, as compared with exports in May of 76,134 tons, valued at $4,902,970. The exports of switches, frogs, etc., in June totaled $1,359,725, as compared with $1,881,626 in May.

Japanese China and Japan were the largest customers in June, and large shipments were made to France and Belgium.

The figures in detail as compiled by the Division of Statistics of the Bureau of Foreign and Domestic Commerce are as follows:

Countries	Spikes Pounds	Spikes Dollars	Steel Rails Tons	Steel Rails Dollars	Switches, frogs, splice bars, etc. Dollars
Belgium	1,184,499	94,551	7,593	426,703	218,475
Denmark	.....	.....	200	16,880	1,513
France	2,988,075	164,977	8,397	527,483	450,885
Italy	.....	.....	1,959	156,720	152,167
Netherlands	.....	.....	1,315	83,662	31,176
Norway	.....	.....	82	5,350	450
Portugal	.....	.....	1,609	94,036	.....
Russia in Europe	1,599,200	41,345	355	20,643	12,560
Spain	.....	.....	404	24,670	88
England	.....	.....	278	15,055	2,483
Scotland	.....	.....	49	2,834	272
British Honduras	.....	.....	.....	.....	53
Canada	53,028	1,683	717	41,928	26,806
Costa Rica	14,000	647	.....	.....	.....
Guatemala	1,400	59	.....	.....	180
Honduras	33,000	1,228	860	42,581	96
Nicaragua	5,000	228	.....	.....	323
Panama	.....	.....	.....	.....	2,627
Salvador	28,000	1,872	.....	.....	11
Mexico	190,781	11,693	2,093	86,948	36,265
Miquelon, Langley, etc.	1,218	148	.....	.....	.....
Newfoundland and Labrador	960	64	12	638	2,281
Jamaica	.....	.....	220	12,089	1,005
Other British West Indies	.....	.....	19	1,579	.....
Cuba	450,146	13,021	4,232	226,677	53,435
French West Indies	7,600	337	222	16,625	898
Haiti	55,000	2,008	2	200	75
Dominican Republic	8,000	488	994	50,782	4,855
Argentina	.....	.....	4	360	.....
Bolivia	.....	.....	.....	.....	3,092
Brazil	397,930	19,219	1,513	98,610	33,932
Chile	4,000	235	567	49,290	19,843
Colombia	48,400	1,897	972	54,045	2,046
British Guiana	1,000	50	.....	.....	24
Peru	.....	.....	771	43,281	18,115
Uruguay	.....	.....	.....	.....	1,248
Venezuela	.....	.....	.....	.....	938
China	18,116	1,125	3,194	233,937	6,291
Japanese China	1,218,954	55,927	12,115	900,970	100,932
Chosen	.....	.....	50	3,061	257
British India	.....	.....	562	48,404	1,885
Dutch East Indies	144,400	12,700	2,360	123,376	19,534
Hongkong	16,632	808	202	14,024	906
Japan	1,232,664	56,179	12,689	768,670	130,395
Australia	22,000	1,200	.....	.....	14,064
Philippine Islands	852	25	14	870	3,828
Belgian Kongo	.....	.....	40	2,791	2,660
British South Africa	.....	.....	.....	.....	191
Portuguese Africa	12,088	752	363	19,100	266
Total	9,727,943	484,466	67,028	4,208,872	1,359,725

Equipment and Supplies

Locomotive Deliveries Week Ended August 2

The following new locomotives were shipped during the week ended August 2:

Works	Road	Number	Type
American	Virginian	3	USRA Mallet.
		3	
Baldwin	P. & R.	1	Mallet.
	A. T. & S. F.	4	Santa Fe.
	P. L. W.	1	Santa Fe.
	P. L. W.	4	USRA S. F.
	T. & P.	4	USRA Mikado.
	S. P.	1	Santa Fe.
	A. & V.	3	Santa Fe.
	A. & V.	1	Mikado.
	B. & O.	1	USRA Pacific.
	P. L. W.	1	Mallet.
		21	
Total		24	

Sale of War Department's Surplus Material

The Director of Sales, of the War Department, announces that the Surplus Property division of the office of the director of purchase and storage, War Department, is offering for sale under sealed proposals 46,037 lanterns, located at Jeffersonville, Ind., bids for which will be opened on August 27, by the surplus property officer, Jeffersonville. These lanterns are 11 inches in height and hold ½ pint of oil. No bid for less than 180 lanterns will be considered.

Bids are also wanted as follows: For 15,492 new shovels located at Chicago, bids for which will be opened by the surplus property officer at Chicago, on August 29. These shovels are of three types, 996 "D" handle, round blade; 7,700 long-handle, square blade, and 6,796 long-handle, round blade. All are unpolished. No bid for less than 10 dozen of one style will be considered.

For 38,283 axe handles located at Lewistown, Pa., bids for which will be opened by the surplus property officer at Philadelphia, Pa., on September 2. These are all new and are 36 inches long. No bids for less than 100 dozen will be considered.

For 19,863,697 brass rivets located in warehouses at Boston, Mass., bids for which will be opened by the surplus property officer at Boston on September 3. These rivets consist of three lots as follows: 12,531,877, 4-16 inches long; 5,377,820, 5-16 inches long, and 1,954,000, 6-16 inches long. They are packed a thousand to a container and no bid for less than 50,000 rivets will be considered.

Passenger Cars

THE BUTLER COUNTY has ordered a Unit car from the Unit Railway Car Company, Boston, Mass., for September 1 delivery.

Mallet Locomotive Recently Built by the American Locomotive Company for the Pekin-Kalgan Railway of China

This locomotive has 20 and 32 by 26 in. cylinders; a weight on drivers of 241,000 lb., a total weight in working order, engine only, of 293,000 lb., and a tractive effort of 66,500 working simple and 55,000 compound. It is of standard gage and is superheated.

Supply Trade News

George J. Lynch has been appointed sales manager for the **Youngstown Steel Car Company**, with headquarters at Youngstown, Ohio.

The **Condron Company**, engineers, Chicago, has opened a branch office in the Central Saving & Trust Building, Akron, Ohio, in charge of **C. L. Post**, vice-president.

J. L. Canby has been appointed district manager of sales of the **Chicago Pneumatic Tool Company**, Chicago, with offices at Chicago, succeeding **Nelson B. Gatch**, who has been transferred to the New York office.

A. E. Braun, president of the Farmers Deposit National Bank, Pittsburgh, Pa., has been elected a director of the **Pressed Steel Car Co.**, New York, to fill the vacancy caused by the death of T. H. Given.

F. O. Slutz has been appointed manager of the railway sales department of the **B. F. Goodrich Rubber Company**, Akron, Ohio, succeeding **C. M. Woodruff**, who has resigned to accept a position with the Akron Board of Education. Mr. Slutz was born on April 29, 1883, and received a high school education. He entered the service of the B. F. Goodrich Rubber Company, on October 24, 1901. In 1909, he served as a clerk in the pneumatic tire sales department and the following year was transferred to the railway sales department, where he served in various positions, giving most of his attention in recent years to railway sales work exclusively, until his appointment, effective July 1, as manager of the same department. Mr. Slutz will have his headquarters at Akron, Ohio.

F. O. Slutz

James M. Monroe has resigned as representative of the Southeastern territory of the **Hunt-Spiller Manufacturing Corporation**, Boston, Mass., to become vice-president of the **Harry Vissering Company**, Chicago, and vice-president of the **Charles R. Long, Jr., Company**, Louisville, Ky.

The **Light Railway Equipment Company**, Philadelphia, Pa., manufacturers of frogs, switches, portable track, cars and electric locomotives, has been taken over and is now controlled by the **L. B. Foster Company**, Pittsburgh, Pa. **B. H. Behrens** has been made general manager of sales with offices at Pittsburgh and **H. A. Ellis** has been appointed general manager of a recently completed factory at Holmes, Pa. Branch offices have been opened in the Commercial Trust Building, Philadelphia, and the Tribune Building, New York.

The Chicago Pneumatic Tool Company, Chicago, is now erecting a 10-story office building at 6-8 East Forty-fourth street, New York, in which will be housed its general offices now at Chicago. The new building will be completed early in 1920. The structure will be of steel, brick and limestone construction and will be occupied solely by the offices of the company. The ground floor will contain a permanent exhibition room and display of its pneumatic and electric drills and other tools, gas engines, air compressors, etc. A completely equipped service station will also be maintained. The six American plants and 26 sales and service branches will be directed from New York. A sales and service organization will be maintained in Chicago on a more extensive scale than formerly.

Alexander Chapman, assistant district sales manager of the Rail Joint Company, with headquarters at Chicago, has been promoted to district sales manager with the same headquarters, succeeding Geo. C. Isbester, who has resigned to go with another company. Mr. Chapman was born in 1880 at Jersey City, N. J., and received his education in the Stevens Preparatory School and the Stevens Institute at Hoboken, N. J., from which institution he graduated in 1902. He entered the engineering department of the Rail Joint Company at Newark, N. J., in the following year. After a short time in that department he entered the mills of the company as an inspector and served in that capacity at Delaware, N. J., Buffalo, N. Y., and Columbus, Ohio, returning to the headquarters office in 1908 to take a position in the order department. In 1914, he was transferred to the Chicago office as assistant district sales manager, in which position he remained until his recent promotion to district sales manager.

A. Chapman

Trade Publications

STROMBERG AUTOMATIC TIME SYSTEM.—The Stromberg Electric Company, Chicago, Ill., has issued a folder describing its automatic time systems, in which a master clock controls various pieces of secondary equipment, such as secondary clock for indicating time in various places, in-and-out time-recorder for recording time of arrival and departure of each employee, program instrument for automatically blowing whistles, ringing bells, etc., office time stamp for stamping time and date of receipt of letters and other similar devices.

OWEN BUCKETS.—Two booklets descriptive of the character and use of the material handling equipment manufactured by the Owen Bucket Company were recently issued by that company. The first of these, entitled "Owen Buckets," is a general explanation of the detailed parts of this bucket, followed by a general drawing and table of each class of bucket in turn, together with a folder illustrative of the character of work for which the bucket described is most suitable. The second booklet, "Owen Buckets in Operation," consists essentially of illustrations of the manner in which these buckets have been placed in practical use in excavating, handling materials and dredging, with a short exposition of the manner of using in each class of work.

Reinstating the Commissions. The Cummins bill to restore the rate-making powers of the Interstate Commerce Commission does not have the weight of the best opinion behind it; and to provide that each state commission is to enjoy its former authority over intrastate rates will make the law potentially a nuisance. It is unfair and absurd that the state commissions, with their well-proved partiality and narrowness of outlook, should be allowed to confer benefits upon their respective communities and thus add to the deficit which the national government must pay. So long as the government is running the railroads, it should say to what extent it will subsidize shippers. The Director-General can be trusted to exercise public-spirited discretion.—*Springfield (Mass.) Republican.*

Railway Financial News

Atlanta Terminal.—The Georgia Railroad Commission has authorized this company to issue $1,200,000 new mortgage bonds to retire outstanding bonds and outstanding certificates of indebtedness. The total authorized (by the company) issue of these new bonds is $2,500,000.

Delaware & Hudson.—L. F. Loree, president, has issued a statement outlining the financial transactions and the financing of his road since 1900 in answer to the charge made by Glenn E. Plumb before the House Interstate Commerce Committee on Tuesday that the Delaware & Hudson, among other roads, had issued much new stock between 1900 and 1910 at less than its market value, or had given it away as bonuses to its stockholders.

"At the beginning of 1900," says the statement, "the authorized and outstanding capital stock was $35,000,000. In 1904 the company authorized an increase in its capital stock of $10,000,000, of which $7,000,000 was offered to stockholders of record March 19, 1904, at $135 a share, each stockholder having the right to subscribe for one share of new stock for every five shares owned. The balance of $3,000,000 of authorized stock is still unissued.

"This $7,000,000 of capital stock was issued to retire $5,000,000 of New York Canada bonds maturing May 1, 1904, to defray the cost of standard gaging the Chateaugay & Lake Placid Railway and to reimburse the treasury for advances for construction work. At the subscription price $9,450,000 was realized on its sale.

"The average market price of the Delaware & Hudson stock in March, 1904, was $152.45. The lowest price in that month was $149, on March 12.

"In May, 1905, the company authorized an increase in its capital stock of $5,000,000 for the purpose of exchanging same prior to April 1, 1916, for Albany & Susquehanna Railroad 3½ per cent bonds, due in 1946, at the rate of five shares for each $1,000 bond. There has been exchanged thereunder $1,778,000 of this issue for $3,556,000 of Albany & Susquehanna bonds, the balance, $3,222,000, remaining unissued.

"In January, 1906, the company authorized an increase of $7,000,000 in its capital stock for the purpose of exchanging same for its issue of $14,000,000 of 4 per cent convertible debentures, due June 15, 1916, at the rate of five shares for each $1,000 debenture; $13,500 of capital stock was issued under this authority in exchange for $27,000 of these bonds, the balance of the authorized increase, $6,986,500, still remaining unissued.

"Capital stock of the company was retired and cancelled between the years 1900 and 1910, by the operation of the sinking fund, as follows:

Year	Shares	Par Val.	Year	Shares	Par Val.
1900	2,000	$200,000	1905	500	$50,000
1901	1,543	154,300	1906	2,285	228,500
1902	1,386	138,600			
1903	1,000	100,000		12,885	$1,288,500
1904	4,171	417,100			

"To those who can intelligently interpret financial transactions the financing of the Delaware & Hudson Company through capital stock during the eleven years from 1900-1910 must appear most fortunate."

Georgia Coast & Piedmont.—The United States District Court has given permission to Gordon & Friedman to withdraw their bid for the Georgia Coast & Piedmont. The road was offered for sale recently as a going concern. Gordon & Friedman bid for it with the intention of scrapping it. This, under the terms the sale, they could not do.

Waycross & Western.—The Georgia Railroad Commission has authorized this company to issue $147,000 five-year six per cent notes and $50,000 stock.

Railway Construction

Canadian Pacific.—Bids have been asked for grading work on lines in western Canada, as follows: From Wymark, Sask. (mileage 15.8 Vanguard subdivision), east for 25 miles; from Lanigan, Sask., north 50 miles; from Rosetown, Sask., south 25 miles; from Vidora, Sask. (mileage 56.6 Govenlock subdivision), south-easterly 30 miles; from Milden, Sask. (mileage 22.3 Kerrobert subdivision), west 34 miles. In addition bids have been asked for grading from Russel, Man., north for 12 miles and a contract has been let to the John Stewart Construction Company for grading a line from Acme, Alta., to Drumheller, 37 miles.

Plans for the construction of a new station at Three Rivers, Que., have been completed. The building as designed will be of the French Chateau style and of fireproof construction, faced on the exterior with warm brick and cut stone dressing of limestone. The floors will be of marble and terrazo tile, the walls treated with marble wainscot and caen stone or marble above. The wood finish throughout will be of Canadian oak.

Chicago & North Western.—Work on the elimination of two grade crossings by the construction of one mile of new highway east of the Chicago & North Western tracks, four miles south of Racine, Wis., will be started soon. The work will also involve some incidental changes to the Chicago & Milwaukee electric line. The approximate cost is $25,000.

Chicago & North Western.—The Railway Commission of Wisconsin passed an order on July 11, 1919, which calls for the elevation of 2-4 miles of the main line from Solma to North streets, Kenosha, and on the Kenosha division from the main line junction to Fremont street, a distance of .26 miles. The work will involve 15 subways on the main line, and 1 subway on the Kenosha division. All the work inside of the right-of-way will be paid for by the railroad except changes in public utilities while the city will pay for all pavement and street improvements and sewers outside of the right-of-way and assume the responsibility for all changes in property. The estimated cost of the work is $2,650,000.

The Chicago & North Western has entered into a contract with the city of Kenosha, Wis., for the division of the cost of the Main street improvement project, which will include a 200-ft. viaduct and a 140-ft. bascule bridge. As the viaduct extends over the industrial tracks of the Chicago & North Western, its share of the cost of the improvement will amount to $40,000, while the cost to the city will be $310,000.

Northern Pacific.—This road has completed and placed in operation a branch line extending from Hesper, Mont., seven miles north of Laurel, 41 miles to Rapelje, serving the Lake Basin country.

Texas Roads.—Plans are being made to build a line from New Castle, Tex., south for about 150 miles. Hammon & Kell, Wichita Falls, are interested and Colonel J. R. Holman is the chief engineer. Grading contracts are reported let for work on 45 miles near Ranger. The Missouri, Kansas & Texas is contemplating the sale to Hammon & Kell, of the Wichita Falls & Southern, which operates from New Castle north to Wichita Falls, 53 miles, to form a north extension of the proposed new line.

Wisconsin Southern Railroad Company.—This company is planning to construct its railway over that part of its chartered line from Milwaukee to a connection with roads reaching Chicago and the belt lines around Chicago. The company has extensive charter rights in counties northeast from Madison, Wis., to Sturgeon Bay and also with counties northwest from the state line between Illinois and Wisconsin, through Kenosha, Racine, Milwaukee to Marshfield. The company is capitalized for 50,000 shares of stock at $100 each, of which 35,000 shares are preferred and 15,000 shares are common stock. Charles B. Smith, of Fond du Lac, Wis., is president of the company.

Railway Officers

Railroad Administration

Executive, Financial, Legal and Accounting

A. F. Dodd has been appointed treasurer and auditor for the receivers of the Denver & Salt Lake, with headquarters at Denver, Colo., succeeding **J. R. McCoy,** who has been granted a leave of absence on account of illness and who, upon his return to service, will be assigned to other duties.

Operating

M. E. Welch, trainmaster on the New York Central lines east, at Buffalo, N. Y., has been appointed assistant superintendent of the Buffalo division, with headquarters at Buffalo.

H. L. Wright has been promoted to general inspector of the operating department of the Mobile & Ohio and the Southern Railroad in Mississippi, with headquarters at Mobile, Ala., performing such duties as may be assigned to him by the general superintendent; **V. J. Thompson** has been appointed supervisor of safety, with headquarters at Mobile, Ala., vice **Mr. Wright.**

John M. Davis, manager of the New York properties of the Baltimore & Ohio, including the Staten Island lines, with headquarters at New York, has resigned to become president of the Rock Hill Iron & Coal Company and associated corporations, including the East Broad Top Railroad and Coal Company, with office at New York, effective September 1. Mr. Davis was born on November 5, 1871, and began railway work in 1888 as a freight trainman on the San Antonio & Aransas Pass. From September, 1891, to July, 1898, he served consecutively as stenographer to the superintendent of the Gulf, Colorado & Santa Fe; chief clerk to the superintendent of the Mexican Central; clerk in the general manager's office of the Great Northern, and assistant superintendent of the Great Northern. In 1898, he was made superintendent of the Breckenridge and Montana divisions of the Great Northern, and left that road in 1900, to go to the Erie as superintendent at Scranton, Pa. Two years later he was appointed superintendent of the Union Steamboat Line of the Erie, at Buffalo, N. Y., and from August, 1902, to May, 1903, was superintendent of the Allegheny division of the Erie. He then returned to the Great Northern, where he served as superpromoted to assistant general superintendent of the Central district. In 1907, he went to the Oregon Short Line as assistant general superintendent, with headquarters at Salt Lake City, Utah, and was subsequently made acting general superintendent and later general superintendent. In 1910, he was appointed general superintendent of the Central district of the Southern Pacific, with headquarters at San Francisco, Cal. He entered the service of the Baltimore & Ohio on January 1, 1914, as assistant general manager at Cincinnati, Ohio, of the Baltimore & Ohio Southwestern-Cincinnati, Hamilton & Dayton, and later in the same year, was promoted to general manager of these lines. In July, 1916, he was appointed vice-president in charge of operation and maintenance of the Baltimore & Ohio System, with headquarters at Baltimore, Md., and held that position until July 1, 1918, when, under federal control of the railroads, he was appointed manager of the New York properties of the Baltimore & Ohio, including the Staten Island lines, as above noted.

J. M. Davis

Engineering and Rolling Stock

Colonel Frederick Mears has been appointed by the President as chairman and chief engineer of the Alaskan Engineering Commission, in charge of the construction of the government railroad in Alaska. Colonel Mears was formerly a member of this commission but retired to return to active duty with the army during the war. He was with General Goethals during the construction of the Panama Canal and the Panama Railroad, and has been connected with the management of the American railroad lines in France. **William C. Edes,** heretofore chairman, has been appointed consulting engineer to the commission.

Traffic

W. B. Ferguson has been appointed chief of the tariff bureau of the Cleveland, Cincinnati, Chicago & St. Louis and the Louisville & Jeffersonville Bridge, with headquarters at Cincinnati, Ohio, succeeding **Walter Nichols,** deceased.

C. E. Hochstedler, chief of the tariff bureau of the Detroit, Toledo & Ironton, at Detroit, Mich., has been appointed assistant general freight agent, with headquarters at Detroit, vice **J. A. Scheuerman,** resigned to accept service elsewhere, and the position of chief of tariff bureau has been abolished and **W. G. Howard** has been appointed commercial agent, with headquarters at Detroit, Mich.

Colonel Hal S. Ray, formerly assistant general passenger agent of the Chicago, Rock Island & Pacific, with headquarters at Des Moines, Ia., and for the last two years in military service as assistant chief of the inland traffic service of the war department, and on the general staff of the American Expeditionary Forces abroad, has received his discharge from the army and resumed his former position at Des Moines.

Charles D. Quinn, whose appointment as assistant general freight agent of the Louisville & Nashville, with headquarters at Louisville, Ky., has already been announced in these columns, was born on December 29, 1874, at Louisville, and was educated in the high school of his native town. He began railway work on March 16, 1896, with the Louisville & Nashville as stenographer to the assistant general freight agent. He subsequently served in the soliciting department, and then was consecutively rate clerk, chief rate clerk, assistant chief clerk and chief clerk until his recent appointment as assistant general freight agent of the same road.

Purchasing

J. D. East has been appointed division storekeeper on the Baltimore & Ohio Eastern Lines, with headquarters at Keyser, W. Va., vice **C. S. Filler,** resigned.

G. H. Greer, storekeeper on the Yazoo & Mississippi Valley, with headquarters at Vicksburg, Miss., has been appointed storekeeper for the Gulf, Mobile & Northern, with headquarters at Mobile, Ala., vice **R. C. Brown,** resigned.

Obituary

John S. Shaughnessy, formerly purchasing agent for the Minneapolis, St. Paul & Sault Ste. Marie, and more recently connected with the construction department of the Canadian Pacific, died at his home in Chicago on August 10, after an illness extending over a year. He was 55 years old. Mr. Shaughnessy was a brother of Lord Shaughnessy, chairman of the board of directors of the Canadian Pacific.

Labor Unions in France. Before the war the French Labor Confederation had about 300,000 members. At the present time their membership has increased to about 1,500,000.

EDITORIAL
Railway Age

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Financial Showing Improving

During the months of April, May and June the Railroad Administration steadily and substantially reduced the rate at which it was incurring a deficit. The financial showing made in June was relatively the best up to that time this year. In January the net operating income earned was 33 per cent of the guaranteed standard return of the companies; in February, it was only 21 per cent, and in March it was less than 16 per cent. It looked then as if the deficit for the year would be $750,000,000. In April, however, net operating income was 39 per cent of the guaranteed return; in May it was 51 per cent; and in June it was 64 per cent. The improvement is partly due to some revival of business since March, but more largely to the energetic measures which have been adopted by the Administration and the operating officers to effect economies. The ratio of expenses to earnings in February and March was over 92 per cent. It was reduced in each of the months of April, May and June, and in June was less than 84 per cent. If the Railroad Administration should do relatively as well during the last six months of the year as it did in April, May and June its total deficit for the year would be just about $500,000,000, while if it should do relatively as well in the last six months of the year as it did in June its total deficit for the year would be only about $415,000,000, of which about $243,000,000 was actually incurred in the first six months of the year. Of course, the recent strikes will have an adverse effect upon the operating and financial results; and if further advances in wages are granted they will cause the deficit to begin to increase at an accelerated rate again.

Improving the "On Time" Record

The railroads of the Southern region under the direction and stimulus of Regional Director B. L. Winchell are engaged in a form of rivalry which deserves to be recommended for imitation to the railroads of other regions. This is a rivalry for increasing the number of trains that arrive at destination on time. One of the criticisms which long have been made, and justly made, against the operation of the railroads of the United States, has been that they have had many late passenger trains. This is one respect in which before the war their service was inferior to that of most of the railways of Great Britain, France and Germany. The railways of what is now the Southern region bore the reputation of having a relatively larger number of late trains than those of almost any other section, although whether they deserved the reputation cannot be shown. In June, of 50,949 trains operated in the Southern region 94.4 per cent either were on time or made up time after having been received late from connections. The number of trains which actually arrived on time at their final terminals was 92 per cent of the total. A still better record was made in May, when 95.3 per cent of all passenger trains either arrived at their final terminals on time or after having made up time which had been lost on connecting lines. The best record made by any road in June was that of the Illinois Central, whose "batting" average was 96.6 per cent. The Southern railroad, operating one-third of all the trains handled on the larger roads in the region, had a record of 95.6 per cent of trains, which either were on time or made up time lost by connections, and of 92.6 per cent of trains which were on time at the final terminals. One of the very most important features of good passenger service is trains that maintain their schedules. The Southern region has started a form of rivalry which should not only be imitated in other regions now, but continued after the railroads are returned to private operation.

Justice for the Technical Men

Attention is directed to the report appearing on another page of this issue on the adjustment of salaries for subordinate engineering positions recently authorized in the Northwestern region. This was prepared in the form of a classification of duties and responsibilities for the various positions, together with maximum and minimum rates of compensation for each grade. It is the work of a committee of three chief engineers, who are to be commended for the fairness, clearness and logical arrangement of the schedule. This is the first real recognition accorded the technical employees. They were not mentioned in any of the supplements to Order No. 27, and while the officers of a few individual roads took it upon themselves to place interpretations on Supplements 7 and 8 so as to apply to draftsmen and subordinate engineers, this was not generally done. Consequently many of the technical men have had a valid grievance against the Administration. The matter of salary adjustment for these men was the subject of a hearing before the Board of Wages and Working Conditions early in the year, but no action was taken and the matter was finally transferred to the regional directors. The Northwestern region has been the first to act officially in this matter and its officers deserve a great deal of credit for recognizing the justice of this case and for having the courage to set a precedent for the other regions.

Government Control and Strikes

Premier Lloyd George's speech before the House of Commons on Monday of this week, which was reported at length in most of the leading daily papers, was of special importance in more ways than one. The premier had considerable to say in his three-hour address concerning Britain's serious financial condition, but we should like to refer particularly to the decision he announced that the government had rejected the majority report of Justice Sankey's commission which proposed the gradual nationalization of the coal mines. The government, he said, would launch, instead, a plan for partial state control, by which the government will buy out the owners of coal lands, who receive royalties from the mining companies, give the miners a share in the control of the mines, organize the mines into districts and establish a fund for improving the living conditions of miners. This decision is of special importance because it indicates that the British government has finally taken a definite stand against nationalization. Judging from what the premier said as to nationalization, it is apparent that the British government has at last discovered that government ownership does

not at all mean satisfied labor and efficient work. The premier deprecated severely the intentional slowing down of production, which, although he did not say so, has been emphasized by government control. But even more important is the evidence that the premier is firmly converted to the idea that government ownership or control does not mean the end of labor troubles and strikes. "The premier contended," says the despatch, "that there was no evidence that harmony would prevail with the workers under state ownership. He instanced the recent miners' strike in Yorkshire, which he declared was a strike against the government, and the experience of the railways under government control. Therefore, he thought the whole basis of the Sankey report that state ownership would promote harmony had been falsified." The argument that government ownership and control will mean an end to strikes and similar labor difficulties seems to die hard. But two blows in two successive weeks, one from the British premier on the other side of the ocean, and the railway shopmen's strike on this side, will no doubt go far towards downing it at last.

Economies Effected by Signals

THE increased cost of material and labor makes it necessary for the railroads to effect economies in every way possible. This condition prevails not only in this country but throughout the world. One method being considered for reducing costs on the British railways is by the general installation of automatic signals to replace their present system of manually operated signals. The New South Wales Government Railways were confronted with a heavy increase in traffic and found it necessary to double track a considerable mileage beyond the metropolitan area. Although operating under the British Board of Trade standards with respect to the safe working of the lines, the officers have found it advisable to install automatic signals on certain stretches, which have proved to be a profitable investment. Under the operating conditions on these lines it was found that signals could be used to advantage in the suburban areas and also on the country stretches of the double track lines where the distance between stations is greater than the length of block stations necessary to handle the existing traffic.

On the single track lines in New South Wales it is felt that automatic signals cannot be used to advantage, as the electric tablet or electric staff system is employed. The larger part of the system is interlocked. The installation of signals in the suburban area was found necessary in order to shorten the headway between trains and in this manner increase the capacity of the tracks. On the double track country lines automatic signals were installed to facilitate the movements of through trains and to obviate the necessity for the force of men that would have been required to operate the old type of signals.

While a greater expenditure in first cost was necessary than for a manual system, the smaller number of employees required, with the increased safety of operation through the elimination of the human factor in the operation of the signals, has proved of great advantage. The economy effected shows the value of such installations. On the territory where 108 automatic block sections were provided it would have been necessary to construct 46 additional interlocking towers and use a staff of 138 men whose wages would have amounted to at least $116,640 per annum. The saving in wages by using automatic signals in a short time more than offset the increased investment. Under the operating conditions now existing on many lines in the United States automatic signals can also be used to advantage as they will produce similar savings.

Has Railroad Capital or Railroad Labor Been "Exploiting?"

THE FUNDAMENTAL POSTULATE upon which the advocates of the Plumb Plan based their arguments for it in the hearings before the House Committee on Interstate Commerce was that the railroads should not be privately owned and managed for private profit, but should be government-owned and operated by the employees "at cost." Their operation by private companies for private profit results, it was asserted, in the public on the one hand and the railroad employees on the other being "exploited" to get huge profits for the private owners.

If this contention is based upon experience, and not upon mere theory, it must be possible to show that under private ownership and operation, the railroad owners actually have received large and increasing profits, while, in order to make these profits, they have exploited the public by charging it ever higher and higher rates, and exploited the employees by keeping down or reducing their wages.

In fact, in one of his closing statements to the House Committee on August 12, Glenn E. Plumb made numerous charges to the effect that the railroad companies have issued fictitious securities, have given their stockholders stock bonuses, have padded their property investment accounts, and have done numerous other things of similar character with the purpose and effect of enabling the owners to make enormous profits at the expense of the public and the employees. When he attempted to supply any facts in support of his allegations—a thing Mr. Plumb seldom does—he referred chiefly to transactions which he asserted had occurred since the year 1900.

We do not wish to cause pain and embarrassment to Mr. Plumb and his fellow leaders of the "red" element of organized labor by applying the standard of cold official statistics to their wild ravings against capital. It is necessary, however, for the enlightenment of the public that this be done. Let us therefore take the official statistics of the Interstate Commerce Commission for the years 1900 to 1917, when the railways were under private management, and see just how much support they give to Mr. Plumb's series of allegations. Let us see who, if anybody, connected with the railroads, did any exploiting during this period; and if so, who really were the exploiters and the exploitees. We shall add to the Commission's statistics for the years 1900 to 1917 some estimates based upon the available statistics of the Railroad Administration for the year 1918 and for the first six months of 1919, to show who, if anybody, connected with the railroads, has been doing any exploiting under government operation.

The accompanying table shows, for the seven year period 1900 to 1907, and the ten year period 1907 to 1917, and also, as closely as can now be estimated, for the two year period 1917 to 1919, and the nineteen year period 1900 to 1919, the increases which have occurred in the book cost of road and equipment, and the operating income of the railway companies, in the number of their employees, and in the total compensation of the employees.

If the reader will take the trouble to study these statistics he will see that they throw much light upon the validity of the allegations made by Mr. Plumb. They show that in the seven years from 1900 to 1907 the book cost of road and equipment, as reported by the railway companies and compiled by the Interstate Commerce Commission, increased about 27 per cent. Meantime their operating income increased 59 per cent. ("Operating income" is all that is left to a railway company after it has paid its operating expenses and taxes; and every dollar of interest and dividends it pays, and every dollar of earnings which it invests in its property,

comes out of operating income. Therefore, operating income is the best measure available of the profitableness of the railroads to their owners.) During this same period of seven years the number of railway employees increased 64 per cent, and the amount of compensation paid to them increased 86 per cent. During this time the profits of the owners of the railroads increased faster relatively than did the average wage per employee.

The statistics for the ten year period 1907 to 1917 tell a somewhat different story. During this period the railroads were subject to strict regulation. Their net capitalization increased less during this time than their book cost of road and equipment, but their books were kept under an accounting system prescribed by the Interstate Commerce Commission, and therefore the additions to their book cost of road and equipment must have been correctly made. The Interstate Commerce Commission has not given us its figure for total book cost of road and equipment in 1917, but its figure for 1916 exceeded $17,500,000,000, and therefore we have assumed that for 1917 it will be about $18,000,000,000, although it may be less.

The increase in property investment in ten years, then, was about 38 per cent, while the increase in operating income was less than 40 per cent. (The year 1917 was the best ex-

Years	Book cost of road and equipment	Operating income	Number employees	Total compensation of employees
1900	$10,263,313,400	$477,284,030	1,017,653	$577,284,841
1907	13,030,344,328	760,277,389	1,672,074	1,072,386,427
Increase in 7 years	$2,767,030,928	$282,993,359	654,421	$495,101,586
Percentage of increase in 7 years...	26.9	59.3	64.3	85.8
1907	$13,030,344,328	$760,277,389	1,672,074	$1,072,386,427
1917	18,000,000,000*	1,069,750,514	1,732,703	1,738,796,046
Increase in 10 years	$4,969,655,672	$309,473,125	60,629	$666,409,619
Percentage of increase in 10 years..	38.1	40.7	3.6	62.1
Increase in 17 years	$7,736,686,600	$592,466,484	715,050	$1,161,511,205
Percentage of increase in 17 years..	75.3	124.1	70.3	201.2
1917	$18,000,000,000*	$1,069,750,514	1,732,703	$1,738,796,046
1919	18,500,000,000*	947,000,000†	1,848,774‡	2,834,607,068‡
Increas ein 2 years	$500,000,000	$122,750,514‖	116,071	$1,095,811,022
Percentage of increase in 2 years...	2.8	12.9‖	6.7	63.
Increase in 19 years	$8,236,686,600	$459,715,970	831,121	$2,257,322,227
Percentage of increase in 19 years..	80.2	93.5	81.7	391.

*Estimated.
†Average for years 1915, 1916 and 1917, on which government's guarantees to companies are based.
‡Based on January, 1919, statistics.
‖Decrease.

cept 1916 in point of operating income that the railroads have ever had. A very different story regarding the increase of operating income would be told if we compared the year 1915 with the year 1907.) In the same ten years the number of railroad employees increased less than 4 per cent, while the total wages paid to them increased 62 per cent. It can hardly be said that during this period the railroad companies were very successful in increasing their profits by "exploiting" their employees. The increase in what the employees got out of the railroad business was relatively and absolutely much greater than the increase in what the owners got out of the business.

In the period of seventeen years, 1900 to 1917, the increase in the book cost of road and equipment was 75 per cent, and the increase in the number of employees only 70 per cent. Meantime, operating income increased only 124 per cent, while the total compensation of employees increased 221 per cent. Relatively and absolutely the employees increased their income from the business during this time much more than did the capitalists against whom Mr. Plumb directs his melodramatic series of "I charges."

What was happening to the public meantime? Was it being "exploited" to make a Roman holiday for the owners? The statistics of the Interstate Commerce Commission show that the average receipts per ton per mile declined from 7.3 mills in 1900 to 7.15 mills in 1917, and that there was a slight decline in the average receipts per passenger per mile. In spite of all the crimes and misdemeanors alleged to have been committed by the railway companies during these seventeen years, the public was charged lower rates at the end of the period than at its beginning, and the average wage of employees had increased 75 per cent.

We come now to the period of government operation of railroads. The railroad owners have had no opportunity during this time to exploit the public. The return they are being paid on their capital is based upon the average operating income earned by them in the three years ending on June 30, 1917, and is about 13 per cent less than what they received in 1917. Meantime how has labor been getting on? The pay roll of the Railroad Administration for January, 1919, which contains the latest statistics available, indicates that since 1917 the total number of railway employees has increased about 7 per cent, while the total wages paid to them have increased at the rate of 63 per cent per year. Mainly in order to pay this advance in wages the public has had its passenger rates increased 50 per cent and its freight rates at least 25 per cent; and it is defraying a huge railroad deficit from taxes. If anybody connected with the railroads has been "exploiting" the public during this time, it has not been the terrible Morgans, Rockefellers, and so on, but the Stones, the Garretsons, the Lees and other leaders of railroad labor organizations.

Reviewing, now, the record of the last nineteen years, we find it shows that the increase in the book cost of road and equipment, which represents the investment made in the railroads, and which Mr. Plumb says is enormously inflated, has been about 80 per cent, while the increase in the operating income from which the railway companies are deriving their return has been 98 per cent. Meantime, the increase in the number of railroad employees has been less than 82 per cent, while the increase in their annual compensation has been 391 per cent.

Let us state the matter in another way. In 1900 the operating income of the railways was $477,000,000 and the wages paid to labor were $577,000,000. The operating income upon which the railroad companies' guaranteed compensation for 1919 is based is less than $950,000,000 while the total compensation of railroad employees in 1919 is running at the rate of approximately $2,835,000,000. *Nineteen years ago the wages of the employees were about $100,000,000 more than the operating income of the companies, while in 1919 the compensation of the employees is running at the rate of $1,900,000,000 a year more than the return guaranteed to the companies.*

In the face of facts such as these the leaders of the labor organizations are demanding still another increase of $800,000,000 a year in wages, and, at the same time bitterly assailing the companies for alleged "profiteering" and for seeking legislation which will enable them to pay perhaps 6 per cent upon their property investment. The increase in the wages of the employees since 1900 has been over four times as great, both absolutely and relatively as the increase in the operating income of the companies.

Let us consider these statistics regarding capital return and wages in connection with statistics showing the service rendered to the public. In the last nineteen years, as we have seen, the book cost of road and equipment has increased about 80 per cent and the operating income of the companies about 98

per cent. The number of tons carried one mile has increased meantime 160 per cent and the number of passengers carried one mile about 181 per cent. The traffic handled annually for the public having increased almost twice as much in proportion as the book cost of road and equipment and the operating income of the companies, it follows that the *capital cost* of moving a ton one mile, or a passenger one mile, is now a little over *one-half* what it was nineteen years ago. Meantime, the annual compensation of the employees has increased 391 per cent. In consequence the labor cost of moving a ton one mile and a passenger one mile is now *more than twice as great* as it was nineteen years ago. Again we ask, since the labor agitators indulge in so much wild talk about "exploitation," who do these figures indicate has been "exploiting?"

It is difficult for a generous and rational mind to decide whether Mr. Plumb and the other labor agitators are prompted by ignorance, malignity or sheer recklessness in indulging in the sort of wild misrepresentation and melodramatic vituperation regarding railroad management with which they recently have been regaling the House Committee on Interstate Commerce and the American public. One good result they do cause by it, however. They prompt people who know something of the facts regarding the railroad business to present them; they jar the public into taking an interest in the facts; and the more the facts are presented, and the more widely they become known and are understood by the public, the better chance there will be of securing the return of the railroads to private management under a system of regulation under which they can be efficiently operated and can become prosperous again.

Far be it from the *Railway Age* to say the statistics presented above show that railroad labor has been "exploiting" the public. But if it cannot truly be said that railroad labor has been exploiting the public during nineteen years when the labor cost of moving a ton one mile has more than doubled, surely it cannot truly be said that railroad capital has been exploiting the public when it can be shown that during the same period the capital cost of moving a ton one mile has been reduced by almost one-half.

New Books

The Design of Walls, Bins and Grain Elevators (third Edition), by Milo S. Ketchum, dean of the College of Engineering, University of Colorado, 6 in. by 9 in., 556 pages, illustrated, bound in cloth, published by McGraw-Hill Book Company, 239 West Thirty-ninth street, New York.

This constitutes an amplification of the preceding edition of this well known treatise on structures subjected to the lateral pressures of earth and other materials. The additional material consists of data on the economic design of reinforced concrete retaining walls, formulas for wedge-shaped reinforced concrete beams, formulas for calculating the load on bin walls according to several methods, the calculation of pressures in sand boxes and one feature—which will be most welcome to a great many engineers—fully worked out problems in the design of retaining walls and bins. A report on the design of retaining walls adopted by the American Railway Engineering Association in 1917 has been added to this volume. The arrangement of the matter in the present edition follows that of its predecessor, commencing with a general explanation of the theory of lateral pressures on walls and bins as expounded by various authorities, reports of various experiments and types of walls constructed with detailed explanations of retaining wall design as mentioned above. The second part of the book is devoted to the design of coal bins, ore bins, etc., and the third portion to the design of grain bins and elevators. There is also an appendix of about 70 pages on plain and reinforced concrete materials, design and specifications.

Letters to the Editor

How About Eliminating the Flagman?

To the Editor:

I was much interested in the article on "Flagging and Its Relation to Railroad Accidents," by C. C. McChord, in the issue of the *Railway Age* of June 20, page 1528. I consider it a very good treatise on the shortcomings of flagmen and the disastrous results often attributed to the failure of the flagman to give the engineman warning in time to avert collisions.

I wonder if the author has given very careful consideration to one other view that might be taken in regard to the prevention of collisions in block signalled territory; that is, eliminating the flagman, and depending entirely on the engineman's observance of the signal indications. Every instance of collision cited shows that in those instances the presence of the flagman did not avert the accident, and to these can be added a much longer list of such instances. If there were any records to show how many accidents the presence of the flagman in block territory averted, I wonder how it would compare with the other. In very few cases has it been shown that the signals failed to give a proper warning, and I believe that the proportion of accidents due to improper automatic signals is at least as small as that caused by air brake failures. It cannot be disputed that an occasional false clear indication is given by an automatic signal, but the investigation of accidents seems to show that false clear signals are responsible for a very small percentage of them, and the fact that the accidents occurred at those times is positive proof that the practice of having a flagman out did not prevent them.

It was my good fortune recently to be present at a conference on this subject where the operating officers of one of the largest railroads in North America begged for the opportunity of eliminating flagmen in automatic block signalled territory, but they were denied the privilege through the joint action of other roads and a government body. These men had the courage to do this even though there had been rather a bad accident not long before on their road in automatic territory where there was some, but not conclusive, evidence that a signal of an old design had given a false clear indication. Had they carried out such a procedure, that road would, no doubt, have been able to furnish interesting and valuable information on the value of the flagman in automatic territory. There is no doubt but that such a practice would increase the capacity of a railroad by eliminating the time required to recall a flagman. Possibly the increase in alertness of the engineman in observing signal indications and in acting on the instructions given by the signals, which he would know was the last warning he could have of conditions ahead, would reduce rather than increase the number of such accidents. Would it not seem more logical to make full use of and put full dependence on the automatic signal before we augment it with an automatic stop? Perhaps we would find the automatic stop was needed after all, but there certainly is a chance that the automatic signal is sufficient if a way is found to cause its indication to be obeyed. There does seem to be foundation for the argument that the presence of the automatic signal helps to make the flagman careless and the presence of the flagman tends to make the engineman careless of obeying the signal indications. If this can be corrected by elimination, it must be the flagman. If it must be corrected by addition, it seems we must add the automatic stop, in which event will we still require the flagman?

C. H. T.

The Import Situation in England and France

Economic Conditions Have Made It Necessary to Restrict Imports; Present Regulations More Favorable

By Robert E. Thayer,
European Editor of the *Railway Age*

London, July 31, 1919.

THE ECONOMIC POLICIES formulated by England and France immediately upon the signing of the armistice regarding imports have been exceedingly discouraging to American manufacturers of export materials. Both of these countries realizing the almost disastrous condition of their local industries made a very determined effort to protect them against "foreign invasion" by establishing rigid embargoes against the importation of materials. This gave their own local industries an opportunity to supply the particular needs of these countries and at the same time prevented any increase in the already collosal national debt. This policy has been found to react against them as it has not been possible for the home industries fully to supply their needs. The governments of Great Britain and France have, therefore, made considerable concessions in the matter of restricted imports, so that now exporters of railway materials have a much clearer field than heretofore. The need of France for railway material has been well stated by the Paris correspondent of the "London Post," who, under date of July 30, states that it will be a long time before France is again in a position to meet the demand for such manufactured goods as railway rolling stock, whereas these things have been urgently required for many months past for the purpose of enabling the transport service of the country to be readjusted to something like a normal footing.

France, however, has increased the duties on certain classes of goods up to as high as 300 per cent;—that is the existing rates of duty are to be multiplied by factors or coefficients varying up to three, according to the protection desired.

Both France and England have been critized for having taken such strong measures, but neither of these countries can be blamed for wanting to keep as much business for their own manufacturers as possible and thus build up their impoverished industries and provide labor for their demobolized men. The credit situation was so bad and the problem of reconstruction so vast and complicated that, true to the inborn conservatism of these nations, they sought protection behind a rigid embargo to give them time to really find themselves. The magnitude of the war, and the problems arising therefrom were wholly without precedent and were impossible of immediate solution. The American nation as a whole has not experienced the great trials, both physical and financial, of our allies in Europe. It was thus hard for us to appreciate fully the mental attitude of those nations.

After the signing of the armistice, the American manufacturers, realizing the great need for railway equipment in France and England, came over in large numbers expecting to obtain a large amount of business. There were and are quantities of railway business to be done in these countries, but at the time they were not ready to go out into the open market for materials until they determined what it was possible for them to obtain in their own countries. The rigid embargo gave these countries an opportunity to determine their actual conditions, and to find out exactly what they could do for themselves. They have realized that their problem of reconstruction is so vast that outside help must be obtained, and thus the removal of restrictions has been very pronounced during the past few months.

On June 14 a decree was issued by the French government removing the restrictions on all goods imported into France, but at the same time placing an ad-valorem surtax on such goods which varied from 5 to 45 per cent. This was only a temporary measure which has been changed (July 8) to an increase in the duties, as described above, by multiplying existing duties by certain coefficients. This change was made to facilitate the application of the increased duties and to eliminate possibilities of disputes. In view of the necessity of not exceeding the limits of a just equalization of these tariffs, the government will continue to follow the markets closely and will reduce the coefficient figures when necessary. An inter-ministerial commission has been established for the purpose of preparing periodical revision of these coefficients, in order that the schedule may correspond as exactly as possible to the present and pre-war values. While these figures will be quite burdensome to many of our American manufacturers, particularly while the present rate of exchange between the United States and France is so low, it was felt necessary to take steps to assist the French industries to reestablish themselves, particularly on account of the fact that at the present time the exports of France only represent one-sixth of the imports.

The following table gives a list of the items of particular interest to railway supply manufacturers together with the coefficients which are to be used in multiplying the present rate of minimum tariffs to obtain the new tax:

Articles	Coefficient
Fine steel for tools	2.7
Special steel containing—	
At least 0.5 per cent of nickel	1.9
From 0.5 to 6 per cent of chromium	1.9
From 0.5 to 6 per cent of tungsten	1.9
From 0.2 to 2 per cent of molybdenum	1.9
From 0.1 to 0.5 per cent of vanadium	1.9
From 0.1 to 0.5 per cent of titanium	1.9
Special steel containing—	
More than 6 per cent of chromium	1.9
More than 6 per cent of tungsten	1.9
More than 2 per cent of molybdenum	1.9
More than 0.5 per cent of vanadium	1.9
More than 0.5 per cent of titanium or any other rare elements	1.9
Wheels, tires, and wheel centers of iron or steel—	
For railway and tramway cars and carriages	2.6
For locomotives	2.6
Axles—	
Straight axles for railways and tramways, axles not specially mentioned, of iron or steel	3
Crank-axles for locomotives of iron and steel	3
Steam and other engines	
Steam engines, stationary without boilers; stationary steam pumps; various gas and air compressors; gas, petrol, alcohol, hot-air and compressed air motors and those operated by any other gaseous or explosive mixture as well as all other motors not mentioned	2.6
Locomotives	2.6
Tenders for steam locomotives	2.3
Dynamo-electric machines	2.9
Electric and electro-technical apparatus containing coils of insulated metallic wire	2
Electric and electro-technical apparatus not containing coils of insulated metallic wire	2
Machine tools	3
General machinery—	
Pulleys for transmitting power, lifting apparatus balances, scales, fixed railway and tramway stock, presses	2.7
Straight axletrees mounted as material for railways and tramways	3
Component parts of boilers and similar apparatus of pressed or welded sheet iron	3
Balls for ball bearings	1.8
Rough frames and bodies of dynamos and electric motors, armature crosses, covers of electrical collectors ("fourreaux de collecteurs"), solid poles of dynamos and alternators, of iron or steel wrought or swaged of molded iron or steel, of malleable cast iron, of pressed or welded plate	3
Springs of steel for carriages, automobiles, railway carriages and wagons or locomotives	3
Component parts of copper, pure or alloyed with any metal, cast, molded, wrought (brasses, cocks, and accessory apparatus for water, gas, and steam, etc.)	3

Component parts of machines and of shafting, not specified, of two or more metals, such as iron, steel, cast iron, copper pure or alloyed with any metal named in the preceding articles, such as brasses, cocks, and accessory apparatus for water, gas and steam	3
Wires and cables, insulated, for electricity, composed of cores of iron, steel, copper, or an alloy of copper, covered with	
Silk in combination with india-rubber or gutta-percha, without protective covering of metal	3
India-rubber or gutta-percha alone or in combination with material other than silk, without a protective covering of metal	3
Other, if the metallic core has a diameter:	
Equal to or greater than 5/10 mm	3
Less than 5/10 mm	3
Dynamo armatures and component parts, such as coils, solid or hollow, of metal surrounded by insulated copper; worked parts of metal, fitted or not, for electric machines, electric apparatus, electrotechnical apparatus, transformers and other electrical appliances	3
Tools with or without handles* of cast iron or steel (except twist drills [American drills] and other drills, screw taps, dies for screw stocks, stamps and matrices, reamers and milling cutters in one piece)—	
Saws—	
Circular saws, endless hand-saws, fret-saws, hand-saws	2.7
Files and rasps, cut or pointed, finished or not	2.7
Vises of all kinds, diestocks, stocks and dies, ratchet braces, breast drills, spiral drills, monkey wrenches, with wooden handles, adjustable spanners, and others	2.7
Mechanics' tools—	
Shear blades, tools for threading, turning, planing, mortising, "a moleter," reaming blades, sockets for reamers, reamers and milling cutters with blades	2.7
Other tools	2.7
Articles of cast iron (neither turned nor polished)—	
Railway chairs, paving plates, furnace plates cast in the open mold	3
Straight cylindrical pipes, for canalization, 7 mm. or more in thickness. Beams and columns, solid or hollow, not ornamented; frames of columns simply pierced with holes; retorts for the manufacture of gas; solid bars for grates, even put together; bars and plates for furnaces; straight bars of solid section; vats of large size for industrial purposes; inspection doors; plates for sewers and similar rough castings	3
Straight cylindrical pipes, for canalization, less than 7 mm. in thickness; water and like unions, such as elbow pipes, branched pipes, straight joints (including joints furnished with rough flanges drilled)	3
Manufactures of case-hardened cast iron	3
Iron-work for carriages, especially such as enters into the construction of railway rolling stock (including buffers and couplings)	3
Tubes of iron or steel	3
Carriages—	
Carriages to run on rails, upholstered or not, for ordinary gage tracks, including passenger carriages, good wagons, ballast trucks, and tramway carriages†	1.2
For narrow gage tracks—	
Passenger carriages	1.2
Goods wagons	2.4
Ballast trucks	2.6
Tramway carriages†	1.3
Bodies, chassis or bogies, or parts of bodies, chassis or bogies of railway or tramway carriages or wagons	1.3
Paint and other brushes—	
Paint brushes of martens' or other animal hair, except pigs' or boars' bristles, mounted on quill or on wooden, bone, etc., handle, with or without ferrule of non-precious metal	1.8
Paint brushes of pigs' or boars' bristles—	
Common wooden handles, with or without metal ferrule	1.8
Fine wooden, bone, celluloid, etc., handle	1.8

*Handles of fine materials are subject separately to the duties payable on manufactures of the material of which they are composed.
†The motors pay duty according to kind.

In England there has been no increase in the custom rates with the removal of restrictions. A revised list of exports from the United States for which a license is not necessary, corrected up to June 17, 1919, was recently published in the "Anglo-American Trade," the monthly bulletin of the American Chamber of Commerce in London. The following list taken from the published list applies particularly to railroads:

Abrasive wheels.
Carpenters' tools.
Cells, Edison and component parts, for electrically propelled vehicles.
Chucks.
Die heads.
Dies and die stocks.
Drill presses.
Drill sleeves and sockets.
Drills.
Electric batteries, secondary.
Emery stones.
Expansion bits.
Files.
Friction clutches.
Gages.
Grease cups.
Grinding stones.
Hacksaw blades.
Hammer heads, iron.
Hammers: Engineers', hide, household or upholsterers', lead.
Hand screwing machines.
Hatchets.
Injectors and ejectors.
Jacks, motor car and track.
Lathe carriers.
Lathe dogs.
Lubricators.
Machinery: Prime movers, except agricultural and electrical textile, woodworking and parts thereof driven by power, and suitable for use in cutting, working or operating on wood, including: sawing machines of all descriptions, general joiners, mortise, tenon, and boring machines, lathes and rounding machines, box and cask making machines, and all accessories thereto, scraping and sandpapering machines, wheelwright machinery, firewood making and bundling machinery, wood wool fibre and pulp machinery, saw sharpening and setting machines, saw stretchers and brazing apparatus, all machines for grinding, planing or molding irons. Unenumerated (not including typewriters and sewing machines.)
Machine tools and parts thereof.
Machine vises.
Micrometers.
Milling cutters.
Mitre blocks and scrapers for metal.
Mitre boxes.
Motors, electric, up to ¼ h.p.
Motors, electric rolling mill for auxiliary, driving up to 250 h.p.
Motors, single phase repulsion induction.
Oil, Fish, viz., train, blubber, sperm or head matter, animal coco-nut, unrefined, refined, mineral jelly (including vaseline), olive, palm, lubricating oils, turpentine, essential (if not capable of retail sale as perfumery) unenumerated.
Pipe cutters.
Pipe tongs, adjustable.
Pipe vises.
Pipe wrenches.
Pliers.
Pressure regulators.
Pressure and vacuum gages.
Punches.
Reamers.
Rods, copper, steel, and iron wire.
Saws, band circular, crosscut, kitchen and others.
Screwing tackle (i. e., chasers, dies and stocks, taps and thread milling cutters).
Smiths' tools.
Spanners.
Steam traps.
Swage shapers.
Tapping attachments.
Taps.
Tap wrenches.
Time recorders, and parts thereof.
Tool holders.
Union coupling, pressed steel.
Water gage fittings.
Wire: Brass, copper, coppered steel spring, phosphor bronze, steel wire—coppered and flattened, tinned mattress, wire leading in nickel copper.
Wood boring bits.

At the same time, when the licenses were removed from the articles mentioned above, important concessions were granted in gun metal, brass or bronze valves for gas, water and steam, which permitted an importation of 100 per cent of the 1916 imports. The importation of Yale triplex blocks is permitted to an amount equivalent to the 1913 imports, the business to be given to regular pre-war importers.

There are still some items requiring individual licenses. These include the following:

Ball bearings.
Cables and wires, electric (other than flexible wires for telephony and house wiring).
Electrical accessories and parts thereof, including fan motors.
Fan blowers and forges.
Hoists, electric.
Jacks, except motor car and trap jacks.
Motors, electric and parts thereof other than for renewals, except (a) small motors up to ¼ h.p.; (b) rolling mill motors for auxiliary driving up to 250 h.p.; (c) single phase repulsion induction motors.
Pinch bars.
Pipes, cast iron and fittings.
Pulleys, iron and steel, except pressed steel pulleys, of which 200 tons (actual net weight) are to be admitted until September 1.
Pulleys, wooden.
Pulley blocks, steel, except Yale triplex.
Roller bearings.
Shop cranes, portable.
Spring cotters.
Spring washers.
Trolleys and trucks for warehouse and wharf.
Tubes, welded iron and steel up to 2 in. in diameter.
Valves, iron and steel.
Weighing machines (and scales).
Weighing machines, portable platform.

With the increase in the custom duties in France, with the low rate of exchange between both France and England and the United States, and with the high freight rates, there will be some difficulty in making sales to both those countries on account of the net cost of the delivered materials. In fact the industries of France have brought great pressure to bear on the government to protect them properly in the manufacture of railway materials. Regardless of the fact that the American government is willing to accept a very low figure for the railway material it now has in France, it is believed the Fench commercial interests will strongly oppose the purchase of this material.

The removal of the restrictions, however, has given American manufacturers a basis on which to work which will be far more satisfactory than under the licensing system. In the matter of deliveries the United States has the advantage and undoubtedly more sales will be made in the future than since the signing of the armistice.

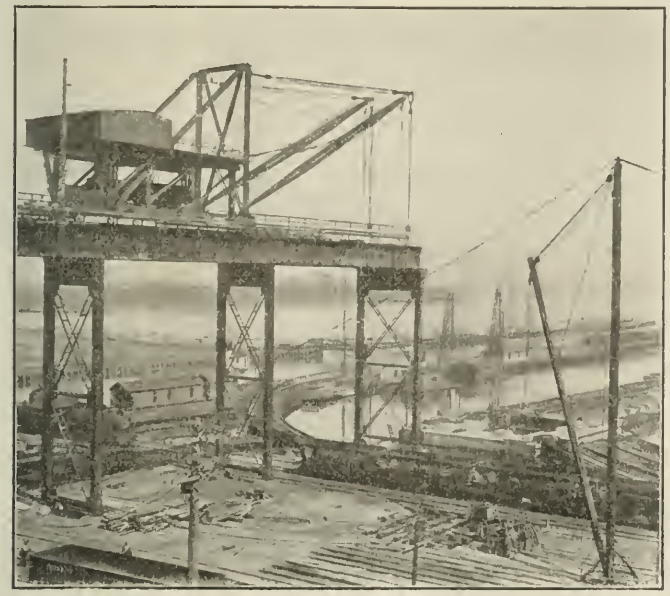
According to the "Popolo Romano" the "gravest danger threatens Italy at this time" as a result of the British coal crisis, says a press despatch from Rome. The only hope in the situation, says the newspaper, lies in American coal, though the problem of sufficient shipping to carry it is a difficult one at the present moment. Little hope is held out that coal can be received from the Saar Valley and the Teschen district. "In a few weeks," the "Popolo Romano" says, "our coal stocks may be completely depleted. As Italy imports 7,000,000 tons of coal out of the 12,000,000 tons consumed each year the prospect for the winter is alarming."

Duluth Ore Dock is the Largest in the World

Description of Record Structure Completed This Spring for the Duluth, Missabe & Northern

By W. H. Hoyt
Assistant Chief Engineer, Duluth, Missabe & Northern

THE LARGEST ORE SHIPPING DOCK in the world is the new dock of the Duluth, Missabe & Northern, on Duluth-Superior harbor, which was placed in operation on May 1 of this year. It has a length of 2,438 ft., sufficient to dock two of the world's largest ships, the Bismarck and the Leviathan, end for end on either side. The



Double Boom Traveler Erecting the Steel Work

deck is 84 ft. above water with electric light masts reaching to 120 ft. above water.

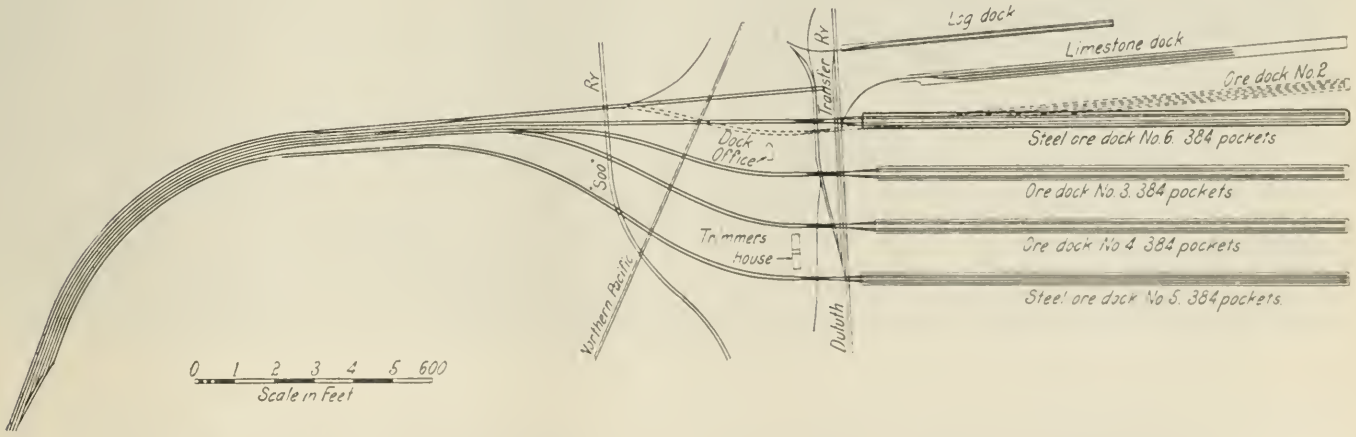
Construction work on this pier was started in August, 1916, by tearing down an old wooden ore dock which occupied a large part of the site of the new dock. The wrecking of this old structure and the pulling of 8,255 piles from 50 to 75 ft. in length was a big job in itself. After removing the timber superstructure and pile foundation, three rock-filled timber cribs were removed with powerful dredges and derrick scows.

The first shipments of new piling were received on December 2, 1916, and pile driving started on December 23. Four drop hammer drivers, with 60-ft. leads, were used on this work, and a total of 971,014 lin. ft., or over 183 miles, of timber piling was driven by July 28, 1917. During this time two other machines drove 174,230 lin. ft. of 12-in. 43-lb. United States Steel sheet piling, in 38-ft. lengths. The timber foundation piles run from 50 to 85 ft. in length and receive loadings not exceeding 20 tons per pile.

The drivers used were swing machines carried on platforms supported by piling driven ahead, followed by the steel sheet pile drivers and then by the outside fender driving machines.

The pile cut off was 9 in. above low water datum, which is amout average water level. About 180,000 ft. b. m. fir timber was used for caps. Tie rods, 1¼ in. in diameter, running across the dock every 12 ft., serve to anchor the tops of the sheet piling in place. The entire dock foundation, being surrounded by steel sheet piling, was pumped full of sand, of which 33,000 cu. yds. were taken from slips alongside and 49,000 cu. yds. was brought in by scows. This sand was carefully leveled off at low water datum and served as a support for the concrete foundation slab, leaving the piles projecting 9 in. in the concrete.

The foundation of the dock is a reinforced concrete slab 2,438 ft. long, 69 ft. wide and 6 ft. deep, with openings along the center line which were filled with sand. The concrete was composed of a 1:3:5 mixture of Universal Portland cement, Lake Superior sand and crushed run trap rock, taking everything through a 3½-in. screen. The reinforcement consisted of a layer of 1-in. plain round steel rods on 6-in. centers, crosswise of the dock and a layer of ¾-in. rods on 12-in. centers lengthwise of the dock, placed



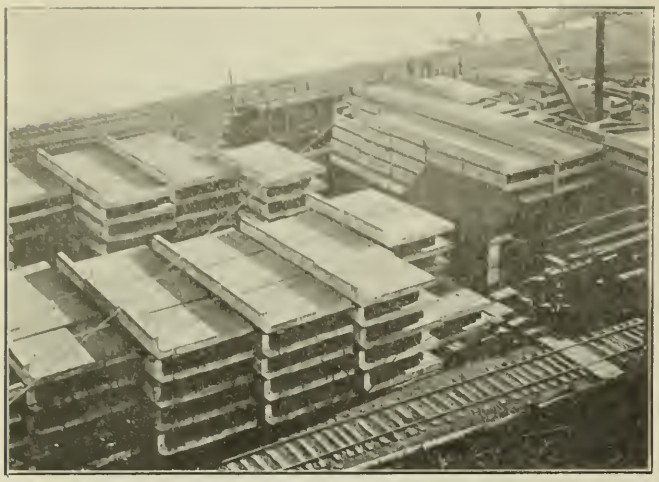
Map Showing Relation of New Dock No. 6 to the Other Docks and to the Approach Development

near the bottom of the slab. A total of 884,410 lbs. of reinforcing steel and 171,320 lbs. of tie rods were used in this part of the work.

Recesses were left in this concrete slab at proper points to allow the placing of column anchor bolts and the pouring

of the column footing pedestals as one block. This avoided the horizontal joint line at the top of the slab and permitted the simple handling of anchor bolts. Expansion joints are provided at cross sections 144 ft. apart in the foundation slab as well as in the superstructure. An oak wale strip 12 in. by 10 in. is embedded in the face wall of the foundation, set into the concrete 8 in. and held in place by anchor bolts every 6 ft. A total of 28,698 cu. yds. of concrete was placed in this work between July 7 and November 8, 1917.

A 1¼-in. water pipe was laid the whole length of the dock foundation to supply drinking water to bubbling fountains on



Concrete Deck Slabs in the Storage Yard

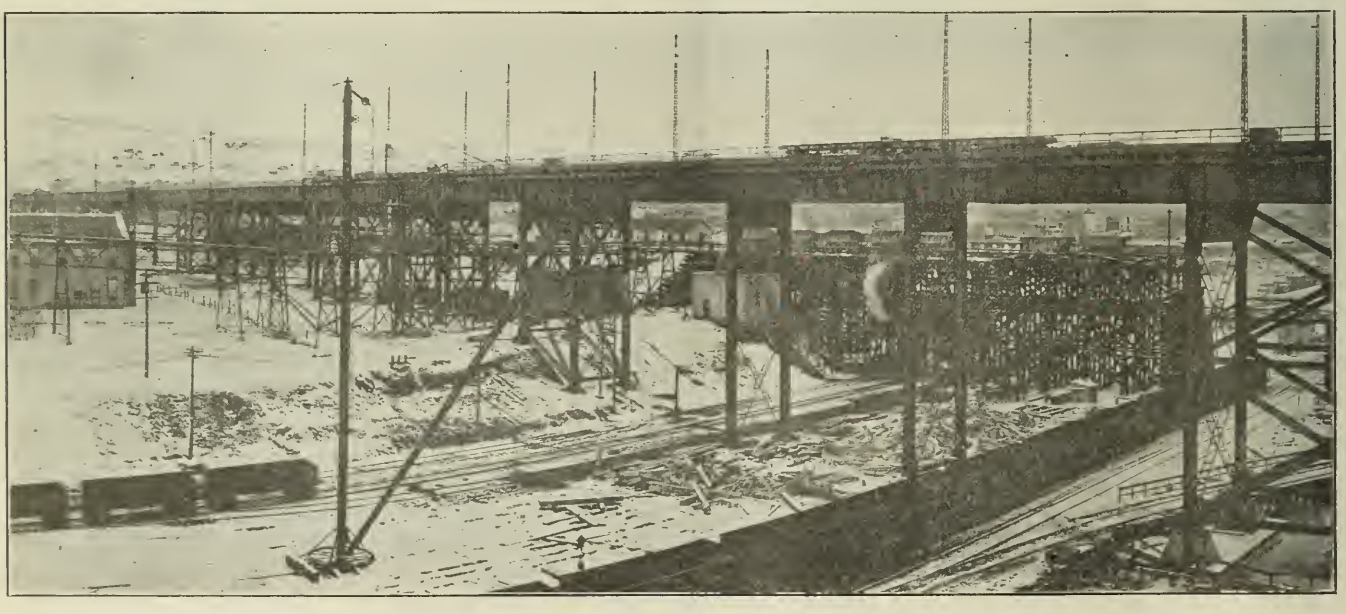
the deck. This pipe was laid 3 ft. 9 in. below the top along the center and covered with sand, thus ensuring a cool supply during the summer months. The pipe was laid with a

5 in. wide, out to out of concrete, and carries four tracks the entire length. Seven lines of walks furnish ample working room and safety for employees. The elevation of rails and walks was set to leave no troublesome flangeway openings to

View of the Deck of the Dock

require constant cleaning. The entire dock and approach are designed to carry the heaviest locomotives of the Duluth, Missabe & Northern, a 304-ton Mallet type and a 266-ton Santa Fe type with 55,000-lb. axle loads.

The superstructure has a structural steel frame with concrete partition walls, pocket walls and sidewalk slabs. The



The Approach Viaduct

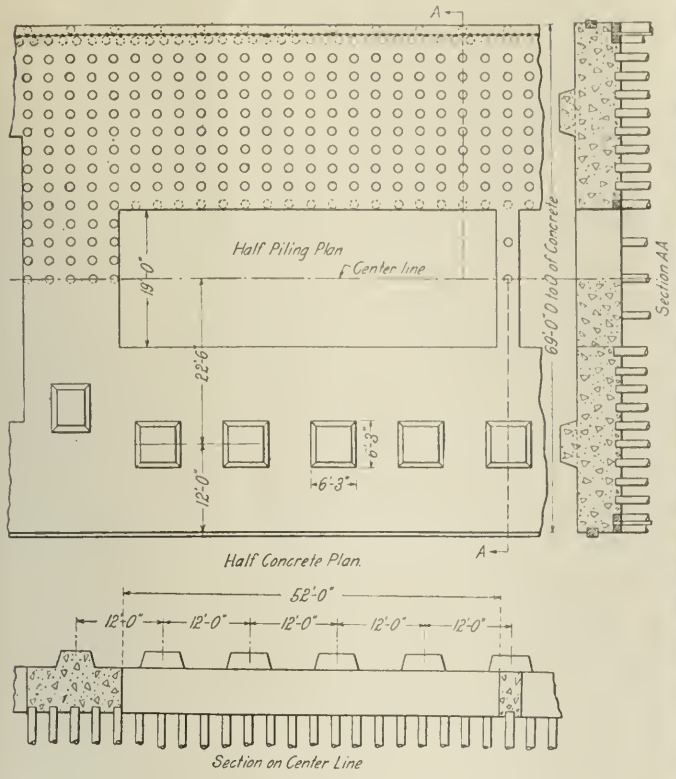
grade and drain outlets in order that it might be drained to prevent freezing in winter when the dock is not in use.

The Superstructure

The superstructure provides for 384 ore pockets, 12 ft. center to center, with 6,540 cu. ft. capacity each. Eight standard 50-ton ore cars can be dumped into each pocket without trimming, thus providing a storage capacity of 3,072 cars, or 153,600 tons. The top of the dock is 76 ft.

fronts are of plate steel, supported between pocket walls by I-beam wales and held against the walls by tie bolts. The entire pocket structure is carried by two lines of steel columns spaced 12 ft. apart, arranged in pairs to form bents under each transverse wall. Each column is designed to carry 1,500,000 lbs. The columns consist of three 115-lb. I-beams, stayed with batten plates. The partition walls and the loads from the pockets are carried to the columns by two plate girders forming an A-frame, and the pocket bottom slab rests

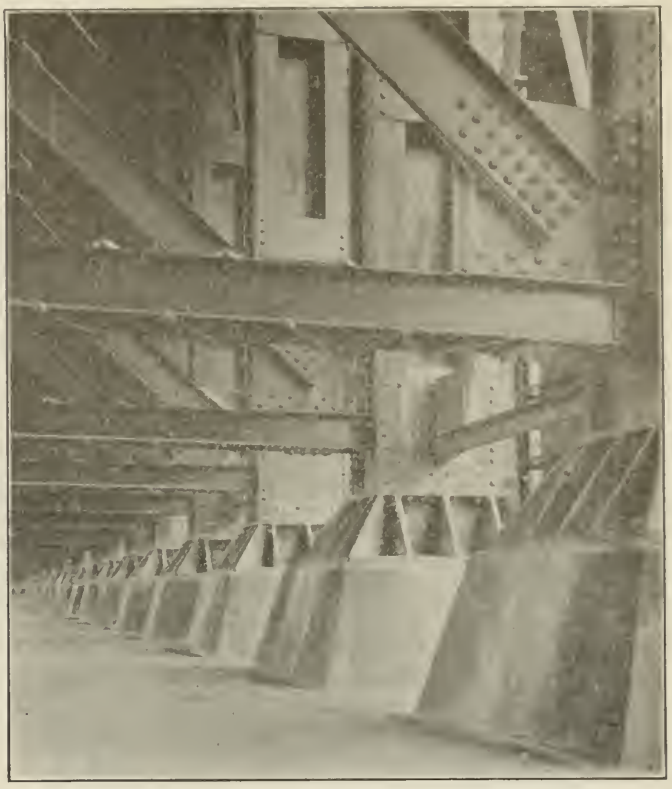
on transverse I-beams that frame into these girders. Reinforcement is put into the floor slab, both for slab action



Part Plan and Sections of the Footing

across the supporting beams and for shear between the slab and the side walls, tending to cause the slab to slide out of the pocket. The column bents are amply wind and sway braced to prevent distortion. Special care was taken to provide effective expansion joints at intervals of 144 ft. in the length of the dock.

The superstructure concrete was made of carefully graded material in proportions by volume of one part cement, three parts sand, five parts of chushed stone, and one quarter part hydrated lime. The hydrated lime was added to secure easy running concrete around and under the reinforcing bars and to assist in water-proofing the mass. The surface of the concrete after removing the forms was very even and required a minimum of hand pointing. Plain round bars, suitably bent, were used to reinforce the bottoms of the ore pockets.

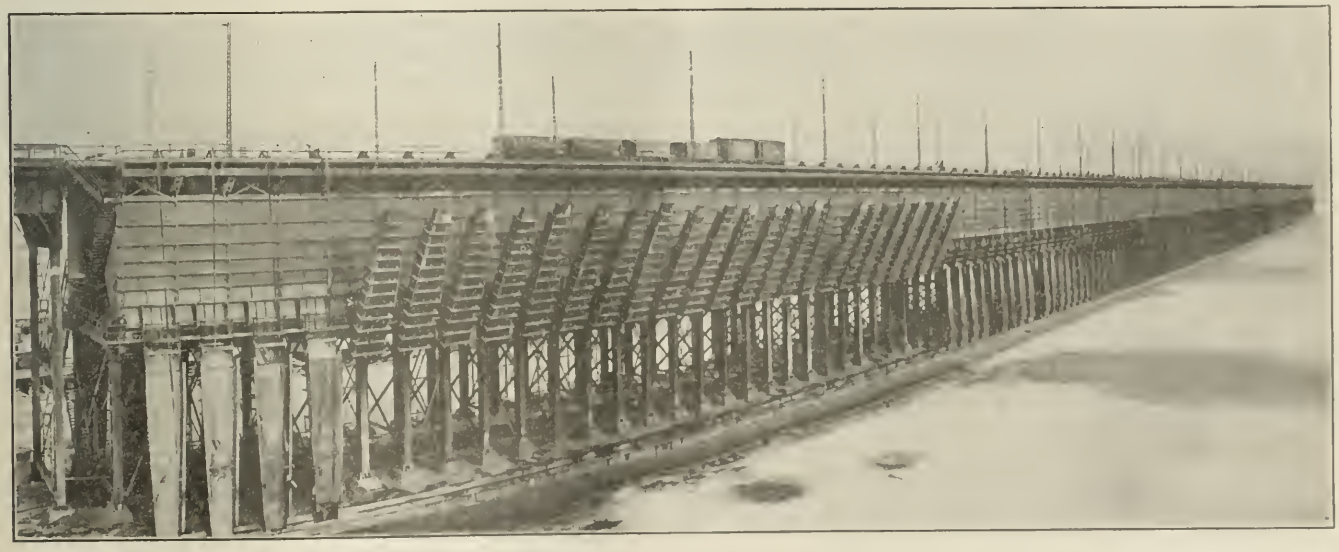


Typical Column Bases and Pedestals

The top deck was reinforced with American Steel & Wire Company triangle mesh.

Concrete bumping blocks properly bonded into the steel and concrete floor finish the outer ends of each track. All stairways are of steel and concrete. Underneath the ore pockets a 4-ft. concrete walk, elevated somewhat above the foundation slab, was placed the full length of the dock. This is to provide a dry walk above the sand and water when this deck is flooded while the ballast water is being pumped out of the ore boats.

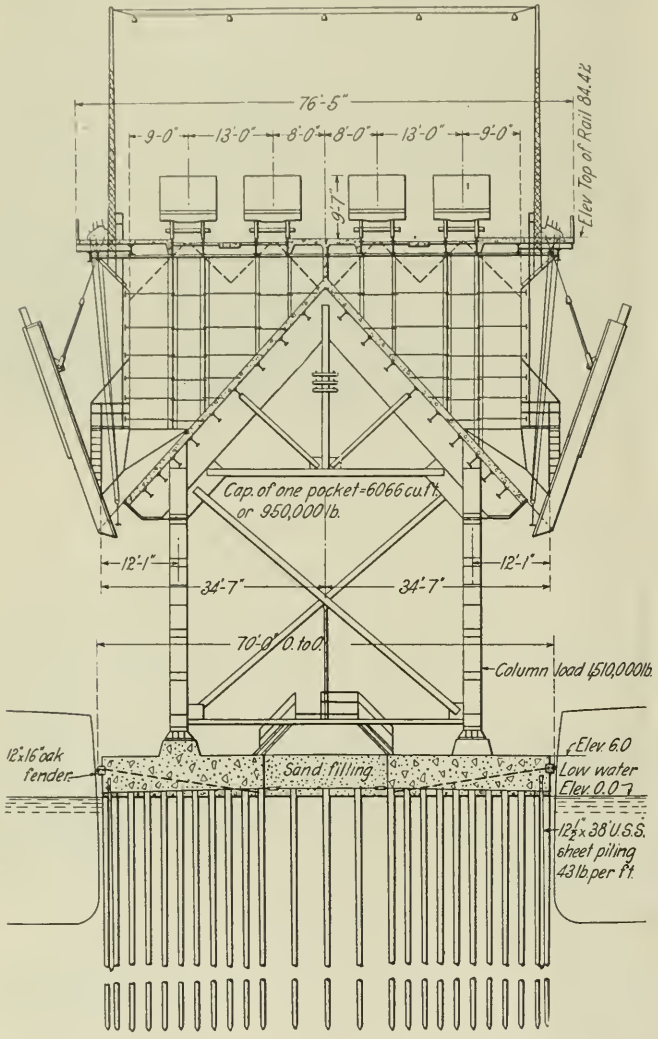
The ore chutes are of the usual type, but heavier, and are raised and lowered by hoists designed and supplied by the



View of the Completed Dock

Whiting Foundry & Equipment Company. These hoists are driven by power from clutches on a line shaft geared to General Electric a. c. motors, one motor operating 12 spouts and doors. The ore pocket doors are the Dickerson type, made of steel plates and frame with two lifting cables wound on drums built into the chute hoists. This makes it possible to raise and lower the doors by power from the deck of the dock. The latching and unlatching of doors is controlled by a lever and connections from the deck. This leaves only the punching and cleaning of ore from the lower parts of the pockets to be done by men on the lower platform.

The deck is lighted by a string of five 100-watt lamps, equipped with Benjamin deep-cone reflectors suspended from a 3/8-in. galvanized strand span wire stretched across the deck from steel poles 35 ft. high. These cross spans are



Typical Cross Section of the Ore Dock

spaced 72 ft. apart along the length of the dock and give a distributed light which has proven very satisfactory. All lighting on the approach is of the same overhead type. Other lamps on the dock light the interior of the pockets, the doors and the boat decks. All wiring, motors and switches are housed in steel conduits and steel boxes. Toilet and drinking facilities are constructed at both ends of the deck and two bubbling fountains are installed at third points between the ends.

The dock has a two-track steel approach trestle 3,087 ft. long, beyond which is also 400 ft. of elevated embankment carried between parallel reinforced concrete retaining walls 24 ft. apart and from 8 to 15 ft. high, held together by reinforced tie walls at intervals of 20 ft. The long steel approach has plumb steel columns resting on concrete pedestals and piles, standard plate girders and a concrete trough deck made of pre-cast reinforced slabs. The longest girder span is 80 ft. 6 in., with 30-ft. spans for the tower bents. Stone ballast and standard track ties are used. On the portion of the approach where the track area is required to be wider to meet the four tracks on the dock the deck slab was built in place.

As a record structure of its kind, some of the quantities of materials used in the construction are of interest and are listed below:

1,667,971 lin. ft. of timber piling, 50 ft. to 85 ft. in length.
174,130 lin. ft. of 12-in., 43-lb. U. S. steel sheet piling.
162,570 sq. ft. of triangle mesh reinforcement.
59,846 cu. yd. concrete in dock and approach.
29,609 tons of steel.

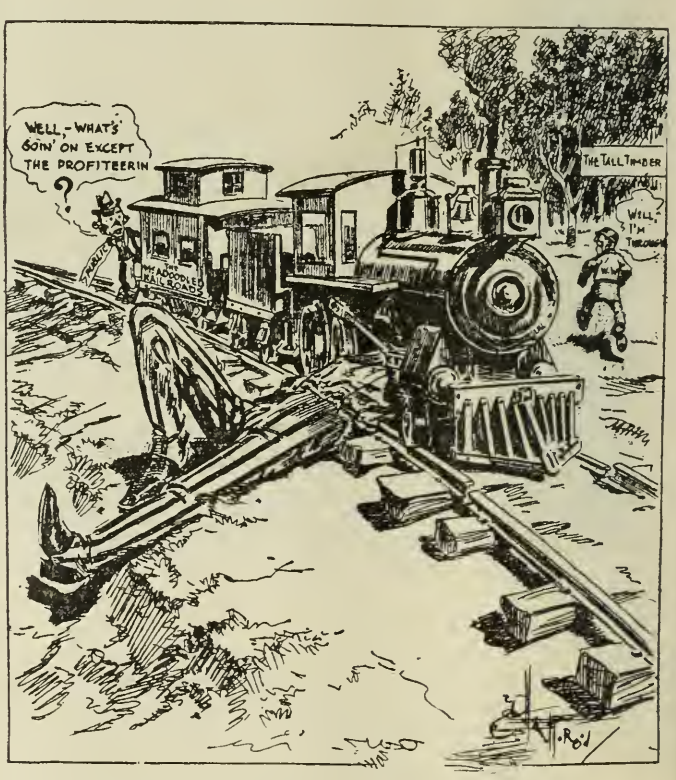
This amount of steel would require approximately 60,000 tons of iron ore, which could be placed in less than one half of the dock and loaded into boats in less than 30 min. time.

The contractors on the work included the Barnett & Record Company, for the foundation; the American Bridge Company, for the steel work; the Stack Construction Company, for the superstructure concrete, and the Whiting Foundry & Equipment Company, for the machinery. All electrical work was installed by the railway.

The following prices were paid on the work:

Foundation piling, let in 1916, furnished for 20 cents per lin. ft.
Foundation piling, let in 1916, driven for 3¾ cents per lin. ft.
Furnishing and placing fir timber in foundations, $42 per M ft. b. m.
Furnishing and placing oak wale timbers, $65 per M ft. b. m.
Driving steel sheet piling, 38-ft. lengths, $1.60 each.
Foundation concrete 1:3:5 mixture (1916 price), $5.51 per cu. yd.
Superstructure concrete 1:3:5 mixture (1917 price), $9.70 per cu. yd.

The personnel concerned with the designing and erection of the dock included the following officers of the Duluth, Missabe & Northern: W. H. Hoyt, assistant chief engineer; W. E. Hawley, office engineer; A. M. Frazee, electrical engineer; F. C. Baluss, engineer of bridges and buildings, and F. N. Graham, engineer of construction.



From the Hartford Daily Courant

Time for Uncle Sam to Get Out and Get Under

Motive Power Under Government Control*

Condition of Equipment and the Means Employed by the Railroad Administration to Improve It

By George N. De Guire

General Supervisor Equipment, United States Railroad Administration

THERE NEVER HAS BEEN a time in the history of your organization when delegates have been called upon to handle matters of as great importance as will be taken up during your present session.

With the country just entering upon a reconstruction period, your organization, if they are to follow the splendid record they have made in the past, will take an active part in the reconstruction problem and as the action of your brotherhood will depend on the attitude this convention assumes towards those matters, it is essential that you weigh carefully every subject that may be brought up so as to fully protect the interests of the men you represent and to assist your country in planning the various industries on a peaceful and successful basis.

Every man in locomotive service has a deep interest in the condition of the equipment he is called upon to operate, and therefore I am going to outline some of the things the Railroad Administration has accomplished from a mechanical viewpoint. In the past 18 months greater concessions have been granted to locomotive engineers and firemen in the way of labor saving devices than have been granted in all the period of time that the railroads were under private control.

When the mechanical department of the Railroad Administration was organized, the director general selected as an officer to be placed in charge of this department, a man who has long held membership in your brotherhood. That person, Frank McManamy, was chosen as assistant director, Division of Operation, mechanical department. In the past 18 months during which Mr. McManamy has held this position, he has continually advocated the application of labor saving and safety devices and because of his extensive railroad training, which started on the deck of a locomotive as a fireman, he has been in a position to show the necessity for any action that has been taken in this respect.

It is not possible to state what the Railroad Administration has accomplished without taking into consideration the conditions which existed at and prior to the time the Government assumed control of the railroads. Therefore, in order to fully comprehend the difficulties encountered by the Railroad Administration and appreciate what has been accomplished, a brief outline of some of the conditions found in motive power and car departments will be given.

The Federal government assumed control of the railroads not because it was desirous of adding to the enormous task it already had on hand, but was forced to do so as a war measure, because the railroad machine had to an alarming extent ceased to function, and in the emergency which confronted the nation it was essential that the railroads should function at their highest degree of efficiency.

The statement has been made and is generally accepted that the principal cause for the railroads failing to function was due to car and locomotive shortage, and while this correctly represents the situation so far as the shipper was concerned, from a standpoint of railroad operation such a condition did not exist.

When a railroad, or a number of railroads are congested with cars and when the shops and roundhouses in any section of the country are blocked with locomotives undergoing or awaiting repairs, in so far as these railroads are concerned there can be no shortage of cars or locomotives. These conditions existed on every railroad which was congested with traffic at the time the Railroad Administration assumed control, therefore, congestion was not primarily due to shortage of cars or locomotives, but to the inability or failure to use to their maximum efficiency, the cars and locomotives at hand.

It was not possible, at the time the railroads were taken over, to say to what extent the condition of locomotives and cars was responsible for the situation which existed. As the Railroad Administration at that time had no mechanical department organized to check up shop practices and the handling of equipment at terminals and advice relative to outlining plans for improvement, the Interstate Commerce Commission was asked to assist in obtaining accurate information relative to the general situation.

The records of the Commission contained much valuable data with respect to general conditions throughout the country and the inspection forces of the Commission were assigned to various congested terminals, particularly throughout the East and Middle West, to investigate and make daily reports of the actual conditions of locomotives and cars and of train movements.

These reports showed that a serious condition existed because of the number of bad order cars at various terminals and also because of the generally defective condition of motive power. This condition, together with overcrowded and inadequate shops and roundhouses, had resulted in trains being held at terminals on account of shortage of efficient motive power, and also had seriously slowed up movement on the road, often to the extent of blocking several divisions.

Condition of Shops and Roundhouses

Prompt handling of locomotives was seriously hampered by the condition of roundhouses and the lack of facilities, at many points, to make running repairs to large locomotives. Roundhouses built 20 years or more ago, for locomotives in service at that time, were not large enough to take care of those in use at the present time, consequently repairs had to be made out of doors or at open roundhouses often with the temperature below zero.

Similar conditions existed in the shops at many points for it was found that there had been no improvements made for many years and consequently there were no crane facilities or proper tools with which to handle and make repairs to modern power promptly. This resulted in locomotives being held out of service for an excessive period of time to receive classified repairs.

The immediate remedy for these conditions was not so much the building of new locomotives and cars as the proper maintenance of locomotives and cars that were in service and more prompt movement of trains.

At a time when the various war industries were clamoring for skilled mechanics at almost any rate of pay, and the supply had been substantially decreased by the selective draft, the problem of improving the condition of locomotives and cars in the midst of exceptionally severe winter weather, was an extremely difficult one.

A survey of the situation indicated that shop facilities were

*From an address at the twenty-eighth annual convention of the Brotherhood of Locomotive Enginemen and Firemen recently held in Denver, Colo.

sufficient if efficiently used, therefore, about one of the first acts of the Railroad Administration was to nationalize the railroad shop facilities so that locomotives could be assigned to shops where repairs could be made regardless of ownership.

Methods for Improving Conditions

Increasing the facilities and forces under war conditions was clearly impossible and the only practical means of improving equipment conditions was the adoption of some plan whereby existing facilities and forces could be made to produce greater results.

The first step in this direction was to call on the representatives of the organized railroad employees to agree to a modification of their agreements and contracts with the various railroad companies relative to hours of labor and the rules governing the promotion of apprentices and helpers to the rank of mechanic.

This was agreed to by the employees' organizations, and on February 14, 1918, a letter directing the manner in which this should be done was sent by the Director General to the representatives of the employees and to the various railroads. Immediate steps were taken to increase the shop hours of men working in locomotive repair shops and roundhouses to 70 per week where the condition of equipment required it.

The average increase in locomotive shop hours for the entire country amounted to about 16 per cent, and the effect immediately became apparent by the increased number of locomotives repaired per week in comparison with the most accurate records available for the corresponding week of the preceding year.

This increase in shop hours applied to roads where locomotives were in good condition and shop facilities ample, as well as to roads which were not so favorably situated. This permitted a comprehensive program of nationalization of railroad shop facilities over the entire country to be carried out and locomotives from roads where shop facilities were not sufficient, and motive power in bad condition, to be sent to shops on other lines for repairs. This distribution of locomotives was so arranged as to reduce, in many instances, the distance travelled to the repair shops, therefore, the cost of transporting locomotives to the shops was no greater and all the shops under this plan were kept working to their maximum capacity with a full force.

The plan of considering the condition of equipment as a whole and taking steps to improve it by uniformly increasing shop hours on all railroads in the country and utilizing to their full capacity the facilities of all shops, which could only be done under federal control, is really what improved the condition of the locomotives and cars. The result of this was that not only was the existing congestion of traffic cleared up, but trains were moved by locomotives in good repair, with promptness, and with reasonable assurance that they would reach their destination without delay.

The result of the policy of nationalizing railroad shop facilities made it possible to thoroughly overhaul and in some cases to practically rebuild at other line shops, 3,493 locomotives for railroads which lacked sufficient shop space and shop organization, thus improving the general situation without detriment to the railroads that furnished this help. In addition to this, during the period January 1, 1918, to April 30, 1919, there were 310 new locomotives constructed in various railroad shops under federal control. At the present time, due to this method of handling repairs to locomotives, we have been able to put in first class condition and place in storage, for service when business improves, over 5,000 locomotives.

Investigation was also made of the facilities of the different locomotive builders with a view to having locomotives repaired by them. It was found, however, that this could not be done to any material extent without disarranging their schedule of new work both of domestic and foreign locomotives, and in view of the need for both, this was not considered advisable. Both the Baldwin Locomotive Works and the American Locomotive Company did endeavor to make use of surplus facilities to repair what locomotives they could without interfering with their output of new locomotives.

Illustrative of the improvement in motive power and the changed conditions in railroad shops, is the fact that it was possible to grant the request of the Baldwin Locomotive Works made on September 13, 1918, for assistance in machining locomotive frames, driving boxes, rods and other parts, thus facilitating the construction of locomotives for the use of our army in France, and this work was continued in various railroad shops until the armistice was signed.

The increased working hours in railroad shops under the instructions issued on February 14, 1918, were continued until after the signing of the armistice, and without this loyal support from the employees the increased number of locomotives repaired during this period and the assistance rendered locomotive builders would not have been possible. On the signing of the armistice, shop hours were reduced to nine per day, effective November 25, and to eight hours per day, effective December 9.

Standardized Locomotives

In addition to the vigorous action which had been taken to improve the condition of existing equipment, the necessity of adding to the available stock was recognized and designs were worked out for standardized locomotives and orders placed for their construction.

The director general realized the necessity for new power, which to some extent had been neglected by the railroad companies, and decided that all new power would be built to standard design. S. M. Vauclain, senior vice-president of the Baldwin Locomotive Works, and who at this time was chairman of the Committee on Production of the Council of National Defense, was requested to assemble a committee composed of practical experienced locomotive builders, to select standard locomotive types, stipulating that Mr. Vauclain was to act as chairman of this committee. The personnel of this committee consisted of S. M. Vauclain, senior vice-president, Baldwin Locomotive Works, chairman (representing Committee on Production, Council of National Defense); Grafton Greenough, vice-president, Baldwin Locomotive Works; Andrew Fletcher, president; Charles M. Muchnic, vice-president; J. D. Sawyer, vice-president, and J. B. Ennis, vice-president and chief mechanical engineer, American Locomotive Company; John E. Dixon, vice-president and W. E. Woodard, vice-president and mechanical engineer, Lima Locomotive Works, Inc.

Instructions were issued to this committee to prepare specifications for not more than 12 types of standard locomotives with particular consideration given to creating standards of parts subject to wear and replacement, so that they may, as far as efficiency and economy would permit, be made standard for as many types as possible, and at the same time permit the entry of better and improved parts in the future. This committee recommended twelve types of standard locomotives, and specifications were prepared and orders were placed for 1844 locomotives of standardized types and 86 locomotives are on order, the type of which has not been decided on.

In addition to this committee it was decided by the director general that a committee made up of mechanical representatives of various railroads be assembled to consider these general dimensions and specifications, and to work out the details, meeting the various equipment and patterns, and the maintenance, fuel, water and other operating factors, as well as give due consideration to various items, usually termed specialties, which have already been developed and practi-

cally made standard practices, or which may be in process of development and in line with conditions and requirements of the future. As locomotives have a probable life of at least twenty-five years, they should be made as modern and as practicable as possible. The Committee was further instructed to take into consideration greater expediency in movement on the road and in terminals, greater comfort for engineers and firemen, and all others concerned, the most effective and economical operating resources, and particularly greater safety, the elimination of arduous manual labor, to provide for superheating, for the best and most perfect combustion of fuel burned in solid or liquid form, the utilization of all possible waste heat and reduced liability for setting-out fires. In other words, the locomotive to be brought to the same standard of efficient operation as the modern stationary power plant.

In the interest of safety, there has been provided on each standardized locomotive which has been built, two water glasses, so that each might be a check on the other, as well as permit the men on the left side of the locomotive to observe the height of the water in the boiler. To insure more accurate registering of water in the gage cocks, gage cock water columns have been provided, and the gage cock screwed into the water column rather than into the boiler to avoid the irregularity and unreliability which is sometimes experienced where gage cocks are screwed directly into the boiler. In carrying out this practice, we had in mind the recommendations of the Bureau of Locomotive Inspection of the Interstate Commerce Commission, which has devoted a great deal of time and thought to this subject.

For the protection of the men against bursting flues, bursting arch tubes, etc., pneumatic firedoors have been applied to all locomotives built by the Administration. These locomotives are provided with a power reverse gear by which the cut-off may be changed without any risk of accident to the man handling the reverse lever. Pneumatic bell ringers are applied to each locomotive, and the grates on each are provided with power grate shakers. Much thought also was given to the location of cab lights. Drawbars have been provided which are a guarantee against the locomotive and tender becoming uncoupled. Radial buffers insure better riding qualities by not only preventing slack between the tank and the engine, but also guard against derailment of the tenders, particularly in backing trains around curves or in the sidings. Double strength pipe and flexible joints have been used instead of hose connections for the train brake and signal line, as well as for the train heating lines on passenger locomotives.

In the further interest of safety all pipes carrying boiler pressure are placed outside the cab, the only exceptions being the short lengths of brass pipe which connect the water column for the gage cocks to the boiler, the steam gage syphon and the steam pipe to the lubricator. Injector, steam pipes, air pump steam pipes, steam pipes to blowers, stokers, train heater and headlight generator are all located outside the cab. While some work has been done along this line by one or two roads, the locomotives constructed on Administration order are the first on which this was generally carried out.

Much consideration was also given to the convenient location of the appliances manipulated by the engineer and the fireman. The reverse lever, injector, throttle, brake valves, sanders and bell ringer, are all within the engineer's reach while sitting on the seat box. The steam and air gages and water glasses are so located that they may be observed by the engineer without losing sight of the track. In all of these things the locations have been made uniform so that the man who yesterday ran the Mikado and who today is called to run the Pacific or the Mountain, will find each of these things in the same relative position on each class of locomotive. I know that you can appreciate very much better than I can tell you, just what this means for comfort and convenience. One other thing in connection with reducing the labor of the fireman is the application of automatic stokers to these locomotives.

In considering the question of the size of locomotives to which stokers should be applied, it was thought that the limit of coal which could be handled by a man with a shovel on the firing deck of a locomotive, was approximately 4,000 lb. per hour, and locomotives which consumed this amount or more are provided with stokers.

Freight locomotives with a tractive power of 54,700 lb. and over, (light Mikados) and in passenger service, those with a tractive power of 43,900 lb., (heavy Pacifics) have been provided with stokers. Those locomotives on which, by reason of coal consumption, it was felt that the application of stokers was not desirable, have been equipped with coal pushers of a type which may be operated while the locomotive is in motion so as to bring the coal to a point where the fireman can reach it with a shovel easily.

No matter how good or how perfect a device may be when new, some measure of maintenance is required, and this maintenance can not be done either economically or intelligently if those charged with this duty lack information. I urge, therefore, that each of you who have to do with the making out of Form 2 of the Interstate Commerce Commission, daily locomotive inspection report, which is filled out at the conclusion of each trip or day's work, give explicit information as to the repairs which are necessary in order to maintain the locomotive and its accessories in a safe condition for service.

There are three other matters upon which the mechanical department of the Railroad Administration has taken action, and in which I am sure you will be interested.

First: The proper lubrication of locomotives.

Second: Seeing that locomotives are kept in proper repair.

Third: Enforcement of the various laws that have been passed by Congress from time to time compelling the railroads to equip cars and locomotives with safety appliances and to see that they are maintained in proper condition.

Shortly after the government assumed control of the railroads, many reports reached us which indicated that locomotives were not properly lubricated, which, in addition to increasing the coal consumption and consequently the work of the firemen, was also causing excessive wear on cylinders, cylinder packing, valves and valve chambers, as well as on piston and valve stem packing.

To correct this condition, Mechanical Department Circular 6 was issued which provides that all lubricators shall be filled to capacity before locomotives leave terminals and in addition thereto sufficient oil should be carried on the locomotive to provide against any emergency that might arise, and I am pleased to state that the issuance of this circular has resulted in a great improvement.

The Railroad Administration, recognizing that in the interest of safe and efficient operation, locomotives should be repaired before being offered for service, issued Mechanical Department Circular 3, which provides, among other things, that road foremen of engines or traveling engineers, or men with any other title who perform similar duties, will be required to carefully supervise the locomotives in service to see that they meet the federal requirements and that they are in a condition to render efficient and economical service. If not, they should order the necessary repairs to be made and such orders will be observed as if issued by Federal inspectors of locomotives, and it further provides that locomotives that are in violation of the Federal laws or are not in condition to make a successful trip, should be repaired before being offered for service.

The President of the United States, realizing that laws on this subject were essential and necessary, promised the rep-

resentative of your brotherhood to protect the Bureau of Safety and the Bureau of Locomotive Inspection of the Interstate Commerce Commission, from interference when the government assumed control of the roads. In carrying out the policy outlined by the President, the director general issued General Orders 8 and 46, which outline a plan for the enforcement of various Federal laws, rules and instructions of the Interstate Commerce Commission on such matters.

Under General Order 46, Frank McManamy was placed in charge, so far as the Railroad Administration was concerned, of seeing that these laws were complied with. Reports received from the bureaus of the Interstate Commerce Commission indicate that these laws are being complied with in a manner that is gratifying to them, and in your national legislative representative's report, which has been presented to the delegates of this convention, you will note Mr. McManamy states,—"On December 26, 1917, the President took over the railroads and proclaimed that our safety laws would be protected and this has been religiously lived up to since that time."

I desire to thank you for having had an opportunity to address you at this time and I trust that your deliberations will result in the passage of laws which will be of great good to your membership. It is my sincere hope that when the history of the World war is written, proper emphasis will be placed on the great work which the railroad employees have performed in connection with the winning of the war.

Classification of Technical Employees in the Northwestern Region

A DEFINITE STEP toward the classification of technical employees of the engineering, mechanical, land and valuation departments was recently made in the Northwestern region through the issuance of a communication by R. H. Aishton, regional director, to the federal managers of railways in the Northwestern region for their information and guidance. This classification was prepared by a committee consisting of H. E. Stevens, chief engineer of the Northern Pacific, C. F. Loweth, chief engineer of the Chicago, Milwaukee & St. Paul, and A. Montzheimer, chief engineer on the Elgin, Joliet & Eastern, and is the result of a detailed study of the technical service of the roads in this region. This schedule is of particular interest because of the detail in which the duties, responsibilities, degree of technical training and extent of experience are treated in defining each classification. The statement covers positions in the engineering, mechanical, land and valuation departments below the grades of assistant engineer and chief draftsman, and the definition of each grade includes a salary rating giving the maximum and minimum limits of salary comparable to the character of services rendered in each grade of position.

The classification, which is given in detail below, is prefixed by an explanation or statement of general principles involved in its application. In this explanation attention is directed to the difficulties of fitting a classification definitely to all existing organizations, for which reason considerable range of salaries is given to allow for such irregularities. Along this line attention is given to the fact that a large organization may need a more expanded classification, while a small road may require an even smaller number of grades than those given in the schedule. The purpose of the classification is to grade each man in accordance with his duties and responsibilities, familiarity with standard practices, and length of service.

Authority is given to apply this classification as effective July 1, 1919.

No overtime is to be allowed men covered in this classification.

SCHEDULE

DRAFTSMEN, CLASS 1, $200-225

On general or special duty, requiring special knowledge, training and experience, and a special degree of initiative and originality, thoroughly competent, engaged regularly in the design and general direction of the design of large and difficult work on yards and terminals, track details, etc., or steel, concrete and timber bridges and structures, or special buildings, etc., or locomotives, cars, special machinery, mechanical and electrical power plants, etc.

DRAFTSMEN, CLASS 2, $175-190

On general or special duty, requiring special knowledge or training and experience and the use of initiative and originality. Engaged in the general designing and the direction of detailing of plans of yards and terminals, track details, etc., or steel, concrete, or timber bridges and structures, or special buildings, power plants, etc., or locomotives, cars, special machinery, or signals and signal apparatus, or land, right-of-way and valuation maps and profiles from field notes and records.

DRAFTSMEN, CLASS 3, $150-165

On general or subordinate duty, requiring special knowledge or training, experience and initiative, generally engaged in the designing and detailing of work in accordance with standard practices, and the direction of work of a minor character on right-of-way maps, mileage records, or steel, concrete and timber bridges and structures, or locomotives, cars, special machinery, mechanical and electrical power plants, or signals and signal apparatus, or land, right-of-way and valuation maps and profiles from field notes and records.

DRAFTSMEN, CLASS 4, $125-140

On subordinate duty requiring a certain amount of knowledge, training or experience, and engaged generally in detailing, compiling and recording general engineering plans, land and right-of-way maps, or valuation maps and profiles, or records of bridges, buildings, locomotives, cars or signals.

TRACERS, $100-120

On subordinate duty requiring a certain amount of experience or knowledge of drafting. Capable of doing neat, accurate and rapid work.

ENGINEERING INSPECTORS, CLASS 1, $175-185

On general or special duty requiring special knowledge, training and experience and the use of initiative. Capable of directing and supervising the inspection of extensive engineering construction and all classes of construction materials.

ENGINEERING INSPECTORS, CLASS 2, $150-165

On general duty requiring special knowledge or training and experience and the use of initiative. Capable of supervising the inspection of average engineering construction and materials.

ENGINEERING INSPECTORS, CLASS 3, $125-140

On subordinate duty requiring a certain amount of knowledge or training and experience. Capable of inspecting minor construction work and materials.

INSTRUMENTMEN, CLASS 1, $180-200

On general or special duty, requiring special knowledge, training and experience and the use of initiative. Capable of directing a field party, and responsible for technical field work of a complicated and difficult nature, and platting the field notes and data.

INSTRUMENTMEN, CLASS 2, $150-170

On general or special duty, requiring special knowledge, training and experience and the use of initiative. Capable or directing a field party, making personal investigation of ordinary field work, and platting the field notes and data.

RODMEN, CLASS 1, $120-130

On subordinate duty with knowledge, training and experience. Capable of doing ordinary field work without supervision or more difficult field work with supervision, and platting the field notes and data.

RODMEN, CLASS 2, $100-115

On subordinate duty with a certain amount of knowledge of field work, but not required to use transit or level.

CHAINMEN OR TRAINMEN, $90-100

On subordinate duty, preferably with a certain amount of knowledge or experience in field work.

There Must Be an End.—It is not a railroad man, but a member of the Interstate Commerce Commission, Mr. Clark, who has told the House Committee that the raising of freight rates is inevitable. Time was when the Commission conceived it to be their duty to oppose every application of the railroads for higher rates. Mr. Clark believes the high wages will have to be maintained. The suggestion that the Commission be given power to fix wages he earnestly repelled. Not for the Commission the job of cutting wages to meet income! There remains only the universal last resort—to make up the deficit out of the pockets of the public. This process is now world-wide. But there must be an end to it some day. English miners, fearing the effect of public feeling regarding their pleas for shorter hours and higher wages, have asked the Government to suspend the order until they have had a chance to show that it may not be necessary. "Strike and the world strikes with you; work and you work alone."—*New York Evening Post.*

Railroad Hearings Before House Committee

Executives Submit Outline of Principles—Ask That Roads Be Made Self-Sustaining—Other Testimony

WASHINGTON, D. C.

THOMAS DE WITT CUYLER, chairman of the association of Railway Executives, appearing before the House Committee on interstate and foreign commerce, on August 20, on behalf of 94 per cent of the railroad mileage of the country, presented the following outline of principles which the carriers believe should be incorporated in legislation for the return of the roads to private operation:

1. Approval by public authorities of rates that will enable the railroads of the country to be self-sustaining, and to command the new capital needed year by year for expansion of railroad facilities; but with no guaranty of income by the government.

The growth of population and industry now requires the annual investment of from $700,000,000 to $1,000,000,000 of new capital.

2. Exclusive regulation of rates by the Interstate Commerce Commission with the aid of regional sub-commissions, and with a definite direction by Congress to the Interstate Commerce Commission that:

"the level of rates shall provide revenue sufficient to pay wages and other expenses of operation, a fair return on the value of the property used in the public service, and establish and maintain a credit sufficient to attract the new capital necessary to meet the public need for transportation facilities."

3. Greater unification of public regulation of the privately owned and operated companies, by broadening national control; with exclusive national control of the issue of securities and the expenditure of new capital, and provision for federal incorporation of interstate carriers.

4. Authorization of consolidations of existing lines into strong, competitive systems, whenever found to be in the public interest; also providing for joint use of equipment and terminals when in the public interest.

5. A Federal Transportation Board, charged with the general oversight, from the point of view of the public interest, of all transportation.

The Federal Transportation Board, proposed by the railroads, would be composed of three commissioners appointed by the President.

This board would be co-ordinate with the Interstate Commerce Commission, and would relieve it of all functions excepting rate regulation, valuation and accounting.

The duties of the Federal Transportation Board in addition, would be:

(a) To certify from time to time to the Interstate Commerce Commission the amount of operating revenues needed by the carriers to enable them to perform their public service.

(b) To require the distribution in times of congestion of traffic from the more congested to the less congested lines, when in the public interest.

(c) To require the joint use of terminals when in the public interest.

(d) To consolidate all lines into a unified system in times of national emergency, as directed by the President.

In order to provide a bridge over which the railroads can return to private operation, without risking financial disaster, the railroad executives make these suggestions:

(1) With the termination of government operation, the level of rates established by the government to remain temporarily in force.

(2) The Interstate Commerce Commission, in consultation with the director general of railroads and the new Federal Transportation Board, to readjust rates so as to restore the equilibrium between revenues and expenses and make the carriers again self-supporting.

(3) Pending this readjustment the government guarantee of the standard return to continue.

(4) The indebtedness of the railroad companies to the government on account of new capital expenditures made during war control to be funded for 10 years.

Mr. Cuyler stated that the principles and measures proposed had been unanimously agreed to by all the roads in the association.

They include several important changes from the original outline of principles presented before the Senate committee early in the year.

Mr. Cuyler also introduced a complete bill containing the provisions to carry out the principles proposed by the railway executives which was explained in more complete detail by Alfred P. Thom, counsel for the Association of Railway Executives.

Mr. Cuyler also read a statement prepared by A. J. County, vice-president of the Pennsylvania, in reply to Mr. Plumb's statement including the Pennsylvania among eight eastern roads which he said had issued stock for less than its market value.

He pointed out that a large issue of stock always depresses the market value and showed that in the period mentioned the Pennsylvania had received more than $40,000,000 in premiums by issuing stock to its stockholders at 120 per cent of par.

Instead of being watered he said the Pennsylvania had property that cost over $400,000,000 in excess of the capitalization.

In conclusion Mr. Cuyler made the following statement regarding the Plumb plan:

"I cannot bring these remarks to a close without reference to the proposal as to a future railroad policy made to this committee by counsel for certain groups of the railroad employees.

"I am unable to accept this proposal as creating an issue between railroad companies and the great body of employees. The workers on the railroads are fair-minded men, thoroughly patriotic and devoted, as their fellow citizens are, to our American institutions. In my judgment, they will never knowingly consent to dangerous experiments destructive of our institutions, under which we have grown to be the foremost nation of the world, and under which there have been established standards of happiness and well-being of which all of us have a right to be proud.

"I have complete confidence that a proposal as radical, as revolutionary of the accepted and cherished principles of our social and economic life, as the proposal made to you, will never, when it is fully understood, receive the sanction of the great body of our citizens, whether engaged in railroad work or in other occupations.

"The people have already made a correct appraisal of the danger of the proposal, and have realized that it involves in essence the taking of the means of all the people, to acquire

the railroad properties from their owners, and turn them over, not to all the people, not even to all labor, but to one class of labor—and that a comparatively small one—to manage and operate for their own advantage and without adequate responsibility to any public authority.

"In order to popularize the proposal, it is accompanied by a suggestion of a reduction of railway rates. Without reference to the pending large demands for further increases, railway wages, since the beginning of Federal control, have already been increased about a thousand millions of dollars a year, which is more than the entire annual return on the capital invested in the railroads.

"The public has been quick to see that the promise in this plan of a reduction of railway rates is entirely illusory, and, in fact, that it promises instead a very large increase either in rates or taxes, for the public burden would depend upon the exercise of the power of the employees to fix their own wages.

"The payment of the wages thus fixed would constitute a charge against all the people either in transportation rates or in taxes.

"It is declared by the proponents of this measure that it introduces democracy into industry. Democracy is the rule of all the people. But this would be the rule of a very small minority.

"Instead of democratizing industry, it would establish in industry class power and privilege. It is a proposal to take a large part of the national wealth and set it aside for the benefit of relatively a very small class of our population, at the expense of all the rest.

"Railroad owners, while the immediate object of attack, are by no means chiefly interested in the issue which has thus been raised, although these owners, directly and indirectly, constitute a very large part of our population.

"As long as we have a Constitution, the owners must be paid adequate compensation for their property if it is taken.

"The issue affects the entire people, for it constitutes an assault upon the very fundamentals of our institution.

"As such it is the business of the entire public and as such it will be opposed by all these who are attached to American ideals and to American conceptions of government and social order."

Mr. Cuyler explained that the proposed bill did not include any provision for the settlement of labor disputes but that one would be submitted later. Asked how the executives proposed to take care of the situation of the weak roads, Mr. Cuyler said they had not intended to, on the ground that it would be contrary to the spirit of American enterprise as well as unconstitutional to require a strong, well managed road to contribute to the support of a weak road. In reply to a question he said that in order to protect a community vitally dependent upon the service of a weak road the public might be willing to have the government aid it financially, but he did not suggest such a plan.

Mr. Sims referred to the arguments made by advocates of the Warfield plan that a road ought to be required to give up two-thirds of its return above 6 per cent. Mr. Cuyler said the Warfield plan apparently represented the interest of the bond holders, who desire protection for their fixed return, rather than the stockholders. When Mr. Sims asked why there should be any difference of opinion between the executives and the bondholders, he said there should not be because the executives feel that they represent "the whole road," but he added that he was a director in a large insurance company and in many large trust companies and had never heard the Warfield plan discussed in any of their meetings, nor had he heard of any dissent from any of the bondholders to the proposals of the executives nor any evidence, except the Warfield plan, of any difference of opinion between the two classes of security owners.

Mr. Cuyler said that if satisfactory legislation can be enacted the sooner the roads are returned the better, because both the corporate and the operating organizations are "rapidly going to pieces."

Mr. Thom began his argument with a brief discussion of the Plumb plan, quoting opinions of the Interstate Commerce Commission to controvert the assertion that railroad property paid for out of surplus belongs to the public and should not be included in the value. He also declared that if the labor organizations should possess sufficient political influence to put through such a bill as that they have proposed there would be no difficulty about their being able to get control of the board of directors.

The plan proposed by the railway executives was also to be discussed by R. S. Lovett, Howard Elliott and S. T. Bledsoe.

Luther M. Walter

Luther M. Walter, general counsel of the association, brought out the fundamentals of the Warfield plan, providing for rates that would give a fixed minimum return on the aggregate property investment and for division of all surplus over the fixed return between labor, the roads earning the surplus and the public in equal shares. Mr. Walter declared that labor should participate in the earnings of the carriers and that such participation was a fundamental of the plan. He showed that under the minimum return plan the net result of railroad operations in the pre-war test period would have been the turning in of a surplus of $84,000,000 by some of the carriers for division with labor and the public.

Mr. Walter said in part:

"The purpose of this association is to secure from public authority such action as will protect the investments made and make it possible for capital to be furnished to the railroads for future needs. The financial structure of all credits depends upon the results of legislation by this Congress upon the railroad question.

"We believe that capital invested in railroad properties is entitled to a fair return, that labor is entitled to a just wage, and that the public which furnishes the money is entitled to efficient service at the lowest cost.

"Our association presents to you a bill which embodies and effectuates the views of the association. Our plan can be put into effect immediately. No other plan yet suggested dealing with the financial needs of the carriers can be effectuated short of a period of years. The keystone of the plan is a congressional direction to the Interstate Commerce Commission that it shall make freight and passenger rates sufficient to pay operating expenses, maintain railroad properties, and give not less than 6 per cent return upon the aggregate fair value of the property devoted to transportation in each of the principal traffic territories. The chief difficulty in the past has been the impossibility of adjusting rates so that the great bulk of the railroads of the country could earn sufficient to operate and maintain their individual properties without at the same time furnishing excessive earnings to a few great carriers.

"We use the property investment account as the basis upon which to apply the 6 per cent, because the Interstate Commerce Commission in the five per cent case found that the only basis available for prompt determination of the sufficiency of the return upon investment. In that case the commission found that the average return had been 5.64 per cent over the period from 1900 to 1914. Under the Warfield plan, Congress is asked to direct the commission to furnish a return from rates of not less than 6 per cent. When two-thirds of the excess earned by individual carriers over 6 per

cent upon their property investment has been placed in the excess earnings fund, there will remain to the carriers average earnings of 5.78 per cent, or only .14 per cent more than the commission found was not adequate in the public needs and for the railroad needs. The Supreme Court at its last term held in the Lincoln Gas Case that the return of 6 per cent on the property devoted to the public use was the minimum which the law would permit.

"The second fundamental is that labor shall participate in the earnings of the carriers. Labor's share should be used for the establishment of the insurance system or for profit-sharing. By reason of the largely increased duties which will fall upon the commission the security holders ask Congress to create six regional interstate commerce commissions, subordinate to the Commission, but with all the powers of the Interstate Commerce Commission in their respective territories. Our plan contemplates that these regional commissions shall act as boards of conciliation in settling wage disputes, being a body close to the employees, the carriers and the shippers. The issuance of securities of all carriers engaged in interstate commerce would be vested exclusively in federal authority.

"Finally, the plan would create a corporation operated without profit to the railroads and managed by the nine interstate Commerce Commissioners and eight railroad men selected by the railroads. This corporation would furnish expert advice to the commission in the operation of carriers, would unify terminals, would operate equipment such as has been built by the Railroad Administration and allocated to the individual railroads. It would furnish a great clearing house for railroad operation and in times of emergency would constitute the directing force for the handling of the railroads as a single system.

"Our association is opposed to the compulsory federal incorporation of railroads, to the provision for a new cabinet officer, or for a federal transportation board, or any board having supervisory power over the interstate commerce commission.

"We are opposed to the creation of new and larger regional companies because it means the elimination of competition in service, and competition in service is the thing which the public demands and which the Railroad Administration has not furnished. Many shippers and manufacturers' organizations have approved our plan. It is simple, easy of application, and can be made immediately effective. Under it investors will feel secure, labor will receive a fair wage and the shipper will obtain the service which he pays for.

"I have quoted liberally from the commission's two important general rate increase decisions to show that the commission itself used the property investment account to test the sufficiency of the revenues of the carriers as a whole in each of the three great traffic territories. That 6 per cent is the proper rate of return will not be questioned by anyone if private operation is to obtain. One of the great difficulties has been the adjustment of the rate structure so that the great bulk of the roads would have sufficient revenue without at the same time giving excessive earnings to the stronger roads. The weak and the strong roads operate in the same territory. The rate which is applicable on one must be applicable upon the other, else the road with the lower rate would enjoy all the tonnage, and the road with the higher rate would find itself without tonnage. Having in mind the fundamental, long-established rule that an investment in a public utility such as a railroad is entitled only to a fair return, there can be no constitutional inhibition upon this Congress fixing a maximum return. There should, however, be accorded to a carrier a portion of the earnings in excess of the maximum reasonable return so that the incentive to economy and efficiency in operation should not be lost. We believe that one third of the excess over 6 per cent is sufficient to encourage incentive and initiative in operation; that the carrier will be anxious to make the additional dollar in order that it may have the 33⅓ cents for its own treasury. The other two-thirds of the excess, I believe, should be divided equally between labor and the public which has paid the money.

L. M. Walter

"The application of this principal will not reduce the usual and customary dividends of the carriers. Had the system been in effect during the test period of three years ending June 30, 1917, there would have been excess earnings of $126,000,000. The 78 corporations earning in excess of 6 per cent would have received one-third, $42,000,000. There would have been left to divide between labor and the public some $84,000,000. During that three-year pediod, had the plan been in effect every customary dividend could have been paid. The only effect would have been to reduce the corporate surplus of carriers to whose earnings the plan applied.

"The plan contemplates a continuation of the present rate committees composed of representatives of both railroads and shippers to primarily consider and pass upon all changes in rates requested by either railroads or shippers and before being filed with the regional commission or the Interstate Commerce Commission."

Mr. Walter began his statement by telling the committee that the operation of the railroads up to June 30 had cost the government a deficit of $550,000,000 and that by the end of the year we can count on an irrecoverable loss of at least a billion. He presented the six months figures to show the present situation of the carriers and to show that the government cannot fairly turn back the roads without making provision for an assurance of revenues sufficient to enable them to provide good service with reasonable wages to the employees and a fair return to the investor. "When you do that," he said, "the quicker you return them the better." In commenting on the reduction in traffic expenses he said that one of the reasons why the Railroad Administration has not been successful was because the men who kept in touch with

the shippers had been removed from duty. He added that he said this after having handled most of the complaints from shippers for nine months while he was assistant director of public service for the Railroad Administration. Many of the traffic men were given other duties, many taken care of by the corporations and many good men were let go, he said in reply to a question.

Asked about the volume of traffic during the six months period, Mr. Walter showed that the ton miles per mile of road per day were 5,081 in the first half of 1917, 4,975 in the first half of 1918 and 4,266 in the first half of 1919. Representative Merritt remarked that these figures have some bearing on the statement that the railroads "had ceased to function." Mr. Walter said that the congestion had come in the latter part of 1917 but that if some of the restrictions had been removed and the railroad officers allowed to create their own organization and their own director general he thought they would have done as well as or better than was done under government operation. He added that west of Chicago and south of the Potomac there was little congestion.

"I feel that way myself," said Representative Montague.

Representative Sims asked if the roads would not be more economically operated if they were returned now.

"They might reduce the deficit," replied Mr. Walter, "but to return them under present conditions would be to shift from all the people to the railroad owners the burden of expenses which the government has itself put on the roads."

The first problem is to get a proper rate level, Mr. Walter declared, and for that reason the association suggests that Congress should give the commission a definite instruction. The commission, he thought, ought to be glad to have a more specific basis to work on than a law that rates must be "just and reasonable" and a specific rule is needed, he said, because the commission is composed of several minds.

Until the commission has completed its valuation, Mr. Walter said, the property investment account should be taken as the only available basis, subject to corrections for any obvious defects. He pointed out that defects in this account as to individual roads would be absorbed in the aggregate on which the rate level would be based and also in the indisputable increase in values not represented in the accounts.

Replying to Mr. Plumb's repeated claims that the property investment accounts are unreliable, Mr. Walter pointed out that Mr. Plumb had read to the committee only some of the earlier statements by the commission criticizing these figures. He also pointed out that of the 19 billions in the property account, 6 billions are represented by cash expended under the strict accounting rules of the commission since 1907 and that the five roads whose valuations were taken by Mr. Plumb as the criterion for charging that the other roads were worth only half their property account represented only 1,800 miles out of 260,000. The points were readily appreciated by members of the committee, who smiled some at Mr. Plumb's expense.

"Do the proponents of the Plumb plan question that 6 billion dollars?" asked Representative Cooper.

"Mr. Plumb just tells you what he thinks the property is worth as a whole," replied Mr. Walter. "But this shows how futile it is to accept his figures. Of course, the lower he makes the valuation the less the fixed charges and the more for wages. Mr. Plumb probably believes what he says."

"I have seen some very honest men believe some curious things," remarked Mr. Montague.

Chairman Esch asked if the courts had ever ignored the property investment account and when Mr. Walter replied that they could not, he asked: "Then what hope have the Plumb plan advocates that the courts will sustain their figures?"

"I can't see a possible chance," said Mr. Walter. "I haven't any doubt that the courts will sustain a value of 18 or 19 billions. However, we are asking you merely to accept it as a yardstick until we get an actual valuation."

Mr. Walter devoted some time to explaining the proposed rule of rate-making. "If you are going to see that rates are high enough," he said, "you have got to do something to see that some roads do not earn too much." He replied to the argument that the government cannot take from one road to give to another by saying that this plan does neither, because the two-thirds of the excess never becomes the property of the company, which has had its fair return and a little more as an incentive, but is held in trust or dedicated to a public use. He compared it with an amount collected by a carrier above what the commission finds to be a reasonable rate, which is returned to the shipper as reparation. He insisted that none of the excess goes to make up any deficiency of the weaker roads. The proposed corporation might take over special equipment such as refrigerator and tank cars and collect car hire from the roads. As counsel for one of the packers, Mr. Walter said he knew the packers would be glad to get rid of their investment in cars if assured an adequate car supply, but no single road can afford to own enough special equipment which has a seasonable use.

Mr. Walter thought the shippers would be entirely willing to pay rates high enough to produce an average of 6 per cent if assured that an undue proportion of profit would not go to the richer roads. He also said that the Federal Reserve Bank act affords a precedent both for the 6 per cent and for the distribution of excess earnings. Applying the proposed rule to the average figures of the test period, in which the railroads earned 5.2 per cent, Mr. Walter showed that to raise the rate level to produce 6 per cent would result in 78 roads contributing $84,000,000 to the excess earnings fund, but would leave them better off by $24,000,000, while 84 roads would not contribute but would be better off by $29,000,000.

Forney Johnston

Forney Johnston, of advisory counsel of the association, urged that the Warfield plan is the one solution upon which all the conflicting elements in the situation could unite. Congress must give constructive relief, he said, or look upon the overwhelming of the present economic situation, the plunging of the railroads into bankruptcy or government ownership.

His statement was in part as follows:

"We suggest no radical, complicated or costly process. We urge Congress to put into effect certain policies which have been found by experience to be essential both to the protection of railroads and to the protection of the public interest in transportation.

"We freely acknowledge the propriety of the main features of the bill introduced by Mr. Esch. The measure we have formulated embodies substantially all of the advances proposed in the Esch bill but accompanies them with the indispensable provisions necessary to protect American transportation from headlong bankruptcy. We earnestly caution the committee against the report of any bill without provisions for constructive relief. The representative of the commission who has testified before you has asserted that transitional and constructive relief is imperative; that the Esch bill does not embody that relief; that normal pre-war conditions can never be expected to return and that it is squarely up to Congress to define the policy which is to govern the railroads. Shall they be returned to their owners on a self-supporting basis that will justify further investment or shall the established system of ownership and operation under complete regulation be condemned by leaving them as permanent mendicants before the United States Treasury or the Interstate Commerce Commission?

"The American people have invested six billion dollars in

permanent railroad property—road and equipment—since 1907. That sum was added under supervision of the commission. Yet that vast sum produced in 1917, the so-called high-water mark of railroad prosperity, only about 200 millions in net income more than was earned in 1907. In short, the American railways produced six billion of new money to earn less than the government paid for loans secured by a mortgage upon the American people.

"In the so-called banner period of 1915-16-17, 120 out of the 162 systems, Class I railroads, operating a total of more than 170,000 miles or over two-thirds of the total mileage in the United States, earned less than 6 per cent upon their property investments. In the year 1916, 91 railroads, operating over 80,000 miles, paid no dividends whatever. Yet before the committees of Congress and in every case brought before the commission to advance rates, a vast mileage of American railways has been choked off with the assertion that average statistics show average prosperity.

"In all of these cases the commission has been actuated to deny general relief because certain roads were prosperous and the commission was unwilling to add to their prosperity even to save the large number of roads which were receiving admittedly inadequate revenue. Under these conditions, opposed in every effort to adjust rates to meet proven necessities by powerful mobilization on part of the shippers, the American railroads have been kept in a bread line before the door of the Interstate Commerce Commission since 1910. Relief has been denied or grudgingly and sparingly dealt out because certain roads in each region were thought to be affluent.

"The fundamental proposal of the Warfield plan is that this continual basis for warfare between the shipper and the railroads, this constant depressing factor against relief before the commission when relief is necessary, must be removed by regulation of excess earnings which will relieve the shipping organizations of their apprehension and the commission of the odium which would be visited upon it if affluent railroads were given higher rates to protect American transportation from bankruptcy.

"For this reason we believe that in asking Congress to instruct the commission that a 6 per cent rate level which would leave only 5½ per cent in the treasury of the Class I railroads we are suggesting the lowest possible ratio on which the railroads, as a whole, can survive, the lowest in the aggregate which any court would sustain. It is the irreducible minimum. The present law and the bill being considered by your committee give no consideration to the necessity for general advances. The power of the commission is the power to suspend and reduce. It can act only when individual rates are proposed or put into effect by the railroads which are in violation of the law, that is, unreasonable or discriminatory.

"Thus a petition for general relief can be inaugurated only by the needy carriers conspiring to advance competitive rates in violation of the Sherman act, filing those rates, and having the proposed schedules suspended. While the commission ordered an investigation in 1913, members of that body dissented on the ground that the commission had no power to investigate the carriers' necessity for revenue. So the railroads filed tariffs in October, 1913, and forced their suspension. This situation is fundamentally wrong. The commission which is to be given the power to force railroads to add billions of dollars to their investment for new tracks and facilities should be required to produce a reasonable return upon that investment. If a railroad is ordered to secure a hundred million of dollars for additions or facilities, it should not be forced to stand in line before the commission in year long efforts to secure the revenue to sustain that investment. It would be immoral to ask the commission to approve the sale of securities as being consistent with the public interest unless Congress proposes that the purchasers shall be permitted a square chance for a reasonable return.' That investment, which will hereafter be forced and in every event approved by the commission, should go on the books of the carrier at what the money cost and the rate level should directly reflect that cost.

"For every dollar invested in the average American railroad in cash since 1907 it has received a return of less than 4 per cent, if the income and investment of 1917 be compared with the income and investment of 1907. Congress cannot expect this result to continue. It must now determine its policy to the railways as a whole, when that policy is declared, the so-called weak roads, indispensable to a vast population, can decently and in order readjust their organizations to a permanent and wholesome basis. Under the 6 per cent level, accompanied by a regulation of earnings over 6 per cent as proposed by the plan, and applying that plan to the three-year pre-war period, 78 railroads would have received less than 6 per cent on the property accounts. Their average would have been 8.34 per cent. It is obvious that this result is just what we have asserted—the irreducible minimum.

"We feel absolutely assured that in presenting the Association plan we stand upon safe ground, consistent with the Constitution and with American traditions. While it is progressive in its acceptance of the idea of complete regulation, we are certain that it preserves the incentive to good service, high efficiency and consideration for passengers and shippers which no governmental organism or class organization would accord."

Samuel H. Beach

Samuel H. Beach told the committee that half of the people of the United States are directly interested in return of the railroads to private ownership on a basis that will afford adequate protection to security holders. He strongly advocated the Warfield plan as the only acceptable vehicle for the accomplishment of the end. Mr. Beach said in part:

"The only idea in the minds of many people regarding railroad securities is that they are mainly owned and held by the very wealthy. They do not stop to consider the fact that the major portion of the liquid wealth of the nation consists of the small accumulations of the many. The Savings Banks Association of the State of New York, comprises in its membership 139 of the 141 mutual savings banks in the State. It is needless to say these banks are popular with the people, for over one-third of the entire population of New York state are depositors in mutual savings banks. To be exact there are 3,500,000 depositors, who have to their aggregate credit the enormous sum of over two billions of dollars. There are similar mutual savings banks in 14 other states, the total number being 615, which own approximately $850,000,000, of railroad securities. These securities belong to over 9,000,000 people.

"Savings banks are required by law to invest the money of their depositors as speedily as possible in certain safe and specifically designated high-class securities and among them of necessity are these issued by railroads. Besides the savings bank depositors there are 33 million citizens holding life insurance policies; and railroad securities form a large block in the investments of the companies by which these policies are issued. In addition to these are millions of small depositors in trust companies, national banks and state banks; also hundreds of universities, thousands of trust estates and individual investors, so that in all 50 million people, a full half of all the people in the nation, comprising mainly the middle class—made up of business men, mechanics, clerks, laborers, the widow and the orphan—are vitally interested in having the railroads returned to private ownership under such terms and conditions as will render present outstanding bonds de-

sirable to retain and future issues attractive as an investment.

"The vital point of this proposed measure is that if to those roads having the average of efficiency can be assured a return of 6 per cent by act of Congress, it will settle and take out of the hands of the Interstate Commerce Commission the much vexed question of 'What is a reasonable return?'

"Ex-Senator Elihu Root said, in a letter addressed to Mr. Warfield touching on this plan, 'I think you have put your hook into the key log of the jam.' No more terse or more effective description of the conditions which prevail could be expressed than is contained in these words of Mr. Root. We all know there is a jam. Every business man in the nation knows that government ownership or government operation of railroads can never be made either economical or efficient and, in a Republic to the continued existence of which political parties are necessary, the making of a political asset of the vast number of railroad employees which our great transportation system requires, would be a constant and grave menace to a good government.

"It is our firm conviction that the railroads cannot avoid destruction and eventual governmental absorption unless they are assured of a return of not less than 6 per cent, 'though exercise by Congress of its duty to stop, by act, the knife of regulation short of the heart of the transportation system of the United States.'

"Nothing in human experience affords a precedent for such operation of railroads, in this or any other country, as the past two years have witnessed. Operating costs have mounted so far out of proportion to receipts that the bonds of at least eight or nine railroads, which were eligible before the war started are in a fair way to become illegal for savings banks to hold. It is easy to ask 'Why cannot these laws be made more liberal to conform to new conditions?' But we do not want these laws changed. We have no need to attempt to camouflage our position. What we do want is to have such legislation enacted as will bring the railroad securities up to the requirements of the law; so that instead of being forced to sell the bonds we now hold and thereby still further deflecting an already depressed market we may feel warranted and justified in adding to our holdings by investing in new issues of railroad bonds as much of the two billions of deposits entrusted to our care as we are permitted to do by the laws which govern our investments."

George A. Post

Submitting the National Chamber's plan, and its objection to the Plumb plan, on August 18, George A. Post said that at the time the referendum vote was taken there was no doubt in the minds of the railroad committee that government ownership and operation was not the issue pressing for attention upon the present Congress.

"Due to the unfavorable impression made upon the public mind by the operation of the railroads under federal control for the period of 16 months," he said, "there was manifest throughout the country a strong, even overwhelming, sentiment against continuance of federal control and operation. Many men in public office and multitudes of private citizens, prior to the adventure into the field of federal control, had been harshly critical of railroad management; had jealously advocated and brought about legislation severely restrictive and punitive respecting railroad operation, and in their bitterness because of what they considered unfair and aggravating practices of the railroad, had declared that government ownership and operation was the only remedy for railroad evils. Later they were so aroused by what they deemed the baleful effects of government operation upon their personal convenience and the conduct of their business, brought about by the indifference of governmental agencies, that they renounced their previous advocacy of government ownership, and became vigorous opponents thereof. So recently as July 15 last, at the opening of these hearings before this committee, Chairman Esch said: 'In view of the widespread sentiment throughout the country against government ownership, I feel that we ought not to spend very much time on that proposition.'

"American business is deeply concerned respecting the future of our railroads. It has high hopes of the wise outcome of your deliberations. It has noted with gratification the earnestness, patience and fairness with which the Congressional committees are seeking to secure all possible information. The chamber has keen appreciation of the perplexities that confront you in framing the legislation which must precede the return of the railroads to their owners. It has aimed to be helpful to you in showing the trend of thought of American business upon some of the outstanding issues involved in your deliberations. It knows that deep study is needed of the complexities inherent in the very existence of a transportation system which serves those who need service that they desire to obtain at the lowest possible rates—a service which is rendered possible through the labors of those who are entitled to liberal wages for dangerous and exacting toil, and require investment of billions through the savings of thrifty folks who will invest only if the return is attractive to them. In such circumstances, not one of the elements may reasonably hope to exact the fullest measure of its desire, either as to lowness of rates, height of wages, or abundance of investment return."

Mr. Post declared that under government ownership the development of the railroad facilities, which means so much to the country's progress, would depend upon Congressional appropriations, and that would prevent the anticipation of transportation needs. He pointed out that appropriations were not to be made in the amount and at the time necessary to insude adequate development and that political considerations not only would control the amount of appropriations, and the objects for which they were made, but would also weigh heavily for the selection of men for official positions.

To acquire the railroads, he said, the government would have to pledge its credit for 18 to 20 billions of dollars, at a time when other large financing must be done. It would be difficult for the government to dispose of the securities required to purchase the railroads, and it would be necessary for the government to secure from five hundred million to one billion dollars of new capital every year. If the government were to assume the burden of financing the railroads at the present time, when the war debt is so large, its interest rate would necessarily be as high as, if not higher than, the rate at which corporations could secure capital.

Business men of the country are convinced, Mr. Post said, that government operation cannot be as efficient as corporate management. Competition, the incentive to efficiency and progress in private enterprises, he declared, is absent from the government administration of affairs. Individual initiative is less characteristic, bureaucratic methods more so, and the services rendered are less progressively efficient.

The concensus of opinion of the National Chamber, Mr. Post said, is that unless the government adopted the policy of fixing low rates and fares with the intention that any resulting deficit from operations should be placed as an increased burden of taxes upon the general public, rates and fares would be higher under government than under private operation, on the theory that under government operation expenses rise in relation to income, and the charges imposed by the government must be higher than those which it would be necessary to permit railroad corporations to make.

Mr. Post urged the return of the railroads to corporate control as soon as remedial legislation can be enacted. The plan he offered for the future provides that permission be granted for railroads to consolidate, in the public interest,

with prior approval of government authority, in a limited number of strong competing systems, so located that each of the principal traffic centers of the country shall, if possible, be served by more than one system, the proposed grouping to be about the present large systems, and not by territorial subdivisions of the country.

The position of the National Chamber on the consolidation feature, Mr. Post said, is in substance: The existence of so many railroad systems as there are now increases the difficulty of coordinating their facilities, and service to the extent necessary to secure the most economical operation. Moreover, some of the present roads are financially weak and their continuance as separate systems complicates the government's problems of rate making; of common or joint use of equipment and facilities; of the regulation of security issues, and of reestablishing the financial credit of the railroads as a whole. If the railroad systems that are financially unstable and the many systems of minor importance can (subject to the approval of the government, and under conditions which it may prescribe) be grouped or consolidated, with a limited number of strong systems, a better service can be rendered and a larger development of lines, terminals and other facilities will be possible. If such a plan shall be found by Congress to be constitutional and feasible, the National Chamber of Commerce recommends that railroad corporations engaged in interstate commerce be made subject to the United States by the enactment of a statute similar to the National Bank Act, the states retaining the power of taxation and police regulation.

Federal regulation of capital expenditures and securities of railroads engaged in interstate commerce is favored, as is federal regulation of intrastate rates affecting interstate commerce.

The National Chamber plan, Mr. Post explained, calls for the enactment of a statutory rule providing that railroad rates and fares authorized by the Interstate Commerce Commission shall be designed to yield the railroads, in each of the traffic sections which shall be designated by the commission, aggregate revenues which shall provide (after allotment has been made for renewals and depreciation) such net returns upon a fair value (determined by public authority) of the property devoted to the public use as will be sufficient to enable the carriers to obtain at reasonable cost the capital required to furnish the public with adequate facilities and efficient and economical service.

The National Chamber, Mr. Post said, authorized him strongly to recommend that the Interstate Commerce Commission retain all its present power, and be given certain additional power, and that there be created a Federal Transportation Board whose general duty it shall be to promote the development of a national system of rail, water and highway transporation, and thus to make possible the economical use of all facilities, including tracks, terminals, transfer facilities, steam and electric roads, waterways and highways.

G. A. Post

The program of railroad legislation presented to the House committee by the National Transportation Conference is up to a certain point identical with the plan which Mr. Post presented as having received the approval of the members of the Chamber of Commerce. The conference program goes further, however, and includes certain recommendations which, although entirely in harmony with the principles embodied in the chamber plan, have not yet been submitted to the members of the chamber for their approval by referendum vote.

The Chamber of Commerce has published in one pamphlet and is distributing widely the program of railroad legislation adopted by the National Transportation Conference and also the statements in support of the program made before the House committee by members of the conference. Both the conference and the railroad committee of the chamber recommend:

(1) Corporate ownership and operation of railroads.

(2) Return of the roads to their owners as soon as the necessary legislation can be enacted.

(3) Consolidation of existing roads in strong, competing systems.

(4) Compulsory federal incorporation.

(5) Federal regulation of capital expenditures and security issues.

(6) Federal regulation of intrastate rates affecting interstate commerce.

(7) Adoption of a statutory rule of rate-making that will assure to the railroads revenue sufficient to enable them to furnish the public with adequate facilities and efficient and economical service.

(8) Creation of a Federal Transportation Board to promote the development of a national system of rail, water and highway transportation.

The further recommendations embodied in the conference program that are in harmony with the principles of the chamber's plan; but as yet have not been submitted to the members of the chamber for approval by referendum vote are as follows:

(1) Creation of a company contingent fund for each railroad and a general contingent fund for all railroads, to be used in strengthening and stabilizing railroad credit.

(2) Creation of a railroad reserve fund for use during the period of transition from government to corporate management.

(3) Creation of boards consisting of equal numbers of representatives of employes and officers of the railroads for the adjustment of wages, hours of labor and other conditions of service of railroad employes.

(4) Organization of the board of directors of each consolidated railroad company with twelve members of whom one shall be a representative of the employes of the system, and three shall be selected by the Federal Transportation Board to represent the principal interests involved in the territory served by the system.

Samuel Spring, associate counsel of the Citizens' National

Railroad League, has filed with the committee a statement supplemental to that of Nathan L. Amster, president of the league, made on July 29:

N. L. Amster's Valuation Plan

"If I may start at the end of our tentative bill first, I would like to point out the next to the last section, that dealing with valuation. It is vital," he said, "no rate base with any degree of permanency can be fixed until we know the value of our carriers on which they are entitled to earn a fair return. Consolidations under government supervision are impossible unless the public can rest assured that such consolidations will not represent financial juggling and the palming off on the public once again of a large mass of water securities.

"Yet, unhappily, the question of physical valuation of our carriers is a legal question to be determined by our courts and not by the Interstate Commerce Commission. This arises, as the committee well knows, from our constitutional provisions which enable the carriers to attack by injunction as confiscatory any valuation which they deem too low. The courts have not laid down any legal rules which are clear enough to enable the commission to fix any final value. Indeed the whole legal question is a sad muddle. The courts, as any lawyer knows, have a fixed judicial rule of avoiding the decision of any unnecessary question. Thus many of the most difficult questions in utility valuation are unsettled. Who can say anything definite about intangible values such as development cost or going concern value? Indeed, the method of reaching a final fair value still remains undetermined with any degree of certainty. Our courts have had too big a task. No one today desires to have the question of physical valuation decided with meticulous, breath-taking accuracy. A fair, honest approximation that will end the controversy is demanded. If we leave the decision of the Interstate Commerce Commission to be passed upon by the courts as valuation questions have been judicially determined in the past I say advisedly that it will take 10 years at least to end the matter. Congress, with due regard to constitutional rights, has got to settle the matter.

"Already the Interstate Commerce Commission has encountered sad difficulties. I might almost call the valuation battle before the commission between the carriers and the public represented by the state commissions acting through their national association a rare and delicate comedy. This committee doubtless remembers how violently opposed the carriers were to physical appraisal in 1913. At that time the theory of reproduction cost was welcomed by the public and condemned by the carriers. Now the carriers—or at least they were before the war—are urging the complete and logical application of the reproduction theory and demanding that the commission fix a final value. The public desires to avoid the reproduction theory because of the unhappy way in which it can be twisted and desires the commission to state the factors of value only, not the final value. Thus we are on the threshold of a heyday of litigation, briefs, arguments and passionate utterance. The Gordian knot must be cut by Congress and at once.

Now Mr. Amster has suggested a sound way of ending this matter. It is based on honest, fair approximation. Let us average the original cost, where an investment was made in good faith, and the reproduction cost. Then let us correct this result by capitalizing the net earnings of the road over a period of 10 years and averaging this result with our former figure. This is obviously fair. A road in reality is not worth what it cost to build it if it can't earn a fair return. By taking a 10-year period we give every road a fair chance to show its latent possibilities. I think that the Supreme Court will not for a moment say that this method of reaching a fair valuation, if adopted by Congress, is so clearly unreasonable as to require it to hold it void. The Supreme Court, it is true, has avoided taking the earnings of a road as an indication of its value in a rate case because it felt that this was arguing in a circle. But it has repeatedly and urgently said that any rate or value, over and above any question of original or reproduction cost, must be fair to the public and to the carrier. It has repeatedly said that any value producing a rate unreasonably high must be rejected. In a word it has left a big space for a corrective, and Mr. Amster's corrective, since it is the only one that I have discovered in a careful examination over a period of years of all court decisions and articles and discussions of the subject, will be in complete accord with the views of the court. Congress cannot leave this problem of determining the value for rates and consolidation of one-tenth of our entire wealth, so far as the principles of valuation are concerned, to the Interstate Commerce Commission. It is too vital a question for any commission to determine. I feel confident that the commission feels this way; at least the commission has shown the greatest prudence in avoiding a final decision of the question.

"Congress must speak. Congress is the logical—indeed the only body—that can speak. Mr. Amster has prepared and devised a solution that is sound, in accord with the views of the courts, is fair and just, and is the only solution seriously suggested.

"This bill adds to Section 19a of the act to regulate commerce various paragraphs which strive to end the valuation controversy. It ends the question of land values; it ends the question of intangible values. These provisions have been drafted only after a painstaking study of court and commission decisions and they are a codification of the best judicial views in a field where the decisions are in confusion.

"I would also like to add a word about the theory of regulation as evolved in this bill. The great weakness of regulation of our utilities in the past has been due to the fact that the public acted only after the act had been done. Then the public approved or disapproved. Too much of our regulation has been of the character of locking the barn after the horse was stolen. Again the utilities were hampered because they had to act and take the risk of the public's disapproval. This bill gives the Interstate Commerce Commission and the state railway commissions representation on the board of governors of the unified railroad corporation. Thus the regulatory bodies will know all that is being done and can exert their influence before the act is done. The time has come when we must have preventive regulation; the public must know all that is done from the very beginning."

Statement of S. H. Cowan

S. H. Cowan, representing the National Livestock Shippers' League, who appeared before the committee on August 18 and 19, argued that very little legislation is necessary before the railroads are returned. He delivered a characteristic tirade against both high rates and high wages, saying the director general has not been able to control either the traffic men who took advantage of the opportunity to "put it over on the shippers" or the brotherhoods. He said that labor was able to get nearly all it demanded and that the railroads want 6 per cent after labor gets what it wants, and as a result it is becoming too expensive to ship freight by rail. He thought it was time for Congress to "talk turkey" to both capital and labor and to fix it so that it won't be necessary, as he said, "to go to Washington to get permission to change a $5 bill." He opposed government ownership vigorously, saying the government is not organized to run a business and that the President has to appoint men he knows nothing about.

If the railroads are returned, he said, all the old statutes and constitutional guarantees will remain in effect, labor will continue to draw its high wages and the rates will remain in effect. When some of the members of the committee ques-

tioned whether the state rates would remain in effect he proposed that the existing rates be continued by law for four months after the return of the roads unless changed by the interstate or state commissions. He also proposed that the director general be authorized to retain control over some roads, that the railroads be paid the amount of working capital taken over, that they be required to pay all liabilities incurred by the director general in the ordinary course of operation, such as loss and damage claims, and charge them to the government, that an accounting board be appointed by the Interstate Commerce Commission to adjust accounts between the railroads and the government, to report to the commission, which should make a recommendation to Congress, and that Congress should make an appropriation for loans to the railroads.

Mr. Cowan said the purpose of the federal control act had been to pave the way for permanent government ownership and that the standard return was too large because it included about $300,000,000 for surplus. He said Mr. McAdoo thought he could shake the railroads up like a kaleidoscope and show a profit from unification, but that he "learned different just before he went to California to go into the moving pictures." He said he was not criticizing Mr. McAdoo, that he was honest in his opinions, and "one of our greatest men since Barnum." Asked whether the railroads would be able to avoid deficits under private operation Mr. Cowan said he did not know, but he thought Congress ought to investigate the operating expenses to see if they do not include a large amount of betterment work.

Mr. Cowan's argument was supplemented by S. C. Rowe, representing the Texas Cattle Raisers' Association, who particularly urged the creation of a board to regulate wages and legislation to prevent strikes.

Plumb Wants Congress to Investigate

INDICATIONS ARE APPEARING that the charges made by Glenn E. Plumb, counsel for the organized railway employees, before the House committee last week, are another part of the campaign to prevent the return of the railroads to private management, and thus to extend the period in which it is possible to pay wages without relation to the earning power of the railroads.

Representative Huddleston of Alabama has introduced a resolution in the House, copies of which were given out in advance by the Plumb Plan Press Bureau, providing for the appointment of a committee of six members to investigate the truth of the charges. Mr. Huddleston also made a speech, which was also given out in advance by the Plumb Plan Press Bureau, declaring that the "entire country was greatly shocked by these sensational charges." He declared that the railroad employees have "inside knowledge of the facts" and he objected to a suggestion that they be referred to the Interstate Commerce Commission.

Representative Denison of Illinois expressed surprise that the gentleman from Alabama, coming from the great industrial center of Birmingham, should state that the people were shocked by these charges. "Charges similar to these have been made in this country for the last five or ten years," he said, "and there is not anything new about them. The Interstate Commerce Commission has been investigating that question for five years."

Mr. Plumb also wrote a letter to Chairman Esch of the House committee, referring to a newspaper report that he intended to confer with officials of the Interstate Commerce Commission in order to learn whether it would be practicable for that body to conduct an investigation of the charges. Mr. Plumb said he feared Mr. Esch had missed the intent which actuated the preferment of those charges at this time; that the investigation should be made and reported upon before Congress acts on railroad legislation, and that the investigation should be made by a committee of the House or Senate or preferably by a joint committee. If Congress wishes to designate the Interstate Commerce Commission, he said, it should be expressly provided that the investigation be prompt in order that the report may be placed before Congress and the public "before the enactment of any measure looking to the restoration of the railroads to hands which we denounce as unclean." The letter then repeated the charges as made before the committee and concluded with another reference to the desire that a report be had before the railroads are returned to their private owners. Apparently Mr. Plumb recognizes that if he can secure a thorough investigation of the history of railroad land grants before the railroads are returned, the present system of government control might be continued for a very considerable part of the period advocated by Mr. McAdoo.

The Plumb Plan League has found another defender in Congress in the person of Representative Carrs of Minnesota, who was recently committee chairman of the Brotherhood of Locomotive Engineers. Mr. Carrs did not say much in favor of the plan, but he objected to statements made by other Congressmen that the railway brotherhoods forced the Adamson law by threats of a strike and that they are now seeking to force the Plumb plan by threats of strike. While the determination of the labor leaders was plainly not to accede to a delay on the question of wages, he said, there never has been a vestige of a threat of strike or the desire of intimidation with regard to the Sims bill.

"I can say of my own personal knowledge that in all the conferences of the railroad union presidents held during the spring and this summer in connection with their advocacy of the Plumb plan the subject of strike as a means to support the plan has never been even broached. The program called for introduction of the bill not before October, and then as the spirit of resistance on the wage questions became apparent the program was changed and the labor bill was thrown into the basket to prove to the men in the shops and on the trains that their interests were being carefully served. So, as it happens, the threats of strike were not made in support of the Sims bill, but the Sims bill was introduced when it was as an effective answer to the strikes."

Six Months Income 39.8 Per Cent of Standard Return

THE CLASS I RAILROADS under federal control during the first six months of this year earned 39.8 per cent of their standard return as compared with 38.4 per cent during the first half of 1918, according to a statement compiled by the Railroad Administration. The net federal income for six months was $156,827,416, as compared with $151,319,830 in the first half of 1918 and as compared with a standard return for this period of $393,975,779. The New England district had a deficit in both years. The Central Western region came nearer to earning its standard return than any of the others, but its percentage was only 63.1. A total of 58 roads had deficits for the six months period and only 20 roads earned their standard return. It will be noted that most of these are comparatively short lines that are handling a much greater traffic than formerly.

The operating revenues in the six months period show an increase from $2,055,966,861 to $2,324,499,304, or 13.1 per cent; the operating expenses increased 14.9 per cent. from $1,790,249,693 to $2,056,720,484.

The operating expenses for the first six months of 1918 do not include those months' proportion of retroactive wage payments made and accrued in subsequent months and are

Condensed Income Account

For 6 Months Ended June 30, 1919, Compared with Same Period of Previous Year

Railroad	Operating revenues			Operating expenses			Operating ratio		Net federal income (See notes)			Standard return (See notes)		Per cent net federal income to standard return, this period (See notes)	
	This year	Last year	Increase or decrease Per cent	This year	Last year	Increase or decrease Per cent	This year	Last year	This year	Last year	Increase or decrease	For this period	For entire year	This yr.	Last yr.
Total, New England District	$113,576,893	$104,632,237	8.5	$109,297,611	$98,731,229	10.7	96.2	94.4	D $1,637,747	D $3,074,986	$1,437,239	$17,097,876	$38,720,647	b	b
Total, Central District	388,151,521	340,544,282	14.0	339,005,693	310,194,356	9.3	87.3	91.1	31,529,942	9,282,055	22,247,887	63,005,258	142,684,644	50.0	14.7
Total, Ohio-Indiana District	66,616,386	62,809,339	6.1	58,027,744	53,660,976	8.1	87.1	85.4	4,918,991	3,615,751	1,303,240	9,630,510	21,809,702	51.1	37.5
Total, Eastern Region	568,344,800	507,985,858	11.9	506,331,048	462,586,561	9.5	89.1	91.1	34,811,186	9,822,820	24,988,366	89,733,644	203,214,993	38.8	10.9
Total, Allegheny Region	445,154,921	390,757,956	13.9	420,523,631	375,284,012	12.1	94.5	96.0	6,118,292	D 10,142,156	16,260,448	65,448,208	148,217,061	9.4	b
Total, Pocahontas Region	75,246,787	70,078,057	7.4	61,537,976	57,671,236	6.7	81.8	82.3	9,848,932	10,042,587	d 193,655	16,386,101	37,108,728	60.1	61.3
Total, Southern Region	305,876,829	270,125,864	13.2	274,216,785	217,145,662	26.3	89.6	80.4	19,735,414	42,335,278	d 22,599,864	44,848,991	101,567,115	44.0	94.4
Total, Northwestern Region	312,544,133	261,231,815	19.6	270,616,028	235,710,208	14.8	86.6	90.2	23,544,011	13,771,526	9,772,485	65,548,222	148,443,558	35.9	21.0
Total, Central Western Region	423,268,216	379,515,783	11.5	348,314,061	297,205,032	17.2	82.3	78.3	53,420,992	65,090,505	d 11,669,514	84,704,505	191,825,769	63.1	76.9
Total, Southwestern Region	194,063,618	176,271,528	10.1	175,180,955	144,646,982	21.1	90.3	82.1	9,348,589	20,399,269	d 11,050,680	27,306,108	61,838,684	34.2	74.7
Grand total, all regions	2,324,499,304	2,055,966,861	13.1	2,056,720,484	1,790,249,693	14.9	88.5	87.1	156,827,416	151,319,830	5,507,586	393,975,779	892,215,908	39.8	38.4
Eastern Region															
New England District															
Bangor & Aroostook	2,611,728	2,233,051	17.0	2,358,541	1,959,974	20.3	90.3	87.8	140,780	293,888	d 153,108	686,984	1,555,775	20.5	42.8
Boston & Albany	12,138,098	11,436,021	6.1	11,653,615	10,178,206	14.5	96.0	89.0	D 112,927	375,825	d 488,752	1,794,157	4,063,131	b	20.9
Boston & Maine	33,116,396	31,169,902	6.2	31,709,689	30,385,545	4.4	95.8	97.5	227,840	D 1,799,214	2,027,054	4,318,137	9,779,055	5.3	b
Central New England	3,057,400	2,763,010	10.7	2,998,878	2,496,430	20.1	98.1	90.4	D 309,546	D 200,997	d 108,549	648,280	1,468,124	b	b
Central Vermont	2,629,992	2,330,479	12.9	3,069,434	2,527,428	21.4	116.7	108.5	D 550,732	D 333,719	d 217,013	344,026	779,098	b	b
Grand Trunk Lines in New England	2,130,207	998,858	113.3	2,522,173	1,360,769	85.3	118.4	136.2	D 300,494	D 573,456	272,962	D 1,886	D 4,271	bc	bc
Maine Central	8,156,465	7,068,158	15.4	8,541,999	7,375,494	15.8	104.7	104.3	D 993,366	D 966,081	d 27,285	1,305,147	2,955,697	b	b
New York, New Haven & Hartford	47,335,175	44,533,001	6.7	44,280,701	40,391,830	9.6	93.2	90.7	301,329	135,950	165,379	7,549,029	17,095,884	4.0	1.8
Rutland	2,201,432	2,099,757	4.8	2,162,581	2,055,553	5.2	98.2	97.9	D 40,631	D 7,182	d 33,449	452,116	1,023,883	b	b
Total, New England District	113,576,893	104,632,237	8.5	109,297,611	98,731,229	10.7	96.2	94.4	D 1,637,747	D 3,074,986	1,437,239	17,097,876	38,720,647	b	b
Central District															
Ann Arbor	1,931,130	1,512,521	27.7	1,732,935	1,458,576	18.8	89.7	96.4	101,968	D 77,265	179,233	232,656	526,883	43.8	b
Buffalo, Rochester & Pittsburgh	6,480,097	8,033,382	d 19.3	7,231,724	7,963,487	d 9.2	111.6	99.1	D 937,480	342,532	d 1,280,012	1,446,764	3,276,410	b	23.7
Delaware & Hudson	15,938,986	15,153,911	5.2	15,014,920	14,669,244	2.4	94.2	96.8	433,503	D 107,762	541,265	3,271,857	7,409,600	13.2	b
Delaware, Lackawanna & Western	34,287,407	29,951,436	14.5	26,845,219	23,139,380	16.0	78.3	77.3	5,350,217	5,524,795	d 174,578	6,941,275	15,719,539	77.1	79.6
Detroit & Mackinac	719,953	711,255	1.2	835,093	668,137	25.0	116.0	93.9	D 172,327	30,737	d 203,064	137,180	310,664	b	22.4
Detroit & Toledo Shore Line	1,120,911	946,619	18.4	528,338	534,360	d 1.1	47.1	56.4	490,511	168,812	321,699	201,582	456,512	243.3	83.7
Erie (Inc. C. & E.)	46,784,985	40,626,308	15.1	46,962,743	44,967,497	4.4	100.4	110.7	D 2,424,953	D 6,960,074	4,535,121	6,945,485	15,729,068	b	b
Grand Trunk Western Lines	10,252,842	7,975,771	28.3	8,431,125	8,165,997	3.2	82.4	102.4	1,073,594	D 1,583,370	2,656,964	475,136	1,076,017	226.0	b
Lehigh & Hudson River	1,184,405	1,029,227	15.1	1,015,189	884,852	14.7	85.7	86.0	58,656	62,543	d 3,887	229,339	519,371	25.6	27.3
Lehigh & New England	1,591,508	1,752,602	d 9.2	1,281,968	1,362,627	d 5.0	80.5	77.7	266,095	406,106	d 140,011	501,519	1,135,761	53.1	81.0
Lehigh Valley	29,325,283	27,195,521	7.8	27,726,531	26,180,513	5.9	94.5	96.3	615,917	59,619	556,298	4,999,117	11,321,233	12.3	1.2
Michigan Central	35,083,567	29,356,570	19.5	27,554,912	23,825,153	15.6	78.5	81.2	5,939,486	3,174,153	2,765,333	3,555,578	8,052,127	167.0	89.3
Monongahela	1,575,784	1,348,318	16.9	1,191,176	995,487	19.7	75.6	73.8	353,996	104,882	249,114	257,473	583,086	137.5	40.7
New York Central	129,876,194	110,965,111	17.0	109,214,827	100,174,668	9.0	84.1	90.3	15,629,724	4,220,952	11,408,772	22,846,611	51,739,500	68.4	18.5
New York, Chicago & St. Louis	11,836,524	9,068,351	30.5	8,988,860	7,836,391	14.7	76.0	86.4	2,331,426	464,180	1,867,246	979,781	2,218,857	238.0	47.4
New York, Ontario & Western	4,610,067	4,776,097	d 3.5	4,512,011	4,495,899	0.4	97.9	94.1	D 30,052	98,988	d 129,040	928,882	2,103,589	b	10.7
New York, Susquehanna & Western (Inc. W. B. & E.)	2,011,856	2,218,701	d 9.3	1,917,854	2,171,645	d 11.7	95.3	97.9	D 81,976	21,780	d 103,756	432,798	980,135	b	5.0
Pere Marquette	15,658,076	12,193,644	28.2	12,715,728	10,540,649	20.6	81.3	86.4	2,222,529	493,437	1,729,092	1,655,091	3,748,196	134.3	29.8
Pittsburgh & Lake Erie	13,358,112	13,980,011	d 3.0	12,263,393	10,341,509	18.6	90.4	74.0	872,461	3,269,137	d 2,396,676	3,965,395	8,980,219	22.0	82.4
Pittsburg & Shawmut	535,974	617,831	d 13.2	675,160	584,263	15.6	126.0	94.6	D 151,182	133,968	d 285,150	267,612	606,048	b	50.1
Pittsburgh & West Virginia	642,191	856,716	d 25.0	1,004,376	803,773	25.0	156.4	93.8	D 405,383	D 51,004	d 354,379	104,657	237,010	b	b
Ulster & Delaware	461,718	414,259	11.5	593,819	461,025	28.8	128.6	111.3	D 160,547	D 70,458	d 90,089	56,525	128,009	b	b
Wabash	22,730,851	19,850,030	14.5	20,767,792	17,969,224	15.6	91.4	90.5	153,759	D 444,633	598,392	2,572,944	5,826,810	6.0	b
Total, Central District	388,151,521	340,544,282	14.0	339,005,693	310,194,356	9.3	87.3	91.1	31,529,942	9,282,055	22,247,887	63,005,258	142,684,644	50.0	14.7
Ohio-Indiana District															
Chicago, Indianapolis & Louisville	5,604,328	4,573,207	22.5	4,678,182	4,031,215	16.0	83.5	88.1	366,215	72,940	293,275	715,458	1,620,259	51.2	10.2
Cincinnati, Indianapolis & Western	1,381,004	1,450,300	d 4.8	1,600,484	1,424,071	12.4	115.9	98.2	D 311,207	D 31,308	d 279,899	186,437	422,213	b	b
Cincinnati Northern	1,409,470	1,166,097	20.9	1,097,257	1,072,350	2.3	77.9	92.0	207,471	D 53,545	261,016	140,255	317,628	147.9	b
Cleveland, Cincinnati, Chicago & St. Louis	32,305,000	29,301,568	10.3	25,859,126	23,424,630	10.4	80.1	79.9	4,876,492	2,589,079	2,287,413	4,388,586	9,938,597	111.1	59.0
Detroit, Toledo & Ironton	1,716,587	1,209,080	42.0	2,079,309	1,678,748	23.9	121.1	138.8	D 439,027	D 643,703	204,676	99,748	225,895	b	b
Hocking Valley	4,528,294	5,178,056	d 12.5	4,224,877	4,670,142	d 9.5	93.3	90.2	110,329	560,896	d 450,567	1,164,195	2,637,167	9.5	48.2
Kanawha & Michigan	1,975,871	2,363,304	d 16.4	1,892,626	1,768,180	7.0	95.8	74.8	23,205	661,040	d 637,835	571,895	1,295,141	4.1	115.6
Lake Erie & Western	4,429,793	4,084,316	8.5	4,537,064	3,644,743	24.5	102.4	89.2	D 276,900	165,457	d 442,357	683,790	1,548,542	b	24.2
Toledo & Ohio Central	3,970,457	4,240,881	d 6.4	3,900,493	4,044,705	d 3.6	98.2	95.4	D 212,956	64,098	d 277,054	479,832	1,086,651	b	13.4
Toledo, St. Louis & Western	3,452,878	3,562,917	d 3.1	2,998,153	2,935,136	2.1	86.8	82.4	185,837	248,424	d 62,587	439,050	994,294	42.3	56.8
Wheeling & Lake Erie	5,842,704	5,679,613	2.9	5,160,173	4,967,056	3.9	88.3	87.5	389,532	D 17,627	407,159	760,964	1,723,315	51.2	b
Total, Ohio-Indiana District	66,616,386	62,809,339	6.1	58,027,744	53,660,976	8.1	87.1	85.4	4,918,991	3,615,751	1,303,240	9,630,510	21,809,702	51.1	37.5
Grand total, Eastern Region	568,344,800	507,985,858	11.9	506,331,048	462,586,561	9.5	89.1	91.1	34,811,186	9,822,820	24,988,366	89,733,644	203,214,993	38.8	10.9

Condensed Income Account

FOR 6 MONTHS ENDED JUNE 30, 1919, COMPARED WITH SAME PERIOD OF PREVIOUS YEAR—Continued

Railroad	Operating revenues			Operating expenses			Operating ratio		Net federal income (See notes)			Standard return (See notes)		Per cent net federal income to standard return, this period (See notes)	
	This year	Last year	Increase or decrease Per cent	This year	Last year	Increase or decrease Per cent	This year	Last year	This year	Last year	Increase or decrease	For this period	For entire year	This yr.	Last yr.
ALLEGHENY REGION															
Baltimore & Ohio (Incl. Coal and Coke)	79,759,851	69,636,106	14.5	80,935,159	70,472,532	14.8	101.5	101.2	D 3,924,972	D 5,338,561	1,413,589	12,377,713	28,031,146	b	b
Bessemer & Lake Erie	5,688,417	4,987,912	14.0	4,549,027	4,112,382	10.6	80.0	82.4	1,257,563	1,383,903	d 126,340	2,064,213	4,674,714	60.9	67.0
Buffalo & Susquehanna	1,006,751	1,079,001	d 6.7	1,172,059	1,034,950	13.2	116.4	95.9	D 200,231	215,769	d 416,000	261,687	592,628	b	82.5
Central of New Jersey	20,197,406	19,086,173	5.8	18,456,254	16,750,838	10.2	91.4	87.8	807,451	1,192,375	d 384,924	4,129,696	9,352,301	19.6	28.9
Cumberland Valley	2,641,772	2,259,958	16.9	2,395,922	1,584,227	51.2	90.7	70.1	34,162	487,353	d 453,191	542,675	1,228,967	6.3	89.8
Grand Rapids & Indiana	3,535,766	3,129,087	13.0	3,431,113	2,943,513	16.6	97.0	94.1	D 106,905	D 73,882	d 33,023	410,389	929,385	b	b
Long Island	11,409,564	9,379,787	21.6	9,539,433	7,313,405	30.4	83.6	78.0	1,222,987	1,184,661	38,326	1,422,716	3,221,949	86.0	83.3
New York, Philadelphia & Norfolk	3,692,713	3,068,347	20.3	3,207,608	2,709,641	18.4	86.8	88.3	347,628	180,360	167,268	439,826	996,051	79.0	41.0
Pennsylvania East	174,626,274	152,123,346	14.8	163,816,981	149,036,128	9.9	93.8	98.0	4,882,129	D 5,550,303	10,432,432	22,704,077	51,416,712	21.5	b
Pennsylvania West (Inc. P. C. C. & St. L.)	91,263,769	74,894,276	21.9	84,752,350	73,413,972	15.4	92.9	98.0	2,460,971	D 4,610,832	7,071,803	11,625,160	26,326,679	21.2	b
Philadelphia & Reading	38,549,046	39,745,295	d 3.0	35,218,982	34,335,011	2.6	91.4	86.4	219,894	1,417,204	d 1,197,310	7,531,961	17,057,230	2.9	18.8
Staten Island Rapid Transit	1,073,279	763,127	40.6	956,397	709,183	34.9	89.1	92.9	46,336	D 46,038	92,374	157,563	356,824	29.4	b
Western Maryland	6,763,163	6,630,967	2.0	6,886,067	6,690,418	2.9	101.8	100.9	D 309,169	D 58,692	d 250,477	1,359,856	3,079,593	b	b
West Jersey & Seashore	4,947,150	3,974,576	24.5	5,206,269	4,177,812	24.6	105.2	105.1	D 619,552	D 525,473	d 94,079	420,676	952,682	b	b
Total, Allegheny Region	445,154,921	390,757,956	13.9	420,523,631	375,284,012	12.1	94.5	96.0	6,118,292	D 10,142,156	16,260,448	65,448,208	148,217,061	9.4	b
POCAHONTAS REGION															
Chesapeake & Ohio (Incl. C. & O. of Ind.)	34,778,133	30,046,974	15.8	27,983,460	25,022,783	11.8	80.5	83.3	5,123,924	3,926,934	1,196,990	5,840,639	13,226,983	87.7	67.2
Norfolk & Western	35,358,795	34,969,428	1.1	29,234,802	28,731,901	1.8	82.7	82.2	4,417,407	5,492,012	d 1,074,605	9,111,418	20,634,142	48.5	60.3
Virginian	5,109,859	5,067,655	0.8	4,319,714	3,916,552	10.3	84.5	77.3	307,601	623,641	d 316,040	1,434,044	3,247,603	21.4	43.5
Total, Pocahontas Region	75,246,787	70,078,057	7.4	61,537,976	57,671,236	6.7	81.8	82.3	9,848,932	10,042,587	d 193,655	16,386,101	37,108,728	60.1	61.3
SOUTHERN REGION															
Alabama & Vicksburg	1,331,734	1,083,550	22.9	1,237,214	904,689	36.8	92.9	83.5	19,517	152,881	d 133,364	142,563	322,854	13.7	107.2
Alabama Great Southern	4,947,457	3,904,446	26.7	4,245,285	2,915,824	45.6	85.8	74.7	493,180	1,002,115	508,935	752,073	1,703,180	65.6	133.2
Atlanta & West Point	1,335,348	1,104,953	20.9	992,062	770,435	28.8	74.3	69.7	258,864	264,134	d 5,270	111,715	252,995	231.7	236.4
Atlanta, Birmingham & Atlantic	2,403,258	2,004,769	19.9	3,115,419	2,165,766	43.8	129.6	108.0	D 817,087	D 286,839	d 530,248	158,108	358,058	b	b
Atlantic Coast Line	32,858,909	26,226,235	25.3	27,065,814	20,191,010	34.0	82.4	77.0	4,362,202	4,773,762	d 411,560	4,495,587	10,180,915	97.0	106.2
Carolina, Clinchfield & Ohio	2,906,642	2,152,767	35.2	2,307,684	1,636,699	41.0	79.3	76.0	445,966	601,900	d 155,934	720,277	1,631,172	61.9	83.6
Central of Georgia	10,104,559	9,551,095	5.8	9,154,836	7,381,460	24.0	90.6	77.3	629,791	1,780,049	d 1,150,258	1,523,815	3,450,903	41.3	116.8
Charleston & Western Carolina	1,478,481	1,320,551	12.0	1,333,795	1,062,739	25.5	90.2	80.5	94,463	139,735	d 45,272	206,178	466,921	45.8	67.8
Cincinnati, New Orleans & Texas Pacific	8,303,760	6,604,119	25.7	6,965,638	5,454,565	27.7	83.9	82.6	1,179,685	1,370,100	d 190,415	1,563,617	3,541,040	75.4	87.6
Florida East Coast	5,396,729	5,030,538	7.2	4,595,198	3,063,124	50.0	85.2	60.9	632,077	1,589,800	d 957,723	1,255,314	2,842,842	50.4	126.6
Georgia	2,954,221	2,742,676	7.7	2,381,881	1,968,426	21.0	80.6	71.8	602,651	663,825	d 61,174	379,159	858,662	158.9	175.1
Georgia & Florida	468,555	461,988	1.4	631,549	477,274	32.3	134.8	103.3	D 185,630	D 54,815	d 130,815	38,858	88,000	b	b
Georgia, Southern & Florida	2,130,119	1,684,797	26.4	2,015,345	1,447,490	39.2	94.6	85.9	13,440	227,351	d 213,911	225,844	511,457	6.0	100.7
Gulf & Ship Island	1,150,675	1,215,806	d 7.0	1,164,308	946,081	23.1	103.0	77.8	D 84,284	188,647	d 272,931	263,819	597,456	b	71.5
Gulf, Mobile & Northern	1,244,001	1,118,495	11.2	1,299,632	914,797	42.1	104.5	81.8	D 102,545	207,221	d 309,766	246,545	558,338	b	84.0
Illinois Central	50,353,827	47,521,121	6.0	45,974,503	41,918,653	9.7	91.3	88.2	2,004,465	4,030,054	d 2,025,589	7,189,808	16,282,174	27.9	56.1
Louisville & Nashville	50,459,171	42,294,794	17.4	45,204,450	34,968,357	29.3	89.6	81.3	3,585,949	7,539,182	d 3,953,233	7,643,795	17,310,495	46.9	98.6
Louisville, Henderson & St. Louis	1,433,646	1,259,193	13.9	1,164,509	964,664	20.7	81.2	76.6	182,501	195,594	d 13,093	151,863	343,916	120.2	128.8
Mississippi Central	474,912	570,737	d 16.8	543,693	432,508	25.7	114.5	75.8	D 67,534	171,335	d 238,869	136,541	309,216	b	125.5
Mobile & Ohio	7,156,696	6,685,586	6.7	7,717,534	6,469,568	19.3	108.1	96.8	D 973,672	153,650	d 1,127,322	1,146,968	2,587,478	b	13.4
Nashville, Chattanooga & St. Louis	9,061,398	9,054,654	0.1	8,909,015	7,581,932	17.5	98.3	83.7	3,521	1,499,968	d 1,496,447	1,405,115	3,182,089	0.3	106.8
New Orleans & Northeastern	3,095,768	2,876,982	7.6	2,907,029	2,190,107	32.7	93.9	76.1	162,778	527,748	d 364,970	532,088	1,204,992	30.6	99.2
New Orleans Great Northern	1,054,885	1,007,589	4.7	1,039,140	737,293	40.8	98.5	73.2	D 55,136	247,509	d 302,645	254,323	575,952	b	97.3
Norfolk Southern	2,981,225	2,636,355	13.1	2,981,987	2,297,317	29.8	100.0	87.1	D 108,384	172,760	d 281,144	515,308	1,166,991	b	33.5
Northern Alabama	558,791	563,629	d 0.3	547,580	421,373	29.9	98.0	74.8	22,965	4,234	18,731	67,037	151,814	34.3	6.3
Richmond, Fredericksburg & Potomac (Inc. W. S.)	6,576,312	4,426,491	44.0	3,599,576	2,629,765	36.9	56.5	59.4	2,630,424	1,484,843	1,145,581	709,076	1,105,807	371.0	209.4
Seaboard Air Line	20,449,364	17,437,963	17.3	18,508,867	14,606,307	26.7	90.5	83.8	1,266,129	1,587,028	d 320,899	2,868,891	6,497,025	44.1	55.3
Southern	59,052,113	54,134,611	9.1	54,298,170	40,163,273	35.2	92.0	74.2	2,067,172	10,826,850	d 8,759,678	8,237,000	18,653,893	25.1	131.4
Southern Railroad in Mississippi	818,040	623,300	31.2	856,926	594,247	44.2	104.8	95.3	D 102,308	D 110,671	17,363	3,087	6,990	b	b
Tennessee Central	1,241,959	1,236,347	0.5	1,460,113	1,106,602	31.9	117.6	89.5	D 303,669	D 43,901	d 259,768	71,858	162,734	b	b
Western Alabama	1,302,076	1,135,486	14.7	1,000,661	826,873	21.0	76.9	72.8	263,225	262,492	733	127,277	288,238	206.8	206.2
Yazoo & Mississippi Valley	11,035,258	9,754,221	13.1	8,997,372	7,936,444	13.4	81.5	81.4	1,614,698	1,175,737	438,961	1,705,484	3,862,318	94.7	68.9
Total, Southern Region	305,876,829	270,125,864	13.2	274,216,785	217,145,662	26.3	89.6	80.4	19,735,414	42,335,278	d 22,599,864	44,848,991	101,567,115	44.0	94.4
NORTHWESTERN REGION															
Chicago & North Western	62,550,324	51,059,520	20.6	55,453,562	48,639,742	14.0	88.7	93.8	3,930,377	1,388,720	2,541,657	10,244,872	23,201,016	38.4	13.6
Chicago Great Western	9,812,065	8,410,491	16.7	9,117,655	7,889,543	15.6	92.9	93.8	D 93,371	D 15,558	d 77,813	1,304,156	2,953,450	b	b
Chicago, Milwaukee & St. Paul	69,693,453	55,916,757	23.6	65,231,927	54,548,940	19.6	94.4	97.6	D 113,963	D 1,938,769	1,824,806	12,340,456	27,946,771	b	b
Chicago, St. Paul, Minneapolis & Omaha	12,646,379	10,652,859	18.7	10,876,684	9,670,114	12.5	86.0	90.8	955,100	517,469	437,631	2,179,056	4,934,790	43.8	33.7
Duluth & Iron Range	3,339,757	2,806,855	19.0	2,063,673	2,148,522	d 3.9	61.8	76.5	1,141,043	602,445	538,598	1,040,005	2,355,242	109.7	57.9
Duluth, Missabe & Northern	8,300,020	5,591,885	48.4	3,410,005	3,406,499	0.1	41.1	60.9	4,758,960	2,031,504	2,727,456	2,261,743	5,122,051	210.4	89.8
Duluth, South Shore & Atlantic	2,151,128	1,975,264	8.9	2,081,627	2,050,335	1.5	96.8	103.8	D 97,613	D 245,342	147,729	262,574	594,637	b	b
Elgin, Joliet & Eastern	10,254,604	8,051,735	27.2	7,711,477	6,584,855	17.1	75.2	81.7	2,038,362	662,071	1,376,292	1,263,652	2,862,177	161.3	52.4
Great Northern	47,272,184	39,057,427	21.0	41,686,831	37,752,667	10.4	88.2	96.7	2,688,266	D 356,407	3,044,673	12,668,869	28,690,511	21.2	b

Condensed Income Account

FOR 6 MONTHS ENDED JUNE 30, 1919, COMPARED WITH SAME PERIOD OF PREVIOUS YEAR—Continued

Railroad	Operating revenues			Operating expenses			Operating ratio		Net federal income (See notes)			Standard return (See notes)		Per cent net federal income to standard return, this period (See notes)	
			Increase or decrease			Increase or decrease					Increase or decrease	For this period	For entire year	This yr	Last yr
NORTHWESTERN REGION.	This year	Last year	Per cent	This year	Last year	Per cent	This year	Last year	This year	Last year					
Mineral Range	415,060	538,086	d 22.8	444,379	522,597	d 15.0	106.9	97.1	D 38,163	D 3,682	d 34,481	65,103	147,432	b	b
Minneapolis & St. Louis	6,021,754	5,365,419	12.2	6,091,185	5,159,218	18.1	101.2	96.2	D 382,279	151,280	d 533,559	1,165,682	2,639,857	b	13.0
Minneapolis, St. Paul & S. S. Marie	18,797,824	13,537,588	40.2	16,290,811	13,266,623	22.8	85.8	98.0	1,125,745	D 132,852	1,259,597	4,657,426	10,547,429	24.2	b
Northern Pacific	45,570,225	42,023,234	8.4	36,706,335	32,930,755	11.5	80.6	78.4	6,223,552	8,161,591	d 1,938,039	13,272,685	30,057,760	46.9	61.7
Oregon-Washington R. R. & Nav.	12,765,153	11,628,748	9.8	10,868,011	9,009,597	20.6	85.1	77.5	823,582	1,659,804	d 836,222	1,995,609	4,519,372	41.3	83.8
Spokane, Portland & Seattle	3,378,203	3,805,947	d 11.2	2,581,966	2,130,201	21.2	76.4	56.0	583,412	1,289,252	d 705,840	826,213	1,871,683	70.6	156.6
Total, Northwestern Region	312,544,133	261,231,815	19.6	270,616,028	235,710,208	14.8	86.6	90.2	23,544,011	13,771,526	9,772,485	65,548,222	148,443,558	35.9	21.0
CENTRAL WESTERN REGION															
Arizona Eastern	1,875,672	2,179,565	d 13.9	1,458,021	1,327,873	9.8	77.7	60.9	318,534	672,151	d 353,617	543,540	1,242,475	58.1	122.5
Atchison, Topeka & Santa Fe	81,036,315	75,433,555	7.4	65,614,006	53,514,534	22.6	81.0	70.9	11,740,551	18,683,563	d 6,943,012	17,571,152	39,792,449	66.8	106.3
Chicago & Alton	12,080,990	10,118,751	19.4	11,163,620	9,273,460	20.4	92.4	91.6	D 52,968	D 17,900	d 34,168	1,403,448	3,178,315	b	b
Chicago & Eastern Illinois	11,510,535	11,250,236	2.3	11,918,747	10,740,773	11.0	103.5	95.5	D 1,266,369	325,913	d 1,592,282	1,300,866	2,946,401	b	25.1
Chicago, Burlington & Quincy (inc. Q. O. & K. C.)	68,989,107	62,574,001	10.3	56,449,347	52,061,803	8.4	81.8	83.2	8,694,713	7,312,620	1,362,093	14,744,658	33,391,480	59.0	44.6
Chicago, Peoria & St. Louis	768,749	1,038,031	d 25.9	1,165,684	1,164,634	0.1	151.6	112.2	D 456,653	D 217,515	d 239,138	56,318	127,540	b	b
Chicago, Rock Island & Pacific (inc. C. R. I. & G.)	51,259,363	45,955,939	11.5	46,147,069	40,038,582	15.3	90.0	87.1	1,980,447	2,996,378	d 1,015,931	7,913,856	15,883,801	25.0	42.7
Chicago, Terre Haute & Southeastern	1,847,297	1,993,360	d 7.3	2,031,588	2,085,986	d 2.6	110.0	104.6	D 260,408	107,966	d 368,374	407,474	922,785	b	25.5
Colorado & Southern	9,190,812	5,733,137	8.0	5,120,441	4,365,286	17.3	82.7	76.1	727,164	1,004,572	d 277,408	1,095,620	2,481,212	66.4	91.7
Denver & Rio Grande	14,098,588	13,519,245	4.3	11,955,027	10,784,486	10.8	84.8	79.8	1,701,782	2,511,998	d 810,216	3,673,587	8,319,377	46.3	68.4
Denver & Salt Lake	1,202,985	877,258	37.1	1,715,978	1,162,312	47.6	142.6	132.5	D 560,215	D 350,596	d 209,619	156,002	353,290	b	b
El Paso & Southwestern	6,259,429	7,311,963	d 14.7	4,054,552	4,348,213	d 6.8	65.0	59.5	1,812,044	2,596,103	d 784,059	1,930,353	4,145,102	99.1	141.9
Fort Worth & Denver City	4,989,915	3,511,951	42.1	3,595,222	2,850,180	26.1	72.1	81.2	1,252,558	637,727	614,831	835,179	1,891,386	150.0	78.4
Los Angeles & Salt Lake	8,386,096	6,559,555	27.8	6,534,875	5,266,770	24.1	77.9	80.3	1,306,376	822,909	483,467	1,507,852	3,414,751	86.6	54.6
Northwestern Pacific	2,741,499	2,400,215	14.2	2,416,685	1,742,366	38.7	88.2	72.5	184,803	536,653	d 351,850	545,383	1,235,101	33.9	98.4
Oregon Short Line	17,055,943	15,155,307	12.5	12,995,332	9,963,680	30.4	76.2	65.7	3,081,057	4,442,078	d 1,361,021	4,502,579	10,196,750	68.4	98.7
Southern Pacific (Pacific System)	76,601,926	66,900,147	13.6	62,857,373	54,245,973	15.9	82.7	81.1	9,180,070	10,202,798	d 1,022,728	15,972,185	36,171,354	57.5	63.9
Toledo, Peoria & Western	783,564	698,601	12.4	856,075	745,129	14.9	109.0	106.7	D 122,610	D 5,053	d 117,557	70,536	159,740	b	b
Union Pacific (inc. St. J. & G. I.)	50,849,045	41,320,331	23.1	35,545,877	27,982,337	27.0	69.9	67.7	13,849,645	11,759,180	2,090,465	10,630,277	24,073,820	130.3	110.6
Western Pacific	5,358,386	4,984,635	7.5	4,718,542	3,540,855	33.3	88.1	71.0	309,571	1,068,961	d 759,390	839,137	1,900,350	36.9	127.4
Total, Central Western Region	423,268,216	379,515,783	11.5	348,314,061	297,205,032	17.2	82.3	78.3	53,420,992	65,090,506	d 11,669,514	84,704,505	191,825,769	63.1	76.9
SOUTHWESTERN REGION															
Fort Worth & Rio Grande	668,087	520,074	28.5	754,233	504,593	49.5	112.9	97.0	D 123,034	D 61,379	d 61,655	574	1,301	b	b
Gulf Coast Lines	4,047,649	3,722,915	8.7	3,331,629	2,737,799	21.7	82.3	73.5	421,321	845,326	d 424,005	486,264	1,101,216	86.7	173.8
Gulf, Colorado & Santa Fe	8,856,832	8,873,413	d 0.2	7,992,801	6,835,061	16.9	90.2	77.0	317,684	1,295,974	d 978,290	1,248,857	2,828,218	25.4	103.8
International & Great Northern	6,757,763	6,234,562	8.4	7,255,669	5,367,064	35.2	107.4	86.1	D 780,327	553,637	d 1,333,964	615,967	1,394,946	b	89.9
Kansas City, Mexico & Orient	1,032,519	1,151,590	d 10.3	1,734,724	1,388,014	25.0	158.6	120.5	D 735,961	D 269,493	d 466,468	66,236	150,000	b	b
Kansas City Southern (inc. T. & F. S.)	7,628,066	7,795,633	d 2.1	6,744,557	5,395,558	25.0	88.4	69.2	343,602	1,823,716	d 1,480,114	1,561,138	3,535,427	22.0	116.8
Louisiana & Arkansas	1,015,989	850,013	19.5	1,035,800	637,838	62.4	102.0	75.0	D 104,274	154,834	d 259,108	180,155	407,987	b	85.9
Midland Valley	1,874,546	1,598,487	17.3	1,494,291	1,107,515	34.9	79.7	69.3	287,380	443,137	d 155,757	196,210	444,346	146.5	225.8
Missouri & North Arkansas	703,348	682,823	3.0	1,069,156	642,231	66.5	152.0	94.1	D 453,702	D 6,074	d 447,628	77,275	175,000	b	b
Missouri, Kansas & Texas	15,609,924	14,192,320	10.0	14,029,525	12,785,153	9.7	89.9	90.1	1,313,477	1,387,389	d 73,912	2,584,876	5,853,831	50.8	53.7
Missouri, Kansas & Texas of Texas	11,371,309	8,749,770	30.0	10,779,144	8,766,119	23.0	94.8	100.2	D 97,709	D 1,326,049	1,228,340	274,556	621,773	b	b
Missouri, Oklahoma & Gulf	610,442	860,133	d 29.0	1,020,213	1,050,708	d 2.9	167.1	122.2	D 461,488	D 312,079	d 149,409	D 36,917	D 83,603	bc	bc
Missouri Pacific	42,039,700	40,098,953	4.8	38,940,594	33,277,643	17.0	92.6	83.0	1,074,400	3,922,205	d 2,847,805	6,273,342	14,206,814	17.1	62.5
St. Louis-San Francisco	35,480,668	30,151,168	17.5	28,704,629	25,515,301	12.5	80.9	84.6	5,245,264	2,696,333	2,548,931	6,045,188	13,690,213	86.8	44.6
St. Louis-San Francisco & Texas	657,350	721,479	d 8.9	682,815	553,135	23.4	103.9	76.7	D 154,891	D 3,762	d 151,129	D 144,408	D 327,035	bc	bc
St. Louis Southwestern	6,128,746	6,185,564	d 0.9	4,857,231	3,980,738	22.0	79.3	64.4	999,245	1,984,025	d 984,780	1,481,798	3,355,749	67.4	133.9
St. Louis Southwestern of Texas	2,925,294	3,158,774	d 7.4	3,605,863	3,212,351	12.2	123.3	101.7	D 754,805	3,481	d 758,286	245,144	555,165	b	1.4
San Antonio & Aransas Pass	1,940,859	1,908,809	1.7	2,501,640	2,046,322	22.3	128.9	107.2	D 637,724	D 176,656	d 461,068	164,728	373,052	b	b
Sunset Lines (inc. H. & T. C. and H. E. & W. T.)	25,322,773	24,967,423	1.4	20,967,754	17,184,773	22.0	82.8	68.8	3,187,219	6,118,041	d 2,930,822	3,754,679	8,503,021	84.9	162.9
Texas & Pacific	16,344,972	11,649,270	40.3	14,511,406	9,465,276	53.3	88.8	81.3	812,536	1,456,840	d 644,302	1,813,719	4,107,432	44.8	80.3
Trinity & Brazos Valley	587,565	544,871	7.8	888,341	609,210	32.7	151.2	122.8	D 378,412	D 126,985	d 251,427	22,379	50,000	b	b
Vicksburg, Shreveport & Pacific	1,532,703	1,171,510	30.8	1,301,363	904,794	43.8	84.9	77.2	177,387	235,463	d 58,076	149,228	337,948	118.9	157.8
Wichita Falls & Northwestern	926,514	471,974	96.3	977,577	619,786	57.7	105.5	131.3	D 148,601	D 238,655	90,054	64,135	145,245	b	b
Total, Southwestern Region	194,063,618	176,271,528	10.1	175,180,955	144,646,982	21.1	90.3	83.1	9,348,589	30,399,269	d 11,050,660	27,305,108	61,838,684	34.2	74.7
Grand total, all regions	2,324,499,304	2,055,966,861	13.1	2,056,720,484	1,790,249,693	14.9	88.5	87.1	156,827,416	151,319,830	5,507,586	393,975,779	892,215,908	39.8	38.4

"Net Federal Income" represents net operating revenue, minus railway tax accruals and uncollectible railway revenue, plus or minus the net balance for equipment rents, joint facility rents, and miscellaneous federal income items (if any). Items of prior revenue or expense, commonly called "lapovers," have been excluded.

Standard return for this period is based on the proportion which the railway operating income of all Class 1 roads in the same period of the three years of the test period bore to the total railway operating income of those roads during the test period. The average for all roads combined is applied to each road as well as to totals. This may not exactly represent this period's proportion for individual roads, but provides a fair distribution by totals, and is closer to the facts for individual roads than the former method of applying one-twelfth of standard return to each month. The proportions to be used for each month are:

January	6.228%	May	8.568%	September	10.113%
February	5.257	June	9.149	October	10.436
March	7.517	July	8.363	November	9.222
April	7.438	August	9.643	December	8.066

b—Per cent not computed as net federal income this year is a deficit.
c—Per cent not computed as standard return is a deficit
d—Decrease.
D—Deficit.

therefore understated to the amount of $98,993,529. The expenses for the first six months of 1919 contain retroactive payments applicable to prior months and are overstated to the amount of $16,166,301.

The operating ratio for the six months' period was 88.5 as compared with 87.1 in the corresponding period of last year and 70.25 for the average of the first six months of the test period.

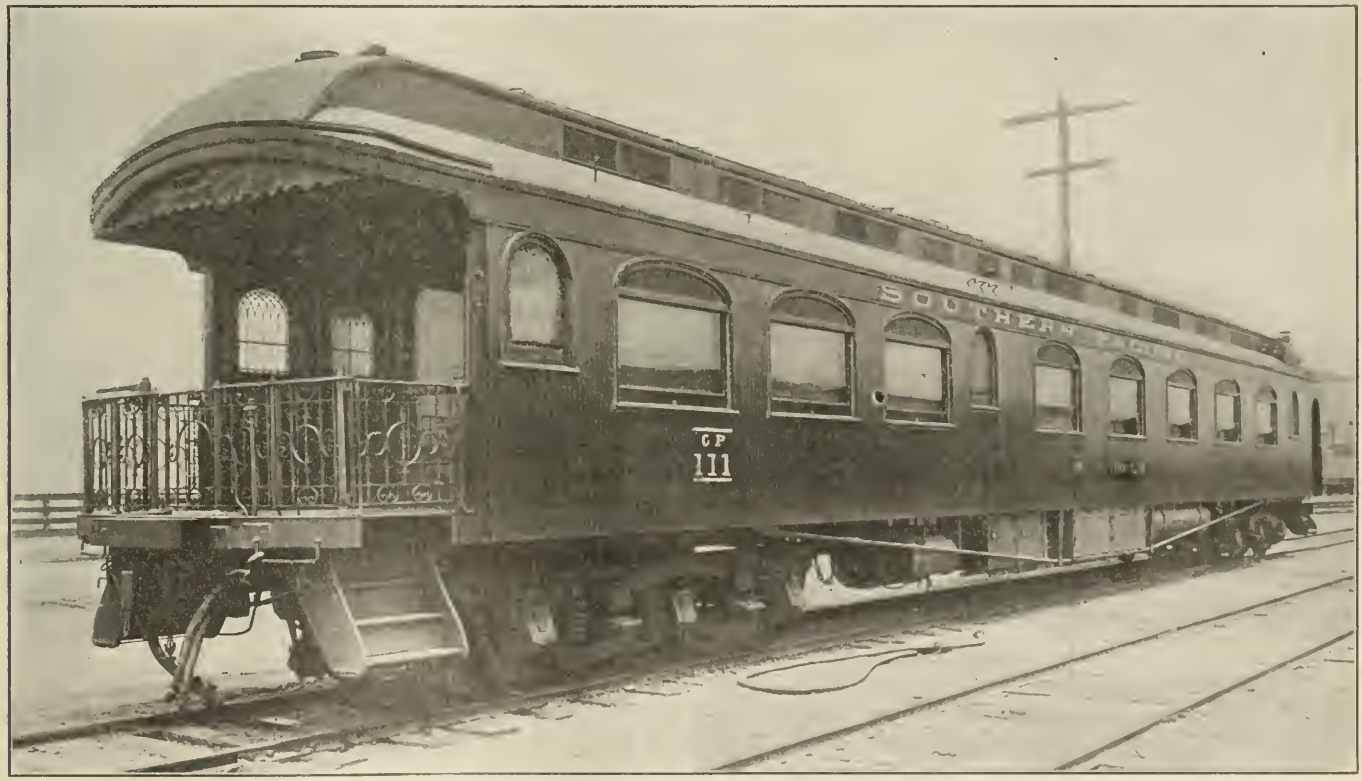
For the month of June the number of roads having deficits was less than for the six months' period, only 45, while 33 earned their standard return. The percentage of the standard return earned by all roads for June was 64. The Ohio-Indiana district was the only district in which the roads as a whole earned the standard return. Its percentage was 100.7. The lowest percentage was in the Pocahontas region, 25.3 per cent.

The figures by regions and by roads are given in the tables on the three preceding pages.

New Instruction Car for the Southern Pacific

Equipment Includes Apparatus for Presenting Operating Problems Graphically to Employees

THE INSTRUCTION of railroad employees, both new and old, is gradually assuming a more important function in the successful operation of railroads of this country. Indicative of this trend is the construction and equipment of a new instruction car recently at the Southern Pacific shops at Sacramento, Cal. The designers and builders of this car believe that this "academy on wheels" represents an advance both in car construction and in facilities for carrying on educational work among railroad men. The car is equipped with modern devices for the instruction and examination of railroad employees and facilities are available for conducting practically every test found in the operating curriculum.



Exterior View of the Instruction Car

The car itself was originally an observation car of the six-wheel truck type, weighing approximately 135,000 lbs., which was in service on the Southern Pacific. The length over end sills is 72 ft. 6 in., with steel under frame and trucks, and the car equipment includes a vapor heating system and both electric and Pintsch gas light, so arranged that connections may be established with city power mains where stops are made for any considerable length of time. Approximately one-half of the car has been converted into a class room with a total seating capacity of 30. The other half of the car contains three staterooms, one for the chief instructor and two smaller compartments each containing a standard Pullman section for his assistants. The observation end of the car has been converted into a commodious office, which is approximately 12 ft. in length and contains, besides desks, facilities for installing another berth to take care of extra assistants. In addition to these conveniences in the living end of the car, a metal-lined shower bath and adequate clothes lockers have been installed for the use of the examiners.

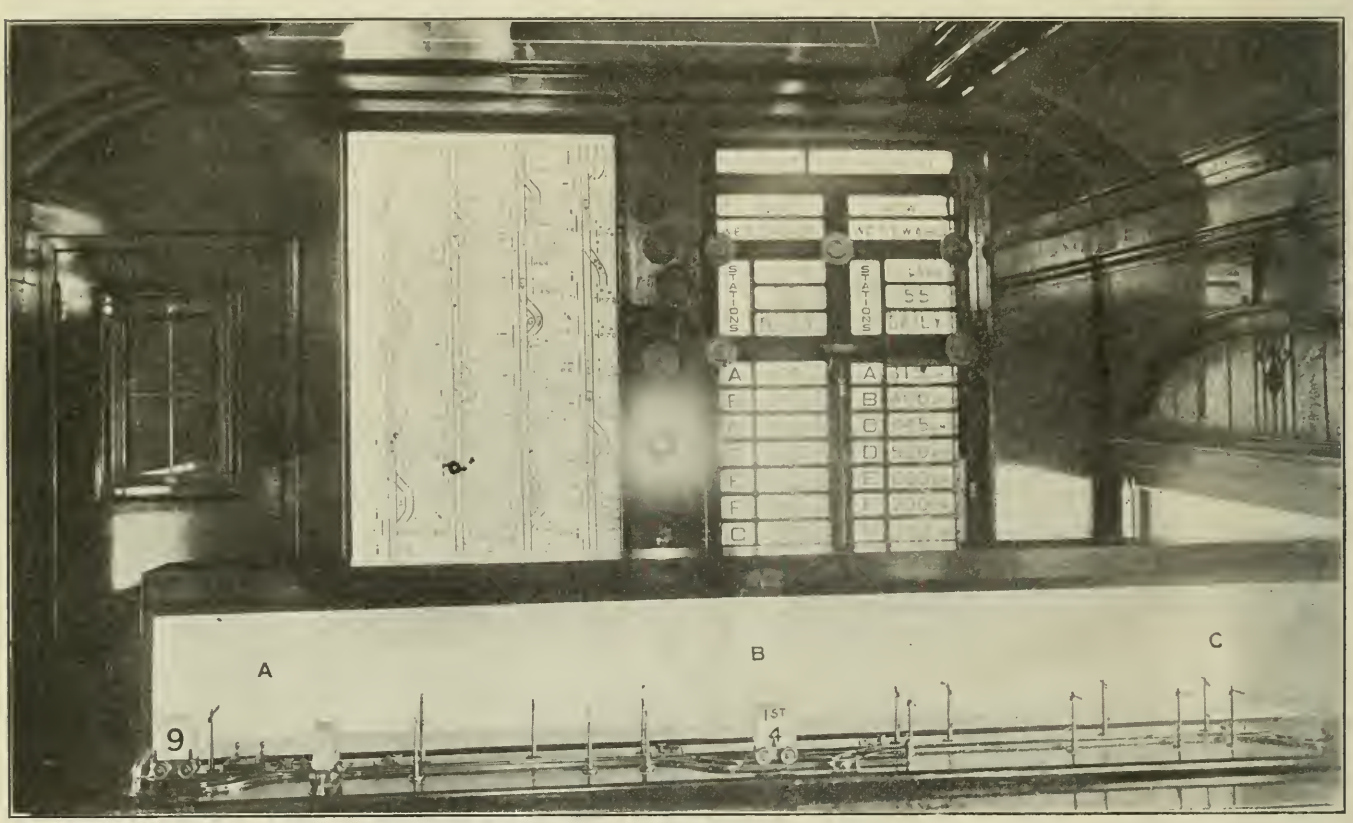
The class room is equipped with a complete automatic block signal working model in which the signals are operated from storage batteries. A display board provided in the

bulkhead near the center of the car enables charts to be effectively exhibited and illuminated, by the side of which there is also an apparatus for displaying various conditions under which trains may be operated when a new time table becomes effective. In addition to this, a projecting machine has been installed immediately behind the display board and apparatus by means of which train orders may be flashed upon a screen placed in front of the display board. In conjunction with this apparatus problems are worked out on the miniature railroad on which practically every situation arising in actual practice can be duplicated.

The car is intended to serve the territory of about 9,000 miles comprising the Pacific system, and to make possible the examination and instruction of approximately 10,000 employees on each round trip. In traversing this territory stops are made at points where train crews lay over, making it possible for the men to attend at either end of their run. Where telegraphers are employed the car is halted the required time for thorough examination and instruction. The local examiner of each division questions employees entering the service or those recently promoted to new positions. However, all employees are required to attend the examinations conducted in the car. In this manner a conductor or engineer obtains the benefit of questions and answers between the despatcher and the examiner and brakemen and firemen learn the problems that confront the conductors and engineers.

As the car passes over each division examiners check all train orders used by the conductors and engineers to see if they are in proper form and legible. Attention is directed to any irregularities and the assembled class receives instructions immediately concerning the necessity for correction. A similar check is made upon the despatchers' train order books, train sheets, checks of train register and clearance cards.

The division officers whose division the instruction car is operating find it to their advantage to be present at these examinations in order to familiarize themselves with constantly changing instructions, and in this manner obtain a uniform understanding of the company's practices. The visualization of problems presented graphically to the men in the class room has made instruction work more interesting to all concerned.



Interior of Car, Showing Automatic Block Signal Model

Grand Central Terminal Handled 189,838 Passengers

On Monday, August 18, the elevated and subway service in New York City, Boroughs of Manhattan and the Bronx, was completely discontinued. The surface lines were entirely inadequate to handle the morning and evening traffic from the Bronx and the northern end of Manhattan Island, and the New York Central and, to a lesser extent, the New York, New Haven & Hartford, were called upon to furnish transportation up to the limit of their capacities.

What may be properly called the city traffic as distinguished from suburban passenger traffic begins at about 300th street or just south of the junction of the New York, New Haven & Hartford and the New York Central. To the east of the New York Central tracks are two double-tracked subways, and a little further south a double-track elevated. To the west there are also two double-track subways, and a little further south a double-track elevated. From Woodlawn Junction into Grand Central Terminal the New York Central has four tracks used by both the Central and the New Haven.

On a normal Monday, about 175 through trains and 300 locals are handled into and out of the terminal. The normal number of passengers on Monday into and out of the station is about 100,000.

The strike on the subway and elevated was declared on Sunday on a comparatively few hours' notice. On Monday,

the New York Central handled 26 special multiple unit trains of 10 cars each during the morning rush period and all of the regular trains were built up to the full 10-car limit. The average movement of passengers into the station is about 20,000 during a morning's rush period and on Monday, 62,733 passengers were handled, an increase of over 200 per cent. During the 24 hours of Monday, 50 special trains in all were handled into the station but after 10 o'clock they were not well filled and probably not more than 8,000 to 10,000 people were handled into the station over and above the normal movement.

The evening rush period began much earlier than normally and this was of great help in taking care of the crowds. By 4:15 the lower level of the Grand Central Terminal, from which the suburban trains leave, was crowded with people, and police protection with crowds roped back from the entrances to the ramps was necessary until 8:15. During this period of four hours, 25 additional trains with about 30,000 people were sent out from the Grand Central Terminal in addition to the regular outbound suburban and through traffic movement. Ordinarily, the New York, New Haven & Hartford makes no passenger stops south of Mt. Vernon, so that the extra trains were all New York Central trains. Under normal conditions the Grand Central Terminal, between five o'clock and seven o'clock, handles a very heavy movement of outbound trains. For instance, on the Hudson Division there is a five o'clock, 5:03, 5:30 and a six o'clock express, and there are 5:06, 5:15, 5:19; 5:22, 5:34 and 5:51 locals and local expresses. On the Harlem Division there are 5:09 and 5:23 expresses, two 5:12 trains, 5:26, 5:37, 5:38, 5:46, and 5:56 local and local express trains; and on the New York, New Haven & Hartford there are the five o'clock, 5:03, 5:10, 5:13, 5:19, 5:29 and 5:32 express trains and 5.06, 5:16, 5:25, 5:41, 5:44 and 5:57 locals. All of these trains, of course, leave the Grand Central Terminal.

The Putnam Division of the New York Central terminates at 129th street and, therefore, much of the traffic of this division was also thrown on to the Hudson and Harlem Divisions.

The Grand Central Terminal is called upon to handle very heavy business on the days of the Yale-Harvard and Yale-Princeton foot ball matches at New Haven, on the day preceding a holiday, on the day following Labor Day, etc., but the crowds during these days are distributed over a period of hours and, furthermore, are of a class which can be handled in an orderly manner. On the other hand, on Monday the crowd which was thrown upon the New York Central was particularly difficult to handle; in the first place, because the large proportion were foreigners or people entirely unused to steam railroad travel; and, secondly, there was included in the crowd a considerable element of an unruly nature. The travel in the subway with the jamming of rough element into the doorways after the cars are completely filled engenders in this class of traffic a disregard for the rights of others which made the crowd on Monday night at the Grand Central somewhat dangerous for women or children to venture into. Many of the passengers did not know the names of the stations to which they desired to go, knowing simply the name of the elevated or subway station at which they ordinarily got off. Extra booths were provided, sufficient to handle the crowds as quickly as they could be handled into the trains, but the confusion of mind of the passengers was so great that tickets were lost between the ticket booth and the entrance to the train, groups drifted about, pushed hither and thither by the crowd in a seemingly aimless state of mind. One of the New York Central employees who commutes out of Grand Central picked up, on his way to his train, between 20 and 30 tickets that had been dropped in the confusion. The ticket sellers were generally able to tell passengers what station they wanted tickets to when the subway or elevated station was named, but this took time and made the ticket selling slower than it would have otherwise been.

Fifty extra policemen were on duty at the entrance to the lower level and ropes were stretched across between the pillars midway through the length of the lower level concourse, and passengers were admitted through the ropes as trains were placed ready for loading.

The loop was used exclusively for extra trains and regular trains were run into the stub tracks. Nevertheless, great care was used to have regular commutation and suburban trains run out from platforms as nearly as possible to those from which they ordinarily depart. No train was moved from its regular platform further than would permit a passenger standing at the entrance to the regular platform to see the sign either to the right or left of him of his train.

Notwithstanding the confusion among the extra passengers there was comparatively little difficulty experienced by the regular commuters and the average detention of the regular trains on this Monday was only 2:07 per train.

Miles Bronson, general superintendent and manager of the terminal, and G. H. Wilson, superintendent, were in charge of the situation during the entire period.

The accompanying table shows the train and car movement and number of passengers handled on days of particularly heavy business, on a normal day (August 11, 1919) and on Monday, August 18, the day of the strike:

November 25, 1916
(Yale-Harvard Football Game at New Haven and Saturday Before Thanksgiving)

	Trains	Cars	Passengers
Through	225	2,025	
Local	442	2,655	
Total	667	4,680	129,486

August 31, 1918
(Labor Day Travel)

	Trains	Cars	Passengers
Through	205	1,845	
Local	385	2,160	
Total	590	4,005	104,286

July 3, 1919

	Trains	Cars	Passengers
Through	215	1,935	
Local	421	2,450	
Total	636	4,385	130,197

August 11, 1919

	Trains	Cars	Passengers
Through	170	1,530	
Local	296	1,804	
Total	466	3,334	96,370

August 18, 1919

	Trains	Cars	Passengers
Through	175	1,575	
Local	449	3,330	
Total	624	4,905	189,839

On a Branch Line in Russia

Doings of the United States Railroad Administration

Director General and Bituminous Coal Operators Engage in Controversy Concerning Possible Coal Shortage

WASHINGTON, D. C.

THE RAILROAD ADMINISTRATION and the bituminous coal operators are again engaged in the polite and preliminary skirmishes of a controversy as to the responsibility for a possible coal shortage this winter. The National Coal Association has been preparing its alibi for some time in an effort to create an impression that the railroads are already failing to supply coal cars, while Director General Hines takes the position that if the public will not place its orders in advance at the present prices for coal and the railroads are called upon to handle an unduly large proportion of the year's supply in the later months of the year, any resulting shortage will not be the fault of the railroads.

In reply to a Senate resolution introduced by Senator Pomerene, inquiring as to the past, present and future supply of coal cars in relation to the demand, Mr. Hines says that if the demand to be supplied is as large as has been predicted by the National Coal Association he foresees difficulties not only in the transportation, but also in the production of that amount of coal during the latter part of the year. However, he says, there is no accurate information available to support the estimate that the requirements for 1919 will amount to 500,000,000 tons and he does not anticipate any shortages in transportation which will be "in any sense exceptional or abnormal," or which will justify "oppressive prices" for coal. He points out that up to date any shortage in coal production must be attributed not to car shortage, but to "no market," which he strongly hints is due to the high prices charged, and he suggests that "in the event any Congressional investigation should be undertaken it would be expedient to ascertain the extent to which the absence of demand for coal has been due to the maintenance of high prices which discouraged the demand."

Opportunity to suggest that Congress might do something to protect the public from excessive coal prices was given to Mr. Hines by the Senate's question as to what, if any, further action by Congress is required in order to meet the demands for the transportation of coal. He does not believe, apparently, that Congress can be of much assistance in the practical matter of producing and transporting the coal, but he indicates an opinion that it might prevent the coal people from convincing the public that high prices are justified by car or transportation shortage.

The National Coal Association has until recently been spending large sums in advertising, urging the placing of early orders for coal and laying stress on the few scattering instances of car shortage that have developed thus far and the prospects for a real shortage later on. Evidences of its propaganda have been seen also in numerous resolutions urging the Railroad Administration to hasten the repair of coal cars and to put into service the unallocated new standard cars. Mr. Hines indicates a belief that this represents an effort to create a psychological condition that will support high prices by hanging the responsibility on the Railroad Administration. The Senate resolution asked five questions. To these Mr. Hines replied in part as follows:

"The number of open-top cars in the United States is approximately 1,067,000, of which over 99 per cent are owned by federal operated railroads and all of which are, generally speaking, subject to interchangeable use on federal operated railroads and non-federal operated railroads. Open-top cars are commonly known as coal cars, though some open-top cars are not suitable for coal loading.

"At the present time something less than 10 per cent of these cars are awaiting repairs, either light or heavy. A large number of the cars so awaiting repairs are so held for very light repairs which can be speedily applied. During federal control the methods of classification to determine what cars need repairs have been made much more strict, with the result that large numbers of cars are now shown as needing repairs which in former years have not been so shown. The Railroad Administration program of car repairs will, it is expected, gradually reduce the proportion of cars awaiting repairs despite the stricter classification.

"The total result is that there are now approximately 900,000 open-top cars in the United States ready for use without any repairs, and about 775,000 of these open-top cars are suitable for coal loading. This type of equipment is, however, regularly used for a very heavy tonnage of other bulk commodities which cannot be handled except in open-top cars. Adequate transportation for many of these commodities, particularly those used in highway construction and repairs, general building, and railroad ballast and improvement work, now requires a large number of these cars. Those actually in current use for the transportation of coal number approximately 600,000. It must also be remembered that box cars have always been used to an important extent in some parts of the country for transporting coal.

"During the first five months of the present year open-top cars were regularly available greatly in excess of shippers' orders for the same. The maximum was reached in February and March when the surplus of open-top cars daily available amounted to the extraordinary totals of 187,339 and 192,933, respectively. There has at no time been any shortage of cars for anthracite coal loading.

As to bituminous coal there occurred in June a slight shortage in Southern West Virginia, Eastern Ohio and Western Pennsylvania, due to an accumulation of cars in lake coal trade, and increased detention of such cars under load at Lake Erie ports awaiting vessels, and also to a strike of railroad shopmen on the Norfolk & Western Railroad. Since about July 15, coincident with a marked upward trend in production, there have been some shortages of cars for loading with bituminous coal in some producing districts, mainly in Eastern Kentucky, Virginia, West Virginia, Maryland and Pennsylvania, and usually in districts producing the higher grades of coal. A strike of marine workers on coastwise ships, floods and other operating difficulties have contributed to these shortages. Contemporaneously, however, there still exist slight surpluses of open-top cars in some sections, principally in the West.

"Exhibit "B" shows comparatively for 1919, as far as available, the weekly reports by the Geological Survey of percentage of full time operation lost by bituminous coal mines in the United States, and the cause of such loss, and indicates that up to July 12 the loss on account of 'car shortages' was a very minor one, and relatively much less than that from 'mine causes' and 'no market.'

"The purchase of 45,000 cars available for coal loading was arranged for by the director general for delivery to railroads under federal control. All these cars have been or will be put in service as rapidly as practicable, whether transferred to the several railroad companies or not. Thirty-seven thousand have already been built, of which 17,000 have been put in service. The remaining 20,000 already built are now being numbered and lettered and are being placed in service as fast as this work is being completed. The 8,000 not yet

built will be put in service as rapidly as they are constructed.

"Of the 45,000 cars available for coal loading thus purchased, 4,750 have not yet been assigned definitely to any one or more railroad companies; 32,800 cars have been assigned to various railroad companies and definitely accepted by them; the remaining 7,450 cars have been allocated to certain of the railroad companies, but up to this time these cars have not been definitely accepted, due to unwillingness of said companies to accept the cars. Mandatory orders to require the cars to be accepted have not been issued pending full opportunity for disussion with the companies, but the fact that in these instances the cars have not been accepted by the companies is not delaying the cars being put in service as rapidly as constructed.

"It is not believed that further action by Congress will aid in meeting the demands for the transportation of the coal which will be needed during the remainder of this calendar year. The matter is largely dependent upon practical conditions which will not be affected by legislation. A statement is appended showing some of the important conditions in this respect and indicating that if the demand to be supplied is as large as has been predicted by the National Coal Association, there promises to be not only substantial difficulties in the transportation of coal, but also in the production by the mines of the coal which can be transported. The transportation difficulties will not be principally or primarily a shortage of cars, but the fact that the entire railroad plant—locomotives, cars, main tracks, terminal tracks, etc.—will be so occupied in handling a very large business of all sorts that an abnormal amount of any particular business such as coal will inevitably lead to congestion and delay. Nevertheless the unified control of the railroads will admit of specializing on the transportation of coal to whatever extent is absolutely necessary to prevent actual hardship.

"The great danger that confronts the public in this matter is that any shortage either in production by the mines or in transportation may be exaggerated so as to serve as a pretext for heavy increases in the coal prices which, in my opinion, are already high, generally speaking. It is worthy of serious consideration whether Congressional action can be taken to protect the public under these circumstances from excessive coal prices. In this connection it is important to remember that shortages in the production of coal by the mines and also in the transportation of coal by the railroads have not been exceptional in the fall and winter months, and any effort to stress unduly these conditions this year will probably be for the purpose of creating a pretext for increasing the prices of coal to the consuming public and the public should be given the benefit of reliable information on the subject.

"I believe it will be of specific advantage to the public if Congress would provide for an official inquiry by the proper branch of the government (presumably the Geological Survey in the Interior Department) to ascertain the probable demand for coal for the rest of the year, so as to determine the extent to which the predictions of an abnormal demand for coal are justified.

"It is important to emphasize that the relatively low production and purchase of coal up to the present date in this year have been due only to a very small extent to shortage of transportation and have been due to a very large extent to 'no market' or absence of demand for the coal, and in some parts of the country the lack of demand for coal still prevails. The weekly statements of the Geological Survey shows that beginning with January, 1919, and extending to June 14, 1919, the weekly loss of bituminous coal production on account of no market ranged from 32.6 to 46.5 per cent of working time, whereas, during the same period, the loss of time on account of car shortage ranged from only 0.6 of 1 per cent to a maximum of 4.8 per cent.

"The ability of the railroads to transport all the bituminous coal will, of course, be largely dependent upon the amount required. On that point no accurate information seems to be available. The National Coal Association, however, has advertised that 500,000,000 tons of bituminous coal must be produced in the calendar year 1919 to meet the requirements of the country. This estimate is just about the production of 1916, a year of great industrial activity, with normal winter weather and normal storage of coal to begin with, whereas in 1919 the year began with storage piles greatly exceeding normal, winter weather was the mildest in history and industrial activity, due to the readjustment of business following the war, has been at a very low ebb for months. Another element to be kept in mind in estimating the prospective tonnage for which transportation must be furnished is the export movement, of which much has been said to indicate that the tonnage will be large, but with respect to which there is little accurate information readily available.

"It may be noted that during the first six months of 1919 the coal consumption by railroads was about 26,000,000 tons less than in the corresponding period of 1918, during which latter year the fuel coal consumption by railroads aggregated 154,000,000 tons for the 12 months.

"If 500,000,000 tons shall be needed in the present year, the prospects are that its transportation will be accompanied by difficulties and, especially in view of the heavy business to be expected this fall, it will be exceedingly difficult to transport the amount required. These difficulties will not be due primarily or principally to the car shortage, but rather to the fact that an abnormal demand for coal will be concentrated into an unusually short period, when the necessary use of the railroads for other purposes will make it difficult to handle the coal.

"There is shown below a comparison of weekly production averages of bituminous coal for selected periods in 1917, 1918 and 1919:

Per week for the year 1917	10,611,230 tons
Per week, July 28-December 31, 1917	10,588,410 tons
Per week for the year 1918	11,216,000 tons
Per week, July 18-December 28, 1918	11,330,000 tons
Per week, July 28-November 16, 1918	11,900,000 tons
Per week, January 1-July 26, 1919	8,349,000 tons

"If it be assumed that 500,000,000 tons of bituminous coal must be produced during the present year, and we deduct the 250,000,000 tons already produced to July 26, it will be necessary during the remainder of the year to produce 11,340,000 tons weekly. When we consider what has been done in former years, and especially the maximum which was produced last year under the war influences which enlarged production as well as increased transportation, it is apparent that serious difficulties will be encountered both in the production and in the transportation of the amount of coal necessary in order to produce 500,000,000 tons for the entire calendar year 1919.

"It is highly important to remember that shortage in coal will largely be due to conditions of production having no reference to transportation. For example, in the case of anthracite coal the predominant cause of failure to produce up to the capacity of the mines is shortage of labor because there has been no shortage of transportation. The same condition is true with respect to bituminous mines in certain fields producing the higher grades of such coal, although at present shortage of transportation has become a factor in those fields. During the year 1918 extraordinary efforts were made by the government to obtain maximum production and to keep sufficient miners at work and to keep them working under sufficiently high pressure as a measure of patriotism to accomplish this result. The changed conditions in these respects this year may easily limit production in ways having no connection with transportation. These are matters, however, outside the field of the Railroad Adminis-

tration and are merely suggested without effort to discuss them exhaustively.

"It will be appropriate, however, for me to point out various conditions which last year favored the maximum transportation. During 1918 every transportation preference possible was accorded to coal traffic in order to obtain the maximum output.

"This was done as a matter of war necessity and under the authority of war legislation.

"Another important point which should be borne in mind is that the recent increase in bituminous coal production has been most pronounced in the eastern states where the higher grades of coal are mined. In a number of the eastern districts production has already reached, or closely approximates, that of the same period a year ago. If the production of the country as a whole is to be further increased, it must come largely from the central West and beyond. I would refer, in this connection, to the weekly reports of the Geological Survey on the production and shipment of coal, dated July 26 and August 2, 1919, particularly the former, which stated 'an average of 10,000,00 tons a week will not be exceeded until buying increases in the middle West.'

"Since the exceptional expedients mentioned had to be resorted to as war measures in order to move the average of 11,330,000 tons per week for the period of July 28 to December 28, 1918 (and the greater average of 11,900,000 tons per week in the most intense part of that period from July 28 to November 16, 1918), it is evident that without interfering with other business pressing for transportation, it is not likely to prove practicable under the modified conditions which have necessarily resulted from the termination of hostilities, to transport an average of 11,340,000 tons per week during the rest of the present calendar year (which would be necessary to bring up the total production and transportation for the entire year to the suggested 500,000,000 tons). As already stated, however, it is believed that the unified control will admit of such specialization on coal as may be necessary to prevent real hardship."

Representative Huddleston of Alabama, speaking in the House on August 13, charged the coal interests with carefully fostering a public impression of a shortage of coal cars as an excuse for increasing coal prices. He said the directors of the National Coal Association in June appropriated $50,000 for newspaper advertising, urging the public to "buy it now" because of present car shortages and prospects of worse shortages later, but that the people refused to buy very much at the prices charged and the propaganda plan was abandoned on July 10 with the idea of putting prices up still further when a shortage develops.

Mr. Huddleston read a letter from W. T. Tyler, director of operation of the Railroad Administration, in which he said:

"The fact is that the railroads are in much better shape than they were for several years preceding the war. We now have more than 4,000 locomotives in good repair stored and ready for service, whereas at no time during the two years preceding the war did any such condition exist. During the week of June 14, 1919, the average number of coal cars in bad order was only 9 per cent, and this 9 per cent included a large number of light coal cars actually withdrawn from service, but not taken off the books. The system adopted by the Railroad Administration classes cars as being in bad order when they are undergoing only light repairs as well as heavy repairs. While figures on the same basis are not available for the years preceding the war, there can be no question but what the situation in this respect is more favorable now than it was then."

The Senate on August 15 adopted a resolution presented by Senator Frelinghuysen directing the committee on interstate commerce to investigate the coal price situation.

During the week ended August 2, according to the report of the Geological Survey, the percentage of full-time output lost by reason of car shortage in the bituminous fields had increased to 14.5 per cent.

Following the receipt of Mr. Hines' letter by the Senate, on August 18, Senator Pomerene put into the record a number of telegrams from coal operators disputing Mr. Hines' statements and referring to serious shortages of cars for coal loading at several places, but these referred in most instances to dates later than those of the official statistics which Mr. Hines used. One of the Senator's correspondents sent photographs of long lines of empty, unstencilled new cars.

New Wage Demands

Enlargement of the Board of Railroad Wages and Working Conditions from six to twelve members for the consideration of the new general demands for increased wages which have been or are about to be presented to the Railroad Administration is now under consideration. Such an enlargement of the board has been proposed by the labor organizations, some of which are not now represented on the board. It now includes a representative of the trainmen, shop men and telegraphers, and three representatives of the management. It is proposed to add a representative of the engineers, clerks and maintenance of way employees and three more officials. Although no announcement has been made, it is understood that the case of the shop employees will probably be handled by the divisions of operation and of labor, as it has already been before the wage board, but the new demands will probably be referred to the enlarged board for investigation.

Several of the organizations that have prepared or have submitted demands are taking referendum strike votes which will give their officers full authority in case their demands are not complied with promptly or to their satisfaction.

Conferences between representatives of the Railroad Employes' Department of the American Federation of Labor and of the Railroad Administration on the demands of the shop crafts on wages and rules and working conditions were resumed on Monday, when the representatives of the shop employees, headed by B. M. Jewell, called on W. T. Tyler, director of the Division of Operation, and W. S. Carter, director of the Division of Labor, and reported that the unauthorized strikes of the shopmen on various railroads had come to an end. The Railroad Administration had received the same information from its operating officials and the labor committee held a further conference with the director general on Wednesday.

In order to meet the high cost of living the Brotherhood of Locomotive Firemen and Enginemen has decided that its members must have not only a large increase in wages, estimated at 35 to 65 per cent, but also the assistance of mechanical stokers on engines weighing over 200,000 lb., mechanical coal passers on locomotives of less weight, and power grate shakers and automatic fire door openers on all locomotives, besides being relieved of various odd jobs that some of them are now required to perform. The new wage scale to be presented to the Railroad Administration was adopted at a meeting of 300 general chairmen of the brotherhood at Cleveland last week. The firemen are the second of the four organizations of train service employees to present new wage demands, that of the Brotherhood of Trainmen having been presented in July. The engineers and conductors have not yet presented specific demands.

The status of the various wage proposals of the different organizations is as follows:

Federated Shop Craft Unions, affiliated with Railroad Employee' Department American Federation of Labor, and including the International Brotherhood of Blacksmiths and Helpers, the International Association of Machinists, International Brotherhood of Boilermakers, Iron

Shipbuilders and Helpers, the International Brotherhood of Electrical Workers, the Brotherhood of Railway Car Men and the Amalgamated Sheet Metal Workers International Alliance.—Demand submitted in January provides for increase from 68 cents to 85 cents per hour in minimum rate for machinists, blacksmiths, sheet metal workers, electrical workers, carmen and boilermakers, minimum of 60 cents an hour for helpers, 10 cents an hour increase for apprentices and differentials above the minimum rates for various classes of employees. Retroactive to January 1, 1919. Also asked uniform agreement on rules and working conditions which the director general has promised to grant. Hearings held before Board of Railroad Wages & Working Conditions, which submitted a divided report to Director General Hines on July 16, the three labor members recommending an increase from 68 cents to 80 cents for machinists, with proportional increases for other classes, and the three management members recommending against any general increase, although recommending certain readjustments. Negotiations with director general suspended on July 31 because of strikes on many roads and resumed this week after strikers had returned. Strike vote now being taken, returnable August 24.

Brotherhood of Railroad Trainmen.—Demand presented on July 1 provides for minimum rate of $150 per month of 26 days for brakemen, flagmen and baggagemen, and of $200 for conductors, with mileage scales ranging in passenger service from 3.85 cents to 4.55 cents per mile for flagmen, brakemen, baggagemen and assistant conductors, and 5.13 cents up for conductors; in freight service from 5.88 cents to 6.91 cents per mile for flagmen and brakemen and from 7.35 to 8.64 cents for conductors; time and one-half for overtime, Sundays and holidays; also rates for yard service and various special rules. Hearings held before Board of Railroad Wages and Working Conditions July 21 to July 31.

Brotherhood of Railway & Steamship Clerks, Freight Handlers, Express and Station Employees.—Demand presented provides for increase of 20 cents an hour, 44-hour week, and time and one-half for overtime, Sundays and holidays; retroactive to January 1, 1919.

Brotherhood of Locomotive Engineers.—Told President that unless cost of living is reduced it will be necessary to ask increased wages and served notice on Railroad Administration of probable request for general increase in near future.

Order of Railway Conductors.—No demand filed, but President L. E. Sheppard told Board of Railroad Wages and Working Conditions that if trainmen's demands are granted conductors should receive consideration based on brakesmen's ratio, being 66 2/3 per cent of conductors' rate, and that conductors should receive $9 a day in passenger service, $8.10 in through freight service and $8.88 in local freight service.

Brotherhood of Locomotive Firemen & Enginemen.—General chairmen in session at Cleveland formulated demand providing: Firemen and helpers in passenger service, $6.50 a day of 5 hours or less, 100 miles or less (Mallet locomotives, $7.20); through freight service on locomotives weighing less than 200,000 lb., $6.50 a day or 8 hours or less, 100 miles or less, on locomotives weighing over 200,000, $6.80; local or way freight service, mixed trains, mine runs, etc., minimum of 50 cents per 100 miles or less in addition to through freight rates; helper, pusher, transfer, work, wreck, construction, snow plow, circus, milk and unclassified service, through freight rates; yard service, $6.50 (Mallet $6.80), on Mallet locomotives in all except yard service, $7.20 a day; inside hostlers, $6.80 a day; outside hostlers, $7.20; hostlers' helpers, $6.50, eight hours or less, all coal burning locomotives to be equipped with power grate shakers and automatic fire door openers. All coal-burning locomotives in road service weighing over 200,000 lb., to be equipped with mechanical stokers and two firemen to be employed on each engine until so equipped. All locomotives weighing less than 200,000 lb. to be equipped with coal passers. Firemen to be relieved of cleaning locomotives, removing tools or supplies, loading coal, filling lubricators, etc.

Switchmen's Union of North America.—Demand presented to Board of Railroad Wages and Working Conditions in July for the following rates east of Rocky Mountains: night foremen, $8 a day; night helpers, $7.50; day foremen, $7.50; day helpers, $7; also differentials for mountain district and time and one-half for overtime Sundays and holidays.

United Brotherhood of Maintenance of Way Employees and Railway Shop Laborers.—New schedule presented August 11 includes rates for bridge and building, track, shop and signal employees, ranging from $200 to $270 a month for foremen, and including 90 cents an hour for pile driver, derrick, hoisting and steam crane engineers; 67 to 85 cents for painters, plasterers, carpenters, masons, bricklayers, etc.; 90 cents for powder men; 67 cents for stationary firemen; 65 cents for trackmen and track-walkers; 67 cents for trace apprentice and assistant section foreman; and 60 cents for crossing flagmen. Retroactive to January 1, 1919.

Demand is also made for time and one-half for overtime. A referendum strike vote is being taken, returnable on August 24.

Railway Signalmen of America.—At convention in Kansas City July 15 proposed further increase in wages, now being submitted to referendum vote of members. No demand yet filed with Railroad Administration.

In addition the 14 railroad labor organizations have filed with Director General Hines a general statement of their desire for further wage increase, which was published in last week's issue. The former demand of the four train service brotherhoods for time and one-half for overtime is also before the director general for consideration, and the trainmen and firemen have repeated it in their new demands.

Rail Bids Submitted

Bids were received by the Railroad Administration on August 16 from several steel companies on its inquiry for prices based on 100,000 tons of rail, Bessemer and open-hearth. In the absence from Washington of H. B. Spencer, director of the Division of Purchases, decision as to the quantity to be ordered was postponed but Director General Hines expected to take up the matter with him in a few days. It was understood that more than 100,000 tons might be ordered if the prices were satisfactory, and it has been reported that the proposals were at the same prices as were quoted on the order placed earlier in the year, $55 and $57.

Supplement to General Order No. 15

Director General Hines has issued Supplement No. 2 to General Order No. 15, by which Paragraph (2) of the order is changed to read as follows:

"2. Where existing industry tracks are not covered by written contracts, they shall be maintained and operated in accordance with the provisions stated in paragraph (1) hereof. In the absence of a written contract as to the maintenance of an industry track constructed prior to March 26th, 1918, the practice of the connecting carrier prior to federal control, as applied to such track of any particular industry from the beginning of its use by such industry, shall be considered as equivalent to a written contract in accordance with such practice.

Department of Public Works in Foreign Countries

M. L. Leighton, chairman of the Engineers, Architects and Constructors' Conference on National Public Works, which is sponsoring the bill for the creation of a Department of Public Works in the United States, now before Congress, has prepared a brief summary of the practices of foreign countries regarding such a department. In Canada a ministry of Public Works presides over the Department of Public Works with control over rivers, harbors, and all hydraulic works, roads, bridges, public buildings, telegraph lines and surveys. Australia has a parliamentary committee of nine, which constitutes a standing committee of public works. New Zealand has the most comprehensive public works' code in existence, presided over by a Minister of Public Works whose powers include lands and eminent domains concerning the same; roads, surveys, bridges, ferries, rivers, railways, drainage, water supply, mining, water power and irrigation.

In France a Ministry of Public Works covers roads and traffic regulations, river and maritime navigation, water power, drainage, irrigation, railroads, mines, public buildings and public monuments. Spain has a Ministry of Public Works covering roads, railways, waters, rivers, canals, ports, mining and forestry. In Italy a Ministry of Public Works has jurisdiction over postoffices, railways, public buildings, bridges, monuments, prisons, fuel, storehouses, telegraphs, internal navigation, water storage, irrigation, drainage, floods, lighthouses, water power and climatology.

Denmark has a Department of Public Works having jurisdiction over buildings, roads, rivers, harbors, water-power, drainage, dykes, ferries, railroads, telegraphs, and telephones, postal affairs and transportation. It is of interest to note that this Department of Public Works was, by royal decree of April 27, 1900, set up by a division of the Departemnt of the Interior in much the same way as is now proposed for the United States by the Engineers, Architects and Constructors' Conference on National Public Works. Norway has a department of Public Works also—made by division from the Department of the Interior—with jurisdiction over highways, rivers, railroads, fire insurance, harbors, postal affairs, technical schools and surveys.

In Prussia a Ministry of Public Works has jurisdiction over coasts, harbors, lighthouses, merchant marine, waterways, public buildings, railroads, highways, monuments, postal service, telegraphs and telephones, rivers, lakes, canals, drainage and hydraulic works. Argentina has a Department of Public Works embracing all enterprises and works concerning means of communication, hydraulic works, all construction—either of architectural or other nature, including public buildings, monuments, churches, prisons, barracks, arsenals, forts, shipyards, lighthouses, roads, bridges and all hydraulic and sanitary matters.

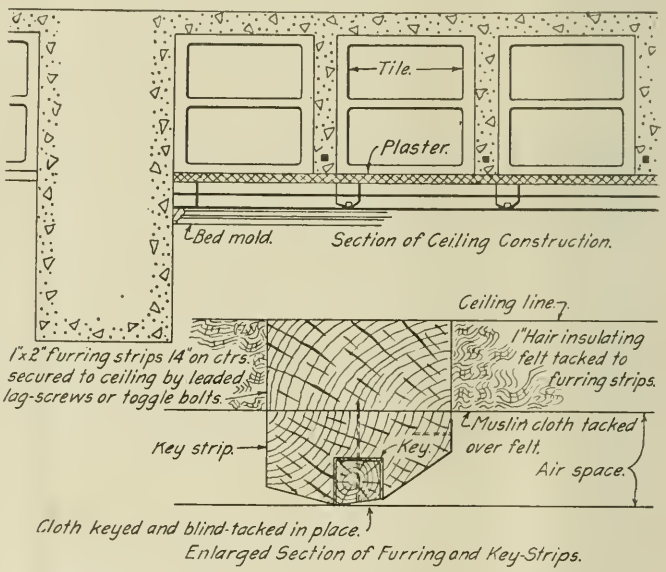
In Brazil a Department of Communication and Public Works has jurisdiction over railroads, highways, interior navigation, ports, rivers and canals, water supply, water-power and surveys. Chili has a Department of Industry and Public Works having jurisdiction over all communications by land, river and sea, the utilization and distribution of waters, public buildings, mines, surveys and mappings. In Peru a Department of Public Works—formerly a part of the Ministry of the Interior—has jurisdiction over irrigation, hygiene, mines, schools, patents and trade marks, water and state railways.

In England the Commissioners of Works and Public Buildings have control over the lands and buildings of all kinds belonging to the Government, while rivers and harbors and their appurtenances are under the jurisdiction of the Board of Trade. This is the only modern government of any size, except the United States, in which all government activities of this kind are not concentrated under one jurisdiction.

Insulating an Office for Noisy Machines

The introduction of a great many calculating and other machines in accounting offices has led to no little difficulty in some instances because the noise made by these machines tends to reduce the efficiency of the persons employed in the department. Following the introduction of dictating machines in the office of the auditor of disbursements of the Santa Fe at Topeka, it was concluded to segregate all operators using mechanical devices of every nature in one room partitioned off from the main office with the intention of cutting off the noise. The partition consisted of plaster wainscot on metal lath to a point about 3 ft. above the floor with double glazed sash from there to the ceiling. The effect of the air space between the glass did not interfere with the lighting arrangement and eliminated the noise and confusion of the typewriters and other mechanical devices so far as the outside clerical force was concerned, but the volume of the noise within the room was so great that it materially reduced the grade of work done.

After trying felt cushions under the machines to obstruct the transmission of the noise to the floor, the idea was conceived of insulating the ceiling as shown in the drawing. The ceilings in the building consist of hollow tile with cement plaster. Accordingly furring strips were secured to this ceiling by expansion bolts with the strips 14 in. center to center. One inch of hair insulating felt was then secured in place between these strips by fine soft wire suspended from the strips, both the furring strips and the insulating felt being then covered by muslin tacked over the felt. One-inch key strips were then placed under the furring strips as a means of stretching a porous cloth over the ceiling, the cloth being separated from the insulating felt by an air space of one inch.



Details of the Insulation Applied to the Ceiling

This improvement was entirely successful. Coupled with the continued use of the felt pads under the machines, the noise was reduced to a minimum. The ceiling insulation effectively eliminated the ringing echo which had been so disconcerting to the workers. This work was done last year and cost $0.86 a sq. ft. complete for 1,584 sq. ft. applied. The material was purchased from H. W. Johns-Manville Company and applied by Lundgren & Carlson of Topeka.

General News Department

The bill to repeal the daylight saving law, effective with the change of the clocks in October, was repassed over the President's veto on Wednesday by the Senate after the House had taken similar action the day before.

Secretary Lane of the Interior Department has submitted a report to Congress recommending the enactment of a bill to forfeit rights-of-way heretofore granted to railroad companies through Indian reservations in all cases where the grantees have failed to utilize the land for five years.

Alfred W. Smithers, chairman of the board of directors of the Grand Trunk Railway of Canada, has been knighted by King George. Sir Alfred has been intimately associated with the activities of the pioneer Canadian line for the past 25 years and chairman of the board since 1909. He is a member of the British House of Commons.

Eleven or more persons, most of them children, were killed in a trolley car accident at a point two miles north of Parkersburg, W. Va., on August 14, an interurban car running into a locomotive of the Baltimore & Ohio, which, according to the reports, appears to have been standing on a side track. Steam from a broken pipe of the locomotive scalded many passengers.

Suspension in street car traffic in Pittsburgh, Pa., last week, because of a strike, threw a large volume of passenger traffic temporarily on the steam railroads entering the city. The United States Railroad Administration sent from Philadelphia and from Washington 127 passenger coaches for use in the Pittsburgh region. These coaches, in seven trains, moved over the Pennsylvania Railroad.

Delos W. Cooke, formerly vice-president of the Erie Railroad and later United States Fuel Administrator for New York, is now a Chevalier of the Legion of Honor, this title having been conferred upon him by the government of France. This honor is in recognition of Mr. Cooke's services in connection with the control of trans-Atlantic traffic for the Allies. He is now associate director of the Cunard Steamship Line.

The National Safety Council reports that the American Rolling Mill Company, Middletown, O., in the first five months of 1919 reduced by 46 per cent the number of casualties to employees and by 51 per cent the total number of days lost as the result of accidents, as compared with the same period in 1918; and the total compensation paid by the company on account of injured employees was 91.9 per cent less than in the previous year. In the month of May, the total outlay for compensation on account of accidents to 3,500 men amounted to $1.71.

The Union Pacific Railroad Company has offered to the Nebraska State Highway Commission to make 50 year leases to county authorities of a sufficient width of the outer margin of its 400-foot right of way for the location of the improved Lincoln Highway, such leases to be at nominal rental and subject to certain reservations protecting the company in case of future need to occupy portions of the leased strip for operating purposes. The conclusion of the arrangement is understood to be awaiting the formal approval of the authorities of the federal government charged with responsibility for the advancement of federal funds in aid of highway improvements.

The Indiana Livestock Sanitary Board has abolished the requirement that all stock cars must be cleaned at the Indianapolis, Ind., stock yards. according to Dr. L. E. Northrop, state veterinarian, and as a result an extra item in the cost of production of beef has been eliminated in Indiana. The regulation was adopted at a recent meeting of the Board and does away with the charge of $2 a car which Indiana shippers were compelled to pay in freight charges. Dr. Northrop said that the cost of cleaning cars varied from $2 to $300 a day for shippers and pointed out that inasmuch as other states did not make this requirement, Indiana shippers have been paying for cleaning cars for the shippers of Kentucky, Illinois and other states. The cars that contain infected or suspicious animals are cleaned now, as heretofore, in compliance with state laws.

The Brotherhoods, in their zeal for developing an idealistic raison d'etre, often ignore the human side of their union. An interesting example of this recently came to light as a result of a decision rendered by the Railway Board of Adjustment No. 1. A number of Chicago Great Western officers early volunteered for war service and went overseas. Conductor J. F. Donnelly was appointed by his superintendent as acting trainmaster to avoid a possibility of section 18, article 9 of the schedule of conductors and trainmen being invoked to demote him. Under this section conductors or trainmen appointed to official positions retain their seniority rights not over six months. Mr. Donnelly served faithfully, preserving the continuity of his service as a conductor by running several trips during each six months period, and his name was retained on the conductor's seniority list without protest, although this seniority list was corrected four times. In fulfilling his duties as acting trainmaster Mr. Donnelly was forced to discharge a brakeman, a member of the Brotherhood of Railway Trainmen, for being asleep in the drawing room of the rear Pullman car on a troop train. This was a serious offense, but the general chairman of the Brotherhood of Railway Trainmen stated that he would get Mr. Donnelly's job and invoked the seniority rule to that end. He obtained the approval of the executive officers of the Brotherhood for that purpose and had the case placed before Railway Board of Adjustment No. 1. Here the case was decided against him.

The Board of Directors of the Associated Industries of Missouri at a recent meeting adopted a resolution opposing the Plumb plan of railway ownership and operation and the nationalization of industry generally. The resolution characterizes the proposal of the railroad workers for conducting the roads as "the most serious menace to the welfare of the nation" which has been presented to Congress since the United States gained its independence.

The resolution as adopted is as follows:

WHEREAS, the proposition is before Congress to nationalize the railroads of the country which is stated to be the first step in the nationalization of industry; now, therefore, be it

RESOLVED that the Associated Industries of Missouri declare itself emphatically and unqualifiedly opposed to the government ownership or government operation of railroads as set forth in the plan of the Railroad Brotherhoods which in our estimation is the most serious menace to the welfare of the nation of any legislation presented to Congress since we became a republic; and

RESOLVED we are unalterably opposed also to the continuation of government operation with all its inefficiency, poor service and high cost of transportation, and that we are in favor of an immedate return of the railroads to their owners; and,

RESOLVED that we are utterly and forever opposed to the nationalization of industry since this will result in ruin to the industries, the workers and the nation.

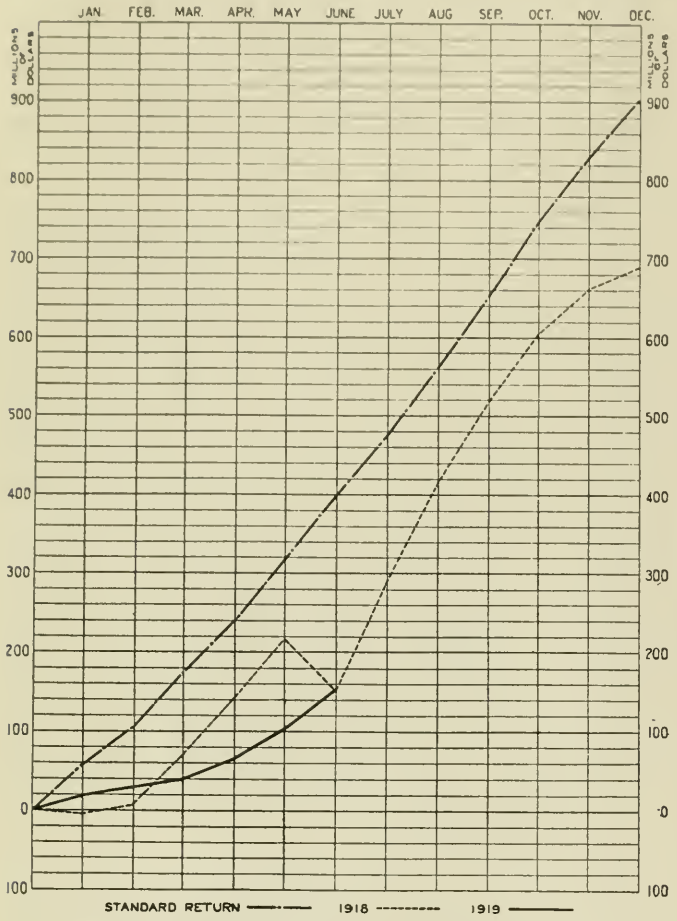
The members of the Associated Industries of Missouri are business men and manufacturers.

Turn Around Service on the Western Maryland

In the issue of August 8 an article on "Turn Around Service on the Western Maryland" was published and, through a typographical error, the author's name was omitted. The author is J. L. Carnochan of Hagerstown, Md.

Net Operating Income

The chart made by the Bureau of Railway Economics shows the net operating income of the Class 1 Roads in 1919, compared with the average in the test period (1915-1916-1917) on which government rental is based. The table gives the figures on which the chart is based.



Net Operating Income, Cumulated by Months, 1918 and 1919, Compared with Standard Return, Class 1, Railways of United States

Month	Average net operating income (Standard return) in 3-year test period: By months	Average net operating income (Standard return) in 3-year test period: Cumulative	Net operating income earned in 1919: By months	Net operating income earned in 1919: Cumulative	Deficit in 1919: By months	Deficit in 1919: Cumulative
January	$56,613,000	$56,613,000	$18,783,702	.....	$37,830,000	.....
February	47,934,000	104,547,000	10,106,268	$28,889,970	37,828,000	$75,658,000
March	68,251,000	172,798,000	10,842,608	39,660,778	57,409,000	133,067,000
April	67,289,000	240,087,000	26,115,214	65,916,807	41,174,000	174,241,000
May	77,385,000	317,472,000	39,462,367	105,215,450	37,923,000	212,257,000
June	82,550,000	400,022,000	52,270,702	157,448,669	30,279,000	242,573,000
July	75,341,000	475,363,000	.....	.....	.....	.....
August	86,860,000	562,223,000	.....	.....	.....	.....
September	91,273,000	653,496,000	.....	.....	.....	.....
October	94,333,000	747,829,600	.....	.....	.....	.....
November	83,536,000	831,365,000	.....	.....	.....	.....
December	73,282,000	904,647,000	.....	.....	.....	.....

Safety by Supervision

R. J. Clancy, in charge of safety work for the Southern Pacific-Western Pacific lines, says that "No-Accident Week," in which casualties were reduced 72½ per cent, confirms the view that four-fifths of all accidents are induced by carelessness, and that most of the carelessness is due to inefficient or lax supervision. This good week's record was accomplished by improved supervision and by all officers taking an active interest in the manner in which employees performed their duties. "Supervision is not confined to officers," says Mr. Clancy; "the most important element of supervision is self-supervision. No one, whether officer or employee, is qualified to supervise others until he has learned to supervise himself—to obey the rules and avoid unsafe practices. Self-supervision is the starting point."

The Safety-Agents' Records for May

The Safety Section of the United States Railroad Administration reports that for the month of May, 2,051 meetings were held by the safety departments of the railroads under government control; attended by 26,188 officers and employees and 1,038 representatives of the safety departments; or one specialist to 26 ordinary members. The total attendance, including visitors, was 31,486, and absences recorded numbered 5,875. Illustrative accidents discussed numbered 4,543; number of safety rallies held 338 and safety bulletins and circulars posted 79,721. In addition to these bulletins and circulars the record of magazines, pamphlets and other literature distributed during the month shows a total of 552,480.

The total numbers of casualties reported from the seven regions for the month of May were: employees killed, 123; injured, 9,206; all cases (including employees), 532 killed and 10,369 injured. The total net decreases, as compared with May, 1918, are: employees killed, 109; injured, 3,393; all cases, killed 129, injured 3,477.

Attention is called to the fact that these comparisons are more satisfactory than those heretofore reported for the reason that on the basis of labor, weather and traffic conditions, May, 1918, was similar to May, 1919.

The Norfolk & Western's report of casualties to employees for six months makes the following remarkable showing, the records being made up according to the Interstate Commerce Commission standards:

Half-year	Killed	Injured	Total	Total man-hours	Man-hours per injury
1918	38	1,270	1,308	36,666,310	28,032
1919	7	735	742	30,826,124	41,545
Increase	..	.....	.....	.....	
Decrease	31	535	566	5,840,186	
Per cent	82	42	43	16	

Net decrease in total killed and injured over man-hours exposed to injury, 27 per cent. The total cost of damage to cars, engines and track in train accidents in 1919 was 38 per cent less than in 1918, though the total number of car miles was only 21 per cent less.

Colorado Governor Aids Heavy-Loading Campaign

Recognizing the necessity for loading cars to capacity and unloading them quickly in order that the heavy crops of the present season may be moved and saved, Governor Oliver H. Shoup of Colorado has issued a proclamation urging the people of Colorado to follow suggestions made by Hale Holden, Central Western regional director, regarding the necessity for loading all cars to their full carrying capacity in order to combat the threatened car shortage.

Governor Shoup's proclamation said:

"In these days when national, state, county and municipal authorities are bending their energies toward the solution of the problems of reconstruction, among which the high cost of living looms most conspicuously, it is

imperative that there be co-operation among all classes of our citizens toward the one end sought. Habits of conservation, inculcated during the period of war activities, should be continued and encouraged along all lines and in every avenue of business activity, and wastefulness, extravagance and inefficiency should be discouraged among the people of the United States.

"The Denver Civic and Commercial Association, representing substantially all of the active forces of the community, acting on the advice of the Transportation Bureau of that organization, calls attention to the imperative need for the conservation of the hauling facilities of the railroads of the country and the imminent danger of a shortage of equipment unless absolute care and great wisdom are used in loading cars.

"A circular from Mr. Hale Holden, regional director of the United States Railroad Administration, dealing with the subject of Car Efficiency—Intensive Loading," states: "We are facing what promises to be the heaviest demand for equipment for some years," and he suggests that "the public can do more to guard against a car shortage than the railroads to the extent that such a condition may be materially relieved by loading all cars to their full carrying capacity, instead of resuming the former easier method."

"Being assured that this serious condition is facing the people of Colorado, I desire to urge the necessity of following the suggestion made by Mr. Holden, who is in direct touch with the situation, and I hereby urge that the shippers of Colorado intelligently and willingly co-operate with the managers of the railroads in the matter of loading, to the end that the people of this state shall conserve their own shipping facilities by seeing to it that freight cars do not go out lightly loaded, but that the maximum carrying capacity be utilized in every instance. This is an imperative matter at this time, and the Civic and Commercial Association is doing a real service in emphatically calling it to the attention of those whose prosperity and happiness will be hampered if the request of the Railroad Administration in the matter of loading care be not heeded promptly and wholeheartedly.

"Real American grasp of a serious situation, such a grasp as was maintained during the war, will ward off a trouble whose consequence might be serious and far reaching."

The necessity for loading cars to the maximum and unloading them with the least delay is especially imperative in Colorado because of the production in that state of an immense fruit crop, perishable and involving millions, which will be in a large part a loss, unless enough cars can be obtained at the right time to move it. The same possibility also arises, although in lesser degree, with regard to the heavy grain and potato crops produced in Colorado. Aside from these imperative reasons, recognition is given to the national necessity for moving the immense wheat and corn yields of the country with a minimum loss. Governor Shoup's proclamation was issued in response to a request from George W. Martin, secretary of the Denver Operating Committee of the Railroad Administration and Arthur J. Dodge, business manager of the Civic and Commercial Association.

Railway Revenues and Expenses for June and Six Months

The Interstate Commerce Commission's compilations, subject to revision, from reports of 105 Class I roads and 17 switching and terminal roads, for the month of June and the six months ended June 30, are as follows:

Item	June, 1919 and 1918				Six months			
	Amount		Per mile of road operated		Amount		Per mile of road operated	
	1919	1918	1919	1918	1919	1918	1919	1918
1. Average number miles operated	233,568.20	234,273.71	.....	.....	233,558.05	234,210.98	.....	.....
Revenues:								
2. Freight	$284,487,599	$263,796,118	$1,218	$1,126	$1,613,365,465	$1,439,048,083	$6,908	$6,144
3. Passenger	105,464,476	94,810,606	452	405	542,809,826	448,613,479	2,324	1,915
4. Mail	4,301,364	4,495,709	18	19	25,790,449	27,157,506	110	116
5. Express	10,063,454	9,650,621	43	41	52 815,186	56,823,141	226	243
6. All other transportation	11,067,537	10,991,665	48	47	57,998,562	57,094,895	248	244
7. Incidental	10,478,591	11,120,450	45	48	61,631,485	57,604,190	264	246
8. Joint facility—Cr	544,364	489,831	2	2	3,267,367	2,757,041	14	12
9. Joint facility—Dr	179,637	154,144	1	1	993,010	833,294	4	4
10. Railway operating revenues	426,227,748	395,200,856	1,825	1,687	$2,356.685,330	$2,088,265,041	10,090	8,916
Expenses:*								
11. Maintenance of way and structures	66,271,891	67,875,290	284	290	370,823,325	288,500,683	1,587	1,232
12. Maintenance of equipment	96,649,377	106,245,571	414	454	572.951,370	462,869,824	2,453	1,976
13. Traffic	3,831,301	5,474,733	16	23	22,447,290	27,788,477	96	119
14. Transportation	176,105,918	238,728,995	754	1,019	1.043,210,690	970,803,480	4,467	4,145
15. Miscellaneous operations	4,139,241	4,118,327	18	18	22,712,035	18,732,146	98	80
16. General	9,961,314	13,394,422	43	57	61 427,854	55,842,679	263	238
17. Transportation for investment—Cr	554,761	452,164	3	2	3,026,290	2,845,859	13	12
18. Railway operating expenses	356,404,281	435,385,174	1,526	1,859	2,090,546,274	1,821.691,630	8,951	7,778
19. Net revenue from railway operations	69,823,467	†40,184,318	299	†172	266,139,056	266,573,411	1,139	1,138
20. Railway tax accruals (excluding "war taxes")	14,559,157	17,118,020	63	73	91,663,514	92,439,375	392	395
21. Uncollectible railway revenues	75,337	61,835	.....	.....	369,021	312,303	2	1
22. Railway operating income	55,188,973	†57,364,173	236	†245	174,106,521	173,821,733	745	742
23. Equipment rents (Dr. Bal.)	1.654,066	2,470,154	7	11	9,500,353	13,754,841	41	59
24. Joint facility rents (Dr. Bal.)	1,264,205	1,439,698	5	6	7,157,499	6,598,988	30	28
25. Net of items 22, 23 and 24	52,270,702	†61,274,025	224	†262	157,448,669	153,467,904	674	655
26. Ratio of operating expenses to operating revs..%	83.62	110.17	.....	.....	88.71	87.23	.....	.....

*The operating expenses for June, 1918, include wage increases representing back pay for the period, January to May, 1918, inclusive.

†Deficit. ‡Credit item.

Note—The average railway operating income corresponding to item 22 above for the month of June in the three years 1915, 1916 and 1917, included in the "test" period of three years ended June 30, 1917, was $371 per mile of line for the United States.

Freight Claims Section—A. R. A.

J. E. Fairbanks, general secretary of the American Railroad Association, 75 Church street, New York City, announces that the Executive Committee of the association has created an additional section to be known as Section VII—Freight Claims, to include the former activities of the Freight Claim Association. The temporary General Committee, to manage the section until a regular election shall be held consists of H. C. Pribble (A. T. & S. F.), chairman; J. B. Baskerville (N. & W.); E. J. Bloodgood (C. & N. W.); W. O. Bunger (C. R. I. & P.) R. L. Calkins (N. Y. C.); J. J. Hooper (Southern); H. C. Howe (C. & N. W.); W. S. Reed (P. & W. V.); and J. H. Howard, manager of the Claims and Property Protection Section of the United States Railroad Administration.

Passenger Traffic in May

The number of passengers carried one mile on the railroads under federal control during the month of May was 3,656,571,089, a decrease of 0.9 per cent as compared with May, 1918. In the Ohio-Indiana district the decrease was 22.2 per cent, in the Southern region there was a decrease of 13.6, and in the Southwestern region a decrease of 3.8 per cent. The other regions showed increases. For the five months ended May 31 the increase in passengers carried one mile was 4.4 per cent.

REVENUES AND EXPENSES OF RAILWAYS

SIX MONTHS OF CALENDAR YEAR, 1919

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses						Operating ratio.	Net from railway operation	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
					Maintenance of										
		Freight.	Passenger.	Total (inc. misc.)	Way and structures.	Equipment.	Traffic.	Transportation.	General.	Total.					
Balto & Ohio	5,151	$57,728,524	$15,837,364	$79,759,851	$12,763,302	$26,717,766	$929,510	$37,578,470	$2,328,555	$80,935,158	101.47	—$1,175,307	$2,236,103	—$3,411,[illegible]	—$[illegible]
Balto., Ches. & Atlantic	87	431,632	200,573	655,638	89,795	144,661	5,986	419,656	20,731	680,808	103.83	—25,170	18,960	—44,130	—24,783
Bangor & Aroostook R. R.	632	2,047,831	438,879	2,611,728	523,707	679,456	23,185	1,020,902	77,769	2,358,541	90.30	253,187	126,000	126,[illegible]	—39,783
Beaumont, Sour Lake & Western	118	437,533	137,090	604,315	154,440	122,476	10,336	283,290	30,230	600,773	99.41	3,542	16,300	—12,[illegible]	—272,513
Belt Ry. Co. of Chicago	31	.....	.....	1,588,074	137,582	311,738	2,116	1,064,643	46,246	1,562,325	98.37	25,749	92,379	—66,631	—46,292
Bessemer & Lake Erie	217	5,331,478	199,032	5,688,416	602,210	1,862,745	64,425	1,957,655	116,951	4,549,037	79.97	1,139,380	87,000	1,052,387	313,367
Hingham & Garfield Ry	37	544,286	12,763	583,296	232,277	231,093	8,101	171,659	24,414	680,976	116.74	—97,681	41,062	—138,742	—809,424
Birmingham Southern R. R.	29	221,761	.....	304,739	23,402	39,078	4,130	136,259	19,324	222,195	72.91	82,545	15,037	66,794	30,087
Boston & Maine	7,258	18,675,449	9,920,633	32,045,780	4,563,059	6,582,247	229,539	18,229,518	1,018,861	30,819,097	96.17	1,266,683	1,649,552	176,594	592,603
Buff. & Susquehanna R. R. Corp.	296	914,827	42,214	1,006,751	238,574	513,394	10,648	363,408	40,636	1,172,658	116.41	—165,308	19,500	—184,808	—204,260
Buff., Rochester & Pitts.	590	5,504,045	732,747	6,480,097	1,132,357	2,385,881	87,635	3,414,294	198,997	7,231,724	111.59	—751,627	162,000	—914,071	—823,476
Canadian Pacific Ry. Lines in Maine	233	1,165,444	330,889	1,572,099	264,043	372,235	15,807	1,051,206	22,183	1,725,475	109.75	—153,376	66,000	—219,375	—28,618
Carolina, Clinchfield & Ohio	282	2,530,975	184,961	2,764,767	474,835	751,970	28,091	898,496	78,663	2,231,704	80.71	533,063	97,800	435,247	40,087
Central New England	301	2,774,352	141,947	3,057,399	738,700	625,252	15,721	1,525,323	88,461	2,998,878	98.08	58,522	96,000	—37,[illegible]	—197,287
Central of Georgia	1,918	6,155,160	2,990,042	10,104,559	1,940,705	2,161,929	200,299	4,513,403	349,224	9,514,836	94.16	949,723	748,017	597,636	—1,180,147
Central R. R. Co. of New Jersey	685	14,896,203	3,710,636	20,197,407	2,432,973	5,429,508	128,285	9,885,705	496,501	18,456,254	91.37	1,741,152	944,752	796,[illegible]	—423,176
Central Vermont Ry.	411	1,913,354	475,443	2,629,992	494,298	702,025	40,879	1,721,328	105,878	3,069,434	116.71	—439,442	104,400	—543,[illegible]	—241,626
Charleston & S. Carolina	342	1,099,339	315,892	1,478,482	262,474	264,267	24,811	746,186	36,058	1,333,795	90.21	144,687	51,000	93,[illegible]	—[illegible]
Chesapeake & Ohio	2,499	25,326,962	7,458,267	34,778,133	5,531,387	7,535,899	217,463	13,848,434	664,364	27,983,460	80.46	6,794,673	1,026,841	5,764,[illegible]	1,617,663
Chicago & Alton	1,050	8,396,713	2,992,742	12,080,991	2,024,090	3,346,415	155,689	5,288,260	294,619	11,163,620	92.41	717,371	338,554	577,743	742,23[illegible]
Chicago & Eastern Ill.	1,131	8,375,910	2,291,701	11,510,525	1,818,135	4,437,829	134,859	5,211,886	286,882	11,918,747	103.54	—408,212	477,092	—887,[illegible]	—931,[illegible]
Chicago & Erie	269	3,980,438	569,946	4,952,461	568,144	894,165	64,350	2,580,689	169,537	4,294,212	86.71	658,249	183,930	47[illegible]	939,029
Chicago & N. W.	8,090	41,259,236	15,953,948	62,550,324	9,692,877	13,575,621	424,440	29,826,510	1,457,548	55,454,562	88.65	7,096,762	2,850,000	4,242,[illegible]	3,556,[illegible]
Chicago, Burlington & Quincy	9,372	47,617,052	15,677,021	68,485,084	10,735,258	14,027,360	521,494	28,003,194	1,896,717	55,897,840	81.62	12,587,244	2,663 178	9,[illegible]	2,253,956
Chicago, Great Western	1,496	6,259,074	2,834,780	9,812,065	1,707,967	2,362,117	152,461	4,353,425	263,717	9,117,655	92.92	694,411	348,568	344,[illegible]	161,[illegible]
Chicago, Indianapolis & Louisville	651	3,762,464	1,336,682	5,604,328	654,761	1,362,226	80,336	2,369,287	154,654	4,678,182	83.47	926,146	208,390	717,516	366,371
Chicago Junction Ry.	12	.....	.....	1,688,746	446,799	294,239	583	1,382,505	44,990	2,169,175	128.44	—480,429	14,231	—494,661	—342,974
Chicago, Milwaukee & St. Paul	10,647	48,957,408	14,019,317	69,093,453	9,903,847	19,923,220	526,702	52,851,777	1,841,455	65,231,927	94.41	3,861,527	3,206,5[illegible]	6[illegible]	2,4[illegible]
Chicago, Peoria & St. Louis	247	577,613	141,806	768,750	218,411	381,305	16,769	495,291	53,917	1,165,685	151.63	—396,935	44,366	—441,315	—268,309
Chicago, Rock Island & Gulf	474	1,575,375	481,708	2,176,505	396,404	443,961	41,182	1,036,552	70,533	1,993,870	91.61	183,634	78,929	103,412	—414,441
Chicago, Rock Island & Pacific	7,595	32,053,269	14,068,053	49,082,858	7,996,568	11,954,974	585,933	22,194,148	1,215,152	44,153,200	89.95	4,929,658	2,092,295	2,834,291	—382,883
Chicago, St. Paul, Minn. & Omaha	1,749	8,259,878	2,487,037	12,640,380	1,709,344	2,403,897	117,499	6,198,068	356,317	10,876,584	86.04	1,763,796	620,865	1,140,900	763,894
Chicago, Terre Haute & S. E.	374	1,677,556	126,820	1,847,297	311,427	896,131	20,546	742,788	51,441	2,031,588	109.97	—184,291	87,000	—271,[illegible]	91,683
Cin., Indianapolis & Western	321	941,069	304,238	1,381,004	284,113	420,312	27,381	787,263	77,890	1,600,485	115.89	—219,480	61,459	—280,939	—247,625
Cin., New Orl. & Texas Pac.	337	6,045,965	1,852,712	8,303,700	971,530	2,574,105	141,890	3,019,316	204,344	6,965,638	83.88	1,338,062	232,119	1,102,282	184,012
Cin. Northern	251	1,273,164	101,421	1,409,470	235,282	319,986	13,946	499,510	29,133	1,097,258	77.84	312,213	50,000	262,061	250,919
Cleveland, Cin., Chicago & St. L.	2,395	22,062,935	7,714,458	32,304,999	4,329,452	6,580,623	454,420	13,590,987	650,302	25,859,126	80.05	6,445,873	1,110,000	5,33[illegible]	1,885,920
Colorado & Southern	1,100	4,819,065	1,045,170	6,190,812	957,707	1,452,329	53,338	2,401,161	218,652	5,120,441	82.71	1,070,371	282,000	786,067	299,162
Colorado & Wyoming Ry.	41	145,597	7,201	569,387	58,807	106,144	647	260,716	22,943	449,256	78.90	120,130	24,000	96,130	—17,507
Cumberland Valley	163	2,069,565	395,336	2,641,972	510,545	650,105	39,104	1,172,278	69,513	2,395,922	90.69	245,850	53,817	191,755	428,344
Delaware & Hudson Co.	875	13,692,234	1,332,441	15,938,986	2,049,311	4,664,930	110,603	7,365,021	641,731	15,014,920	94.20	924,066	360,000	557,589	1,403,294
Del., Lackawanna & Western	955	24,930,343	5,610,350	34,162,323	3,211,841	7,243,298	234,750	14,966,952	670,992	26,668,286	78.06	7,494,037	1,857,294	5,623,693	184,481
Denver & Rio Grande R. R.	2,617	10,588,815	2,686,150	14,098,588	2,211,193	3,862,068	113,872	5,127,777	408,710	11,955,022	84.79	2,143,561	615,000	1,526,[illegible]	566,170
Denver & Salt Lake R. R.	255	999,149	163,478	1,202,985	411,676	527,627	5,565	742,161	26,949	1,715,979	142.64	—512,994	54,000	—567,041	—227,985
Detroit & Mackinac	381	525,671	174,768	719,953	126,932	220,712	22,574	387,548	77,328	835,092	115.99	—115,139	44,094	—159,234	—148,503
Detroit, Tol. Shore Line	61	1,090,590	.....	1,120,911	98,071	90,246	4,463	319,176	16,972	528,339	47.13	592,573	61,246	531,320	161,099
Detroit, Tol. & Ironton	459	1,528,989	68,623	1,716,587	517,337	615,410	16,124	853,159	77,278	2,079,309	121.13	—362,722	51,432	—414,388	108,801
Duluth & Iron Range	292	2,973,133	133,449	3,339,757	455,337	520,162	2,817	1,001,893	82,960	2,063,674	61.79	1,276,084	168,254	168,254	1,107,348
Duluth, Missabe & Northern	416	7,775,429	256,810	8,300,030	864,574	788,242	12,619	1,650,974	105,051	3,410,005	41.08	4,890,016	230,708	4,659,308	2,799,349
Duluth, South Shore & Atlantic	599	1,488,093	530,936	2,151,128	426,164	403,634	36,778	1,130,191	57,583	2,081,627	96.76	69,501	123,003	—53,561	144,789
Duluth, Winnipeg & Pac.	173	787,457	141,018	964,484	164,642	187,650	13,657	445,630	48,356	863,630	89.54	100,854	49,869	50,984	2,313
East St. L. Connecting	3	.....	.....	557,457	81,647	162,570	1,765	375,855	20,524	642,360	115.23	—84,904	15,111	—100,014	—24,983
El Paso & S. W.	1,027	4,844,861	1,077,107	6,239,429	814,207	1,215,106	57,718	1,773,857	149,683	4,054,553	64.98	2,184,877	332,719	1,851,762	—805,925
Elgin, Joliet & E.	827	8,793,548	42	10,254,004	909,434	2,603,286	40,467	4,005,682	153,113	7,711,477	75.20	2,542,527	317,897	2,224,630	1,052,290
Erie R. R.	1,989	31,641,335	3,297,185	41,831,624	5,024,814	14,367,606	357,794	21,473,187	1,213,951	42,668,532	102.00	—836,907	1,512,147	—2,361,232	3,119,383
Fla. East Coast	764	3,055,499	1,748,070	5,390,729	879,257	967,917	48,990	2,543,726	93,408	4,595,198	85.24	795,531	196,949	597,698	—1,122,675
Fonda, Johnston & Gloversville	88	183,159	373,650	579,818	60,283	53,613	3,255	224,603	28,641	370,394	63.88	209,424	29,400	180,023	5,452
Ft. Smith & Western	253	508,459	146,187	703,831	141,509	178,952	21,868	267,133	37,720	649,670	92.30	54,161	30,000	23,355	7,857
Cin., Lebanon & Nor.	76	365,002	40,066	488,232	102,626	108 872	7,831	303,212	5,090	527,629	108.06	—39,397	25,846	—65,243	—47,978
Ft. Worth & Denver City Ry.	454	3,376,118	1,402,476	4,989,915	548,451	975,386	26,935	1,879,791	148,621	3,595,222	72.04	1,394,694	115,500	1,278,364	744,397
Ft. Worth & Rio Grande Ry.	235	345,972	275,684	668,087	170,008	144,265	570	395,539	38,664	754,233	112.89	—86,146	18,486	—104,956	—101,801
Galveston, Harrisburg & San Ant.	1,381	6,904,720	2,709,901	10,112,156	1,537,603	2,253,480	106,332	3,966,184	320,058	8,270,608	81.78	1,842,148	317,356	1,521,988	—1,047,144
Galveston Wharf Co.	13	.....	.....	403,624	115,363	3,770	164	158,014	9,294	332,778	82.44	70,845	72,100	—1,255	—125,756
Georgia R. R.	328	1,889,612	858,051	2,954,220	316,727	482,423	40,406	1,435,542	200,050	2,381,881	8,062	572,339	36,700	535,585	—199,196
Georgia Southern & Florida	402	1,373,239	574,319	2,130,119	374,581	532,464	36,287	1,007,034	61,058	2,015,325	94 61	114,775	82,053	32,391	—121,817
Georgia & Florida	348	331,391	108,778	468,536	163,694	118,073	11,754	305,041	32,987	631,549	134.79	—162,994	25,219	—188,989	—149,661
Grand Rapids & Ind.	569	2,411,061	833,006	3,535,766	569,926	848,976	60,179	1,809,963	133,963	3,431,113	97.04	104,653	154,552	—49,929	—96,586
Grand Trunk Western Line	1,001	7,754,829	1,645,499	10,232,842	1,246,722	1,932,848	96,387	4,846,386	283,330	8,431,125	82.39	1,801,717	301,372	1,496,981	1,980,546
Great Northern Ry.	8,252	34,432,295	8,542,067	47,292,186	9,539,390	9,352,236	326,116	20,966,889	911,897	41,686,831	88.18	5,585,352	2,756,058	2,825,697	4,380,784
Gulf & Ship Island R. R.	317	784,691	251,202	1,130,676	327,885	261,618	22,325	498,079	52,150	1,164,309	102.97	—33,633	62,862	—96,588	—303,991

REVENUES AND EXPENSES OF RAILWAYS

SIX MONTHS OF CALENDAR YEAR, 1919—CONTINUED

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses						Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
					Maintenance of										
		Freight.	Passenger.	Total (inc. misc.)	Way and structures.	Equipment.	Traffic.	Transportation.	General.	Total.					
Gulf Col. & Santa Fe	1,934	6,010,766	2,347,770	8,856,833	1,982,044	1,619,266	85,969	4,032,529	292,330	7,992,802	90.24	864,031	427,006	433,538	—1,184,256
Grand Trunk Lines in New England	172	1,555,545	203,123	2,130,207	577,890	257,727	17,603	1,284,575	28,736	2,522,173	118.40	—391,967	69,000	—460,967	—28,555
Gulf, Mobile & Northern	424	933,200	244,367	1,244,001	270,800	328,041	31,857	612,996	57,293	1,299,632	104.47	—55,631	65,924	—121,835	—258,345
Hocking Valley	350	3,696,671	529,579	4,528,294	614,842	1,736,024	35,885	1,713,993	125,881	4,224,877	93.29	303,417	333,500	—33,748	—242,448
Houston & Texas Central	847	2,692,431	1,178,135	4,103,179	799,822	783,844	42,604	1,803,901	116,230	3,544,287	86.37	558,895	206,750	350,188	—496,137
Houston, East & West Texas	100	803,446	246,354	1,100,792	205,421	140,601	5,489	532,049	25,134	908,694	82.54	192,098	37,491	153,927	—57,843
Illinois Central	4,787	35,323,452	11,463,010	50,353,827	8,827,800	13,562,249	451,131	21,559,544	1,560,854	45,974,503	91.30	8,379,324	2,410,000	1,959,753	—1,151,843
Indiana Harbor Belt	116	.....	.....	3,001,706	530,351	652,572	10,451	1,926,395	100,447	5,220,228	107.27	—218,525	60,025	—278,551	192,202
International & Great Northern	1,159	4,840,679	1,488,260	6,757,763	1,636,293	1,776,285	74,925	3,494,526	239,595	7,255,669	107.37	—497,906	180,000	—678,728	—1,364,391
Kanawha & Michigan	176	1,563,255	341,145	1,975,871	295,967	732,001	14,470	774,432	75,751	1,892,626	95.78	83,245	107,310	—24,068	—501,308
Kansas City, Mexico & Orient	272	421,498	97,886	545,973	247,983	238,817	7,444	542,172	43,368	879,784	161.19	—333,810	37,551	—371,382	—138,724
Kansas City, Mexico & Orient of Texas	465	382,575	72,833	486,546	202,581	241,664	248,126	358,564	44,212	854,940	175.71	—368,394	29,906	—398,302	—326,789
Kans. City Southern	774	5,334,257	1,097,951	6,957,182	1,292,159	1,617,470	111,638	2,926,414	264,608	6,195,460	89.05	761,722	395,284	363,145	—1,537,582
Kansas City Terminal	26	.....	.....	6,5.578	88,170	154,865	.....	304,209	8,078	560.528	89.60	65,051	120,900	—55,900	—57,116
Lake Erie & Western	902	3,859,298	369,183	4,429,793	784,518	1,464,128	70,346	2,077,419	145,080	4,537,064	102.42	—107,271	162,500	—270,385	—550,333
Lake Superior & Ishpeming	34	246.861	1,439	276,668	112,287	111,877	1,208	78,638	15,438	319,447	115.46	—42,779	19,338	—62,117	—75,174
Lehigh & Hudson River	96	1,115,717	22,588	1,184,405	147,992	281,927	9,549	541,874	33,849	1,015,189	85.71	169,216	30,300	138,898	30,542
Lehigh & New England	229	1,487,533	9,702	1,591,508	256,811	351,851	15,913	602,279	55,348	1,281,968	80.56	309,540	250,430	259,110	—78,427
Lehigh Valley	1,435	23,292,820	3,167,720	29,325,283	4,288,496	8,214,472	246,607	14,231,920	644,852	27,726,531	.....	1,598,751	880,350	717,891	673,169
Long Island R. R.	398	2,702,541	7,610,542	11,409,564	1,640,416	1,827,501	67,729	5,636,598	283,598	9,539,433	83.60	1,870,131	544,121	1,323,543	—201,715
Louisian & Arkansas	302	767,082	211,192	1,015,989	246,738	249,872	20,252	482,292	36,645	1,035,800	101.94	—19,811	68,326	—88,192	—235,435
Louisian Ry. & Nav. Co.	549	1,372,514	212,076	1,682,460	475,663	314,293	22,932	867,196	45,983	1,726,044	102.59	—48,585	84,000	—127,717	—314,203
Lou. Western	207	1,225,846	663,946	1,969,408	260,155	361,733	23,571	573,329	65,094	1,296,273	65.82	673,135	56,000	616,964	—257,382
Lou. & Nashville	5,013	35,718,674	12,068,756	50,459,171	8,015,844	13,510,782	658,450	21,722,445	1,134,703	45,204,450	89.58	5,254,721	1,522,607	3,726,313	—2,631,440
Lou. Henderson & St. L.	199	1,008,017	368,383	1,433,646	301,501	208,136	37,186	573,054	44,633	1,164,509	81.22	269,137	24,000	244,711	—26,332
Maine Central	1,216	5,414,931	2,164,721	8,156,465	1,456,558	1,887,969	1,804,506	4,909,517	217,823	541,999	66.45	—385,544	453,738	—839,316	—94.669
Md., Del. & Va.	82	372.629	172.691	560,027	55,855	112,626	3,228	402,988	12,429	587,132	104.83	—27,105	10,398	—37,503	—44,705
Michigan Central	1,861	23,188,753	8,963,181	35,083,567	4,985,624	7,227,021	389,199	13,883,478	—654,905	27,554,912	78.54	7,528,655	970,000	6,555,842	1,979 398
Mineral Range R. R.	101	399,241	2,616	415,661	61,534	134,532	2,631	239,535	5,956	444,379	106.90	—28,719	21,500	—50,219	—45,539
Minn. & International	194	371,973	140,658	542,551	135,875	96,026	3,036	294,107	21,116	550,160	101.40	—7,610	27,990	—35,613	—69,699
Minneapolis & St. Louis R. R.	1,646	4,148,654	1,323,006	6,021,754	1,153,484	1,599,651	61,120	3,108,297	176,958	6,091,184	101.15	—69,451	307,802	—379,364	—286,015
Minneapolis, S. P. & S. Ste. Marie	4,243	14,213,088	3,581,275	18,979,824	2,931,271	4,266,919	142,276	8,431,201	430,399	16,290.811	85.83	2,689,013	1,124,762	1,563,178	2,386,297
Mississippi Central	168	300,039	155,358	474,912	114,376	182,660	7,199	204,530	34,927	543,693	114.48	—68,781	19,950	—88,739	—205,254
Missouri & N. Ark.	365	446,319	212,301	703,348	402,834	234,830	11,239	369,639	51,878	1,069,156	152.00	—365,808	38,386	—404,919	—409,612
Mo. Kans. & Tex. R. R.	1,714	10,948,018	3,827,561	15,609,924	3,090,326	4,633,955	151,299	5,654,620	464,954	14,029,525	89.87	1,580,400	540,735	1,038,737	211,954
Mo., Kans. & Tex. of Texas	1,796	6,940,115	3,608,161	11,371,309	2,283,685	1,986,297	124,230	5,849,639	438,487	10,779,144	94.79	592,165	290,554	298,487	598,584
Missouri, Oka. & Gulf	332	471,513	101,869	610,442	291,043	278,820	10,894	396,435	41,663	1,020,213	167.12	—409,771	51,016	—461,319	—217,297
Mo. Pacific	7,108	29,599,258	9,549,969	42,039,700	8,457,194	10,020,523	489,179	18,555,515	1,216,031	38,940,594	92.62	3,099,106	1,594,710	1,488,646	—3,645,694
Montour R. R.	54	521,908	9,164	559,144	159,592	336,687	7,228	155,494	38,434	698.868	124.98	—139,724	13,744	—153,474	—101,027
Mobile & O.	996	5,688,359	1,047,951	7,136,696	1,231,709	2,564,394	139,611	3,540,990	234,257	7,117,534	99.73	—580.838	323,022	—904,433	—860,586
Monongahela Ry.	108	1,437,554	121,207	1,575,785	387,888	220,325	6,027	566,213	41,724	1,191,176	75.59	384,609	30,000	354,590	24,326
Monongahela Connecting	6	.....	.....	832,669	136,410	313,495	3,072	444,452	45,100	940,529	112.95	—107.860	13,891	—121,751	—220,883
Morgan's Lou. & Texas R. R. & SS. Co.	400	2,387,999	1,032 873	3,644,660	549,335	809,703	45,956	1,595,714	121,460	3,133,725	85.98	510,935	184,549	325,270	—871,362
Nash., Chat. & St. L.	1,247	5,861,506	2,562,594	9,061 398	1,712,697	2,474,417	194,209	4,205,947	262,917	8,909,015	98.31	152,383	300,000	—149,437	—1,421,471
Nevada Northern	168	725,165	62 623	820 260	115 941	139,251	5,631	234,190	26,235	522,076	63.64	298,184	109,939	188,244	—323,825
New Orleans & N. E.	399	2,003,843	694,871	3,095,768	491,695	712,788	49,204	1,529,822	90,587	2,907,029	93.90	188,738	170.142	18,157	—494,339
New Orleans Great Northern	284	759.547	247.284	1,054,885	230,933	257,008	14,301	485,490	49,082	1,639,140	155.38	15,745	59,330	—46.422	—267,162
New Orleans, Texas & Mexico	191	632,161	196.894	889,149	221.677	200.148	15,498	321,300	35,004	826,220	92.92	62,928	60,800	2,883	—289,821
New York Central	6,675	80,533,476	38,580 468	141,813,610	19,173,541	31,447,731	1,273,102	65,088,721	3,686,202	120,868,445	85.23	20,945,166	5,273,955	15,665,435	9,146,197
New York, Chicago & St. L.	573	10,448,754	1,062,875	11,830,524	1,478,072	2,192,065	153.596	4,831,224	313,754	8,988,860	75.98	2,841,664	330.000	2,511,230	1,624 392
New York, N. H. & Hart.	1,965	21,311,056	20,691,116	47,535,175	6,685,206	10,227,289	242,073	24,616,967	1,688,749	44,280,701	93.15	3,254,473	1,608,000	1,635,633	—845,778
N. Y., Ont. & Western	569	2,945,688	846,682	4,610,067	723.459	1,278,281	49 567	2,319,404	141,364	4,512.011	97.87	98.056	152,800	—54,712	—204,193
N. Y., Phila. & Norfolk	121	2,732,510	705.402	3,692,713	296,300	864,081	50,442	1,821,241	68.675	3,207.608	69.57	485,105	102,342	382,763	152,071
N. Y., Susq. & Western	135	1,260,351	319.388	1,834.824	177,824	301.834	11,597	1,199,746	48.561	1,739,706	94.81	95,118	177,633	—82,737	—45,425
Newburgh & South Shore	7	.....	.....	841,165	117,117	170,896	.....	388,497	21,994	698.006	82.98	143,160	48,065	95,094	92,160
Norfolk & Western	2,087	28,449,104	5,162,438	35,358,796	4,804,049	10,154,683	211,141	13,333,564	624,433	29,234,802	82.68	6,123,995	1,560.000	4,563,150	—215,282
Norfolk Southern	907	1,974,757	807,796	2,781,226	614,173	595,053	45,034	1,601,695	123,041	2,981,988	107.21	—762	115,840	—116,792	—360,804
Northern Pacific	6,566	33,528,946	8,874,896	45,570,225	8,464,290	8,343,272	360,714	17,941,092	1,113,634	36,706,335	80.54	8,863,890	3,401,833	5,452,931	573,907
Northern Alabama	112	463,182	75,429	558,791	119,784	32,461	7,445	376,418	11,603	547,580	97.98	11,211	20,400	9,189	129 671
Northwestern Pacific	507	1,408,750	1,046,993	2,741,499	603,011	410,687	29,400	1,289,763	74,406	2,416,685	88.15	324,814	132,310	192,122	—335,080
Oregon Short Line	2,347	12,698,773	3,214,597	17,055,943	3,713,376	3,050,902	92,842	5,278,667	519,080	12,995,332	76.19	4,060,611	965,569	3,094,034	1,143,596
Oregon-Wash. R. R. & Nav.	2,069	8,572,820	3,116,219	12,765,152	2,633,764	2,021,835	163,356	5,314,198	563,024	10,868.011	85.13	1,897,142	683,577	1,212,034	—662,983
Panhandle & Santa Fe	772	1,882,088	490,831	2,501,289	664,283	952,148	22,244	1,354,658	89,149	3,070,511	122.75	—569,223	96,164	—666,024	—1,090,341
Penn. R. R. West	1,754	33,760,376	9,842,552	47,620,355	6,693,195	13,327,659	427,628	21,610,916	1,106,732	43,494,819	91.33	4,125,536	1,811,104	2,312,981	4,124,483
Penn. R. R. East	5,361	111,164,481	48,406,216	174,626,274	25,784,976	49 523,820	1,494,536	79,419,120	4,377,611	163,816,981	93.81	10,809,293	5,347,149	5,455,906	7,709,986
Perkiomen	41	474,784	43,195	511,192	32,500	28,646	120	217,391	1,901	280,186	54.81	231,007	10,800	220,207	82,849
Peoria & Pekin Union	19	193,293	24,916	586,779	96,849	233,536	5,064	469,989	.....	838,005	142.81	—251,227	57,000	—308,226	—185,499
Pere Marquette	2,232	11,969,170	2,492,658	15,638,076	2,080,908	3,213,229	163,799	6,768,255	432,792	12,715,728	81.31	2,922,347	297,802	2,622,971	1,314,854
Phila. & Reading	1,127	26,384,621	5,242,934	33 649,604	3,615,184	9,252,983	214,677	17,500,945	793,032	31,477,408	93.54	2,172,197	859,369	1,312,734	2,550,964
Pitts. & L. Erie	224	11,206,550	1,201,514	13,558,112	2,890,376	4,109,744	86,445	4,908,096	261,187	12,263,393	90.45	1,294,719	453,000	841,486	—2,353,612

Government Ownership Propaganda Mailed Under Senatorial Frank

A protest was made in Congress on August 13 by Representative Denison of Illinois, that the Public Ownership League of America, with headquarters in Washington, has been distributing under the frank of a Senator a pamphlet of 44 pages containing an argument in favor of government ownership of railroads filed with the Senate Committee on Interstate Commerce at its railroad hearings during the spring by Albert M. Todd, president of the League. Mr. Denison declared this to be a very serious abuse of the franking privilege because the pamphlet was sent out, not by the Senator himself, but by the league, which also sent separate letters under paid postage in which Mr. Todd stated that he was sending the pamphlet in a separate envelope. Mr. Todd appeared before the Senate committee on February 21, and was not allowed by the committee to present his statement in full. He was allowed about half an hour for an oral statement, and then filed his written document, of which Congressman Denison says he is informed at least 20,000 copies have been sent out.

Track Supply Association Exhibit

The following names should be added to the list published in last week's issue of the firms who have space in the exhibit of the Track Supply Association, which will be presented at the Auditorium Hotel, Chicago, at the time of the thirty-seventh annual convention of the Roadmasters' and Maintenance of Way Association on September 16-19, inclusive.

Ajax Forge Company, Chicago, Ill.
Blaw Knox Company, Pittsburgh, Pa.
Buda Company, Chicago, Ill.
Carnegie Steel Company, Pittsburgh, Pa.
Cleveland Frog & Crossing Company, Cleveland, Ohio.
Elliott Frog & Switch Company, St. Louis, Mo.
North American Engine Company, Algona, Iowa.

National Safety Council

The National Safety Council headquarters, 168 North Michigan avenue, Chicago, Ill., announces its Eighth Annual Safety Congress, to be held at Cleveland, Ohio, October 1, 2, 3 and 4. About 3,000 men and women are expected to attend, and 160 of these are named in the list of speakers. There are to be four general sessions, four round tables and 35 sectional meetings. All of the general sessions are to be in the afternoon and the sectional meetings in the forenoon.

The first meeting of the Steam Railroad Section will be held at 9:30 a. m., October 2, and R. C. Richards, chairman of the section, will preside. The program of this and the two subsequent meetings of the steam railroad section are as follows:

Thursday Morning, October 2, 9:30 o'clock: Reports of officers and committees. Address, "Aims and Purposes of the Safety Section of the U. S. Railroad Administration," by A. F. Duffy. "Value and Necessity of Safety Agents," by M. A. Dow (N. Y. C.). "Co-operation of Officers and Employees," by R. H. Doolittle (Colorado Southern).

Friday Morning, October 3: "Organized Labor's Interest in Safety Work," by W. G. Lee, president, Brotherhood of Railway Trainmen. "Safety Suggestions—How They Should Be Treated and Disposed Of," by T. H. Carrow (Pennsylvania). "Methods of Selecting Committees and Maintaining Interest in Safety," by Robert Scott (A. C. L.).

Election of officers.

Friday Afternoon, October 3: Round-Table Discussion, J. T. Broderick (B. & O.) presiding. Members are requested to hand the secretary any subject they wish to discuss at this meeting.

Saturday Morning, October 4: Report of nominating committee. Addresses on "Causes of and Remedies for Accidents in Engine and Train Service"; "Inspection of Tools Used in Shops and on Track," by G. L. La Fountaine (Great Northern); "Motor and Hand Car Accidents," by J. L. Walsh (M. K. & T.).

Master Blacksmiths' Convention

The twenty-fifth annual convention of the International Railroad Master Blacksmiths' Association opened at the Hotel Sherman, Chicago, on August 19, with approximately 400 members and guests in attendance. At the first session the association was welcomed by a representative of the mayor and an address was presented by President W. C. Scofield. A more complete report of the proceedings with abstracts of the papers will appear in next week's issue.

Traffic News

C. E. Warner has been appointed traffic manager for the Southwestern Interstate Coal Operators' Association, Kansas City, Mo., with office at Kansas City.

The railroads centering in Montreal have announced increases in their rates for cartage. On carload lots the increase is from 4.5 cents per 100 lb. to 5 cents; and on l. c. l. from 6 cents to 7.

The movement of fruit eastward over the Union Pacific is now somewhat handicapped by the destruction by fire of ice houses at Ogden on August 5, part of the buildings being owned by the railroad and part by the Utah Ice & Cold Storage Company and leased to the Pacific Fruit Express Company; estimated total loss about $90,000.

The Delaware Railroad (Pennsylvania System) extending from Wilmington, Del., southward 95 miles, was compelled to suspend freight traffic almost completely for several days last week because of floods and washouts. Losses of crops and destruction of roads, bridges and buildings caused by the storm, aggregated in Delaware, according to estimates made on August 16, to more than $2,000,0000.

For the month of July, the Troop Movement Section of the Railroad Administration reports the movement of 949,660 soldiers on the railroads within the United States, exceeding the number of men carried in June by 35,000 men. This number included 299,009 men returning from overseas, and 411,642 men discharged from the army. The remainder were included in movements between camps, etc. During July 1,173 special trains were run to carry troops, and the average number of passengers per train was 421 men; average distance per train 603 miles.

The Omaha (Neb.) District Freight Traffic Committee to correct what seems to be a general misunderstanding on the part of shippers, has issued the following instructions:

"Tariffs issued by administration publishing agents such as the Western Freight Traffic Bureau, Transcontinental Freight Traffic Bureau, etc., will only be furnished to shippers by such bureau when the request for them is approved by the District Freight Traffic committee in whose territory the shipper is located, and freight tariff publications issued by individual railroads should be secured direct from the railroads issuing these tariffs.

The Plumb plan for government ownership and tripartite operation of the railroads was vigorously condemned in resolutions recently adopted by unanimous vote by the Texas Industrial Traffic League at a meeting held in Dallas, Tex., August 11. The resolutions adopted, furthermore, condemned any and all plans submitted to Congress which advocated government ownership or plans for guarantees by the government of the earnings of railroad properties, believing that such guarantees will inevitably lead to government ownership. The league at this meeting also adopted resolutions opposing the proposal in the Esch-Pomerene bill conferring upon the Interstate Commerce Commission jurisdiction over water carriers and making port to port rates subject to the provisions of the Act to Regulate Commerce.

The St. Louis, (Mo.) Traffic Club's special committee, appointed to investigate the Esch-Pomerene and Poindexter bills now pending before Congress, in reporting the results of its deliberations stated that the Esch-Pomerene bill is the most comprehensive bill which has been submitted to this session of Congress. The committee endorses especially the proposed plan to pool equipment and terminals. It is felt that competitive conditions should be restored as promptly as possible and in order to secure its restoration the plan which contemplates the pooling of earnings should be eliminated entirely from the bill. The report of the committee furthermore did not concur in resolutions recently adopted by other traffic club committees which advocate the insertion of a provision requiring the commission to take cog-

nizance of the cost of labor in the making of rates. The Poindexter bill was also highly recommended and the suggestion was made that Congressmen be emphatically advised of this support of the bill. In reporting its deliberations on the Poindexter bill the committee said: "Today flagrant fourth section violations exist, based on fictitious water competition. Because unduly favorable rates can be made to such centers, carriers have been unwilling to readjust such rates, because no intermediate territory has been involved. Routes so circuitous as to make inadvisable the application of rates to intermediate points, are not desirable under any conditions. Your committee is not unmindful of the advantage in the past of some of these indirect routes, but their necessity will be obviated in the pooling of equipment and terminals if the Esch-Pomerene bill is approved." Copies of the resolutions as adopted are to be sent to all Congressmen and Senators.

Weekly Traffic Report

The movement of traffic, both passenger and freight, was somewhat retarded during the week ended August 11, owing to the strike of railway shopmen, according to a report to Director General Hines. The Allegheny, Pocahontas and Northwestern regions showed a reduced movement in freight traffic. In the Northwestern region, while the prospects were that the loadings would show a substantial increase over the same week last year, the strike interfered with operations, with the result that the total loading showed a decrease of 2,232 cars under the same week last year.

While the western portion of the Allegheny region was affected by the strike, statistics furnished the director general show that grain loadings into vessels increased 616,000 bushels for the week ended August 11 over the previous week. Revenue freight handled in this district shows an increase of 16,679 cars over the previous week.

In the Pocahontas region, as compared with the same period last year, tidewater coal dumped during the week ended August 11 decreased 9 per cent, domestic coal loaded decreased 14 per cent, and other freight loaded decreased 8 per cent.

In the Southern region, while the movement of peaches from middle Georgia was one of the largest in the history of the industry during the week mentioned, the supply of equipment was ample, although some difficulty was experienced in obtaining sufficient ice for refrigerator cars.

N. I. T. League Opposes Plumb Plan

The National Industrial Traffic League has actively entered the fight against the Plumb plan propaganda for government ownership by sending to members of the league a statement by the president of the league and expressing the views of the league's membership on this subject, as heretofore indicated by formal action taken and reaffirmed on numerous occasions. Co-operative effort is advocated to bring about a defeat of this or any other plan for the government ownership of railroads. This circular says in part:

"The members of the league, while differing in their opinions regarding some details of the federal legislation affecting railroads which should be enacted, have been unanimous in their opposition to government ownership of railroads. This opposition of the league to government ownership applies to such ownerhip in any form and therefore covers the so-called Plumb plan proposed by the railroad brotherhoods and supported by the American Federation of Labor.

"This plan is so radical and fantastic that it is difficult to take it seriously, but its advocates are conducting a vigorous and systematic campaign in its favor and already claim the support of a very large number of voters. It is publicly stated that if the present Congress does not yield to the demand that this plan be adopted, it will be made a political issue and men will be elected to office pledged to support the plan. Under these circumstances it is not wise to ignore the matter, but active measures should be taken to combat this proposal. Will you therefore give the subject prompt and earnest consideration and have the interests which you represent register with their representatives in Congress their opposition to this plan or any other plan of government ownership. . . ."

Foreign Railway News

France is sending locomotives and railway carriages to Switzerland to be repaired at the Federal factories of Yverdon, Olten, Zurich, and Schaffhause.

The Government Railways of Java, says the Far Eastern Division of the Bureau of Foreign and Domestic Commerce, have been desirous of purchasing large quantities of American rails and car materials, but as American manufacturers have been unwilling to comply with the required specification the Netherlands Government has been obliged during the war to buy heavier rails than it needed, and also equipment which was unsatisfactory, especially chilled car wheels. No further purchases are being made in the United States at present.

The safety of passengers on the railroads of Great Britain and Ireland, often the subject of comment in past years, is brought to attention at this time by a note in the Railway Gazette (London) to the effect that no fatal passenger train accident has happened in the United Kingdom since that at Aberdeen, Scotland, on July 6, 1918, or considerably more than a year. Prior to the Aberdeen accident there had been none for a year and 16 days. These records are made in the face of adverse conditions; unusual density of traffic during the last two years, depleted staffs and the unavoidable lowering of standards in some departments of maintenance. Following a collision on October 26, 1907, the railroads of the United Kingdom were free from fatal passenger train accidents for one year and eight months; and a record nearly as good was made as far back as 1901.

Indian Built Rolling Stock

A company has been formed says the Times (London) Trade Supplement for the manufacture of special rolling stock for India which contains no wood.

Transport Director for Ireland

H. G. Burgess, Minister of the Irish Traffic of the London & North Western has been appointed Director of Irish transport of the Ministry of Ways & Communications, and will be responsible for the whole territory of Ireland.

Electrification in Italy

It is announced officially says the Times (London) Trade Supplement that the Italian Government has authorized the electrification of 3,750 miles of line. A large amount of the water power from the Torento is available. There are at the present time only about 300 miles being worked by electricity in Italy.

Locomotives for the Uganda Railway

At a recent meeting of the Chamber of Commerce and Agriculture of the East African Protectorate, a statement was made by the Secretary that the difficulty of transportation was due to a shortage of locomotives. Instructions have been issued that orders must be placed with the mother country or with another British state. Sometime ago 50 engines were ordered in England, but up to last month nothing had been heard of them.

Government Ownership in England

On August 1, a petition was circulated through banking and other financial institutions in the City of London for signatures, which requests the government to consider fully the bearing of nationalization on the national production before any irrevocable steps are taken. It requests that the question be not considered by the government until the people of the country have been given an opportunity of expressing their opinions upon it.

China Will Join in Siberian Loan

A dispatch to the Far Eastern section of the Sun, New York, is authority for the statement that the Chinese government has decided to participate with the United States, Great Britain, France and Japan in the loan for the reconstruction of the Trans-Siberian Railway and has replied in this sense to the recent inquiry made at the Foreign Office by the Japanese Minister. China's share in this loan will be $000,000, and the government is making arrangements to raise this money itself rather than to borrow it from one of the Powers.

Channel Tunnel

The Commission which was appointed by M. Claveille, the Minister of Public Works in France, to study the questions involved in the building of the Channel Tunnel, has reported in favor of the enterprise, and M. Claveille has authorized the French Submarine Railway Association which obtained the contract for building the tunnel to begin at once to make fresh trials of the technical processes necessary. The Minister of Foreign Affairs is to consult also with the British government with a view to appointing a Franco-British Commission to conclude the necessary agreement for the tunnel.

Increase of Railwaymen's Wages

The Minister of Labor of Great Britain announced recently in the Houses of Parliament the following average rates of wages for railway men in July, 1914, and July, 1918, respectively:

Transport railway service	July, 1914, per shift. Per week	July, 1919, per shift. Per week
Engine drivers	35s. to 50s.	68s. to 83s.
Guards	25s. to 35s.	58s. to 68s.
Signalmen	25s. to 30s.	58s. to 63s.
Porters	20s. to 26s.	53s. to 59s.
Carting (12 large towns) one-horse drivers	24s. to 27s.	54s. to 57s.
	Per hour	Per half day
Dock laborers (8 principal ports)	6d. to 8d.	5s. 10d. to 7s.

Electric Regeneration on Swiss Single Phase Railways

The first experiment, on the recovery of the electric energy, which the braking or down-grade movement renders available, were made on the Lötschberg line of the Swiss Federal Railways, on June 27. The system tried was that of the Maschinenfabrik Oerlikon, and the success is described as complete. The tests were conducted with the locomotive which the Oerlikon Company, in conjunction with the Lokomotivfabrik Winterthur had built for the Gotthard Railway, and which has since May been in regular service in the Bern-Thun Railway. In the tests the engine was run at different speeds, up to 70 km. per hour, down hill, first empty, and then with a load of 310 tons, without making use of the mechanical brakes or of any brake resistances. It is said that the remarkably simple devices operated to complete satisfaction from the start, and the detailed account of the tests will hence be a matter of considerable interest.

Railway Development in Burma

The Government of Burma, says the British Board of Trade Journal, has decided to encourage the development of railway communication by the adoption of the general British policy in the case of colonies—that in a country with a generally scanty population and no towns of considerable importance, strategic points on frontiers and general trade routes, etc., should be linked up. It is thus calculated to develop the country by first establishing the lines of communication—a policy for which, according to opinion in British India, there is ample scope also in British India itself, where, it is pointed out, the construction of feeder lines to the main lines on a wholesale scale should be prosecuted. The conditions for railway development in British India and Burma are very different from those in Australia and Canada, where large areas of useful land—arable, forest or mineral—are opened up by railways regardless of the uninhabited condition of the country. The assumption that rich territory, once opened up by means of communication, will find its own development, is an axiom which, in the case of European populations, never fails. Conditions in India are different, in that the population, even when not apathetic, requires both education and capital, and the railways therefore hesitate to launch out in the matter of undeveloped areas, although these areas may urgently require means of communication for purposes of development.

A New Arabian Railway

A railway from Aden, the principal port in Arabia, to Lahej, the capital of the Abdali tribe in southwestern Arabia, has recently been opened, says Consul Addison F. Southard, writing to Commerce Reports on April 30. The road is about 30 miles in length and is the development of a short military line built from Aden to Sheik Othman in 1915 to supply British forces operating from the latter place against the Turks. The railroad was built by the Royal Engineers of the British Army, and the first few miles were built under shell fire from the Turks. After the signing of the armistice and the surrender of the Turkish forces, the railway was continued to Lahej and has been recently opened for freight and passenger traffic.

The railway is of narrow gage, and the equipment is largely from the Bombay, Baroda & Central India Railway, of India. As conditions improve and the amount of traffic increases, it is likely that new equipment will be needed to replace the second-hand rolling stock.

British Munition Factory to Produce Steel Cars

It is understood, writes Trade Commissioner H. G. Brock from London under date of July 5, that negotiations for the acquisition of the state ordnance factory at Nottingham by the steel manufacturers, Cammell, Laird & Co. (Ltd.), of Sheffield, Birkenhead and Penistone are far advanced. According to the Times of June 28 the factory will be adapted to the manufacture of steel railway cars of the most approved type; later passenger coaches may also be manufactured, but the immediate object is the production of steel freight cars, as the springs, tires and other parts can be built at the Sheffield works of the firm.

During the war Cammell, Laird & Co. undertook the designing, erection and management of the ordance factory at Nottingham without remuneration of any kind. The factory was originally laid out for the manufacture of shells, but in its second phase started the construction of 18-pounder guns, of which 11 per week were being produced at the signing of the armistice, with a weekly output of 5,000 9.2-inch shells and 13,500 6-inch shells.

Railway Dividends in England

The accompanying tables gives a list of the dividends paid by various important railways in Great Britain for the first half of 1919, as compared with the same period of 1918, and to the entire year of 1918.

English Railway Dividends

	1st half, 1918 %	1st half, 1919 %	Year 1918 %
Gt. Central (1889) Pref.	2	2	4
Great Eastern	½	½	2½
Gt. Northern Defd. Ord.	nil	nil	2¾
Great Western	2¼	2½	7¼
Lancashire and Yorks.	1⅝	1⅝	4½
London & N. Western	2¾	2¾	7
London & S. Western	2	2	5⅞
London, Brighton & S. C.	1¼	1¼	5¼
London, Chatham, & D. 1st Pref.	2	2¼	4½
Metropolitan	½	½	1¼
Midland Deferred	1⅝	1⅝	4¼
North-Eastern	3	3¼	7
South-Eastern Ord.	¾	1	4
Central London, Ord.	1¾	2	4
Lond. Electric	¾	1	2
Metrop. District	nil	nil	nil

It will be noted that in several instances the dividends for the first half of this year are higher than those of last, although on account of the arrangement with the government one year's results should differ but little with those of another since 1913. There are two sources by which the companies have derived extra income, one arising out of the modification of the government arrangement whereby the companies

receive an allowance in respect of capital invested in property since the railways were taken over and worked by the government, and secondly from interest upon renewal and reserve funds, which, owing to the arrears of maintenance which have accumulated during the war, amounts to quite an appreciable sum. Some of the companies, however, have indicated that the increase for the first half of the year does not necessarily mean an increase for the year.—(*London Post*).

Brazilian Roads Injured by War

War conditions in Brazil for five years have seriously injured the railroads there, especially those owned by British capital, and have not only made it difficult to maintain the existing lines in good repair but have diminished the chances of getting fresh capital from abroad to invest in Brazilian transportation systems, according to a British writer in a London financial journal. This is due to the fact that while expenses and costs have risen and caused the companies to fail to earn dividends, no corresponding increases in rates have been granted which would enable the companies to recoup their losses.

"The problem now to be solved," says this writer, "not only by the companies but also by the Brazilian Government, is how can capital be raised for new construction to make up the leeway for the last five years and to provide for the normal increase of the future.

"There is no doubt that the attraction to investors in investing in Brazilian railways has been greatly diminished by the results of the last five years. There would seem to be only one way of effecting an improvement, and that is by a general raising of the tariffs. Generally speaking, the present situation is not due to diminution in traffic, but to the heavy burden of increasing expenses and to the fall in the exchange. The raising of the tariffs by a moderate amount would restore the earning power of the railways without imposing any undue burden upon their customers. The government should not (and being thoroughly alive to the situation, probably would not) oppose such a proposition. In fact, it has already shown that it recognizes the necessity. In the president's lucid message, recently issued, it is stated that a 20 per cent augmentation of tariffs has been put into force on the Central Railway, belonging to the government, and a similar increase authorized in the case of the Sul de Minas system and of the F. de l'Est Bresilien.

"The last five years have been a lean and unsatisfactory period for the English railways in Brazil, which have not only suffered from the same troubles that similar undertakings in other countries have endured but have also had special causes for loss. The restriction of tonnage and the high rates for freight have been very serious matters for companies which have to import most of their supplies of material, etc., from Europe. In addition, the fall in the Brazilian exchange has reduced their receipts by a large amount when translated into sterling. It might appear that the fall in exchange would not be serious, since the expenses would also be automatically less when valued in sterling. This is not correct. While all the receipts are paid in current Brazilian money, on the other hand expenses (excepting local wages and supplies bought in the country) have to be paid for in Europe in gold, and all the companies before disbursing any profit to the shareholders have to satisfy in gold the interest and amortization payments on their debentures. Finally, unlike the railways in England, they have been mostly unable so far to recoup themselves for higher expenses by raising their rates.

"The result has been unfavorable to their financial position. The reports for 1918 of the three principal companies, the San Paulo Railway, the Leopoldina Railway and the Great Western of Brazil, show the following comparisons between the five past years and the five years ended 1913:

	Average length of line	Average gross receipts	Average working expenses	Average net receipts	P. c. of expenses
1909-1913 (Inc.)					
San Paulo	153	£2,066,989	£1,268,213	£798,776	61
Leopoldina	1,631	1,492,104	925,751	506,353	66
Gt. Western ...	953	644,282	427,868	216,414	66
1914-1918 (Inc.)					
San Paulo	155	1,610,217	1,108,592	501,625	69
Leopoldina	1,820	1,526,543	1,062,045	464,498	70
Gt. Western ...	1,010	658,796	485,056	173,740	73

Equipment and Supplies

Freight Cars

The Solvay Collieries Company, Syracuse, N. Y., is inquiring for three steel tram cars.

The Pittsburgh Construction Company, Pittsburgh, Pa., is inquiring for two 40-ton box car bodies.

The Pennsylvania Coal Company, New York, has ordered 200 mine cars from the American Car & Foundry Company.

The Jamison Coal & Coke Company, Greensburg, Pa., has ordered 125 mine cars from the American Car & Foundry Company.

The Cosden Company, Tulsa, Okla., has ordered 40, 40-ton, 8,000-gal. insulated tank cars from the American Car & Foundry Company.

The Commerce Petroleum Company, Chicago, has ordered 50 40-ton, 8,000-gal. tank cars from the American Car & Foundry Company.

The Imperial Refining Company, Ardmore, Okla., has ordered 100 40-ton, 8,000-gal. tank cars from the American Car & Foundry Company.

The Johnson City & Big Muddy Coal & Mining Company, Chicago, has ordered 250 mine cars from the American Car & Foundry Company.

The James B. Berry Sons Company, Oil City, Pa., has ordered 50 40-ton, 8,000-gal. tank cars from the American Car & Foundry Company.

Hernandez, Robinson & Co., Inc., 29 Broadway, New York, advises that it is in the market for 5 second-hand standard gage flat cars, 30 ft. in length, for export.

The Arkansas City Pipe Line Company, Arkansas City, Kan., has ordered twenty 50-ton, 10,000 gallon tank cars from the American Car & Foundry Company.

The Providence Gas Company, Turks Head building, Providence, R. I., advises that it desires to purchase second-hand, if possible, an all-steel drop-bottom gondola car of 50-tons capacity. Jesse L. Johnson, purchasing clerk, may be addressed.

The Pennsylvania Equipment Company, 1420 Chestnut street, Philadelphia, Pa., desires to lease 150 8,000-gal. tank cars, 90 clean and 60 for crude or fuel oil, for a period of six months to one year, deliveries to start about October 1.

Passenger Cars

The Eastern Massachusetts Street Railway, Boston, Mass., is inquiring for 100 street car bodies.

Locomotives

The Pennsylvania Equipment Company, 1420 Chestnut street, Philadelphia, Pa., is in the market for one Consolidation locomotive weighing about 70 to 75 tons, with 44 to 48 in. driving wheels and with a steam pressure of not less than 180 lb.

Iron and Steel

The Missouri Pacific has ordered 120 tons of structural steel for deck girder spans from the Virginia Bridge & Iron Company, Roanoke, Va.

Supply Trade News

Paul Mitchell has returned to Chicago and has resumed his duties as traveling representative of the Chicago sales office, of the **Independent Pneumatic Tool Company**, Chicago. Mr. Mitchell was a sergeant in the American Expeditionary Forces in France.

The Pettibone-Mulliken Company, Chicago, has awarded a contract to Westinghouse, Church, Kerr & Company, New York, for the erection of a one-story steel foundry at West Division street, Chicago, which will cost about $200,000, including equipment.

Herbert Duckworth has been appointed sales manager of the grinding-wheel division of the **Norton Company**, Worcester, Mass.; **Howard W. Dunbar** has been appointed sales manager of the grinding machine division; **John C. Spence** has been appointed superintendent, and **Charles H. Norton** chief engineer, of the grinding machine division.

W. Terry Field, constructing engineer for the American Car & Foundry Company, New York, with office at Detroit, Mich., has resigned to form a partnership with **John R. Fordyce**, formerly Major and Construction Quartermaster at Camp Pike, Arkansas. The new firm will be known as **Fordyce & Field**, consulting and construction engineers, Little Rock, Ark.

Captain Thomas O'Leary, Jr., of the Fifty-First Engineers, has returned to the service of the **New York Air Brake Company**, New York, as western representative on lines west of the Missouri river. Captain O'Leary was adjutant of the Touraine division of the Fourteenth Grand division, Camp DeGrasse, France, operating the French railroad out of that place.

The **Drew Electric & Manufacturing Company**, Indianapolis, Ind., manufacturers of overhead electric railway materials, started work on July 11 on its new factory in Cleveland, Ohio, which it is expected will be finished about September 1. The first unit, now being built, will be a brick and steel structure 80 ft. by 205 ft., with a two-story section devoted to the general offices and engineering department. This building will have about 20,000 ft. of floor space and will include machine and assembly shop and brass foundry. A contract for the second unit of the factory will be let soon. This will be 40 ft. by 60 ft. and will house the hot galvanizing plant.

At the annual meeting of the **U. S. Light & Heat Corporation**, Niagara Falls, N. Y., on August 13, the following directors were elected: **R. C. Caples, E. H. Gold, J. E. Kepperley, C. L. Lane, C. O. Miniger, J. O. Moore, B. J. O'Reilly, J. A. Roberts, G. G. Shepard, J. Allan Smith** and **J. N. Willys**; and the following officers were elected for the ensuing year: **John N. Willys**, chairman of the board of directors; **E. H. Gold**, vice-chairman of the board of directors; **J. Allan Smith**, president; **C. L. Lane**, vice-president and general manager; **R. C. Caples**, vice-president; **B. J. O'Reilly**, treasurer; **R. H. Van Nest**, secretary, and **T. G. Swannie**, assistant secretary and assistant treasurer.

Fred H. Jones, resident manager of the New York territory of the General Railway Signal Company, Rochester, N. Y., and **Park B. Hyde**, product engineer in charge of primary battery construction of the Thomas A. Edison Company, Inc., Orange, N. J., have resigned and have formed the Hyde Battery Company, with offices in the Railway Exchange building, Chicago. The new company will open a factory in Chicago to manufacture caustic soda batteries for railway signaling. Mr. Jones is also vice-president of the Magnetic Signal Company, Los Angeles, Cal., and will represent that firm in the Chicago district with the same headquarters. The Magnetic Signal Company will also open a factory in Chicago to manufacture highway crossing signals, signal accessories and specialties. Mr. Jones will also act as Chicago representative for the **C. H. Whall Company**, Boston, Mass., manufacturers of fibre insulation for railway signaling.

The housing facilities of the **Westinghouse Air Brake Company**, Wilmerding, Pa., are to be extended at once by the erection of a number of new dwellings, for the families of employees. **The Westinghouse Air Brake Home Building Company** has been organized with a capital of $1,000,000 to transact all business relative to the real estate and dwellings, which have been transferred by deed to this company by the Westinghouse Air Brake Company. It includes over 400 houses and considerable vacant property in the borough of Wilmerding and adjacent territory. The officers of the new organization are **A. L. Humphrey**, chairman of the board of directors; **C. A. Rowan**, president; **W. S. Bartholomew**, vice-president, and **H. C. Tener**, secretary. In addition to the first three mentioned above **J. F. Miller** and **G. W. Wildin** are included in the board of directors. **S. R. Gittens** has been appointed manager. Since the Westinghouse Air Brake Company built its first houses for employees in 1890 there has never been an increase in rents and the new company will carry out the same policy.

Consulting Mathematicians

T. Dantzig, G. A. Pfeiffer and **J. F. Ritt** announce the formation of a firm of consulting mathematicians under the name of **Dantzig, Pfeiffer & Ritt** with office at 500 West One Hundred and Sixteenth street, New York. This firm undertakes to handle all problems arising in industry for the solution of which the knowledge of a mathematical specialist may be necessary.

Each of the members of the firm has been privately engaged for some time in work of this nature, in addition to his other professional activities, and it was at the suggestion of clients that the decision was made to set up a consulting service which would extend to the industrial world the resources of modern pure and applied mathematics.

Dr. Dantzig is a graduate of the University of Paris and of the Ecole Superieure d'Aeronautique et de Construction Mechanique. He has taught at Indiana University and at Columbia. During the war he was in charge of the mathematical work of the instrument section of the U. S. Ordnance.

Dr. Pfeiffer received the degree of mechanical engineer from the Stevens Institute of Technology and the degree of Doctor of Philosophy from Columbia University. He has taught mathematics at Harvard, Princeton, and Columbia. He is an associate editor of the Annals of Mathematics.

Dr. Ritt took the degree of Ph.D. at Columbia University. He was for three years at the Naval Observatory and has since taught mathematics at Columbia. During the war he was one of the chief ballisticians in the U. S. Ordnance.

Trade Publications

Book of Buildings.—The Austin Company, Cleveland, has just issued a new booklet known as Catalog No. 9. It briefly outlines the scope of Austin construction and equipment service. It also contains cross-sections of the 10 Austin standard types of buildings and a description of Austin service to foundry and steel plant operators.

Large Ferro-Concrete Bridge.—The recently completed ferro-concrete bridge over the Ore River in Sweden has an arched span of 90.7m. It belongs to the northern railway system of the country, and crosses the river about 4 km. to the north of the town of Nyaker. There was a parallel-girder bridge at the place, built in 1891 and calculated for axle loads of 12.5 tons and speeds of 20 km. per hour. The new bridge can bear axle loads of 20 tons at speeds of 100 km., and belongs to the longest ferro-concrete bridges in existence, the one over the Tiber at Rome having a length of 100 m., and the Auckland bridge in New Zealand, a length of 97.5 m. The cost was estimated not to exceed 850,000 kroner in 1914, but owing to the war, the expense will probably amount to 2,100,000 kroner.—*Engineering, London.*

Railway Construction

Asherton & Gulf.—Plans are now under consideration for the extension of this road from Asherton, Tex., 50 miles west of Eagle Pass, and from Artesian Wells, Tex., east to Beeville, approximately 100 miles.

Canadian Pacific.—Contracts have been let for building new lines for the Canadian Pacific as follows: To Stewart & Welch, Vancouver, B. C., from Counsul, Sask., east for 30 miles; from Leader, south 25 miles; from Lanigan, northeast 50 miles; from Milden, southwest 34 miles, and from Acme, Alta., to Drumheller, 37 miles. Contracts have also been given to the Northern Construction Company, Winnipeg, Man., to build from Russell, Man., north 12 miles, and to the Canadian Construction Company, Winnipeg, to build from Rosetown, Sask., south 25 miles.

Merrill Coal Mines, Inc., Railroad.—This company is asking for bids on August 20, to build a three-mile line, from a point 75 miles from Huntington, W. Va., on the Guyon Valley branch of the Chesapeake & Ohio. The work involves the handling of 50,000 cu. yd. of material, the construction of 2,500 yd. concrete piers, a 400-ft. steel bridge, 50 houses, one stub tipple and a sub-station. L. B. Conway is president, Danville, Va., C. W. Jones, vice-president and general manager, and W. C. McCall, chief engineer, Logan, W. Va.

Missouri, Kansas & Texas.—This road is now constructing a double track through the town of Burkburnett, Okla., in order to relieve the congested traffic conditions that have existed there since the development of the oil fields in that locality. The length of this work is about three and one-half miles.

Moore Haven Railway.—Organized to build a line from Moore Haven, Fla., on the Atlantic Coast Line, southeast along the shore of Lake Okeechobee to Ritta, 26 miles. The work will include building a steel bridge with a 30 ft. draw. The promoters expect to develop a traffic in perishable truck and general farm products. The work is temporarily held up, pending the settlement of present strikes. John J. O'Brien is president, Moore Haven.

Oklahoma Railway Company.—Plans are now being completed for the rebuilding of the terminal station at Oklahoma City, Okla., at an approximate cost of $250,000.

Red River Lumber Company.—Surveys have been completed for the last seven miles of a line from Westwood, Cal., to Chester. The extension will be of standard construction with a maximum grade of 1.75 per cent, and maximum curvature of 10 deg. The complete line will be about 15 miles long of which eight miles has already been completed and is in operation. The construction work is being done by the company's forces.

The Bagdad Railway.—It is obvious that the railroad as now projected and built (the exact facts not yet being fully known as to the continuity of the line through to Bagdad to meet the military lines built by the British during the War) was due to German money and influence in Turkey. But the fruits of this great project are to be reaped primarily by the regions through which the railroad runs, and the regions which have railway communication connecting with it as a trunk line; and, secondarily, by international trade. This railroad would run when completed through the dominions of several powers, and therefore ought, as much as Constantinople and the Dardanelles, to be internationalized. Whatever the powers given to any mandatory under the League of Nations Covenant, assuming it to come into operation, one of such powers to be expressly stipulated in the decree appointing the mandatory, should be the governmental power of consenting to the internationalization of such an important commercial trade route. *The Future of the Ottoman Empire, by Henry W. Jessup, in the Annals of the American Academy of Political and Social Science.*

Railway Financial News

Boston & Maine.—The Wall Street Journal, under a Boston date line, prints the following:

"Case of the Hampden Railroad, which brought suit against the Boston & Maine for an original claim of $3,798,000, for alleged breach of contract, has evidently not been finally disposed of.

The Massachusetts Supreme Judicial Court has now withdrawn its recent ruling against the Hampden.

"Although this at first appears as having a possibly unfavorable bearing on the Boston & Maine situation, it is pointed out by people in close touch with the situation that this does not necessarily mean that there will be a rehearing of the case, or that the ruling against the Hampden will be essentially changed. The Boston & Maine people have received no notice of a rehearing, and it is legal opinion that there will not be any. It is not unusual for a court to withdraw a ruling, owing to some subsequent objection made to wording or technical point."

Boston & Maine.—Legal matters continue to hold the reorganization of this company in check. Although the Massachusetts Supreme Court convened in special session July 29 to hear arguments on the petition of minority stockholders of the Boston & Maine for a review of the Public Service Commission's decree approving the reorganization of the road, Attorney Crooker, representing the minority stockholders, told the court that he had not had time to prepare his argument and asked for a postponement to October. It was then agreed that the matter would be submitted on briefs. Attorney Crooker had until August 18 to file his. Attorney George L. Mayberry, for the railroad and the public service commission, has already filed his.

The Railroad Administration has filed with the Massachusetts Public Service Commission a statement of the Boston & Maine for the quarter ended June 30, which shows that the net income for the quarter amounts to $936,184 against a deficit of $361,268 for the corresponding period last year.

Chicago & Western Indiana.—Director General Hines under date of August 19 has written the following letter to the financial editor of the New York Sun:

"In today's edition of your paper under the sub-heading of 'Chicago & Western Indiana,' appears a statement as follows:

"'It was learned in banking circles yesterday that the United States Railroad Administration has arbitrarily advanced one year the life of an issue of $15,000,000 6 per cent notes which mature on September 1, and which were put out by a banking group exactly a year ago. This is an entirely new departure in meeting an indebtedness by the Railroad Administration, and Wall Street wondered yesterday just how far it could or would be extended. It was stated that no matter what the circumstances none of the bonds would be paid until one year after they are due, September 1, 1919. It was said by bankers who aided in floating the loan that the distribution of the notes had been extremely wide, and that the average of individual holdings would not exceed $10,000.'

"It is proper that I should say to you that the statement above quoted, so far as it purports to state any past action or proposed action of the Railroad Administration, is not warranted by any facts in connection with the matter, and is entirely erroneous. The Railroad Administration, in response to a request by the Chicago & Western Indiana Railroad Company for its approval, in accordance with Section 7 of the federal control act, of a renewal for one year at 7 per cent interest, without discount, of $15,000,000 of notes of said company maturing September 1, 1919, has stated in a letter of date August 15, 1919, to Messrs. E. H. Lee and W. H. Lyford, finance committee of the Chicago & Western Indiana, that the director general approves 'as consistent with the public interest' the proposal as above set forth.

"In view of these facts, I am sure you will want to correct the erroneous statement contained in your paper."

Railway Officers

Railroad Administration

Central

Judge John Barton Payne has resigned as general counsel of the Railroad Administration on account of assuming the positions of chairman of the Shipping Board and president of the Emergency Fleet Corporation. **E. Marvin Underwood,** heretofore general solicitor, has been appointed general counsel to succeed him. Judge Payne has consented to act as special counsel for the railway, giving such advice and assistance as his new duties will permit. Mr. Underwood was born on December 11, 1877, in Douglas County, Ga. After graduating from Vanderbilt University in 1900 he attended law school, receiving his degree of bachelor of laws in 1902. He then spent the following year in studies at the Faculte de Droit of the University of Paris, and upon his return to this country began the practising of law at Atlanta, Ga. He later became a member of the firm of King, Spalding & Underwood, of that city, and as such engaged in railroad practice, representing, among other companies, the Seaboard Air Line Railway. On February 24, 1914, he was appointed assistant attorney-general of the United States and as such represented the government in a number of important litigations before the Supreme Court of the United States, notably the case in which the constitutionality of the Adamson Law was upheld and the Pacific Terminal Case. In September, 1917, he was appointed general counsel of the Seaboard Air Line and in April, 1919, was appointed general solicitor of the United States Railroad Administration.

E. M. Underwood

Regional

F. E. Desey has been appointed general assistant to Percy R. Todd, director of the New England district of the Eastern Region, with office at Boston, Mass.

Charles G. Weinbrenner has been appointed inspector in the Southwestern region representing the Secret Service and Police Section of the Division of Operation, with headquarters at 1041 Railway Exchange building, St. Louis, Mo.

The Southwestern Regional Association of Chief Special Agents, recently organized, has elected the following officers: **E. R. Hines,** chief special agent, St. Louis-East St. Louis Terminal District, St. Louis, Mo., chairman; **J. S. Webster,** chief special agent on lines under the jurisdiction of Federal Manager W. R. Scott, Houston, Tex., vice-chairman, and **W. H. Boullt,** acting chief special agent on lines under the jurisdiction of Federal Manager A. Robertson, St. Louis, Mo., secretary.

Operating

B. M. Brown has been appointed assistant superintendent on the Galveston, Harrisburg & San Antonio, with office at El Paso, Texas, vice **R. U. Lipscomb,** promoted.

W. M. Stillman, who has been released from military service, is restored to the position of assistant superintendent of the Stockton division, on the Southern Pacific (lines south of Ashland), with headquarters at Stockton, Cal., vice **E. D. Leavitt,** transferred.

G. LeBoutillier, superintendent of the Cleveland & Pittsburgh division of the Pennsylvania Lines West, Northwest system, with office at Cleveland, O., has been appointed superintendent of the Pittsburgh division, Southwest system, and the Pittsburgh, Chartiers & Youghiogheny Railroad, with office at Pittsburgh, Pa., vice **J. C. McCullough,** promoted.

Henry A. Koach, inspector in charge of the Buffalo (N. Y.), district, of the Secret Service and Police Section of the Division of Operation, has been transferred to Chicago as chief of the Chicago district. Mr. Koach was formerly assistant chairman of the Railway Ticket Detective Bureau, Chicago, from 1903 to 1918 with offices in Chicago and from the latter date to January 1, 1919, he was an inspector in the passenger traffic department of the Division of Law with headquarters at Washington, D. C.

Charles Henry Calkins, whose appointment as superintendent on the New York Central, has already been announced in these columns, began railway work in December, 1889, as a telegraph operator at Pierrepont Manor, N. Y., on the Rome, Watertown & Ogdensburg, and has been in the continuous service of that road and its successor, the New York Central, ever since. In July, 1896, he was promoted to train despatcher and later served consecutively as chief despatcher and assistant trainmaster, at Watertown. He was promoted to trainmaster at Richland in December, 1906, and the following October was transferred to Watertown. On October 1, 1913, he was appointed chief trainmaster, at Buffalo, and since November, 1916, served as assistant superintendent at the same place until his recent appointment as superintendent of the Adirondack division, with office at Utica.

Engineering and Rolling Stock

R. W. Lipscomb, assistant superintendent on the Galveston, Harrisburg & San Antonio, at El Paso, Texas, has been appointed chief assistant mechanical superintendent on the Southern Pacific Louisiana Lines and Texas Lines, with headquarters at Houston, Texas, vice **J. P. Nolan,** retired on pension.

B. F. Kuhn, master mechanic on the New York Central lines west of Buffalo, with office at Ashtabula, Ohio, has been appointed assistant superintendent of motive power, with headquarters at Cleveland, and **F. M. Crandall,** assistant master mechanic at Collinwood, has been appointed master mechanic, with headquarters at Ashtabula, and jurisdiction over the Franklin division, including the Oil City branch, the Franklin & Clearfield branch, Ashtabula and Youngstown yards, and the Alliance division.

Traffic

W. E. O'Day has been appointed auditor of disbursements at the Chicago Regional Accounting department of the **American Railway Express Company,** with headquarters at Chicago, succeeding **H. E. Cartwright,** who has been transferred.

Corporate

Executive, Financial, Legal and Accounting

George M. Taylor has been appointed receiver; **H. G. Lunt** has been appointed general attorney and **H. R. Stroupe** has been appointed auditor of the Colorado Springs & Cripple Creek District Railway. All will have offices at Colorado Springs, Colo.

Operating

W. B. Gill, superintendent of transportation of the Bauxite & Northern, has been appointed superintendent, with office at Bauxite, Ark., succeeding **J. R. Gibbons,** deceased.

J. W. Cummings has been appointed superintendent of the Colorado Springs & Cripple Creek District Railway, with headquarters at Colorado Springs, Colo.

EDITORIAL

Railway Age

EDITORIAL

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Damming the Stream at Its Source

In spite of the well-recognized fact that a return to normal conditions in many lines of endeavor is being hindered seriously by the existing shortage of unskilled labor, a bill to suspend immigration for the next two years has just been introduced in Congress. Probably there never was a time in history when the country was less prepared for such legislation. Trading on the shortage of labor has succeeded in raising its pay requirements until improvement projects which ordinarily would prove paying investments have become out of the question. As a result, a vast amount of work which, if carried out, would help enormously in restoring somewhere near pre-war conditions is being deferred. Even under normal conditions, the percentage of native born in the ranks of unskilled labor is remarkably low, and employers have come to depend largely on foreign sources in recruiting unskilled labor. If the principal source of supply is made unavailable by law, it seems to be beyond question that the situation will grow worse before it becomes improved.

An Engineer on the Commission

While the idea is not new, Engineering Council has taken the initiative in suggesting to the President that he appoint an engineer as a member of the Interstate Commerce Commission. This suggestion has much to commend it, not because of the recognition it might give to the engineering profession but because of the opportunity it would afford to give to the Commission the experience and the analytical point of view of one technically trained and familiar with the construction of railways, the relation of standards of construction such as gradients and curvature and of maintenance on operation, and the development of facilities to meet public demands. At present much of the work of the Interstate Commerce Commission is directly or indirectly of an engineering nature. This is particularly true of valuation work, but it also applies to the coordination of existing facilities and the enlargement of the existing plants to care for growing traffic adequately, etc. If the Commission is to do constructive work in the future in cooperating with the carriers in the development of the transportation system of the country to meet the needs of the traveling and shipping public it will be necessary to give more attention to matters of this character than has been done in the past. At present the personnel of the Commission is drawn principally from the legal profession, while only one of the members has worked for any considerable period on a railway, facts which have frequently been offered as an explanation of its failure to recognize many practical aspects of the railway problem. It has long been contended that an industry as large and as vital to the country's welfare as the railways should be regulated by those who know its problems first hand, just as the administration of the Federal Reserve Banking System is properly in the hands of men trained in the banking business. It should be possible for the President to find engineers in this country of sufficient breadth of vision and knowledge of the public's needs and of first hand acquaintance with the problems of railway management to qualify for such an appointment. Surely they can be found when men such as Goethals and Hoover have been found to meet other needs in public life, and men such as Samuel Rea, Julius Kruttschnitt, Samuel M. Felton and W. B. Storey have been promoted from engineering to executive positions on the railways themselves.

Are Railroad Fatalities Relatively Numerous

Some interesting mortality statistics for 1917 were recently issued by the National Safety Council which show the deaths resulting from railway accidents in a relationship not generally brought to the attention of the public. Deaths and injuries resulting from railway operation have been given a great deal of prominence by the imposing tables appearing in the accident bulletins of the Interstate Commerce Commission where a total of about 10,000 deaths and nearly 200,000 injuries per annum presents a rather appalling aspect. The National Safety Council, however, shows railway accidents in comparison with those caused by other agencies. Thus railway fatalities totalled 11.5 per 100,000 of population, while fatal automobile accidents total 8.9. Those resulting from vehicles other than railroad cars, street cars and automobiles, average 3.1, thus giving a total of 12 deaths per 100,000 population from vehicles not running on rails. The year 1917 was one of heavy railway traffic and therefore more than the normal number of accidents. The enormous growth in the use of power vehicles, on the other hand, would indicate that automobile accidents will increase. It should be noted in this connection that fatalities resulting from the contact of railway and highway traffic at grade crossings number only 2 per 100,000 persons and include those involving pedestrians and street cars as well as automobiles.

Electric Regeneration

Regeneration of power for single-phase locomotives equipped with series motors has been used for the first time under regular operating conditions in Switzerland. Road tests, on the recovery of the electric energy which the braking on down-grade movement renders available, were made on the Lötschberg line of the Swiss Federal Railways on June 27. The system tried was that of the Maschinenfabric Oerlikon, and the success is described as complete. Regeneration for three-phase railways, such as that on the Great Northern, has long been practicable, as it is an inherent characteristic of the three-phase motor to return electric power to the line when mechanical power is applied to the motor shaft. In the same way regeneration applies to the single-phase system used on the Norfolk & Western, as the motors on the locomotives are three-phase motors. It was made practicable for direct current operation in the design of the equipment used on the Chicago, Milwaukee & St. Paul, in which case the motors are separately excited by a motor generator set in order to make them function as generators. In the case of the single-phase series motors, one motor is separately excited from a transformer, and it supplies exciting current for the others which then function as generators and return power to the line. The particular significance of this development is that regeneration can be had without regard to the type of equipment and kind of electric power used.

Unauthorized Strikes Here and in England

THE STRIKE of the engine and train crews in Southern California, following so closely upon the recent walk-out of the shopmen in different parts of the country, strikingly emphasizes a peculiar feature in present world economics in a similarity of labor unrest here and in other countries—especially England. In Great Britain, there have been a number of strikes, among which may be mentioned: One on the part of the train crews of the electric lines out of London, one on the part of the engine crews of the London & North Eastern concerning an eye test, and, most important of the three, a strike of the coal miners in Yorkshire. These strikes all have had closely paralleling characteristics, especially in their absolute disregard of the public welfare, the manner in which they have been carried out against the wishes of the national labor union leaders and in the fact that the men concerned in them have represented, not ill-organized trades characterized by a predominance of the radical element, but the most highly skilled and best educated workmen and what are presumed to be the best organized unions.

These strikes are only a few of the many that have occurred in all lines of industry and form only a small part of the labor difficulties following the war. They stand out from among the other labor disturbances in a number of ways, and, looking at them from another point of view, it is apparent that there must be some reason for such similar disturbances 3,000 to 6,000 miles apart.

In both countries, the strikes in question have taken place under government control, spiking, incidentally, the old argument that such occurrences do not take place under such conditions. They have all occurred at a time when the unions have been negotiating with their governments for higher wages, shorter hours and better or different working conditions. In most of them, although the local bodies went out at a critical time in the negotiations, the strikes have related to questions under consideration by the government. In both England and the United States, the national leaders of the unions which struck have been working in favor of new plans for the control of their industries; in the case of the railwaymen here, for the Plumb Plan; in the case of the railwaymen in England, for the Transport Bill; in the case of the Yorkshire coal miners for the nationalization of the coal mines as recommended by the Sankey Commission.

It also happens that in both countries, the railwaymen, and in England, the miners, have for some time been in an exceedingly strong position before their governments and for a time at least have easily had the upper hand. They have secured nearly all they have asked of the government in the way of better wages and shorter hours, and no one will claim that their demands have been modest.

Besides all this, the strikes have occurred under most disagreeable conditions, and, as has been noted above, with absolute disregard of the public welfare. We are familiar with the difficulties on this side of the ocean. It is worth noting, however, that the strike on the electric lines out of London took place in the worst kind of weather, and hundreds of thousands of London's workers had to walk to work in deep slush, and this during the severe epidemic of influenza. In Yorkshire, on the other hand, in a local strike concerning piece rate scales, not only did the miners go out, but they also withdrew the pump men and stationery engine operators. Some pits were flooded and destroyed just as the mines around Lens were, and more would have been had not the navy sent men in to man the pumps. Coal production in the Yorkshire district was cut off to the extent of 115,000 tons daily. Many factories at Sheffield and Leeds had to close down with resulting unemployment. The train service was threatened and, last but by no means least, the strike took place while strong agitation was going on to emphasize the fear that Britain would fall from its pre-eminent position as an exporter because of a general shortage of coal supply.

From this brief outline it is apparent that the leaders in organized labor on both sides of the ocean are either following a parallel course or are being made to follow a parallel course. Inconsistent as it may seem, we are inclined to believe that they are doing both. They have demanded and received so much from their respective governments—whether the governments have been willing or not, is not the question—that they have gotten to the point where they are not afraid to demand almost anything. On the other hand, their actions and their apparent disregard of the people's welfare have been imparted to the rank and file, thereby encouraging such radicals as will always be found in even the most conservative organizations. By their actions they have thus been trying to kill the goose that lays the golden eggs. They are alienating the good-will of the public, which is the last judge in a democratic country, and they are even hurting themselves as well as their unions by the lack of discipline which has been too evident in the several disturbances.

Whether they yet realize these facts or whether they want to realize them is a question. We have heard too many statements of late on the part of the national leaders that they might be unable to forstall unauthorized strikes on the part of local bodies if such is not made thus and so, to be willing to believe that they want to realize the true state of affairs. Even the strongest advocates of labor unionism must regret this present tendency, and as for the public, it will stand much, but it always succeeds in finally fixing a reasonable limit.

Hard Work by Railway Officers

THE STRIKES of shop employees of the railways which occurred recently in various parts of the country are over. The men returned to work under pressure of the officers of their unions because President Wilson announced no action would be taken on their demands for higher wages until they did so. But the effects of the strikes on several railways will be felt for a long time. The only way in which it was made possible for several important lines to maintain operation was by the officers, from the highest to the lowest ranks, putting in as many hours a day as they could stand, doing not only the work for which their salaries were paid but also work for which the striking shopmen ordinarily were paid. Employees in other branches of the service would give little or no help because this would have been in violation of the rules of the unions. In not a few cases even the shop foremen, who are now largely organized, refused to do any work ordinarily done by the employees. The officers labored so hard, so skillfully and so effectively, however, that while train service on numerous railways had to be curtailed, no road had entirely to suspend operation, and the inconvenience and loss to railway patrons was kept at the lowest possible minimum. The officers of the railways repeatedly have been accused by the leaders of the railway brotherhoods of having "laid down" under government operation. It has been asserted by labor leaders—in spite of the fact that railway employees have received large advances in wages while many of the higher officers have had their salaries cut—that "the same men who built up the surpluses under private management created the deficits under government management." W. G. McAdoo has testified, however, to the loyalty and ability which railway officers showed during the war, and Mr. McAdoo's testimony, and the loyalty and energy railway officers displayed during the recent shop strikes, are the best answer to the charges of the labor leaders. The officers have not been given a 50 per cent increase in salaries, or an eight-hour day, or

time and a half for overtime, but they have had their consciences to keep on good terms with and the traditions of their class to maintain, and they have done so under very trying and discouraging conditions and through both good and evil report. The government and public owe them much—how much, the government and public do not realize.

President Wilson Opposes Increases in Railway Wages

President Wilson has refused to grant the demand of the railway shop employees for a large advance in wages. He has given them a general increase of four cents an hour and to certain classes some larger increases. All these increases are made, however, to remove inequalities deemed to exist in the present wage scales, and they do not give the shop employees more than about one-fourth of what they asked for. In announcing these increases, the President made a statement to the representatives of the shop employees, and also issued an appeal to the public and to railway employees, which apparently have great significance. His utterances clearly indicate that he has decided to make no further substantial advances in railway wages under government operation.

The claims of the shop employees were based partly on wages paid to other classes of railway employees, partly on wages paid to similar classes of workmen in other industries and partly on the increase in the cost of living. Director General Hines in a letter to the President stated that his own investigations showed that the average wage paid to the principal metal trades in private industries on May 15, 1919, was probably not more than three cents in excess of the 68-cent rate being paid to the railroad shop employees. Therefore, the advance of four cents makes the wages of the railway shop employees slightly higher than those of workmen in the principal metal trades.

As to the increase in the cost of living since before the war began in Europe, it probably cannot be shown as to the railway shop employees, and it certainly cannot be shown as to railway employees in general, that the advances in their wages have not kept pace with the increase in the cost of living.

The results of all the investigations which have been made indicate that the increase in the cost of living during the five years since the war in Europe began has been approximately 80 per cent. The Industrial Commission of the State of New York recently published a report of an investigation regarding the advance in retail food prices from June, 1914, to March, 1919. This showed that the average price of foods in March, 1919, was 77 per cent higher than in June, 1914. The Bureau of Labor Statistics has estimated the increase in the cost of living since the war started at 80 per cent. The National Industrial Conference Board has estimated it at 71 per cent.

In the year ended June 30, 1914, the average earnings of a railroad employee were $810. In the year ended on June 30, 1915, they were $827. In January, 1919, the railways had 1,848,774 employees whose average earnings for the month were $125. At this rate the average per employee per year would be $1,500, but additional advances have been granted since then which made the average earnings of a railroad employee at least $1,533 a year. Compared with 1915, therefore, the average increase in the earnings per employee is 85 per cent, while compared with 1914 the average increase is 89 per cent. These increases exceed the increases in the cost of living.

As nearly as can be estimated, railway wages are now running at the rate of $2,834,600,000 per year. Director General Hines has estimated that if all the demands for advances in railway wages recently made should be granted the increase in the railroad pay roll would be $800,000,000 a year. This would make it a total of $3,634,600,000 per year. For 1,848,774 employees this would make an average annual wage of $1,965. The increase in the average earnings per employee over 1915, if this additional advance should be granted, would be 137 per cent, while the increase over 1914 would be 142 per cent. The wages of railroad employees already have increased more in proportion than the cost of living; and they are asking for increases which would make their total advances far exceed the increases in the cost of living.

The responsibility of determining what action shall be taken upon the demands of the employees rests, first, upon Director General Hines and, finally, upon President Wilson. The director general and President are not dealing with a war emergency now as they were in 1918. It is not necessary now, as it was then, to make large advances in wages to enable the railroads to get and keep enough employees for efficient operation. It is not necessary now to maintain uninterrupted operation as a war measure. The only questions to be considered are what the employees are entitled to and how much it is worth while to give them to avoid a strike.

The President has decided that they are not entitled to a general advance in wages at this time. It seems not improbable that President Wilson's virtual announcement that no substantial general advance in wages will be granted will result in a general railroad strike. The older railway labor brotherhoods, which formerly were conservative, have passed into the control of men who are as radical as the Russian Bolsheviks and who are drunken with the idea of their power. Their advocacy of the Plumb plan, which is nothing but the Russian soviet plan, shows how radical these men have become. But the danger of a strike is without the slightest validity as an argument for a general advance in wages. Either the employees are entitled to higher wages or they are not. If they are entitled to them they ought to have them. If they are not entitled to them they ought not to be given them even if it is certain that in that case they will strike. If the employees will strike now for an advance in wages to which they are not entitled, they will strike a year from now or two years from now for advances in wages to which they are not entitled. Therefore, to give them an advance in wages would be merely postponing the evil day of the strike and meantime paying an exorbitant price for the postponement.

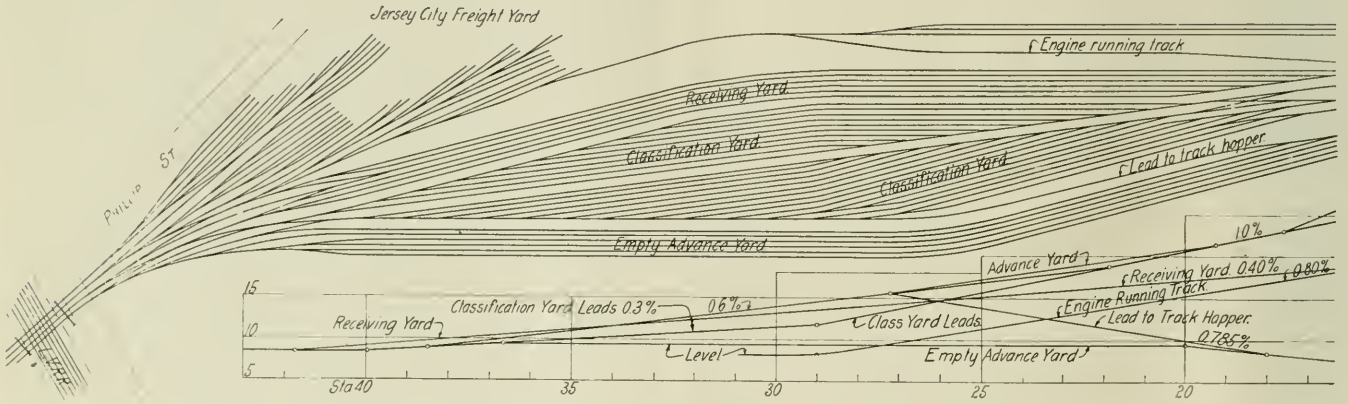
President Wilson's statement to the shop employees and also his statement to the public were conciliatory and even appealing in tone. He asked for a truce to labor disputes both on the railroads and in other lines of industry until business conditions can be restored to normal. The attitude assumed by the president to the shopmen's demands indicates, however, that, while his tone is conciliatory, he has made up his mind as to what he is going to do. Now, everybody knows that when the President has made up his mind he is hard to change. His friends call a certain marked trait of his character "firmness" and his enemies call it "stubbornness," but everybody knows that he has it. If, therefore, there should be a general strike while the railroads are under government control, there is good reason to assume that the President would use all the power and resources of the government to break it. In doing so he would have the support of an overwhelming majority of the public. A general railroad strike while the roads are in the hands of the government would be a strike against the government itself. If the strikers should win, this would demonstrate that they were stronger than the government. Whenever a particular element in the nation shows that it has become stronger than the government it has practically destroyed the government, or, rather, has become the real government itself. The American people are not yet ready to see their government destroyed. Therefore, there would be very little chance of a general railroad strike being successful. Let us hope that the leaders of the railway labor organizations will open their eyes and recognize this fact.

View at the Pier from the River Side

The Jersey Central Is Building a Modern Coal Pier

Includes Facilities for the Trans-Shipment of Coal From Cars to Vessels and for the Coaling of Tugs

THE LARGEST COAL HANDLING TERMINAL in New York harbor is now under construction by the Central Railroad of New Jersey. When completed, the project will include a complete and interesting yard layout in which will be located a duplicate system of thawing sheds and a reinforced concrete pier on which two McMyler car dumpers will be located on the inshore end for the trans-shipment of coal from road cars to barges and schooners, together with a screenings pocket and conveyor and, on the offshore end, facilities for coaling tugs, steam lighters, etc., consisting of 42 reinforced concrete silos for the storage of tug coal with hoppers, conveyors and other apparatus incident thereto. A modern power house on the shore adjacent to the pier furnishes the necessary steam electric power and compressed air required for the operation of the pier and the thawing houses.



Map and Profile of the West End of the Supporting Yard

The project involves the placing of 800,000 cu. yd. of embankment in the yard and 10,700 cu. yd. of concrete on the pier, excluding the offshore end of the pier, which will be devoted to the tug coaling facilities and upon which work has not as yet been started; approximately 23 miles of track and a total expenditure in excess of $3,000,000. The new facilities replace two old gravity-type coal piers having a combined capacity of about 1,750,000 tons of tidewater shipments and tug coal per year. The estimated capacity of the pier under construction is 6,000,000 tons of trans-shipment coal and 1,000,000 tons of tug coal per annum.

The site upon which the new terminal is located was originally open water of shallow depth. The section back of the bulkhead on which the yard is located had been filled in previously to a height of 6 ft. above mean tide and it was on this filled area that the embankments were placed in order to provide the necessary grades for the yard tracks. The area offshore from the bulkhead, consisting of about 2,000,000 sq. ft., has been dredged to a depth of 25 ft. and it is expected that it will at a later date be dredged to 30 ft. The material obtained from dredging operations, which consisted chiefly of pure sand, was used for the yard fill on the inshore section. In this last-mentioned operation a hydraulic dredge was engaged for a period of about 10 months, moving approximately 900,000 cu. yd. of material which was deposited in place by means of pipe lines which were run inshore from the dredge. During part of the operation the length of the pipe line exceeded 3,000 ft., the flow of sand making it possible to deliver the material to a maximum distance of 4,000 ft. from the bulkhead line. Material was discharged direct from the pipe lines to an elevation of 17 ft. above mean low water. The additional height of 8 ft., which was required in certain sections of the yard, was obtained by rehandling the dredged material with a steam shovel and dump car equipment, about 200,000 cu. yd. being handled in this manner. The yard fill has a top dressing of 8 in. of cinders under the ties. The cinders were secured from the locomotive terminal at Communipaw and were distributed by work trains in the usual manner.

The pier, when completed, will be 1,584 ft. long. The inshore section is 970 ft. in length with a maximum width of 184 ft. at the bulkhead line, narrowing to 66 ft. at the sea end of this section. The offshore section, on which the concrete silos will be located, will be 614 ft. in length and 66 ft. in width and will be used for the coaling of tugs.

At the present time the inshore section is practically completed and one dumper is now in operation. It is not expected that work on the offshore or tug-coaling section will be started before next spring.

The completed portion of the pier consists of a reinforced concrete deck and concrete foundations for the car dumpers, the supporting structure consisting of 4,400 creosoted pine piles, averaging 70 ft. in length, which were driven by floating equipment. The track trestles over which the cars are delivered to the dumpers and returned to the empty yard are of reinforced concrete.

As may be seen on the plan, the layout for handling transshipment coal is in duplicate, each dumper being served by a separate thawing house located in a separate gravity service yard. The thawing houses are each 320 ft. long by 51 ft. wide and are divided into three bays having a capacity of eight cars per bay, making a total of 24 cars per house, or 48 in all. These houses, which are now under construction, will consist of precast reinforced concrete units with insulated walls supported on creosoted piles driven through the sand fill by means of a water jet and air-operated hammers, the air being supplied from the compressor unit in the power house. Thawing of coal will be accomplished by forcing air heated to a temperature of about 180 deg. into contact with the bottoms and the sides of the cars. It is estimated that the average time required for the thawing of a car will be 2½ to 3 hr. The air heating apparatus will consist of steam engines, blowers, steam coils, recording thermometers, etc. Steam will be supplied from the power house. Re-circulation of the air in the thawing houses is provided for.

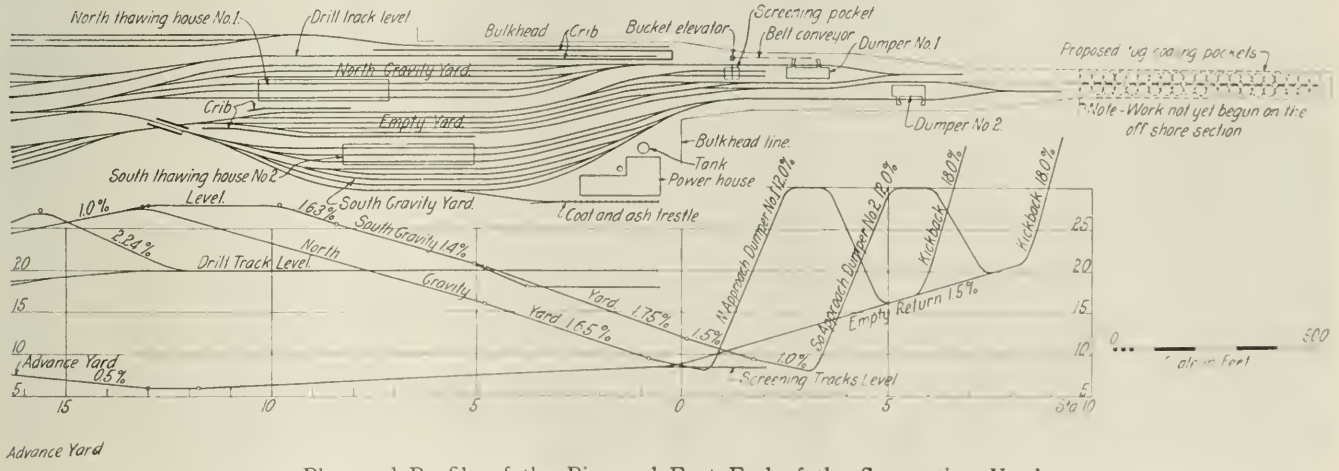
The Car Dumpers

The car dumpers are similar in every respect except that the north dumper is equipped with facilities for screening the coal and with a screenings pocket and belt conveyor for handling the screenings and the south dumper is equipped with a hopper on the side of the pier for handling the coal which will be stored in the silos on the tug-coaling section. While each dumper can handle up to 45 cars an hour, in view of other governing factors, such as the delivery of cars to the dumpers and the handling of the boats, it is estimated that each dumper will handle 25 cars per hr. over a period of hours. They are designed to handle cars of 100 tons capacity with a 10 per cent overload and of a length of 54 ft. over end sills. The cradle of the dumper, on which the car is placed by means of the barney, is 30 ft. above mean tide and operates through a 27 ft. vertical lift.

Both steam and electric power are utilized in the operation of the dumpers, steam being used for the barney and the cradle, while electricity is used for the pan, chute, screenings conveyor and the boat haulage. The coal handled on the north dumper may be screened if desired, as it is dumped from the car. By means of a belt conveyor and a bucket hoist, the screenings are returned to the screenings pocket for storage and shipment in cars to any point desired.

The trestles provided on the pier for carrying the ap-

Looking Over the Yard During Construction

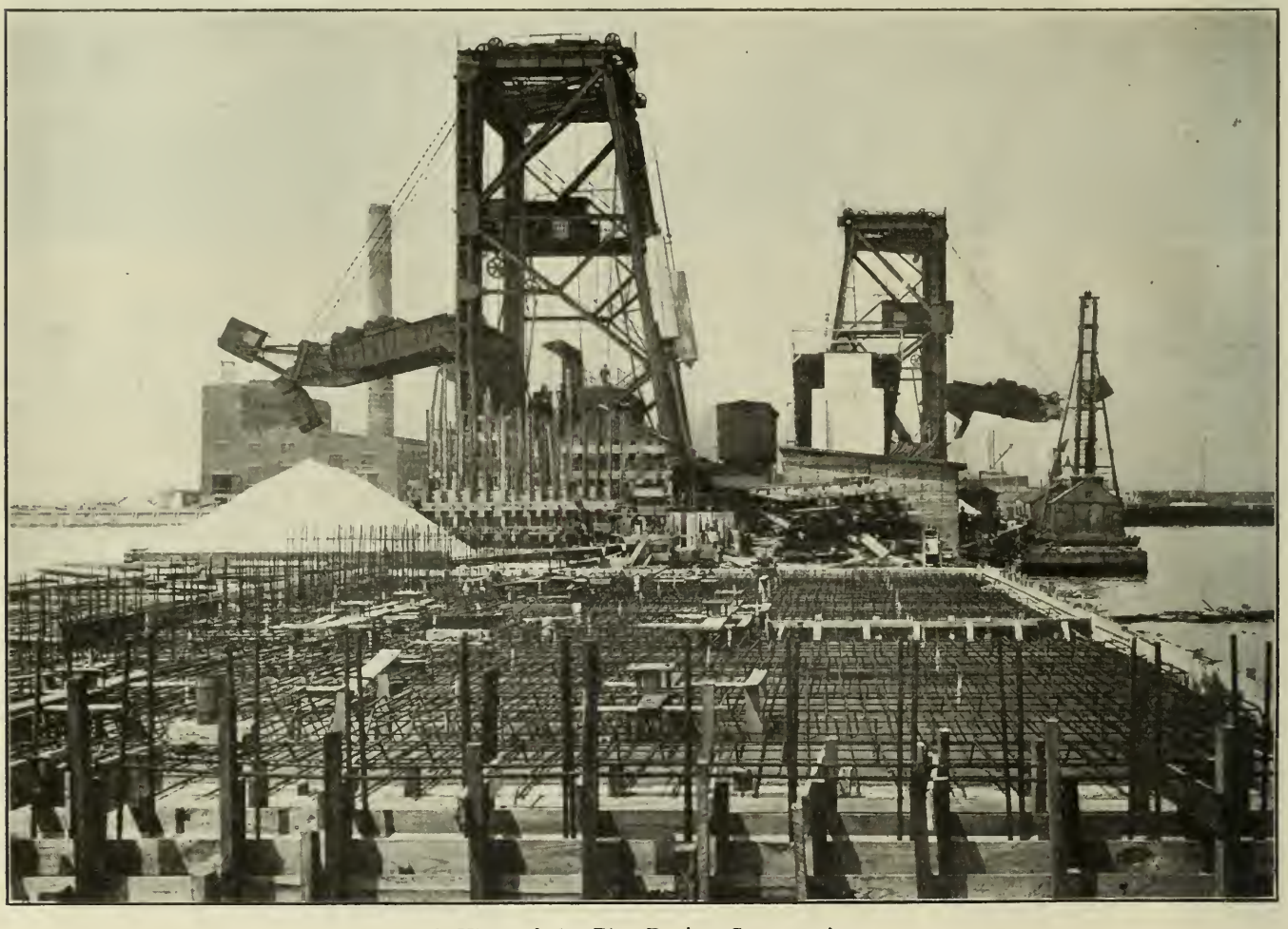


Plan and Profile of the Pier and East End of the Supporting Yard

proach, run-off and kick-back tracks are of concrete throughout with the exception of the long spans immediately adjoining the dumpers, this type of construction being determined upon primarily because of the present high cost of structural steel. The concrete girders for the trestles except on the 12 per cent grade approaches were all pre-cast, the deck of the pier being utilized as space for the casting yard.

In the casting operations, material and labor were saved by casting the girders broadside down; when properly cured they were picked up by a locomotive crane running on a temporary track which closely followed the work as it progressed and were then set in their proper place. On the extreme end of the south kick-back track this method was impractical and floating equipment was utilized.

At the south dumper a hopper has been provided in the deck of the pier for handling coal destined for the offshore facilities. By this arrangement coal passing over this dumper may be loaded into vessels alongside the pier or discharged into the hopper from which it is transported by means of a series of belt feeders to the main belt which will extend to the offshore end of the pier. For emergency use a track hopper in the south return track, discharging onto the cross conveyor, has been provided. By this means continuous operation of the offshore facilities is ensured even in the event that the south dumper is temporarily out of service.



A View of the Pier During Construction

The Power House

In the design of the power units built in connection with this improvement provision has been made for possible further terminal developments. The house is of steel frame construction with 6 in. hollow tile curtain walls resting on concrete foundations which are in turn supported on piles. This type of construction was adopted because of the decreased dead load and the resultant economies which could be obtained in the foundations. For its insulating properties gypsum was used in the roof which is flat and made up of pre-cast slabs covered with Johns-Manville asbestos roofing. The slabs were placed by a "Jim Crow" and are secured to the steel members in the usual way. The power house stack, which is 150 ft. high with an inside diameter of 9 ft. 4 in. at the bottom, was constructed of radial bricks.

The equipment consists of four batteries of Babcock & Wilcox boilers of 500 hp. each or a total of 2,000 hp. Provision has been made for two additional batteries of 500 hp. each. The boilers are equipped with Roney automatic stokers which supply coal to the boilers from overhead coal bunkers constructed of structural steel and concrete, having a capacity of 1,200 tons. The coal is placed in the bunkers by means of a bucket elevator which receives the coal from a track hopper provided in a trestle adjacent to the house. From the elevators the coal is discharged onto a shuttle conveyor which in turn discharges into any of the bunkers.

A basement under the boilers provides space for a narrow gage track on which small ash buckets are operated, the ashes being dumped into the cars which are pushed by hand to the north end of the building where, by means of an electric hoist, they are elevated and dumped into a concrete ash storage hopper located over the coal supply track. At convenient times the hopper is emptied into cars, a storage capacity in the hopper being provided of about 200 cu. yd. of ashes.

The engine room equipment consists of an Ingersoll-Rand

air compressor having a capacity of 2,500 cu. ft. of free air per min., and two 300 kw. General Electric rotary converters which with their complementary transformers are used to convert the 2,200 volt alternating current supplied from the company's power house at Communipaw to 550 volt direct current used on the pier.

The air is used in the empty yard for train line purposes

Looking Over the Coal Dumpers Towards Ellis Island

and in the yard and on the pier for general repair and utility purposes. The maximum demand for electric power will be taken care of by one of the converters, the other being spare for emergency use. Electric operation is provided at the dumpers for the pan, the telescopic chute, the boat haulage and the screenings conveyor. The installation is also designed to care for the offshore operation including the 54-in. belt conveyor for future tug boat coaling facilities.

A concrete tunnel from the power house part way out on the inshore end of the pier is provided for steam, water and air lines. An underground conduit system is also provided for power, lighting and telephones.

As may be seen by reference to the general plan of the layout, the horizontal distance available for the service yard is limited to less than one mile by two grade crossings with the Lehigh Valley on the west and the bulkhead on the east. The difficulties of this constricted location have been overcome to a remarkable extent in the design of the yard and track facilities by the adoption of left-hand operation and other interesting expedients.

The receiving yard to the north of the layout consists of six tracks having capacities ranging from 50 to 65 cars. In operation the coal trains will pull into this yard, the locomotive finding its way to the engine house by means of the engine running track to the extreme north of the layout, connecting with the tracks of the main terminal yard. The receiving tracks are all laid on a 0.4 per cent grade ascending in the direction of traffic. At the east throat of the receiving yard a drill track approximately 1,000 ft. long is provided on a level grade. By means of this track the cars are drilled out of the receiving yard and pushed back over a hump having an approach grade of 2.24 per cent and a descending or accelerating grade of 2 per cent to the classification yard leads which are laid on a 1 per cent descending grade for a distance of 1,140 ft. where the grade flattens to 0.3 per cent, still descending. The classification facilities are arranged in two parts, a north unit consisting of 10 tracks with capacities ranging from 23 to 26 cars, and a south unit containing 10 tracks, the capacities being 21 cars for each of 9 of the tracks, and 23 cars for the remaining track. The grades of the tracks in the classification yard units range from 0.6 per cent for the outside tracks to 0.3 per cent for the inside tracks, all grades descending in the direction of classification.

To the south of the classification tracks is a loaded advance yard containing six tracks with capacities ranging from 15 cars to 21 cars each. All of these tracks are laid on a

Looking Inshore From the Dumpers Towards the Power House and Yard

0.732 per cent ascending grade in the direction of traffic.

The advance yard is separated from the empty advance yard by a lead track to the track hopper for emergency use in connection with the conveyor to the offshore facilities of the pier. The empty advance yard consists of six tracks with capacities ranging from 60 to 65 cars. These six tracks are on a level grade through the yard proper, the approach grade being 0.5 per cent ascending and the departing grade 0.3 per cent descending.

As stated previously the coal handling facilities on the pier are in duplicate and each car dumper is fed by a gravity yard, the two being separated by an empty yard serving the two dumpers. Including the tracks passing through the thawing houses, the north gravity yard consists of six tracks having a total of 115-cars capacity, while the south gravity yard consists of eight tracks with total capacity for 130 cars. The empty yard consists of five tracks with a total capacity for 96 cars.

The grades of the tracks in the north gravity yard are 1.4 per cent at the west end, increasing to 1.645 per cent at the east throat. In the south gravity yard somewhat sharper grades were installed, being 1.63 per cent at the west end and 1.75 per cent at the east. The tracks in the empty yard are

A Concrete Tunnel Is Provided for Steam, Air and Water Lines

all laid on a 0.215 per cent grade descending in the direction of traffic.

In spite of the natural difficulties presented by the site, flexible operation of the facilities is afforded by the installation of a diamond crossover between the leads to the two units of the classification yard, by means of which either car dumper may be served from either classification unit. Again the loaded advance yard with its entrance from the west ensures the operation of either dumper in the possible event that egress from the classification units is temporarily cut off. These movements as may be seen by reference to the map, are made possible by carrying the lead track between the empty yard tracks and the empty advance yard under the approach track to the south gravity yard. In other words, a car may be received in the usual way in the receiving yard, drilled into either of the classification yard units and passed on from either of the units to either of the dumpers and out over the kick-back tracks and the empty yard to the empty advance yard or it may be placed in the loaded advance yard and run over either dumper and out as before.

The approach tracks to the car dumpers are laid on 12 per cent ascending grades for both units. The grade of the run-off track from the north dumper is 11 per cent and from

A View of the North Dumper, Taken from the Kickback

the south dumper is 8 per cent. Eighteen per cent grades have been installed on both kick-back tracks.

The improvement was planned by and constructed under the direction of the engineering department of the railroad; A. E. Owen chief engineer, A. M. Zabriskie principal assistant engineer.

Resolutions declaring that the Indiana State Chamber of Commerce is opposed to the Plumb plan for government ownership and tripartite operation of the railroads were adopted at a special meeting recently of the board of governors and directors of the organization. The stand taken by the Indiana State Chamber of Commerce is outlined in the following paragraph from the letter written to senators and congressmen as a result of the resolution:

"They are strongly opposed to the so-called Plumb bill as proposed by the brotherhoods, and especially so in view of the action taken by the same brotherhoods on the Adamson measure in 1916. They believe that labor should have fair wages and good conditions of work. They are opposed to government ownership because it stifles initiative, destroys efficiency, and substitutes political influence for wise regulation. They urge that the brotherhoods be given a fair hearing, but that the same fairness be accorded to organized farmers (the backbone of America), and that bond holders and stock holders, as well as the officers of the roads, be also given a fair hearing."

The Restoration of Railway Development*

Purposes of Railway Legislation, Conditions in the Railway Supply Industries and Legislative Proposals

By Alba B. Johnson
President Railway Business Association

REPRESENTATIONS of these business men are those of a special element speaking from its own point of view. They believe they desire nothing that is not in the public interest. National prosperity is their prosperity. Nevertheless, those for whom I speak offer testimony only about matters which concern or afflict them in their occupation. Nor have we any detailed plan. We rather emphasize certain objects which we hope Congress will seek to accomplish through whatever plan it may adopt.

The purposes of which we ask your consideration can be stated in one sentence. We favor a prescription by Congress that rates and fares shall be such as will yield revenue sufficient for adequate maintenance and development of transportation, and a lodgment of the authority and the duty to promote such adequate maintenance and development in federal agencies each adapted to its respective task.

Conditions in the Railway Supply Industries

Railway buying for nearly a decade has shown two distinct changes from conditions previously existing.

On the one hand the total amount of material consumed in additions and betterments during a given period has decreased rather than increased. It would be superfluous to repeat here the familiar figures as to provision of track, motive power and car capacity. The slowdown in development of terminal facilities other than track is also well known. In the long run this has had the effect of restraining the growth of railway supply industries, limiting the opportunities of employment in them and retarding the progress of communities where railway goods are made.

A. B. Johnson

On the other hand, at the same time that the aggregate quantity of industrial output for transporation purposes in a given period has exhibited this backward tendency, there has been a marked drift in the direction of instability. Large purchasing has come to be concentrated in periods of general business activity, whereas in times of general depression the railroads have drawn their purse-strings tight and waited for resumption of traffic and earnings.

Now, if there is one thing that the Railway Business Association has endeavored year after year to make clear it is this—that we would not desire and would not favor superfluous or excessive railway purchases for the purpose of keeping these supply industries busy. Waste retards national prosperity; and, I may say again, national prosperity is our prosperity.

What we ask you to consider in regard to the volume of purchases through a given period is that their amount measures our national growth; that during many years down to about 1910 the inventors and developers of railway appliances proceeded on the assumption that the United States would continue to develop its natural resources and to open up territory not yet accessible. They calculated future railroad needs by the yardstick of past consumption.

This was regarded as a warrantable basis of forecast because the undeveloped regions within our continental domain comprised still a vast empire containing untold riches—agricultural, forest and mineral. They hoped and believed that the time when a halt would be called on internal development of this wonderful new country was far beyond their lifetime. What warning had they to the contrary? Was there any decision, either formal or informal, to stop opening up new areas and to slow down the development of older regions?

If there had been a formal decision, where was it made and who made it? Had Congress ever enacted legislation of which the declared purpose was to arrest railway improvement and extension? Had any committee of Congress or any President recommended or even considered such a course?

Had there been any consensus of public opinion that the time had come to withdraw encouragement for capital to go on giving the American people closer communication with one another and new access to the wilderness? On the contrary.

Farmers were clamoring to be brought nearer to market. Consumers of food, clothing and fuel, users of dwellings and furniture were shouting from the housetops their demands that new sources of supply be created and a reduction made in the cost of living.

The voice of labor was beseeching that measures be found for that stabilization of employment in industry which results from the creation of new centers of population where the products of labor might find new markets.

Chambers of commerce were establishing bureaus to at-

*Abstract of statement before House Committee on Interstate and Foreign Commerce in August 25, 1919.

tract new factories and enlarge old ones, and calling upon the railroads for improved terminals and other facilities.

There was nothing to indicate that the people were content with the national development thus far accomplished; but there were innumerable signs that they desired and expected a continuation of pioneering and settlement of the rich regions still awaiting communication.

Railway supply men, therefore, 10 years ago went ahead equipping themselves to perform what they supposed was the highly important and universally desired function of getting the railroads ready for future traffic needs and equipping themselves on a scale proportioned to the continuance of past ratios of railroad growth.

Without formal or informal notice or declaration railroad construction all but ceased, and we had our plants and our organizations on our hands. What is done is done. Our thoughts are of the future. Industrial managers in this field are trustees for their employees and for their stockholders.

Their course from now on must be shaped by their impression of the federal purpose. They await a decision one way or the other. They inquire whether or not the country intends to continue internal development; whether it looks to them for trustworthy provision of railway appliances and for progress in the introduction of economical and efficient devices. They think they ought to ascertain if possible what is their responsibility and their opportunity. They believe they should receive authoritative assurance whether their co-operation is desired and whether they may prudently go forward with projects.

Instability of Railway Purchases

Consider next, if you please, the instability of purchases. A large part of the time those who have plants and organizations established to serve railway needs have had either feast or famine. We have not the slightest doubt that financial panics have been obviated by the Federal Reserve Bank system. There was no panic in 1914, yet in that year commerce and industry in the United States were in dire distress, destined to be relieved only by war contracts, because the railroads were confining their purchases to the barest necessities.

A common remark is that distress in the railway supply field is merely an incident in a general depression, and that at a time when everybody else is suffering it is unreasonable for the makers of railway accessories to complain of unemployment.

Unemployment is only tolerable when it is unavoidable. For unemployment in these particular industries there is, in these days, very little valid excuse.

What grinds us is the needlessness of it. General depression is not a time in which to stop building railroad track and equipment, to leave off repairing railroad plant, but a time to begin. Can anybody suggest a juncture when labor and material will be cheaper than when nobody else wants them except the railroad and the railroad supply maker? Is it difficult to grasp the fact that by keeping those industries going steadily year after year the total output for all the years can be produced with a smaller investment in plant, a smaller overhead for interest and organization, less waste through idleness?

Is it not clear that the very railway plant itself has to be substantially larger to carry the peak-of-load when that load is further burdened with the vast, heavy and bulky tonnage required for the fabrication of track, cars and locomotives and their maintenance?

That is what has been happening. The first inkling of a slump in earnings brought curtailment of buying. When in the next active period general merchandise was crying for cars, power and tracks, the railroads would come into the market frantically bidding against one another for deliveries, demanding that factories work overtime for them and crowding with their own consignments the facilities whose very insufficiency this avalanche of company freight was hysterically intended to relieve.

The greatest railroad genius America has produced, the late E. H. Harriman, pursued the well-settled policy of liberal buying in depressions with the two-fold motive of relieving the depression and of obtaining goods at bargain prices. A similar policy has been characteristic of the Pennsylvania system. The principle was coming to be understood and gradually brought into application in the period before 1906.

Why do not the railroads buy steadily instead of spasmodically? The answer is that the railroads generally speaking since 1908 have lived from hand to mouth, not knowing one year where the next year's bond interest was coming from. Net income was of such proportions that investors declined stock and took bonds, but even these in reduced quantities.

The manager saw the mortgage advancing across the disc of the property like the shadow of the moon across the face of the sun. Dividends can be passed. Interest cannot be passed. With interest staring him out of countenance, he refrained from purchases involving future commitments. Sufficient unto the day was the evil thereof.

Mechanical Progress Devitalized

I wonder if all the members of your committee are aware of the extent to which that hand-to-mouth policy has devitalized the forces formerly serving the country in the mechanical progress of transportation. I hope you share the conviction of engineers that very great improvements in the direction of safety, economy and efficiency are destined to be developed if conditions are propitious. I believe that the further progress in the development of the science of transportation will be as great or greater in the next 25 years than it has been in the last 25.

In an appendix I give some account of the former absorption of inventors and managers in the testing and demonstration of new railway devices and methods and the division of their time and thought now and undoubtedly in the future between the railroad customer and other customers; such impairment of the former concentration having begun with the determination to avoid the disasters which have come from having the eggs all in one basket and spread still further with the war-time experience in turning from one kind of product to another.

The spirit in which we are commenting upon the pending legislation is not that of a lot of people who are sitting with their hands folded and sulking. We ask no alms. Competition is free and the railway supply manufacturers can take and are taking their chances in a more general field. Your attention, however, is invited to the unquestionable fact that if at a given time there is only so much demand, and those for whom I speak are invading fields which they formerly left to others, we may be able to keep our men employed, but that will not save from idleness the employees of those other concerns who would be making goods if we were engrossed in producing railroad accessories. The degree in which those forces can be tempted again into speculative investment of money, time and energy for shop and field experiment in the transportation interest will depend upon the inspiration given by your legislation, by the discussion accompanying it and by the spirit in which the government proceeds to administer it.

Ultimate Consumers of the Public Wrath

Now what was the primary cause behind the financial condition of the roads which led to that hand-to-mouth policy? Our diagnosis was that errors in railway management and in railway financiering had given occasion for public

resentment, and that when this found vent in governmental measures these were conceived more in anger than in wisdom.

We are fond of quoting an epigram made by one of the founders of our association, a veteran maker of car wheels, Thomas A. Griffin, of Chicago, who has for some years now been gathered to his fathers. Standing amid the havoc of smokeless chimneys, bread lines and the general misery of industrial paralysis, with weeping wives beseeching audience that they might implore reinstatement for their breadwinners, Mr. Griffin made a gesture to include himself with those unemployed, and said: "We are the ultimate consumers of the public wrath."

As the years have gone by we have had the satisfaction of hailing a new era. The railway financier proclaims higher standards. The railway manager more fully realizes his obligation to the public and his responsibility as a diplomat. The public official perceives in the popular element a less insistent demand for punitive measures, a more anxious solicitude for encouragement to transportation enterprises. I wish Mr. Griffin were here to enjoy the bright promise of a sound solution which is vouchsafed to us by the attitude of Senators and Representatives in the present Congress.

He would know that if in the future wage-earners are to be turned away from the factory gates because of needless cessation of railroad orders they will be ultimate consumers not of the public wrath but of cold-blooded governmental unwisdom; and I do not see how he could listen to the questions which have been propounded to witnesses during these hearings or converse with leaders in the Senate who are giving concurrent consideration to this great problem, without feeling confident that the seven million persons dependent upon earnings in the railway supply industries and the many more millions in agriculture, trade, professions and other occupations who in turn depend upon them, will be consumers neither of wrath nor of unwisdom but of governmental sagacity.

Proposals for Remedial Legislation

If it were not for fear that silence on certain aspects might be taken to imply opposition, we would state our recommendations in three paragraphs. Lest we be misunderstood, we precede these three with another, enumerating various proposals which have our approval, but which we do not consider especially appropriate for detailed discussion by our industry as such. That enumeration is as follows:

We favor corporate ownership of railways and their permanent return to private management; permitting and facilitating under federal sanction their consolidation into strong competitive systems; bringing railway corporations under federal jurisdiction; federal regulation of railway security issues; adjustment of railway labor conditions by a joint board of employers and employees, disagreements to be adjudicated by the federal authority which determines the amount of revenue to be yielded by rates and fares; accumulation of surplus railway income in good years in order that in poor years railway maintenance, additions and betterments may be carried on vigorously.

All of these recommendations in one form or another are contained in plans submitted or to be submitted to you by others, who are especially qualified to explain them.

Following are the recommendations which we deem essential to be especially emphasized by us:

We favor a federal statutory rule of which the effect will be that rates and fares of the railways within each traffic section shall be sufficient to yield the average railway in the group in the average year its necessary expenses and to provide the credit basis for adequate facilities.

We favor a federal board to promote articulation of transportation by rail, water and highway; to keep informed of the public need for facilities and service in the several traffic sections and of carriers' projects for improvements and extensions; to regulate security issues; to estimate the amount of revenue prescribed under whatever rule for adequacy of revenue Congress may adopt, and the further amounts, if any, which may prove necessary to attract the capital required, and to certify such estimate as the amount of revenue in each traffic section necessary in the public interest to be yielded by rates and fares authorized by the Interstate Commerce Commission.

We favor giving the Interstate Commerce Commission by statute the authority to regulate maximum and minimum rates and fares of all instrumentalities of interstate commerce in the development of just, reasonable and non-discriminatory rate structures, and the duty so to adjust tariffs that they will produce as near as may be in each traffic section the amount of revenue certified as necessary in the public interest.

Most manufacturers are not lawyers. Yet their work may be profoundly affected by legislation. The country looks to those whom I represent or to others who may come into that field to attain reliability in quality and dealings, to acquire resources so that they are ready to meet normal demand, to engage in spirited rivalry so that cost of production may be reduced, to maintain shops for the testing and development of mechanical inventions—the instruments of safety, efficiency and economy in transportation.

Communities of wage-earners and their dependents expect of these manufacturers that when they create works and induce people to locate in a town, with all the mercantile, professional and other population which gathers round such a fountain of wages, there is something more behind the enterprise than guesswork. They assume that men who pretend to such standing and who can command from hard-headed investors the capital for such an undertaking have made due and diligent inquiry regarding all the essential conditions necessary to be ascertained before permitting thousands of people to remove thither and make commitments and investments of a hundred varieties.

So that when we come before you recommending that one of the purposes of the act which you are to frame shall be what I have just read to you, it is with no pretense of legal lore or legislative competence, but it is after years of systematic study of the laws as they are and of the consequence which they seem to contain as affecting us. As well as we could we have analyzed these laws ourselves. We have maintained an association for their concerted consideration. We have caused specialists to study them for us.

Our analysts informed us that the interstate commerce act requires carriers to furnish adequate facilities and every individual rate to be reasonable. I think the time has come to make confession at least for myself that when large-scale rate cases were before the Interstate Commerce Commission the grave anxiety of members of our association led to the assumption of an attitude toward the commission for which there was no warrant in the law.

Our association, I am proud to say, under the wise leadership of my predecessor as its president, George A. Post, refrained from beginning to end from any expression of opinion with regard to any particular rate schedule filed with the commission for its sanction. We merely suggested to our friends in other associations the propriety of letting it be known to the commission that whatever decision it might find in the public interest would meet with their ungrudging acquiescence.

Nevertheless, there was running through our participation in those discussions the assumption that the commission under the law had the authority and the duty of sanctioning rate structures which as a whole would yield revenue bearing a relation to the financial needs of the carriers.

Such jurisdiction was strenuously denied to the day of

his death by the late Commissioner Judson C. Clements. It was unanimously denied by the commission in the first great Eastern rate advance case, though they proceeded to infer authority which they said was not in the law, and denied advances on the ground that the carriers did not need additional revenue.

Shortcoming That of Law

Citizens protesting against advances argued that the law, in prescribing that "any rate" should be reasonable, gave no warrant for consideration of a large number of rates in their aggregate effect upon total revenue. They insisted that in a large-scale case, where millions of tariffs were involved, it was incumbent upon the proponents of a general advance to justify the reasonableness of each one of these millions of rates by the tests which the commission under its traditional practice would apply if only one rate were in question.

If it is true that nowhere in the act as it stands or any act of Congress the commission is authorized and directed to regulate rates with a view to adequacy of maintenance and of development of facilities and service, then I for one desire at this time to say that it seems to me that the shortcoming which there has been in the regulation of rates this past decade is to be laid at the door of Congress and not at the door of the Interstate Commerce Commission.

What of the future? You began these hearings with the detailed consideration of House Bill No. 4378. On page 23 of the committee print the following words appear in italics indicating that they are new matter:

"The commission in reaching its conclusion as to the justness and reasonableness of any rate, fare, charge, classification, regulation, or practice, shall take into consideration the cost of labor and other operating costs in so far as they become material in any case under investigation."

In response to one of those questions which the chairman has been putting to witnesses and which have contained so much encouragement to us, Commissioner Clark stated that the commission would have no objection to adding to and inserting in the above sentence the words "and the cost of capital."

Suppose you enact this provision in that amended form. Obviously you would not have given the commission the responsibility for the financial results of its regulation. You would still be saying "any rate." You still would be inviting citizens to demand that each one of a million rates be justified by a formal proof of reasonableness.

Is it the intention to change the old act in that respect? If so, why not say so in the text? Having so many times been urged to say it, if now you decline to do this, the implication will be that you have deliberately omitted from the act the declaration that the revenue derived from the rates as a whole shall be adequate. If you do omit that declaration it will be taken as a signal by the manufacturers for whom I speak that the government shrinks from acknowledging its responsibility and has no definite purpose of discharging it.

Examine once more the words "shall take into consideration." Is it intended to convey the thought that the statute is defining the purpose of Congress for the guidance of the commission? If not, then why put it in? If yes, then why not explicitly specify what the purpose is? If you shall enact authority for the commission merely to "consider" a rate or even all the rates without setting up a standard by which they are to be considered, you have instructed your administrative arm to make your policy for you, or in other words to determine what in their judgment is in the public interest.

If any deputy of Congress is to decide in any matter what is in the public interest without any indication from Congress of a test or standard, why not all deputies of Congress in any and all matters, and where will delegation stop? Why not proclaim forthwith that our boasted government of laws has been discarded and in its place there has been set up a government of men?

"Shall take into consideration." Where in that phrase are we to find hope? The only sense in which it could be interpreted to promise restoration of railway credit and resumption of railway development would be this—that it commanded rates and fares to be adequate for operations and credit. If it does not mean that, why say it at all? If it is intended to mean that, why not express it so that nobody can have any doubt?

Bill 4378 is not the only current plan in which an attempt is made to define what the regulatory body shall consider in making rates. From among such plans the Railway Business Association refrains from a choice. This much we earnestly urge upon you—whatever rule for rate-making you adopt, whether a prescription of adequacy, or a rate per cent of return, or something else, clinch it by saying somewhere in the statute that the rates and fares of all the roads in any sectional group shall be sufficient to yield necessary expenses and to provide a credit basis for adequate facilities and development.

In our correspondence and conversations with business men these 10 years we have found in the main three avowed reasons for hesitancy about swallowing that pill.

Some merely could not bear the thought of making railroad rates adequate. The word gave them goose-flesh. When invited to declare for such adequacy they inquired, "Does this mean an advance in rates?" To this the natural reply was that if anywhere at any time rates were too low they would certainly have to be raised in order to make them adequate. To this we used commonly to hear it rejoined that no rate anywhere ever could be too low. As you gentlemen are aware, that attitude nowadays is pretty generally stuffed and mounted in the museum along with the dodo and ichthyosaurus. It died contemplating one of the most useless and dismal of institutions—a national railroad system that cannot carry the nation's tonnage and hence chokes industry, and that is powerless to build into new areas of agricultural and mineral production, and hence droops helpless while the cost of living soars.

"Shall"

The second misgiving was that somehow it would be an indignity to the commission if the legislature which created it should announce what it was created to do. There were those who predicted, "Congress will never say 'shall' to the commission." We have lived to see the commission itself write a bill in which the word "shall" is embodied—"shall take into consideration."

Competition in Economies

The third misgiving was not so amenable to easy solution. This was the obstacle of the strong road and its weak competitor both taking the same rates. Toward that phase of the problem the attitude of the Railway Business Association is distinctively occupational. Numerous solutions are offered. One is consolidation.

We favor this, but as developers of mechanical improvement we earnestly hope that the independent corporations will be as numerous as is consistent with their financial stability. Centralization tends to over-standardization and to bureaucracy. It narrows the field of railway managers to whom one after another a new device or method can be offered until somebody is found willing to afford a demonstration. Another solution, either as an alternative or as a supplement to consolidation, is a contingent fund drawn from excess income and employed according to the various plans to tide over lean years or to aid the weak roads or both.

The Railway Business Association volunteers no comments upon these proposals, and its occupational attitude merely takes the form of a hope that whatever is done the condition will be such that the unprogressive road will suffer for its indolence and the progressive road enjoy the reward of its enterprise. Cobwebs would gather in the departments where railway appliances are developed if no railroad had anything to gain by trying new devices or anything to lose by ignoring opportunities for efficiency and economy. So we use the general expression with respect to revenue that it should be sufficient for "the average railway in the group in the average year."

Rule for Rate-Making

Summarizing, then, our observations regarding the rule for rate-making, we urge upon you:

(a) Explicit authority for the regulatory agency or agencies to test the reasonableness of rates as a whole by the sufficiency of the total revenue which they produce.

(b) Prescription by statute that rates and fares shall be such as to yield the average railway in the average year its necessary expenses and to provide the credit basis for adequate facilities, including reasonably rapid settlement of new territory.

In numberless forms Congress might accomplish these two things. As business men we have no pride of authorship. We don't care where the ultimate language originates. We do think that the language when found ought to be so clear and unmistakable that we may know at once whether Congress is giving confidence or dread to those who would like to devote themselves to mechanical progress in transportation, and hope or despair to the wageworkers whom they employ or might employ.

How Much Revenue Will Be Required?

We do not see how anyone can predict what return upon the investment would in the future be necessary in order to attract new capital in the amounts which may be required.

The proposal of the National Transportation Conference, the quality of whose contribution to the clarification of the whole problem it would be difficult to exaggerate, has been explained to you by Paul M. Warburg as follows:

"It has been the consensus of opinion of members of the conference that if private capital is to enter freely upon the venture of further developing the roads, and if railroad credit is to be re-established on a solid basis of genuine confidence, that 6 per cent on the final valuation plus a modest share in earnings in excess of this percentage would constitute the minimum required."

Mr. Warburg does not itemize the elements which led the conference to hit upon the figure 6, although he explicitly speaks of this as the very least that would accomplish the result, and he suggests a decennial revision of the figure. The text of the conference bill itself uses the expression "not less than" 6 per cent.

Is it not evident that in the minds of its framers this plan, having fixed a minimum rate of return below which the regulatory authority must not go, and establishing contingent funds, supported by a grant of Congress, to insure the return up to 6 per cent, leaves undetermined a zone of income in excess of 6 per cent which the Interstate Commerce Commission is neither forbidden nor commanded to permit, and concerning which the statute would give it no guidance whatever?

To our practical minds, and in view of the responsibility which rests upon us, this undetermined zone appears to place upon the Interstate Commerce Commission a discretion by no means accurately described as computation by a mathematical formula. "Not less than 6 per cent." But how much more than 6 per cent, and by what standard determined?

So far as we are aware, nobody has estimated for you the magnitude of the improvements to existing lines which the public interest requires to be made within any specified period in the future. If you were in possession of such estimates, who shall say how far short they would fall of the needs which may actually become manifest? Even if you had the power of divination to make approximate guesses at the requirements expressed in physical units and in units of work performed, what human faculty can be brought to bear in the year of grace 1919 to compute the cost of carrying out such projects?

Vast Capital Demanded

Additions, betterments and extensions are made with new capital. Construction of a new stretch of mileage, whether by an existing system or by a new one, involves investment of capital equal to 100 per cent of the cost of road, structures and rolling stock. The same is true of additions to the property of existing roads. Betterments of existing lines are provided 100 per cent from investment less the value of property scrapped or replaced.

If a locomotive requires repairs which can be made in a few days at a roundhouse, the cost of those repairs is an operating expense. If a locomotive is so in need of overhauling that it is put into the shops, it will be repaired and also brought up to date by the application of new devices; and the cost will be divided between replacement of old value, which is paid for as operating expense, and creation of new value, which is paid for as investment.

Expenditures vast in the aggregate for each region are to be provided from new investment. Nobody knows what labor and materials will cost. How, then, can anybody predict within many millions a year how much capital would have to be raised to carry out projects approved?

If you do not know how much capital you must raise, how can you possibly know what rate of return you must pay in order to obtain it? Supply and demand govern the rates for money as they govern all other prices. The more securities you put out the higher goes the rate.

Some have said that with a fixed rate in the statute investors would regard railway issues as more secure and that this stabilization would enable the roads to command the money at lower rates than heretofore. But this is already discounted in fixing the figure at 6 per cent as the return for the average road. Mr. Warburg points out that 6 per cent is substantially less than investors can obtain in other industries.

Again, there is the complication of reducing the preponderance of bonds over stock. The reason why bonds have been salable and stock not is that railway income available for dividends was insufficient to make a market for stock. Sooner or later that problem must be grappled with. Is there any other way to solve it than by increasing income until a market is made? Six per cent means, say, 4 and a decimal on bonds and 7 or 8 on stock. Will stock of the average road sell for those figures in the quantities that would be necessary if projects were carried out on a large scale and if substantially more than 40 per cent of the new issues are to be stock?

The truth is we do not know what average rate of return will be necessary in order to develop the railroads.

Would 6 Per Cent Pass and Stand?

Nobody knows whether Congress will enact the 6 per cent, and if it did whether subsequent Congresses would let that figure stand.

Suppose this committee and the Senate committee as well were to report 6 per cent—what assurance is there that when the measure reached the respective branches the 6 would not be pared down?

What I am now saying is not to be taken as indicating

any view whatever as to whether the statute should or should not prescribe a minimum of 6 per cent return. What we beg of you to consider is that if you do embody a rate per cent in the bill which you report you shall in addition recognize the undetermined zone of return which may prove necessary above the rate prescribed as the minimum.

Obviously if the statutory rate is made less than 6 the undetermined zone will be by so much the wider. Suppose, moreover, the sixty-sixth Congress says 6. What will the sixty-seventh Congress say? Does anybody expect any Congress to feel itself bound to maintain a rate merely because an earlier Congress fixed it and perhaps provided for decennial revisions? You will invite disappointment if you expect to peg public sentiment at 6 per cent by making the rate 6 per cent in the statute. Laws are created by sentiment, not sentiment by laws.

Your minimum rate of return will not restore development.

Development can only be restored through the undetermined zone; and it will be restored or not accordingly as public sentiment as to interest rates is or is not brought to see and to keep seeing that fact. There is no way of insuring it. No solemn pronouncement and no hocus pocus can put the result beyond jeopardy of public apathy or hostility.

There is only one route to our destination—genuine and continuous public acquiescence in the purpose and definite assignment of responsibility first to the power that appoints, and secondly to the functionaries appointed for exercise of judgment and courage.

Threatened Destruction of Judicial Mechanism

The functions of appraising the carriers' projects and sanctioning security issues involve an assumption of responsibility inseparable from the responsibility of estimating and prescribing the amount of revenue necessary for the projects approved, and impossible of performance by the Interstate Commerce Commission without destroying its character as a tribunal for adjudication of competing citizens' and competing communities' rights.

We assume that Congress will regard the question of the agency of regulation as one of the most important aspects of the whole problem. Touching that aspect, the Railway Business Association will speak only from the practical experience of the industry which comprises its membership. From that point of view we ask you to ponder well at this critical juncture an element in regulation that may be condensed into the word "justice." You may feel duly appreciative of this. I venture to express the fear that you unconsciously take for granted a matter which requires the most continuous and assiduous solicitude.

What was the cause of the public wrath? Was it big grievances—alleged lootings, alleged overcapitalization? Not primarily. It was little things—rebates, discriminations. These sometimes reached large proportions when prominent concerns were the beneficiaries, but the sensitive state of the public mind in which stories of these conspicuous incidents aggravated the inflammation was due to the everyday contact of the general run of the citizens with the railroads. The individual was told and believed that his competitor was getting a lower rate than he was. The community was angry because a rival trade center was favored. A had a pass while B paid or walked. All this was the foundation of the public wrath.

This in reality is the thing of which the railway supply industry has been and is today the ultimate consumer to a degree even greater than the owners or managers of the railroads themselves. Even the first moderate decline in railroad earnings, which might entail little if any effect upon the income of officers or owners, immediately involves drastic curtailment of purchases and unemployment in the supply industries, greatly out of proportion to the reduction of railway earnings. We are here to implore you for protection so far as Congress can give it against such an experience in the future for us and our employees.

Today the citizen has his contact with the railroad, he has his differences, his complaints, but if his emotion reaches the stage of wrath this is directed not against the railroad but against the public authority which regulates the railroad —an authority which the citizens themselves established and which they can change at will.

So far as federal regulation is concerned, they do not desire to change it; for in these disagreements of theirs with the carriers over shipments and rates and practices and regulations they long ago came to believe that they were getting or could get a square deal from an impartial umpire. I wish to say in this presence that I know of no governmental tribunal here or anywhere, now or at any time more highly esteemed for integrity, for conscientious devotion to the litigation which comes before it, for freedom from prejudice in adjudicating controversies between competitors, than the Interstate Commerce Commission.

High Prestige of the Commission

The commission for 32 years has been dealing with this problem. No breath of scandal has ever blown upon its work or its personnel. In its adjudication of differences between users or groups of users of railways no disappointed litigant has ever been heard to insinuate that the decision was affected by fear or favor. When reappointment of one of the present incumbents was before the Senate it was emphasized by those who doubted his fitness that they questioned not his personal character, but the correctness of his economic views.

From time to time in performance of its statutory duties the commission has encountered situations which led to a request for particular authority not previously bestowed. Congress in most instances has promptly complied. Where such a request has been denied or postponed reason has been found in objection to the proposition in view, or the method proposed, never in distrust of the commission as a court for determination of citizens' rights. We believe that Congress in thus giving its confidence to the commission has accurately reflected public opinion throughout the nation.

For five days at the beginning of these hearings you listened to the chairman of the legislative committee of the commission explain the bill which the commission advocates. You asked him many questions. He impressed me as the spokesman for a body dealing with a highly intricate and special problem, meeting its practical phases in a practical way, capable of explaining the reasons for the modifications proposed in the law and deserving of the confidence with which Congress and the country look to it for the highly important judicial functions falling within its purview.

The development of the commission and its performance day by day comprise a chapter in human progress. They demonstrate the capacity of the American people to substitute reason and arbitrament for passion and strife. Our success in this undertaking is a triumph in self-government.

It is our apprehension that the system which I have endeavored to describe is in grave danger.

Powerful groups are urging Congress to superimpose upon the present statutory duties of the commission certain entirely new and wholly incompatible duties. The common purpose of these several plans is to introduce into the governmental policy an element of encouragement to railroad development. The cry has gone up on every hand for better railroads and more railroads. You are asked to create the new duty of promoting adequacy of facilities and the opening up of new areas. Such a declaration of policy to be made effective must be delegated by the law-making body to an administrative arm—an agency.

Is it the object that national growth shall be both promoted and anticipated by provision of transportation facilities? Is it the expectation that representatives of the government will counsel with railway men and waterway men and hard-surface-road men and with users of all these instrumentalities everywhere, planning for the future? Is it in your minds that the reasonable public need for enlarged terminals or multiple tracking or extension into new territory shall be quickly and practically judged and promptly sanctioned and that carriers undertaking such projects shall be provided with the means of carrying them vigorously to completion?

If this is the purpose and the representative of the government in that field is to be the Interstate Commerce Commission, then what is proposed is to transform the commissioners from judges into men of action.

It may be that you could not effect such a transformation. If you tried but it proved that you could not, this would be a gigantic calamity in itself, as I shall endeavor to maintain in a few moments; but if you could and did transform these judges into men of action what would become of the machinery of justice which it has taken us 32 years to construct and develop?

By the word action is meant getting things done—appraising projects, determining methods and bringing results. Gettings things done is a function concerning which as business men we are qualified to speak. We choose our executives according to our lights and place upon them the responsibility of ways and means and results.

We expect them to make mistakes. We look for a certain degree of false motion and waste of money, inseparable from pioneer and creative work. We do not regard the performance as setting up precedent for future guidance but largely as containing warnings. We cannot require that in his relations with other people the executive as he hurries along will necessarily conduct himself with the primary aim of being a paragon of manners, a model of forbearance, or a professor of ethical philosophy. He uses the self-restraint which all responsible citizens use in a civilized community where there is law and order and a decent respect for the rights of others; but his specialty is getting things done.

Action Called for by the Nation

Congress, which is the board of directors of the nation, is about to undertake a project—the restoration of railroad development. Congress is about to assign supervision of that task to an agent. Those who have elected Congress as their board of directors will not be satisfied with a report that postponement of the result desired has been accomplished politely or learnedly or according to tradition.

What the nation requires is that each year's end will record additions to mileage at least larger than were made by a nation of 32,000,000 before the Civil War. They require some progress and some completion of terminal and double-track projects, construction of motive power and cars somewhere near that before 1906, a year in which industry was shackled and foodstuffs rotted because there was not enough rolling stock to carry material to or product from the factory or to convey grain and livestock to market or seaboard. The country wants results.

Suppose Congress appoints as its agent for that task the Interstate Commerce Commission. I suppose nobody will assert that any one of the present commissioners has ever had occasion to demonstrate by performance the possession of the special qualifications universally exacted of an executive who is charged with a work of creation. Each of them would doubtless classify himself in this respect with the man who was asked whether he could read Greek. He answered, "I don't know, I have never tried."

During these hearings, in fact, Commissioner Clark has said that the bill advocated by the commission would require an enlargement of that body. I understand he has special reference to the regulation of security issues. Whether the commission is to be enlarged or not, vacancies in it will from time to time occur. There is one such vacancy at this moment. In the long run, appointments would doubtless be made of both types, the judicial and the executive. The injection of one or two men of action into the commission would certainly and immediately precipitate conflict.

Here you would have on the one side a man or men whose temperament, instinct, training and habit it is to be anxious lest any project may not have money enough and hence to provide an ample margin for contingencies. On the other you would have men whose temperament, instinct, training and habit it is to be anxious lest any project have too much money and hence to hold it down to the minimum.

Public Opinion and Rate Decisions

What would be the outcome? In the past the commission has had the protection that hedges about a judicial body. You will not have forgotten that in one of the early large-scale rate-advance cases the commission complained of what it called the campaign of publicity. Having had laid before it for determination the question how much earnings a group of carriers ought to have, which is the same thing as saying how much or how good work those carriers should be permitted to perform, the commission was in position to rebuke concerted expression of the public desire on the ground that the proceeding was judicial and that public discussion ought not to be employed for the exertion of influence upon the judgment of the commissioners.

Utterly different will be the situation if Congress shall now decree that railroads are to grow and assign the task of stimulating that growth to the commission.

I need not elaborate to a committee of Congress on the distinction between a statutory provision which defines misdemeanors with prescription of penalty and a statute which sets up a standard for the instruction of an administrative department in the carrying out of a public project.

If a shipper solicits a rebate and a railroad officer gives it to him the process by which these lawbreakers are brought to book is one with which public opinion and public discussions should have nothing to do. If the citizens of Philadelphia or of any other city can unite in advocating a unification of terminals nothing ought to stand in the way of their getting all the allies they can to convince the authorities that the thing should be done and carriers' revenues adjusted accordingly.

Does it take the eye of a prophet to see what would happen within a commission made up partly of builders and partly of judges? At the first important difference of judgment over the amount of earnings necessary in the public interest the tribunal would be rent in twain and in a few hours two factions in the country would begin the struggle for control. This, mark you, is a judicial body. It adjudicates citizens' rights. It has made peace in the United States where once there was conflict, and it is relied upon to continue the calm and even-handed administration of justice.

And here we have the proposal that Congress knowingly and wilfully shall toss into the court of interstate transportation a patented and guaranteed occasion for disputation and bitterness, with the people of the United States surrounding the combatants tier above tier and yelling like the local mob at a national party convention.

If any one suspects that the commission under the proposed conditions would somehow be immune from schism, I commend to him an incident which has already happened. At the time, Congress never had decreed that rates and fares should be adequate for any specified purpose whatever or even that the commission must or might consider rates as a whole as affecting total earnings. Just what occurred I

do not pretend to know. The commission guards its confidences well. But the record is eloquent and the deduction is obvious.

It was the western rate-advance case of 1915. The commission had constructed a majority report, stating what advances would be permitted. Two commissioners dissented on the ground that the grant was insufficient. What the majority replied to their arguments is not of record. But one of the dissenters, Mr. Daniels, in his opinion said:

A Punitive Body

"While it is nowhere explicitly stated in the majority report, I am unable to escape the conviction that the reluctance to find that increased rates have been more generally justified is largely rooted in an unwillingness to find that the revenues of the carriers as a whole are smaller than is demanded in the public interests, and also in the belief that the financial exigencies of many of the carriers are traceable to financial maladministration, and that if due economy and integrity had been observed the difficulty over the attested decline in revenues would have been readily surmounted. . . . It would appear that . . . the time had at last come to take a discriminating view of the effect of refusing rate increases otherwise just and reasonable because of a widespread resentment at evils perpetrated in the past by dishonest or designing railroad officers or their allied financiers. Such a policy visits in large measure the same penalty upon the proprietors of a railway conducted with integrity and honesty as upon the luckless shareholders of a looted road. In either case those who suffer from its effects are not those who have profited by the wrongs perpetrated in the past. It is, therefore, suggested that the appropriate remedy is the prosecution and punishment of the individual offenders, not the continual withholding of adequate rates to the carriers as a whole. In bank management this distinction has in large measure been recognized. . . . Similarly in considering propositions involving more or less general increase of rates, the question should be judged in the light of the carriers' revenues as a whole, and in the light of the reasonableness or unreasonableness of particular rates proposed, and neither prejudiced nor complicated by considerations of individual instances of corporate mismanagement."

Out of those earnest, almost passionate fragments can you not reconstruct the scene which Commissioner Daniels refrains from describing? If this is what he felt impelled to impart to the public, what did he say to his colleagues in the shelter of executive session? What did they reply? It is immaterial. Their official acts convey the information which we require.

That commission at that hour was not a court adjudicating citizens' rights, but a legislature determining the policy of a nation; not a tribunal applying law to a particular case, but a Congress enacting the law itself.

Verily, it is not alone against dangers yet to be created that we warn you, but against perpetuation of a present danger. Great as is the necessity for avoiding the imposition of legislative functions upon the commission, an important purpose is the removal of that present cause of discord, the struggle within the commission for and against readjustments designed primarily to promote transportation development.

No More Rate-Making by Men Who Get Things Done

Bring on the combat for control of the commission and you destroy it as a court, for during the conflict you will turn the bench into a shambles, and when it is over, and the advocates of development have prevailed, as they will, you will have turned over the administration of justice to men whose specialty is getting things done; and if you want to know what that means ask some shippers how they like the rates that were made by Mr. McAdoo. Let us profit from at least one lesson taught us by the war. Let us never again have railroad rates made by men whose primary job is getting things done.

You cannot authorize the Interstate Commerce Commission to determine how much revenue is needed and escape a demoralization of the mechanism for justice which we now have. You cannot place upon the commission the responsibility for fixing the amount of revenue and escape a revival of agitation against the roads, which would be accused as the beneficiaries of ruthless rate-making.

Separate Board Imperative for Promoting Development

Even if for the sake of getting adequate facilities, you were willing to sacrifice the judicial system so laboriously built up, about the most circuitous and slow-moving method, as well as the most doubtful in point of ultimate effectiveness, would be an attempt to transform the Interstate Commerce Commission into a body of action.

As an exhibit convincing on that point we can hardly choose better than to examine the testimony of Commissioner Clark at the beginning of these hearings. I have given you my impression of the judicial body which could produce a witness inspiring so much confidence. From practical experience on the bench the commissioners through him offered detailed amendments to the law as it stands.

I now give you another impression. This second impression was one of incredulous amazement that any group of eight men having to do with transportation in the United States could have lived and worked through these last few years and come before you without apparently the faintest realization that the country is confronted with a railroad problem requiring heroic measures.

The chairman opened the proceedings by enumerating the aspects which would have attention. First of all, he said:

"One of the great problems we are to consider is the matter of credits, and credits involve the matter of rates."

Where in the whole course of Judge Clark's analysis of the bill is there a word indicating recognition by him or by the commission of the existence of a great problem of credits, involving rates? The suggestion has appeared in some of the transportation journals that the bill drawn by the commission and Mr. Clark's comments upon it form only one part of a comprehensive scheme in which the credit problem will be dealt with separately. The commissioner, indeed, in his introductory remarks pointed out that as explained by the chairman the purpose of the hearing covered principles as well as details, whereas the bill was confined to amendments, but he gave no intimation of any supplementary recommendations to come from the commission. So far as was decided that body stood upon its annual report for 1918 and its special report to Congress dated December 31, afterwards explained in detail to the Senate committee in the sixty-fifth Congress.

A Delusive Hope

The special report catalogued a series of objects of legislation. Upon first perusing that document I was startled to note what seemed to be an indirect declaration for adequacy of revenues. It began characteristically enough, declaring for "limitation of railroad construction to the necessities and convenience of the government and the public"—a delicious bit of humor, as if superfluous railroad construction were a pressing national peril which must head any list of evils to be abated; but immediately following were these strange and unaccustomed words:

"and assuring construction to the point of these limitations."

My enthusiasm was warm while it survived. I read along through the statement of reasons underlying the pro-

posed limitation of railway construction, and came upon the statement of the thought underlying the assurance of construction to the point of limitation, which was this:

"that a railroad having been permitted, by public franchise, and the powers that go with it, to build into a given territory, it should be required to properly serve and develop that territory. And in developed territory it is important to provide for the extension of short branch or spur lines or spur tracks to communities and industries that should be served and that can furnish sufficient traffic to justify such extension."

Not a word about enabling the carrier to improve or extend; only power to require him to do so.

In the commission's bill the power to require construction is qualified by the following proviso: "That the commission shall find that such provision of facilities or extension is reasonably necessary in the interest of public convenience and will not impair the ability of the carrier to perform its duty to the public." In other words, the carrier must construct if it can spare the funds, but not even in case of public necessity for construction will the commission be directed by law to supply the carrier with the increased earnings necessary for the credit basis.

Except for this one false alarm, I have been unable to find a solitary phrase in any of the statements of the commission acknowledging that railway development needs encouragement and that a change in governmental policy is essential to that end.

Consolidations would be permitted under the commission's bill. Mr. Clark in his testimony mentioned as an advantage of this economies in use of railway plant. He did not mention the rate problem of the strong and the weak road, which for months has commanded the attention of all the leading railway economists, and for which a solution proposed by many of them is consolidation.

The bill confers upon the commission jurisdiction over minimum as well as maximum rates. Some of the advocates of the commission as the agency for restoring railway credit have predicted that if granted this new power they would do everything necessary in that direction. You remember what Judge Clark told you about that provision. The farthest he went was to point out that "the competition between carriers or the insistence of one carrier upon having its own way results in an unnecessary and unwarranted depletion of the revenues of all the carriers in a given situation."

He gave no endorsement to the idea that the revenue derived from the correction of such situation would build in the next year miles of track, freight cars and locomotives in capacity approaching the annual provision which was maintained in former years of vigorous development.

After he had analyzed the provisions of the bill section by section to the end, Judge Clark added the most startling statement that has come from the commission on the subject. In less than five minutes he did away with the need for any other evidence that a new and independent agency is required for the rehabilitation of railway credit. He turned back to a new provision which in its order he had passed without comment. I have previously quoted the provision to you in another connection.

No Problem, No Remedy, No Hope

If nothing which preceded had contained cause for astonishment occasion enough was afforded by his having been able to glance down that page, with that new matter staring at him in italics out of the context, and regard it as so trivial as to require no explanation.

The words are as follows:

"The commission in reaching its conclusion as to the justness and reasonableness of any rate, fare charge, classification, regulation or practice shall take into consideration the cost of labor and other operating costs in so far as they become material in any case under investigation."

Of that provision the commissioner said:

"I originally passed this by, but it seems desirable to comment on it a little. As a part of the statute, it develops the rule which the legislature contemplates shall be followed by the administrative tribunal."

And now mark what he says next:

"In actual practice it will not change the rule followed by the commission, because the commission has recognized that the necessary costs affect the net return."

The chairman then observed that the Traffic Club of Chicago had recommended the addition of the words "and the cost of capital," and asked the witness his views on that.

Judge Clark replied: "I think it would be entirely appropriate to include that, Mr. Chairman, because I cannot conceive of the commission ignoring it if it were pertinent and material to the issue."

The Chairman: "In view of the fact that you say the commission has always heretofore considered the cost of labor and operation—you have also considered the return on capital?"

Judge Clark: "Yes; we have considered the return on capital."

So here was a proceeding which began with a statement by the chairman that "One of the great problems we are to consider is the matter of credits, and credits involve the matter of rates"; a proceeding which followed with examination of a bill brought in by the commission purporting to require adequate rates and making the commission the agency for accomplishing such adequacy; a proceeding which then plunged to its anti-climax with an avowal by the representative of the commission that there is no great problem of rates in relation to credit, because the commission always has considered the return on capital, so that the new rule would not change its course in the least.

I submit, gentlemen, that the least eligible candidate you could find for the task of restoring railway development is a body which in the face of universal opinion here and throughout the country denies the existence of the problem and virtually promises to frustrate any attempt at a change of governmental attitude.

Men of Action for Getting Things Done

It is for these reasons that we advocate the creation of a Federal Transportation Board, which, having jurisdiction over security issues and hence over railway development, shall have the power that goes with the responsibility for results—the power of certifying to the commission the amount of revenue necessary to the public interest.

This would designate men of action for a task of getting things done. It would preserve this excellent and highly esteemed tribunal, the Interstate Commerce Commission, as a court to insure that in getting things done the men of action shall not ride rough shod over the citizens and communities who use the facilities.

Many of those who have made valuable contributions on various phases of the problem as a whole are yet to be converted into advocates of a Federal Transportation Board.

First, it is said that there is no support for such a board in the country.

If Senators and Representatives are as open-minded upon this aspect as they have given token of being on other aspects of the question, what validity is there to the argument that a recommendation should be withheld because they are not already in favor if it? If we knew that Congress favored a Federal Transportation Board it would be a waste of time for us to come and urge them to create it.

With regard to sentiment in the country evidence is accumulating. Our own association is a constituent member of

the Chamber of Commerce of the United States. One of the recommendations contained in the Chamber Referendum No. 28 was that a Federal Transportation Board be created. We conducted an internal poll among our members to determine how our association would vote. On the recommendation in question fewer than 5 per cent of those voting said "No" on that provision. All the constituent bodies in the Chamber throughout the country recorded a vote of 1,196 in favor to 245 opposed. The National Transportation Conference makes such a board the central piece of mechanism in its plan for rehabilitation of railway credit. The proposition is really just beginning to be explained to the public, and there is no reason whatever for dismissing the proposal as a project which has no chance of adoption and therefore is a futile feature of any program.

Another objection is that if such a board were to be created during the present administration the appointments made by the President would be of the same character as the appointments which he has made to the Interstate Commerce Commission. I hold no brief for the present chief executive, and happen to belong to another political party than his own, but the argument reduces itself to absurdity.

It is that citizens are willing to trust the commission, four of whose members were appointed by this same President, and which as a whole is practically organized and committed against any change of governmental policy, but are unwilling to trust a new board appointed by him, although the launching would be in the atmosphere and under the influence of a great constructive and non-partisan plan.

It is said in the third place that there is confusion and deadlock in co-ordinate tribunals. Amen and amen. The Railway Business Association is no advocate of co-ordinate authority. We desire to see the Interstate Commerce Commission supreme over the construction of rate schedules. We desire to see the Federal Transportation Board supreme over issuance of securities and over the amount of revenue necessary in the public interest.

With regret we have noticed that some of those who accept our idea of a certificate of public necessity for revenue would still leave with the commission some discretion as to whether it likes or not the estimate of the Federal Transportation Board. As well provide that the auditor of a commercial company be empowered to refuse to sign checks, if he believes that the purchasing authority has bought goods not needed by the company.

Weak and Strong Roads

The only other obstacle which has been specified to us is that the creation of a Federal Transportation Board would not solve the problem of the strong and weak road. The answer is that it would if it did and the Interstate Commerce Commission wouldn't if it didn't.

If your legislation shall provide a way of dealing with the problem of the strong and the weak road what possible difference can it make who is the agent for executing the plan provided that he is competent for the job and his instructions and power are in accordance with his responsibility?

What is involved is largely the exercise of business judgment. Without any moral obliquity and doubtless with the best intentions in the world, the temperament, training and environment of the Interstate Commerce Commission are all against that liberal provision of present earnings and surplus which a business executive insists upon as a margin of safety for future contingencies.

It is proposed that Congress shall so prescribe the duty and authority of the Federal Transportation Board that the President will have a perfectly clear definition of the qualifications of its members and will select his nominees accordingly.

To say that Congress cannot frame an authorization and the American people cannot through their chief executive establish a competent agency to effectuate the national will is to assert fundamental pessimism concerning our American experiment in self-government. Your present deponent believes we are justified rather in a glowing optimism, and if there were no other warrant for that sentiment we believe it is to be found in the quest and discovery six years ago of the soundest banking and currency system anywhere in the world.

For Congress to enact a scheme sound and strong in every other detail and present it to the public as possessing the same finality as the federal reserve legislation of 1914, but designating the Interstate Commerce Commission as the agent of rehabilitation would be to settle nothing and accomplish nothing. It probably would mean government ownership in ten years if not in five, with all the evils which have attended that system wherever tried. We cannot believe you will take the risk.

Doings of the Railroad Administration

WASHINGTON, D. C.

SOME ADDITIONAL information regarding the number and compensation of railroad employees is likely to be made available as a result of a resolution proposed by Senator Cummins and passed by the Senate on August 21, calling on the director general to furnish to the Senate as soon as practicable the following information:

The number of employees of each class engaged on the class I railroads under federal control in the United States for each month from January to July, 1919, and also for the month of December, 1917; the amount of their compensation; the number of hours or days work; and the compensation per hour or per day for each of said months and for each class of employees, such as engineers, firemen, conductors, brakemen, shopmen, and each of the other classes as shown by the records of the Railroad Administration; also the percentage of change between December, 1917, and the last month of 1919 for which there are available records, both in the unit of compensation and in the average compensation per employee of each class; also to attach to the report on this resolution copies of all orders making advances in wages and of all schedules explanatory thereof.

This will make public some of the up-to-date statistics on wages which the Railroad Administration has been keeping to itself, but as it goes back only to 1917 it will show only the increases in wages made by the Railroad Administration, and not the full effect of the increases made during 1915, 1916 and 1917 by the railroad companies.

Contracts Executed

The Railroad Administration has executed compensation contracts with the Chicago, Indianapolis & Louisville, for $1,620,000, the Texas & Pacific for $4,107,432, and with the Pullman Company for $11,750,000. A short line contract has also been executed with the Missouri Southern.

The Cleveland Railways Company has taken out $10,110,000 insurance policy against "riot and civil commotion," paying a premium of $37,110. The policy covers 90 per cent of the company's line and is written by four western insurance companies.

The total annual freight bill of the lumber industry is estimated at about $215,000,000. Lumber and forest products furnish about 11 per cent of the total tonnage of the American railroads or about 215,000,000 tons yearly, according to Interstate Commerce Commission statistics. This total is greater than the movement of all agricultural products and is exceeded only by the tonnage of general manufactures and mine products.

President Calls a Halt on Wage Increases

Says Insistence on Unwise Demands at This Time Menace Peace and Prosperity of the Country

WASHINGTON, D. C.

PRESIDENT WILSON and Director General Hines have decided that there shall be no new cycle of wage increases for railroad employees. This is on the ground that the increases already granted by the Railroad Administration and by the railroad companies during the two years preceding federal control have kept pace with or exceeded the increase in the cost of living up to date, and that further advances in railroad wages are not warranted by comparison with other wages, and would merely result in a further increase in the cost of living, which the government is now bending every effort to reduce.

"The way to re-establish the pre-war purchasing power of wages," Mr. Hines says, "is to reduce the cost of production, not to increase it."

Whether the decision would be accepted by the labor organizations, however, is still uncertain. The shop craft unions whose demands were directly involved, have formally rejected the offer of a small increase in wages by way of a readjustment and are taking a new strike vote.

The railroad shop employees who have been pressing their demands for higher wages since January, having received two increases in 1918, and who had just taken a vote authorizing their officers to call a strike unless their new demands were granted, were awarded an increase of 4 cents an hour to make up for the fact that they did not receive 10 hours' pay for 8 hours' work at the time other railway employees had their wages adjusted in that way, and some other minor adjustments, retroactive to May 1, for all employees who do not leave the service pending the completion and adoption of a national agreement with the shopmen's organizations.

The President's decision, based on a recommendation from Director General Hines, who had been in frequent conference with him on the subject, was communicated to the committee of 100 representing the shop craft unions affiliated with the American Federation of Labor at the White House on Monday, August 25. In his statement to the committee, and in another addressed to the public, the President also spoke indirectly to the other railroad labor organizations that either have presented or have been preparing demands for further wage increases, as well as to labor generally, when he said that questions of general wage increases ought to be postponed until the return of normal conditions, and, with undoubted reference to various strike votes now being taken, he added: "Demands unwisely made and passionately insisted upon at this time menace the peace and prosperity of the country as nothing else could, and thus contribute to bring about the very results which such demands are intended to remedy."

That his position with reference to the shopmen's demands, which represented the first effort to begin a new wage cycle for railroad employees, also applies to other demands was indicated in the President's statement that "the position which the government must in conscience take against general increases in wage levels while the present exceptional and temporary circumstances exist," will not preclude the Railroad Administration from considering claims by other classes of employees for readjustments intended to establish the proper relationship between various classes of employees. It was made unmistakably clear, however, that the President and the director general do not intend to be influenced by strike threats to grant any further general increases at this time except such as may result from effects to effect equalizations.

The President's statement also indicated that any decision as to increases in freight rates must also be postponed until more normal conditions are restored, on the ground that it is impossible at present to estimate the earning capacity of the railroads and that there is no certain basis for calculating what the increase in freight rates should be. Both he and Mr. Hines are anxious to concentrate every energy on the campaign to reduce the cost of living and are unwilling to take any step that will tend in the other direction by giving any excuse for further increases in prices.

Director General Hines and representatives of the divisions of operation and of labor of the Railroad Administration resumed negotiations with the representatives of the Railway Employees' Department of the American Federation of Labor, representing the shop crafts, on August 20, following the receipt of final information that the unauthorized strikes of shopmen on various roads had been concluded. Later in the day Mr. Hines went to the White House, and on Saturday, August 23, he again called on the President, giving him a complete report of his recommendations on which the President decided to take personal action. On Monday the shopmen's committee was called to the White House to receive the final decision from the President, and a copy of Mr. Hines' report, the President's statement to the shopmen and another statement to the public were given out. The public statement is as follows:

President Wilson's Statement to the Public

My Fellow Citizens:

A situation has arisen in connection with the administration of the railways which is of such general significance that I think it my duty to make a public statement concerning it, in order that the whole country may know what is involved.

The railroad shopmen have demanded a large increase in wages. They are now receiving 58, 63 and 68 cents per hour. They demand 85 cents per hour. This demand has been given careful and serious consideration by the board which was constituted by the Railroad Administration to adjust questions of wages, a board consisting of an equal number of representatives of employees and of the operating managers of the railroad companies. This board has been unable to come to an agreement, and it has therefore devolved upon the Director General of Railroads and myself to act upon the merits of the case.

The shopmen urge that they are entitled to higher wages because of the higher wages for the present received by men doing a similar work in shipyards, navy yards, and arsenals, as well as in a number of private industries, but I concur with the director general in thinking that there is no real basis of comparison between the settled employment afforded mechanics by the railroads under living conditions as various as the location and surroundings of the railway shops themselves and the fluctuating employment afforded in industries exceptionally and temporarily stimulated by the war and located almost without exception in industrial centers where the cost of living is highest.

The substantial argument which the shopmen urge is the very serious increase in the cost of living. This is a very potent argument indeed. But the fact is that the cost of living has certainly reached its peak, and will probably be lowered by the efforts which are now everywhere being concerted and carried out. It will certainly be lowered so soon

as there are settled conditions of production and of commerce; that is, so soon as the Treaty of Peace is ratified and in operation, and merchants, manufacturers, farmers, miners, all have a certain basis of calculation as to what their business will be and what the conditions will be under which it must be conducted. The demands of the shopmen, therefore, and all similar demands are in effect this: That we make increases in wages, which are likely to be permanent, in order to meet a temporary situation which will last nobody can certainly tell how long, but in all probability only for a limited time. Increases in wages will, moreover, certainly result in still further increasing the costs of production and, therefore, the cost of living, and we should only have to go through the same process again. Any substantial increase of wages in leading lines of industry at this time would utterly crush the general campaign which the government is waging, with energy, vigor and substantial hope of success, to reduce the high cost of living. And the increases in the cost of transportation which would necessarily result from increases in the wages of railway employees would more certainly and more immediately have that effect than any other enhanced wage costs. Only by keeping the cost of production on its present level, by increasing production, and by rigid economy and saving on the part of the people can we hope for large decreases in the burdensome cost of living which now weighs us down.

The director general of railroads and I have felt that a peculiar responsibility rests upon us, because in determining this question we are not studying the balance sheets of corporations merely, we are in effect determining the burden of taxation which must fall upon the people of the country in general. We are acting, not for private corporations, but in the name of the government and the public, and must assess our responsibility accordingly. For it is neither wise nor feasible to take care of increases in the wages of railroad employees at this time by increases in freight rates. It is impossible at this time, until peace has come and normal conditions are restored, to estimate what the earning capacity of the railroads will be when ordinary conditions return. There is no certain basis, therefore, for calculating what the increases of freight rates should be, and it is necessary, for the time being at any rate, to take care of all increases in the wages of railway employees through appropriations from the public treasury.

In such circumstances it seems clear to me, and I believe will seem clear to every thoughtful American, including the shopmen themselves when they have taken second thought, and to all wage earners of every kind, that we ought to postpone questions of this sort until normal conditions come again and we have the opportunity for certain calculation as to the relation between wages and the cost of living. It is the duty of every citizen of the country to insist upon a truce in such contests until intelligent settlements can be made, and made by peaceful and effective common counsel. I appeal to my fellow citizens of every employment to co-operate in insisting upon and maintaining such a truce, and to co-operate also in sustaining the government in what I conceive to be the only course which conscientious public servants can pursue. Demands unwisely made and passionately insisted upon at this time menace the peace and prosperity of the country as nothing else could, and thus contribute to bring about the very results which such demands are intended to remedy.

There is, however, one claim made by the railway shopmen which ought to be met. They claim that they are not enjoying the same advantages that other railway employees are enjoying because their wages are calculated upon a different basis. The wages of other railway employees are based upon the rule that they are to receive for eight hours' work the same pay they received for the longer workday that was the usual standard of the pre-war period. This claim is, I am told, well founded; and I concur in the conclusion of the director general that the shopmen ought to be given the additional four cents an hour which the readjustment asked for will justify. There are certain other adjustments, also, pointed out in the report of the director general, which ought in fairness to be made, and which will be made.

Let me add, also, that the position which the government must in conscience take against general increases in wage levels while the present exceptional and temporary circumstances exist will of course not preclude the Railroad Administration from giving prompt and careful consideration to any claims that may be made by other classes of employees for readjustment believed to be proper to secure impartial treatment for all who work in the railway service.

In addressing the committee the President asked them to disregard the strike vote which had been received on August 24, and took occasion to try to calm their frequently expressed fears that the railroads would attempt to reduce wages after the return of the roads to private control. In this statement President Wilson said:

Statement by the President to Railway Employees' Department of Federation of Labor

I request that you lay this critical matter before the men in a new light. The vote they have taken was upon the question whether they should insist upon the wage increase they were asking or consent to the submission of their claims to a new tribunal, to be constituted by new legislation. That question no longer has any life in it. Such legislation is not now in contemplation. I request that you ask the men to reconsider the whole matter in view of the following considerations, to which I ask their thoughtful attention as Americans, and which I hope that you will lay before them as I here state them.

We are face to face with a situation which is more likely to affect the happiness and prosperity, and even the life, of our people than the war itself. We have now got to do nothing less than bring our industries and our labor of every kind back to a normal basis after the greatest upheaval known to history, and the winter just ahead of us may bring suffering infinitely greater than the war brought upon us if we blunder or fail in the process. An admirable spirit of self-sacrifice, of patriotic devotion, and of community action guided and inspired us while the fighting was on. We shall need all these now, and need them in a heightened degree, if we are to accomplish the first tasks of peace. They are more difficult than the tasks of war—more complex, less easily understood—and require more intelligence, patience and sobriety. We mobilized our man power for the fighting, let us now mobilize our brain power and our consciences for the reconstruction. If we fail, it will mean national disaster. The primary first step is to increase production and facilitate transportation, so as to make up for the destruction wrought by the war, the terrible scarcities it created, and so as soon as possible relieve our people of the cruel burden of high prices. The railways are at the center of this whole process.

The government has taken up with all its energy the task of bringing the profiteer to book, making the stocks of necessaries in the country available at lowered prices, stimulating production, and facilitating distribution, and very favorable results are already beginning to appear. There is reason to entertain the confident hope that substantial relief will result, and result in increasing measure. A general increase in the levels of wages would check and might defeat all this at its very beginning. Such increases would inevitably raise, not lower, the cost of living. Manufacturers and producers of every sort would have innumerable additional pretexts for increasing profits and all efforts to discover and defeat profiteering would be hopelessly confused. I believe that

the present efforts to reduce the cost of living will be successful, if no new elements of difficulty are thrown in the way, and I confidently count upon the men engaged in the service of the railways to assist, not obstruct. It is much more in their interest to do this than to insist upon wage increases which will undo everything the government attempts. They are good Americans, along with the rest of us, and may, I am sure, be counted on to see the point.

It goes without saying that if our efforts to bring the cost of living down should fail, after we have had time enough to establish either success or failure, it will of course be necessary to accept the higher cost of living as a permanent basis of adjustment, and railway wages should be readjusted along with the rest. All that I am now urging is, that we should not be guilty of the inexcusable inconsistency of making general increases in wages on the assumption that the present cost of living will be permanent at the very time we are trying with great confidence to reduce the cost of living and are able to say that it is actually beginning to fall.

I am aware that railway employees have a sense of insecurity as to the future of the railroads and have many misgivings as to whether their interests will be properly safeguarded when the present form of federal control has come to an end. No doubt it is in part this sense of uncertainty that prompts them to insist that their wage interests be adjusted now rather than under conditions which they cannot certainly foresee. But I do not think that their uneasiness is well grounded. I anticipate that legislation dealing with the future of the railroads will in explicit terms afford adequate protection for the interests of the employees of the roads; but, quite apart from that, it is clear that no legislation can make the railways other than what they are, a great public interest, and it is not likely that the President of the United States, whether in possession and control of the railroads or not, will lack opportunity or persuasive force to influence the decision of questions arising between the managers of the railroads and the railway employees. The employees may rest assured that, during my term of office, whether I am in actual possession of the railroads or not, I shall not fail to exert the full influence of the Executive to see that justice is done them.

I believe, therefore, that they may be justified in the confidence that hearty co-operation with the government now in its efforts to reduce the cost of living will by no means be prejudicial to their own interests, but will, on the contrary, prepare the way for more favorable and satisfactory relations in the future.

I confidently count on their co-operation in this time of national test and crisis.

Director General Hines' Report

Mr. Hines' report to the President, dated August 23, is as follows:

In view of the importance both to the railroad employees and to the public of the wage demands of the shop employees, and in view of the intimate relationship between that subject and the all-important subject of the cost of living, I feel it my duty to make this report to you for action by you if you wish to take personal action in regard to it.

The responsibility rests upon me to decide upon its merits the claim of the railroad shopmen for the following increases:

	Now receiving Cents	Requested Cents	Increase Cents
Machinists	68	85	17
Toolmakers	68	90	22
Boilermakers	68	85	17
Riveters	68	85	17
Blacksmiths	68	85	17
Sheet metal workers	68	85	17
Electricians	68	85	17
Car inspectors	58	85	27
Car repairers	58	85	27
Car repairers, steel	63	85	22
Helpers	45	60	15

Note.—These figures represent only the principal classes.

This demand was considered by the Board of Railroad Wages & Working Conditions, a board constituted last year by the Railroad Administration to consider wage matters, and consisting of three representatives of labor and three representatives of the railroad managements. On the question of any general increase to the shopmen, the board divided equally, the three labor members favoring an increase to a basis of 80 cents and the three management members opposing any general increase whatever, although expressing the opinion that unless the cost of living could be controlled, there would need to be a further general increase in wages. This is the first time when this board has thus divided on the question of a general wage increase presented to it. In every other case the board has been in agreement upon the proposition that there ought to be a general increase, although in some cases its members have been slightly apart as to the extent of the general increase. In this case three members of the board, who in all other cases have been in favor of a general increase, have thus opposed any increase whatever for the entire class of employees.

I believed it would be more satisfactory both to the employees and to the public to have this grave problem considered and disposed of by a commission created by new legislation. Recommendation to that effect was submitted to the appropriate committees of the Senate and the House, but the unanimous adverse action of the Senate committee made it clear that such a course would not be pursued.

It is also true that the employees themselves vigorously objected to my suggestion and insisted that the matter should be decided by me.

Since the subject must be dealt with, and no other method has been or is to be provided, it follows that it must be dealt with by the director general under the powers conferred upon the President by the Federal control act, and this must be done without the aid of any action by the wage board.

I approach this matter with the clearest conviction that the railroads must be conducted now and for all time in the future in such a way as to give to railroad employees an adequate compensation and a liberal share in the returns from railroad operation. This is not only justly due to the employees who make possible the rendition of the service but it is obviously in the interest of good service. It is true now, and will be true to a continually increasing extent in the future, that a state of contentment on the part of railroad labor will be indispensable to efficient railroad service and this contentment cannot exist unless the evidence of fair treatment is so clear that it will carry conviction to the railroad employees themselves.

I have, after the most careful possible study, and after considering everything presented on behalf of the railroad shop employees, reached the following conclusions:

The main contention of the shop employees is that their demands are just because of the rates paid in the ship yards, navy yards and arsenals. The basic rate in the ship yards was 80 cents at the time the shopmen presented their demands, and an increase effective October 1 next has just been made in an agreement (to which the government was in no way a party) between the employees and the ship builders on the Pacific coast. After the most careful consideration, I can see no escape from the conclusion that the rates paid in the shipyards cannot be adopted as a measure for the rates to be paid in the railroad shops. The conditions are fundamentally different. The work performed by employees classed as railroad shop employees is performed in every city and in every railroad town of considerable size in the United States. The principal railroad shops are not in the largest cities and many of the principal shops are in towns or cities of relatively small size. At the urgent instance of the employees, the rates for all these shopmen throughout the United States, whether in large cities, small cities or towns or virtually rural

communities, have been standardized on uniform bases. It cannot be, therefore, that these standardized rates can be put so high as to reflect the conditions prevailing in the relatively few industrial centers where shipbuilding was developed under high pressure during the war. Not only are the shipyards practically without exception in densely populated centers but employees had to be attracted to those yards in time of war in competition with munition plants and others paying exceptionally high wages, and the employees who were attracted to those yards had to establish themselves in these densely populated centers with particularly costly living conditions. In order to meet the keen competition of other war industries and to build up the forces of men in the shipyards exceptional rates had to be provided.

The work in the railroad shops not only offers year in and year out (despite the fluctuations incident to changes in the volume of business) reasonably steady employment, but also offers a practically permanent career. On the other hand shipbuilding represents to a large extent a temporary employment. This is brought out clearly by the following showing which is actual up to August 15, 1919, and estimated beyond that date, as to the employees who have been and will be employed in the shipyards so far as the present governmental program is concerned:

Date	Number of shipbuilders	Date	Number of shipbuilders
January, 1914	48,700	June, 1919	354,625
January, 1916	78,100	Dec. 31, 1919	250,804
January, 1918	144,600	June 30, 1920	230,000
November, 1918	373,622	Dec. 31, 1920	153,000
January, 1919	361,211	June 30, 1921	0

Note.—These figures do not include, as I understand it, members of office forces, but only include the men engaged in ship construction and men employed in fabricating shops and all other shops actually a part of the shipyard plant.

It is perfectly clear to me that the people of the United States cannot be committed to the policy that the wages of railroad shopmen in every city, town and village in the United States must be brought up to a basis created in an emergency and in a largely temporary war undertaking, concentrated in a comparatively few densely populated industrial centers where living conditions are exceptionally expensive and difficult, so that I conclude that the principal contention of the shop employees cannot be adopted.

Of course if the employees themselves were willing to accede to a plan whereby the wages of railroad shopmen in each community should be made with reference to the average wages in that community, other considerations would have weight. But the employees are insistent that the same wage scale shall be paid in every place in the United States, regardless of its size or of local living conditions, and as this principle has been adopted it necessarily follows that exceptional conditions in exceptional communities cannot be taken as the standard for the wages of railroad shopmen.

The conditions in the navy yards and arsenals cannot, largely for the reasons already stated, be taken as controlling; moreover, it has generally been recognized that the rates therein should reflect local conditions in the particular communities and they have not been standardized at all except for a temporary standardization for the war to correspond with the shipyard rates.

It is further urged by the employees that the rates they receive are below those paid in private industries for similar labor. The employees cite various instances of rates in excess of 80 cents for work of this character, but these citations merely refer to conditions in specific communities. It must also be remembered that to a large extent private industries themselves were influenced to an exceptional degree by the war conditions, enjoying the most exceptional profits and paying unusually high wages to meet emergency requirements. But no convincing evidence has been presented that the average of the wages paid in private industries generally, or in those paying union scales of wages, throughout the United States for similar labor was or is substantially higher than the rates paid by the Railroad Administration.

I myself have collected the available information from the Department of Labor and that indicates that the average rate paid the principal metal trades in private industries, having union scale of wages, was at May 15, 1919, probably not more than 3 cents in excess of the 68 cent rate paid to the railroad shop employees. It is a question whether even as to private industries the advantages of work in railroad shops, including the advantage of substantial amounts of free transportation, do not make it reasonable for the railroad shops to have a differential under the rates paid in other private industries. This question, however, need not be decided because the decision made below will make the rates for the railroad shop employees in excess, if anything of average rates shown in the evidence thus obtainable from the Department of Labor for private industries.

In making comparisons for work of similar character between wages in the railroad industry and wages in private industries, due consideration must always be given to the fact that private industries are frequently able to increase their prices to the public without difficulty to offset, and more than offset, increases in wages, so that to a very considerable extent the wages fixed in private industries are fixed without any representation, either direct or indirect, of the general public which eventually must pay the bill. On the contrary the railroads whether under public or private control cannot increase the prices they charge, i.e., their transportation rates, except with the sanction of public authority. So the question must be viewed from the public standpoint as well as from the standpoint of the employees. This necessitates the most careful scrutiny of rates of pay which have been fixed by industries enjoying tremendous profits which are not subject to public control. Of course the wages paid railroad employees must be not only reasonable in themselves but reasonably satisfactory to the employees, and necessarily the geneal average rates normally paid elsewhere in permanent private industries for similar services, are an important factor for consideration. But the distinguishing conditions must never be ignored.

The further claim is made that the cost of living has increased. In a letter of August 5, 1919, signed by the executives of the six railroad shopmen's organizations, and also by the executives of the eight other organizations of railroad employees, including the various organizations of train and engine men, of telegraphers, maintenance of way men, clerks, the proposition is laid down that railroad employees are entitled to compensation which will, at least, re-establish the pre-war purchasing power of their wage.

The way to re-establish the pre-war purchasing power of wages is to reduce the cost of production and not to increase it.

The government is now taking vigorous steps to reduce the cost of living and is meeting with gratifying progress. This great work would be arrested if not defeated through the present adoption of the policy of moving up wages so as to reflect fully what is probably the very top-notch of the high cost of living. Such a movement would tend to increase still further the cost of living and injure every working man as well as every other person in this country.

In a statement presented to the President on July 30, W. S. Stone, president of the Brotherhood of Locomotive Engineers, said:

"We believe the true remedy for the situation, and one that will result in lifting the burden under which the whole people are struggling is for the government to take some adequate measures to reduce the cost of the necessaries of life to a figure that the present wages and income of the people will meet. Should this not be considered feasible, we will be forced to

urge that those whom we represent be granted an increase in wages to meet the deterioration of the purchasing power of the dollar, be that what it may, which can be easily determined by competent authority."

W. G. Lee, president of the Brotherhood of Railroad Trainmen, in a summary of a statement made by him before the Board of Railroad Wages and Working Conditions and given to the press by him on July 31, stated that an increase in wages was not the proper solution of the present economic stress under which working men are laboring because they will be followed by new increases of cost of everything which would more than absorb the additional pay.

I therefore believe it would be unfair for the general public, subversive of the efforts which the government is making to reduce the cost of living, and injurious to railroad employees themselves, for the railroad Administration at this time to adopt the principle of moving up wages of all railroad employees so as to reflect the highest point yet reached in the high cost of living. Such action would mean inevitably an increase in freight rates which would stimulate an increase in the cost of everything consumed by the public and would give innumerable pretexts for covering up additional unwarranted increases in prices on the claim that such increases will be necessitated by the increased cost of railroad transportation. As a matter of fact the rates of pay and also the earnings of many subdivisions of classes of railroad employees have already been so advanced as to be ahead of the highest point yet reached in the general average increase in the cost of living in the country. Any effort to adopt that high point as the minimum level for all railroad wages will be highly detrimental to the public interest.

I have consistently urged throughout this calendar year that the greatest problem before the country is a reduction in the cost of living and one of the greatest obstacles in the way of such reduction would be substantial increases in transportation rates. I am convinced that it is not reasonable from the standpoint of the public and would not be beneficial from the standpoint of railroad employees to make an increase in wages in the effort to overtake the high cost of living, since the increase would thereby result in putting cost of living that much further out of reach and would seriously obstruct the efforts now being successfully undertaken to bring down the cost of living.

In this connection it is proper to say that if railroad shop employees be viewed as a class it appears from the best data available that, comparing the total earnings of those employees now with their total earnings in the year ending June 30, 1915, the average increase in their earnings is somewhat in excess of the total increase in the cost of living from July 1, 1915, to August 1, 1919. This comes about by the fact that in carrying out the policy of standardization so strongly urged by the railroad employees great numbers of men employed in railroad shops were given the benefit of a higher classification which entitled them to wages much in excess of the increases indicated by the mere difference between the old rates of pay and the new rates of pay. While it is true that those railroad shop employees who enjoyed the highest scale of wages prior to the war may not have received an increase fully commensurate with the increase in the cost of living it is also true that great numbers of those employees have received increases substantially in excess of the increase in the cost of living. This condition however should afford no basis for the claim that the total increase already given to railroad shop employees is excessive, because I do not believe that such is the case. On the contrary, I believe the railroad shop employees were fairly entitled as a whole to the increases in wages provided and are also fairly entitled to the additional increase next below mentioned.

There has been insistent contention that while all other classes of railroad employees have had their wages adjusted in such manner that they receive an increased wage in addition to receiving 10 hours pay (in the pre-war period) for eight hours' work, this same treatment was not accorded to the shopmen. While it has been urged with equal insistence that the shopmen got offsetting advantages, it seems to me it is true that in this specific matter the shopmen did not receive the benefit of equal treatment. On that account it seems to me fair in all the circumstances to recognize this condition by giving the shop employees a rate of 72 cents instead of 68 cents for the classes now receiving 68 cents.

Under Supplement 4 to General Order 27 and an addendum to that supplement, two different rates have been provided for car repairers, one a rate of 63 cents for steel freight car repairmen and another a rate of 58 cents for wooden freight car repairmen. This distinction has been difficult to maintain and has been the source of dissatisfaction and there is general agreement among the members of the wage board that the condition ought to be remedied (although the labor representatives think it ought to be remedied by increasing the rates for all car repairers to the highest rates).

I therefore conclude, that, except as stated below, the rate for all freight car repairmen who by Supplement 4 to General Order 27 and the addendum thereto were intended to receive either 58 cents or 63 cents shall receive 67 cents per hour. There has been great dissatisfaction because car inspectors generally have received only the rate of 58 cents notwithstanding the fact that steel freight car repairmen have received the rate of 63 cents. My conclusion is that, except as below stated, car inspectors should receive the same rate as above indicated for freight car repairmen and therefore should receive 67 cents per hour.

The exceptions above referred to as to freight car repairmen and as to car inspectors are as to such employees at outlying points other than shops and main line terminals at which points the work, generally speaking, is not continuous. The increase for freight car repairmen and car inspectors at such outlying points will be 4 cents per hour. The determination as to the points where the freight car repairmen and car inspectors who according to this principle get only the 4 cents increase will be taken up in conference with the representatives of the shopmen with a view to arriving at a reasonable and definite working rule.

As to all other classes covered by Supplement No. 4 and not above specifically dealt with, the rate of increase shall be 4 cents per hour.

Ever since last September it has been the settled principle of the Railroad Administration to make wage orders retroactive to a date approximating the date upon which the Board of Railroad Wages and Working Conditions made its report and in this instance that report was made on July 16. The conditions here, however, are peculiar in that the action of the wage board has been delayed for an exceptional length of time, the presentation to the wage board having been made last February. In these circumstances it seems to me that, as a part of a negotiation of a national agreement, the changes above indicated could properly be made effective as of May 1, 1919, and the Railroad Administration is willing to make these changes in rates of pay effective as of that date for all employees who do not leave the service pending the completion and adoption of a national agreement with the shopmen's organizations.

In opening the conference with the shop committee on August 20, the director general made it clear that as the representative of the President and of the public, it was necessary for him before acting on the demands for increased wages to have before him adequate information covering the subject in order to determine whether all or any part of the requests of the shopmen for increased wages was justified by the facts. He explained that he had obtained such information as was available from the railroad managements, in-

cluding the facts they had obtained from other industries. In order to develop these facts further, he stated that he understood the claims of the shopmen raised the following questions:

1. Are the wages now paid shopmen in railroad employ on a fair basis compared with the wages paid shopmen doing comparable work in private industries outside of the railroads?

2. Are the wages paid railroad shopmen comparable with the wages paid shopmen doing similar work in ship yards, navy yards and arsenals under government control, and is employment in the shops of the railroads in fact comparable at all with employment in the shops of these other governmental agencies, particularly with regard to the wages established in those other governmental agencies during the war period?

3. Does the increased cost of living at the present time, as compared with the pre-war period and the increases in wages given to shopmen on railroads in the same period, justify further advances in wages to railroad shopmen?

Taking up these three propositions separately, the representatives of the shopmen claimed (1) that wages of railroad shopmen are materially lower than the wages paid shopmen in outside private industries, and that even since the signing of the armistice material advances in wages had been given to shopmen employed in such outside private industries; (2) that the wages paid shopmen in ship yards, navy yards and arsenals under government control have been and are materially higher than the wages paid shopmen on railroads, and that the two industries are comparable because the basis on which the wages in these outside governmental industries have been based had no direct connection with the war, but had direct connection only with a fair basis of wages prior to the war and increases in the cost of living since that time; and (3) that the demands for increased wages paid railroad shopmen did not rest primarily on the increased cost of living, although that it was an important contributing factor, but rested primarily on the proposition that the wages of shopmen ought to be increased so as to be more in line with wages for similar work in other industries.

Shop Employees Take New Strike Vote

After having received the President's decision the executives of the shop unions called on Mr. Hines to ask if the decision was final, and when informed that it was, they went into conference to plan their course of procedure. Ballots were still being counted on the vote as to whether the leaders should be authorized to call a strike or whether they should accept the plan which was abandoned after the strike ballots were sent out, for the submission of the demands to a special tribunal.

On Tuesday the committee representing the shopmen formally advised Mr. Hines that they could not accept the offer, and an order was issued for a new strike vote. With the order were sent copies of the President's statement, at his urgent request, and also of Mr. Hines' proposition with the request that they be given most careful consideration at a summoned or called meeting of each craft. The letter to the officers and members of the unions calling for the vote stated that the director general had declared that the proposition was final and that there would be no wage increase granted to any other class of railroad employees as a class, but that in the event of unjust inequalities, as between individuals, adjustments involving increases to equalize rates of pay would be made where justified, except under the conditions stated in the fourth paragraph of the President's statement.

"Knowing the sentiment of the membership," the letter stated, "your committee, after duly considering the proposition, advised the director general that they could not accept as a basis of settlement the rates established in his proposition, as submitted by the President.

"Practically every class of railroad employees have now submitted requests for substantial increases over existing rates of pay. It is well that our members give very serious consideration to this fact, if there is to be any additional general increase in the wages of railroad employees, the federated shop trades will receive the same consideration. Don't fail to give this statement careful thought and don't forget that if the federated shop trades become involved in a strike now, you are striking alone to force an increase for the two million railroad employees.

"In view of the foregoing facts, the statements contained in the President's letter and the responsibility that must be assumed if a suspension of work is to take place, your executive council has decided that it would fail in its duty were it to authorize a strike until the membership have had an opportunity to decide their course of action on this proposition. It is not our intention to shirk any of our responsibilities as executive officers and the wishes of a constitutional majority of the membership, expressed by their vote as hereinafter directed, will be carried out. Until the wage question has been disposed of there will be no action taken in connection with reaching a conclusion on the national agreement."

Then follow instructions for taking the vote, which is to be returned at once. "Pending the issuance of the official strike order (provided the members vote to strike) it is earnestly requested that every member shall remain at work." It is also stated that owing to the large number of members involved, it must be understood that the respective international organizations will not be obligated to pay regular strike benefits beyond the limits of the funds available for that purpose.

This letter was much less belligerent than a circular issued by B. M. Jewell, acting president of the Railway Employees Department of the American Federation of Labor, and the executives of the shop unions, under date of August 5, giving instructions for the plans and methods to be followed in case of a strike resulting from the vote which was returnable on August 24. In this it was stated that, "If it comes to a strike we want to make the tie-up complete and keep it in that condition until we get the proper recognition from those that can give it to us. Our success depends entirely upon how we can stop the transportation service of the country. If it comes to a strike we must make it the most effective one in the history of this country." In presenting a copy of this in the Senate on August 23, Senator Thomas of Colorado said: "I merely wish to say, in comment upon this remarkable document, that it is a perfectly legitimate development of the action of Congress in 1914 in exempting organizations of men from the operation of the anti-trust law."

Wage Board May Take Up Adjustments

Director General Hines has addressed a letter to A. O. Wharton, chairman of the Board of Railroad Wages and Working Conditions, to define the functions which it is appropriate for it to perform in view of the decision announced by the President.

"The position of the government," he says, "is that in view of its campaign to reduce the cost of living, and of the strong prospects that substantial relief will be achieved, it is not proper now to make general increases in wages on the assumption that the present cost of living will be permanent, and that pending the efforts of the government to bring down the cost of living, the higher costs of living ought not to be accepted as a permanent basis of wage adjustment; although it is recognized that if the efforts of the government to bring down the cost of living should fail, railroad wages should be readjusted in the light of any permanent

higher living costs which would thereby have to be recognized.

"The President has also made it clear, however, that the Railroad Administration is not precluded from giving prompt and careful consideration to any claims that may be made by the various classes of employees for readjustments believed to be proper to secure impartial treatment for all railroad employees.

"I therefore request that you take up promptly the claims which have already been presented and those which are to be presented by any classs of railroad employes to the effect that either for their classes as a whole or for any subdivisions of those classes, readjustments ought to be made in order to make sure that equal treatment is done on the basis of the general principles of wage adjustment which the Railroad Administration has already established.

"It has been our constant endeavor since the first wage adjustments were made by the Railroad Administration to deal fairly and impartially with all classes of railroad employees. The situation is so complex that absolute perfection in this regard is unattainable. Nevertheless, our experience up to the present time may in all probability develop that certain relative injustices may have been unintentionally done, and it should be our purpose promptly to correct these injustices.

The Railroad Administration has been firmly committed to the policy since last September that it cannot make wage adjustments retroactive back of a date approximating the date upon which your board makes its report, because otherwise there would be unending confusion and all effort to get a measure as to the cost of conducting the railroads at any given time in the past would be rendered hopeless. I therefore hope that your board will be able to report promptly upon any inequalities which may be found to exist, to the end that any correction which the director general may find appropriate can be made effective at the earliest justifiable date in accordance with the policy of the Railroad Administration.

"In all such matters the board will be expected to report not only a statement of facts and its conclusions upon the facts, but also its recommendation."

From the Columbus (O.) State Journal

Precedent

Coal Association Says Transportation Is Insufficient

THE RAILROAD ADMINISTRATION is not furnishing enough transportation to insure production and shipment of sufficient bituminous coal to meet the requirements of the nation this year, John Callahan, traffic manager of the National Coal Association, testified before the Senate committee investigating the coal situation.

"Car shortages caused the coal mines to fail to produce 5,900,000 tons of coal during the weeks ending August 2 and August 9," Mr. Callahan said. "This is sufficient coal to supply the requirements of the state of New Jersey for ten months. The difficulty to-day is a transportation deficiency and not a car shortage alone. Coal is one of the few commodities which cannot wait on transportation. It is physically impossible in many instances to bring coal to the surface and store it. "Moreover, the proper place to store coal is at the point of consumption, where it will be available when required for use. Railroad cars must be ready when the coal is brought out of the ground.

"Many mines are idle to-day on account of no cars. Two hundred and eighty-five mines were idle because of car shortage in one West Virginia district during the week ended July 26. This was before the shop men's strike. Ninety-seven mines in this district failed to go to work in one day while many others only worked part time that day.

"The total bituminous coal lost through lack of railroad cars at the mines from the week ending June 7 to the week ending August 9, inclusive, was 12,251,762 tons, distributed by weeks as follows—June 7, 338,996; June 14, 655,190; June 21, 936,662; June 28, 644,149; July 5, 385,485; July 12, 428,359; July 19, 1,146,075; July 26, 1,764,264; August 2, 2,311,402; August 9, 3,591,180. This means 245,000 cars, or 7,000 train loads. This is more than six months' supply for all of the New England states; and this loss occurred in 10 weeks only.

"Since July 12, this shortage has been increasing by leaps and bounds. These figures are based on the United States Geological Survey reports, which indicate that whereas for the week ended July 19, where Director General Hines chose to close his recent report to the Senate, the loss on account of car shortage was 7.4 per cent of full time output, the loss on August 9 was 22.5 per cent; this in the face of statements by the Railroad Administration to the effect that conditions are not now normal. In other words, the loss because of no cars at mines has trebled in three weeks, and is now on a parity with the ordinary shortage during severe winter months when the railroads are handicapped by congestions and engine failures.

"The director general points out that 37,000 new cars have been built, of which 17,000 have been put in service. If all of these 37,000 cars had been in service during the week of August 9 there would still be a shortage of 34,000 cars during that one week alone; but these cars are not yet in service and they are going into service very slowly. The director general states they are being stencilled and lettered and placed into service. He does not say how rapidly. In one instance recently where 2,000 of these cars were being lettered, the work was being done at the rate of 10 cars per day; on this basis, more than seven months would be necessary to place this one batch of 2,000 cars in service."

Mr. Callahan said that the movement of traffic is not adequate to the demands of coal to-day, and presented a table indicating that the average miles per car per day of all cars during 1915 was 24.4 miles. "The mileage per car per day for all cars in 1916," he continued, "was 26.9 miles. It declined in 1917 to 26.4 miles per day, and in 1918 it was 24.9 miles per day, but during the first six months of 1919, the

average miles per car per day for all cars declined to 21.5 miles. This means a much lower mileage on coal than the average figures shown. If all traffic is moving slower, it is natural to suppose that coal moves much more slowly."

Mr. Callahan also introduced charts showing bad order coal cars by weeks from April 5 to July 19, and indicating that whereas there were 66,192 coal cars in bad order on April 5, on July 5 there were 105,295 of such cars requiring repairs, a rise in the percentage from 6.5 to 10.4 percent of the total coal cars in the country. He also stated that "while the Railroad Administration statements recently set forth that there are 208,531 bad order cars at the time Mr. Hines's report was written (August 14) and while the director general stated that 'a large number of cars awaiting repairs are held for only light repairs which can be speedily applied' the facts are there were 135,895 cars requiring heavy repairs, and 72,636 cars requiring light repairs at the middle of July. This figure includes all cars and it is assumed that there are relatively as many coal cars requiring heavy repairs as other cars requiring heavy repairs." At the time to which reference is made 47 per cent of these 208,531 cars, or 98,139 cars were coal cars in bad order; and that on August 2, there were still 96,758 of these coal cars to be repaired.

"The shop men's strike has occurred since August 2, and there are doubtless many thousand additional cars to-day requiring repairs, over and above the number on August 2," Mr. Callahan said. "There are proportionately more coal cars in bad order to-day than closed cars. Of a total of 1,183,490 closed cars, 95,928 or 8.1 per cent were in bad order on July 12, as compared with 98,139 bad order coal cars, out of a total of such cars of 974,547 or 10.1 per cent coal cars in bad order. Repairs to coal cars are being neglected through preference to other cars. Moreover a figure of 10 per cent of coal car ownership in shop is abnormal. There should not be to exceed 5 per cent of the total number of coal cars in shop under ordinary good railroad management.

"The country is full of bad order cars. They impede the movement of freight through railroad yards in certain districts and are backing up the current of traffic. Moreover 8 to 10 per cent of the 62,000 locomotives owned by the railroads under Federal control are now in the shop for classified repairs. These 5,500 or more engines, according to indications, will be needed quite early this winter. They could be used now in avoiding blocking coal mines with loaded cars. If these engines are not repaired at once, they may, when required for use, be in just the same condition so many cars are in to-day."

Mr. Callahan also quoted some correspondence with the Railroad Administration in which Mr. Hines said:

"There appears to be quite a disposition on the part of coal operators to exaggerate the argument about car shortage. I hope this disposition will not be persisted in because necessarily if the situation should be habitually exaggerated we would have to take issue with the claims thus made. It would be unfortunate for the Railroad Administration and the coal operators to get into a controversy on this subject because the controversy would tend to encourage people who are postponing the purchase of coal to feel that the coal operators are not justified in urging the purchase of coal. Naturally we prefer to see the purchase of coal expedited so it can be handled before the Fall and hence we prefer not to say anything which will tend to encourage purchasers to hold off. Yet we could not remain quiescent under repeated assertions exaggerating the car shortage situation and incorrectly stating the policy of the Railroad Administration as to utilizing and repairing its equipment.

"What I would like very much to do is to get the practical co-operation of the coal operators in notifying us of any serious car shortages that exist in specific regions. Of course these matters are reported through our regular channels and are supervised accordingly, but a systematic and accurate check of the matter from the standpoint of the coal operators would be an additional safeguard of which we would gladly avail ourselves. Specific information along these lines conveyed to us will help us to handle satisfactorily a situation of common interest."

Senator Lenroot Introduces Railroad Bill

UNIFICATION OF ALL RAILROADS in the United States into a single national system, privately owned, with minimum earnings guaranteed, and with the management shared by shippers, farmers, security owners, employees and the public, and excess profits divided between the public and employees is provided for in a bill introduced in the Senate on August 27 by Senator Lenroot of Wisconsin.

The bill embodies the views of the Wisconsin Senator and Nathan L. Amster, president of the Citizens' National Railroads League.

Some of the principal features of the bill are:

The ownership and operation of all the railroads by one privately owned and privately operated railroad company with full public control.

The management of this corporation, under the supervision of the Interstate Commerce Commission, by a board of 11 directors selected by the President out of a limited number of names proposed to the President by the various classes of the public—two from the employees, two from commerce, industry and the shippers as represented by the United States Chamber of Commerce, two from the farmers as represented by recognized farm organizations, three from the security holders, one from the Interstate Commerce Commission and one from the state railway commissions.

The selection by the directors of a director-general, who holds office at their pleasure, to operate the roads under such regional divisions as the directors may determine. An efficiency and economy board of five men selected by the President out of engineers proposed to him by the leading engineering and technical societies of the nation, to study service and suggest and supply improvements and inventions.

The valuation of all the railroads by averaging the original cost less depreciation, the reproduction cost less depreciation and the net earnings over the last 10 years capitalized at 5 per cent per annum, varied by urgent equities. Procedure is provided for expediting the valuation and for an early judicial determination of the fairness of such valuations.

Existing bonds would not be disturbed; new stock with maximum dividends of 6 per cent per annum would be exchanged for existing stock as valued by the Interstate Commerce Commission. Earnings in excess of 6 per cent will go 40 per cent to labor, 30 per cent to the public for improvements and retiring outstanding stock, and 30 per cent to the stockholders.

The government would guarantee dividends of 4 per cent on all stock issued by the corporation. No stock to be issued without the consent of the Interstate Commerce Commission.

The directors would establish various labor boards with equal representation for labor to suggest improvements of service, working conditions and safety and to study wages and mediate in all labor disagreements. The right to organize and the right of collective bargaining would be guaranteed.

The Traveling Engineers' Convention.—The Railway Equipment Manufacturers' Association announces that 65 firms have already arranged for space at the exhibit which will be held in connection with the convention of the Traveling Engineers' Association at the Hotel Sherman, Chicago, on September 16, 17, 18 and 19.

American Railway Materials in the Far East

China a Big Market—Japan Likely to Be More of a Competitor Than a Customer in the Future

That American railway supply concerns should find a large market in China in the future, but that Japan will probably come to be regarded as less of a customer than a competitor is the conclusion of Frank Rhea, as expressed in his report on Far Eastern Markets for Railway Materials, Equipment and Supplies issued this week by the Bureau of Foreign and Domestic Commerce. Mr. Rhea, whose earlier report covering Australia and New Zealand was published some time ago, investigated for the present report, China, Japan, Manchuria, Korea and the Philippines. The report, Special Agents Series No. 180 is a paper bound book of 339 pages. It goes into great detail concerning the history and development of the railways in the countries visited and contains a detailed analysis of the physical, financial and operating conditions of all individual railways. It draws particular attention to the lack of unity of the Chinese railway system and the great need of further extensions, additional equipment and the working out of standards on these lines. It also emphasizes the difficulty of bringing about these things without some scheme of consolidation or unification, a change which in the past has been hindered by the various loan agreements and spheres of influence. "Regarding Japan," he says, on the other hand, "it seems only necessary to say that it has passed through all the stages of its railway development until at present, from the standpoint of railway markets, it seems a question rather of competition from Japanese sources than of retaining the general trade in the Empire that the United States has enjoyed in the past. While there will continue to be markets for many materials of American manufacture, the Japanese will, of their own accord, investigate and decide as to their requirements. In short, Japan has reached the point where it is capable of carrying on its own individual railway development. This has been the object of the Japanese railway policy for a considerable number of years."

A Train of American Equipment Throughout on the Kwangtung-Yueh-Han Railway, Which Will Eventually Become Part of the Canton-Hankow Line

Equipment

Mr. Rhea brings out plainly in his report the effect of the existence of the loan agreements and spheres of influence on the equipment and construction of the Chinese railways. These lines have been built to the standards of the countries which supplied the capital for their construction. There are, for example, four distinct types of locomotives, British, Franco-Belgian, German and American. The last are present to a greater or less extent on all lines, but they predominate on the Chinese built lines, such as the Peking-Suiyuan and the Shanghai-Hangchow-Ningpo. Mr. Rhea favors the American engines with their bar-frame construction as being best suited to the class of track construction and maintenance that prevails on most Chinese railways.

The Chinese railways have as a whole, the report says, a more miscellaneous assortment of equipment than any other equal mileage of railways in the world. A considerable part of the rolling stock is light and of small carrying capacity. This, the report says, is unfortunate, for the reason that the railway business of China is not naturally a classified goods business but rather the transportation of commodities, and this tendency as the railways are extended and the traffic grows, will probably become more pronounced. Therefore, the advantage of freight cars of large capacity and heavy motive power along the lines of American practice is readily apparent. The small capacity of the bridges, on most lines, however, will have to be corrected before the type of equipment demanded by this class of traffic can be used. The tendency nevertheless is towards rolling stock of greater capacity until today practically all new freight cars are of 30-ton capacity.

It is surprising, says the report, to find the small amount of freight equipment that is equipped with air brakes. When used, air brakes are of the Westinghouse design of the nation furnishing the equipment. It is not usual for other nations to put as much braking on the locomotive and tenders as is the American practice.

The British have used their typical steel-tired wheel, usually with cast steel centers and of 42-in. diameter on passenger and freight cars of all classes and capacities. The Germans have done the same with a wheel 100 cm (39.37 in) diameter. On the American equipment, particularly freight

cars, most of the wheels have been of the regular chilled cast-iron type and according to the information obtainable, have given satisfactory results.

With the conditions now prevailing and until such time as the Ministry of Communications adopts definite specifications, it is quite proper (and, in fact, advisable) for American manufacturers to put forward propositions conforming in general to American specifications for equipment to be furnished to the Chinese Government railways; advantage should be taken of such points as type of engine frame, but such non-essentials as type of boiler and fire-box materials can be conceded. This suggestion is made for the reason that, in the writer's opinion, the best interests of the Chinese Government Railways will be served by the use of rolling stock along the lines of American practice. Inquiries from Japan will no doubt give very definite and detailed specifications as to what is wanted.

Buying Additional Equipment

In view of the small amount of rolling stock that the Chinese Government Railways now have for the handling of their traffic and the immediate need of additional equipment to take care of their growing business, it appears to the writer that there exists an excellent opportunity for American interests to furnish a considerable quantity of rolling stock, to be financed through the medium of equipment trust certificates, along the same general lines that have been followed in connection with the American railways for many years.

Kind and Amount of Equipment Needed

At the risk of repetition, it is felt that the situation warrants the statement that additional freight equipment in general should be of large hauling and carrying capacity, that it should be provided with power brakes, and that there should be a continuance of the use of automatic couplers constructed with robust draft rigging for the handling of heavy tonnage trains over moderately long distances. It is not probable that the hauls in China will equal those in America, but in all

A Typical Station on the Canton-Kowloon Line

probability the average future haul in China will considerably exceed the average in most other countries and much of the business will be done on a commodity basis.

It is quite impossible to state the amount of equipment that will be needed, but, with the car efficiency now obtained, it seems reasonable to assume that the Chinese railways will not need an amount of equipment equal to that needed in the United States. However, as the haul becomes longer (as it has been steadily doing) and as the business grows it is hardly likely that the present car efficiency will be maintained. Therefore, it is probable that a very considerable amount of additional rolling stock—especially freight cars and locomotives—will be required, but that this will not be equal to that on American railways handling an equal amount of business. One element that has helped the Chinese lines and probably will continue to do so is the supply of labor available in all parts of China, which makes it cheaper to unload cars and store the materials than to pay the present high car-demurrage rates.

Roadway and Bridge Materials

One serious handicap from which the Chinese railways are now suffering and which it will be very expensive to remedy is the fact that all the bridges that have been built carry what

On the Yunnan Railway. A Typical Scene of Almost Any Chinese Line

American railway men consider very light loads. In only a few cases does the load exceed the equivalent of Cooper E-40, and in a number of instances it is as low as E-35. A good example is the Shantung Railway, where the Japanese management is desirous of using heavier motive power, but is unable to do so because the bridges only carry a load equivalent to Cooper E-35; there are about 1000 structures involved, but most of them are short single spans. Each nation has followed its particular practice. It is also apparent that on some of the lines sufficiently large openings have not been provided.

Bridge materials for the Chinese Government Railways thus far have been largely furnished by the loan interests or from the Shanhaikwan bridge works of the Peking-Mukden Railway. In general, the specifications have conformed to the practice of the nation responsible for the loan. For recent construction and replacement, however, a good many bridges have been obtained from American sources. This is particularly the case with the new work on the Canton-Hankow line and the replacement on the Peking-Hankow line of bridges lost in 1917.

On account of the great scarcity and high price of lumber, there is a decided tendency to construct railway buildings of all classes with brick stone or concrete. On most of the lines very substantial buildings of all classes have been provided, and, as already mentioned, in some instances these are elaborate and ornate.

The supply of crossties is a matter of the greatest importance to all the Chinese railways. No part of China, except portions of Manchuria, has any timber suitable for ties. In the past most of the ties used have come from the North Island of Japan, and this will probably remain the main source of supply for some years to come.

One of the great problems of railway construction and maintenance in China will be the supply of suitable crossties.

The life of most timbers is comparatively short and the cost high. In the writer's opinion, a special steel or other similar type of crosstie will provide the solution of this difficulty. One of the conditions that will assist in the success of special track construction in China is the large supply of the cheap and capable labor required for such construction and maintenance, particularly when heavy traffic is handled.

The supply of timber in China is small and the price very high, and the present growing practice of using reinforced concrete for station curbing, information signs, fence posts,

A Scene on the Yunnan Railway Showing Typical French or Belgian Railway Construction

and many similar requirements will no doubt be further extended on all the lines.

Normally the Japanese railways are supposed to obtain their supply of rail and fastenings from the Imperial Japanese Steel Works and the Chinese railways from the Han-Yeh-Ping Steel Works, but, because of the demand for the products of these plants, considerable quantities of rail and fastenings have been obtained from other sources. Japanese railways recently obtained a considerable quantity of rail from the steel mills in Colorado. There is a decided opportunity for the use of rail anchors (anti-creepers) on many of the Chinese railways. All rail anchors used thus far in both countries have been largely from American sources, although in Japan the practice is quite extensive of using second-hand ties set on end to anchor the track.

While the frogs and switches have conformed in the main to the practice of the builders, the tendency for new work and maintenance is to use material along the general line of practice that is becoming common in both China and Japan, representing what might be termed a compromise between British and American practice. Thus far only a few special hardened parts have been used, but the growing traffic on both the Chinese and Japanese railways will warrant the extensive use of such material, for which their track work is well adapted.

Shop Machinery and Tools

The Japanese railways have given this subject careful study, and their shops, as a rule, are equipped with well-selected machines and tools, a large percentage of which are from American sources, although much equipment is also of British and German manufacture and a growing percentage is of Japanese manufacture. The Japanese are very alert and are increasingly appreciative of the benefit of the best equipment along these lines. They will doubtless keep close watch on American developments, and, in all probability, this will continue to be one of our best fields in the Japanese railway markets, particularly on account of the special adaptability of many American products. American machinery and tool manufacturers are, as a rule, well represented in Japan either by American concerns or by the strong Japanese commercial and engineering companies.

Outside of the South Manchuria Railway shops at Shakako and to a certain extent the Tangshan and Harbin workshops, the railways in China are rather inadequately equipped with expediting and labor-saving machinery and tools. Much of the present equipment is of American manufacture, even on the lines built with British, French, and Belgian loans, but in the German-built shops nothing but German machinery has been used.

With the limited equipment and the pressure of growing business the present slow hand methods of doing much of the work have proved unsatisfactory—not from the standpoint of cheapness but because they keep equipment out of service when it is badly needed. A typical case of this is the boiler repairs to the large locomotives in use on the Peking-Suiyuan Railway, which are held out of service almost twice as long by reason of the hand work as they would be if the repairs were effected with a full complement of compressed-air working tools. Therefore, notwithstanding the cheap and capable labor, there should be, and probably will be, a growing demand for shop tools in the Chinese Government Railway workshops.

Representation

The question of representation is admittedly one of much importance. In Japan, at present, there are a number of well-organized American concerns representing American manufacturers; most of these have Japanese employees who are technically familiar with the products handled. The several strong Japanese commercial and engineering companies usually represent a number of American manufacturers for the sale of railway materials, and as a rule these concerns have a well-organized technical staff. In addition there are a num-

French Equipment on the Yunnan Railway

ber of large American manufacturers who have established branch plants in Japan. Much has been said concerning the advantages of these different arrangements, and, on the other hand, there has been considerable criticism of each of the last two methods as not being, in the long run, to the best American interest. The writer inclines to the opinion that it is quite desirable, in any event, for American interests to retain control of the business in some form, and the first of the above arrangements has much to commend it, especially in view of the fact that there are at present a number of well equipped American concerns for handling the business.

In China, aside from the Han-Yeh-Ping Co. and the railways' own workshops, there are very few strictly Chinese

concerns handling railway business. There is, however, a considerable variety of commercial concerns in China representing American manufacturers of railway materials. Some of these are of strictly American interests, but few are fully staffed with Americans, although several are approximately so, especially as regards the technical staff. Some of the other concerns are mixed as to interest, nationality of concerns represented, and nationality of staffs (particularly the technical staffs). It is felt by the writer that American interests and also the customer's interests would be best served

Typical Light Railway Equipment Such as Is Used on the 2 Ft. 6 In. Gage Feeder Lines of Japan, Korea or Formosa

through the repreentation of American manufacturers by American or American-Chinese concerns. Such interests will give the best consideration to the permanent maintenance of the business, while the houses of other nationality will be chiefly interested in the immediate business and the profit therefrom and will desire to secure later business for their own nationalities. This statement is especially pertinent in connection with the recent war conditions.

The question has been asked whether there are sufficient

A Light Railway of 2 Ft. 6 In. Gage. This Scene Taken on the Antung-Mukden Railway (Since Converted to Standard Gage) Is Typical of the Light Railway Lines in Japan, Korea or Formosa

American concerns of this character to handle the present and future business.

The writer believes that there are; in fact, he is strongly of the opinion that some of the present concerns should make a working arrangement under the provisions of the Webb-Pomerene law (making it possible for American interests to combine in handling foreign business), especially to eliminate some of the unwarranted competition between American interests and to represent fully the best American products. Another desirable result that such a consolidation would tend to insure is the utilization of the most experienced men, particularly those who have been in China and have become acquainted with conditions. Probably more than in other countries, experience is an asset in handling business in China. Application engineers should be engaged for long periods—at least 5 years and preferably 10 years. As a matter of fact, this is the rule with the engineers of other nationalities. Also, to handle these markets to the best advantage, it is very necessary that such engineers should return to America for periodical visits to keep fully up to date with developments. Another advantage of such an arrangement would be the utilization of high-grade men to handle extensive lines of railway materials, equipment, and supplies. This will be particularly desirable when competition is encountered.

In the writer's opinion, the railway markets of China are going to develop along such lines—in fact, conditions are such now—that one experienced, energetic representative can handle a very considerable numbr of similar lines; and he can do this at the various commercial centers if aided by the staffs of the several local offices. This is especially true where these local offices have well-qualified engineers (as they frequently have). These remarks apply particularly to the concerns that have their principal or head office in one of the large trading centers—usually Shanghai but sometimes Tientsin—and branches in the other centers, such as Peking, Hankow, and Canton or Hongkong, these centers being the most important from the standpoint of railway markets.

An additional reason for American manufacturers to combine for handling the sale of railway equipment and materials to the Chinese Government Railways is the growing tendency for the Ministry of Communications to supervise large purchases. Manufacturers in the United States do not yet appreciate as they will later the difference between selling railway equipment and material to a centralized buying organization and the competitive buying of a large number of private railways. This is also a strong argument for having seasoned application engineers available to handle this business, particularly in view of the weight that such men's opinion carries with the Chinese officials. It goes without saying that an acquaintance with the personalities of the officials and a knowledge of the formalities of procedure are valuable assets in this connection; and they both take time to acquire.

Commercial interests of Yoakum, Tex., Hallettsville, Eagle Lake and Houston have protested to the Railroad Commission of Texas against the lack of train service on the San Antonio & Aransas Pass, which has not maintained through passenger service between San Antonio, Tex., and Houston for several months. The contention of the railway is that it has no money for better service and that there is no through travel between Houston and San Antonio. Prior to November, 16, 1918, the San Antonio & Aransas Pass operated two night trains without layovers between Houston and San Antonio. At that time a layover of four or five hours at Yoakum was adopted, the idea being to operate these trains in the interest of local travel into and out of San Antonio and Houston rather than of through travel. This layover at Yoakum led to complaints from that and other points and effective June 1, the layover was changed to Eagle Lake which in turn led to the recent complaints. The Railroad Commission, after investigating the matter, concluded that the through service in effect prior to November 18, should be reinstated and so recommended to the Railroad Administration.

Talk is cheap and so are Thrift Stamps, but the similarity ends there.

Railroad Hearings Before House Committee

Executives Explain Need for Changes in System of Regulation and for Temporary Continuation of Guarantee

WASHINGTON, D. C.

THE PLAN PROPOSED by the Association of Railway Executives for the regulation of the railroads after their return to private control with some provision for the transition period during which they ask that the present guarantee be continued pending a readjustment of rates to the new level of expenses, was advocated before the House committee on interstate and foreign commerce by Alfred P. Thom, counsel for the Association of Railway Executives, R. S. Lovett, president of the Union Pacific, Howard Elliott, president of the Northern Pacific, and S. T. Bledsoe, general counsel of the Atchison, Topeka & Santa Fe. An outline of the plan as presented by Thomas De Witt Cuyler was published in last week's issue. Mr. Thom presented a legal argument and Judge Lovett and Mr. Elliott discussed various phases of it and the general railroad situation.

One feature of the testimony was the appearance of an open breach between the executives and the National Association of Owners of Railroad Securities, which puzzled members of the committee as to why there should be such a difference between the executives of the railroads and men claiming to represent their owners until it was explained that the Warfield plan particularly represents the views of representatives of the bondholders while the executives more particularly are the spokesmen of the stockholders, although neither side was very careful to draw the distinction.

Judge Lovett's Statement

Judge Lovett's statement was principally an argument against any plan which would confiscate any of the net income of a railroad above 6 per cent for the benefit of the less fortunate, or, as he put it, the less efficient roads, and he was bitter in his denunciation of the Warfield plan, declaring that "a man would be a fool to put his money into railroads under such a system." He showed that a net income of 6 per cent would mean much less than that for the security owners because it is necessary to use a part of it for that part of the cost of replacements which cannot be charged to operating expenses but which in many cases adds nothing to the real capital of a road or to its earning power. He applied his remarks to a less extent to the plan of the National Transportation Conference, which also proposes a division of the income above 6 per cent, and insisted that both plans propose to take away the fruits of enterprise and efficiency and give them to the less deserving roads, although the Warfield plan advocates deny this and say that none of the excess earnings of any road under their plan go to any other road.

Judge Lovett also discussed the Plumb plan briefly, saying it is "plainly an effort to Russianize the American railroads," but that so long as we have a constitution the railroad owners will be protected and that the public has the most vital concern in the dangers of the plan. Railroad employees, he thought, do not understand the plan, but when they do, he said, they will repudiate it. If labor is allowed to fix its own wages and hours, he said, it is obvious that rates will have to be increased or the people will have to suffer the consequences through increased taxation. "There would be no protection for the shipping and traveling public against extravagant operation and inefficient service. It is rather a bold move on the part of the American Bolshevist to take first for Russianization the one industry that affects all the people."

"The so-called railroad problem as it exists today is solely a question of railroad credit," Judge Lovett said. "The question before Congress is to find how to get the capital necessary to keep up the railroad facilities which the country must have. Any legislation that does not accomplish that object is futile.

"New capital cannot be driven into railroads. It must be induced to enter. The mere request or invitation or desire of the government that investors should come forward and put their money in railroad improvements will not suffice. It is a business proposition. The government does not propose to guarantee the interest or the dividends. The investor must depend upon the net earnings under the regulations which this Congress is going to prescribe and decide whether he will risk his money in railroads or put it in some other business. If you have decided against government ownership, then it inevitably follows that your system of regulation must be such as to attract investors to railroads, or you won't get the necessary railroad facilities.

"It is absolutely necessary to understand some features of the commission's accounting rules in order to deal intelligently with the matter you have in hand. 'Net earnings' or 'net income' or 'profit,' as these terms are ordinarily used, means the amount remaining from the year's operations after paying all expenses of operation, maintenance and taxes, and is supposed to be applicable to investment as interest on bonds and dividends on the stock. The Interstate Commerce Commission has always so regarded it, and proceeds upon the assumption that the sum may be so disposed of. Legally and theoretically this undoubtedly is true, but practically it is far from the fact.

"Any railroad company that exercised this legal and theoretical right by distributing as dividends all this paper profit or 'net income' would soon come to grief and bankruptcy. Unlike manufacturing business or ordinary commercial business or any other business I know, the amount chargeable to maintenance and repairs under the Interstate Commerce Commission's regulations is not sufficient to make the renewals and repairs necessary to maintain the railroad property. The result is that a very substantial part of this reported and apparent net income at the end of the year has already been spent in renewals and replacements, and is not on hand in cash or any other form available for the payment of interest and dividends.

"This leads to the point I particularly desire to make, which is in connection with the much discussed proposition to confiscate the net earnings of all railroad companies in excess of 6 per cent. If the government is to take for itself or for the inefficient roads or others all in excess of 6 per cent, as proposed, I suppose, of course, it is intended that the stockholders will be entitled to distribute the amount, if any is left after the payment of interest, as dividends.

"The Supreme Court said in effect in the Lincoln Gas Case, decided only last June, that a return of 6 per cent was not enough. But I want to point out to you that it will be impossible for the owners to get even that under the scheme proposed. The 6 per cent which the company is to be allowed to retain as 'net earnings' will not be in cash, but a very considerable part of it will have been spent on the railroad.

"Under the accounting rules of the Interstate Commerce Commission, it is absolutely impossible to even maintain a railroad in running order without spending a very substantial part of the so-called 'net earnings' upon the prop-

erty. Practically all renewals and replacements involve charges to capital account. No railroad company, and certainly no progressive railroad company, renews main line rails without increasing their weight. Very few put down new rails of precisely the same weight as the old. Under the commission's rules, the additional weight and any improved fastenings must be charged to capital. Generally speaking, rail renewals involve a charge averaging probably 20 or 25 per cent to capital account.

"As to other renewals, it is even worse. When a railroad company renews a wooden trestle or other bridge, even in kind, it is required to charge the entire cost of the new structure under existing conditions to capital account, and deduct only the original cost of the ancient structure replaced, which, of course, is much less. So it is with every other structure replaced in kind; and where there is an improvement—as a larger or heavier bridge, or a stone or steel bridge, or a larger or better station or other building in place of an old—the charge to capital account is that much greater.

"What, then, will be the predicament of the railroad company, of the financially strong company, if you pass a law requiring it to pay over to inefficient railroad companies or to the government, all its net earnings in excess of 6 per cent upon the value of its property? It is assumed that after making such payment, it would have 6 per cent left—but not in cash—with which to pay its interest and its dividends, but a substantial portion of it in new rails, bridges, trestles, section houses, stations, coal chutes, water tanks, side tracks, yards, etc.

"I give it as my opinion based upon rather long observation that the average railroad company in this country must spend on an average each year an amount equal to 2 or 3 per cent upon the total value of its property for renewals and replacements of roadway and equipment and in wholly unproductive work, which, under the commission's accounting rules, is chargeable to capital account, in addition to ordinary maintenance.

"What is to become of even the strongest and best company and its credit, if at the end of the year it is required to pay over for the benefit of its weak and inefficient rivals, or to the government, all its apparent net earnings in excess of 6 per cent, and be left, not with cash that it may use in payment of interest and dividends, but with these expenditures upon which it cannot get cash? This is the practical difficulty from which there is no escape if you enact such a law.

"The suggestion which I understand was made by one of the lawyers advocating the Warfield plan, that everything earned in excess of 6 per cent must be deemed wrongful and as taken illegally from the shippers, is utterly preposterous. Six per cent is a minimum on questions of confiscation, but there is no statute upon the books of Congress, and no statute of any state in this Union, so far as I know or have reason to believe, that has ever declared that 6 per cent in any year shall be the limit of return upon any railroad investment. If Congress enacts any such law, it will be a radical and new departure in this country, and in my judgment, it will put an end to the flow of new money into railroad enterprises, for who will put his money into a business involving such enormous risks with no hope of reward in the event of success?

"In dealing with railroad capital, haven't we in this country been indulging in much loose thinking and loose talking as to the old expressions about railroad property being 'devoted to a public use' and its being 'affected with a public interest'? The Supreme Court has repeatedly declared that money invested in railroads is as much private property as money in a bank or as an investment in a home. It is subject to regulation, but not to confiscation.

"Too often and in too many minds, these expressions seem to have led to the delusion that there is some taint upon railroad capital, that it is entitled to less consideration than other capital, that the stock of the banker, the manufacturer and merchant and all forms of corporate enterprise are sacred as private property, but the railroad investment has no rights which anybody ought to respect. We ought to correct that fallacy, for just the contrary is true.

"Capital invested in railroad enterprise is of the highest merit, and there is none more deserving. None is more essential to the public welfare. It is even more deserving of praise than money invested in government bonds, because the latter takes no risks. Unlike the older countries that were built up before railroads, this country was built on railroads, and it is absolutely dependent upon them. The need for additional railroad facilities grows with the growth of population and business. If the government itself is not going to furnish the money, then we must look to private individuals for it; and not only regard for their constitutional rights, but good policy and common honesty demand that they should be encouraged and protected, instead of being made the victims of every half-baked theory that unthinking and unmoral ignorance can suggest."

Judge Lovett said he had not much respect for the property investment account as representing the value of the railroads, because in some cases the accounts represent hard cash and in others almost nothing, because the par value of the securities was entered in the books although much less than par may have been received for them in cash. He insisted that a road's value depends upon what it can earn, particularly when its rates have been made or sanctioned by the government for years.

Representative Winslow asked Luther M. Walter, counsel for the Warfield plan, whether its proponents had taken into consideration the point made by Judge Lovett that part of the net income must be used for renewals and replacements.

"No," said Mr. Walter. "We provide for 6 per cent after all operating expenses are paid, according to the commission's rules, but we do not provide that the shipper shall pay any part of the capital investment. Our plan would not reduce the Union Pacific's dividend, but it would cut into its surplus."

Judge Lovett insisted that he was not talking about operating expenses nor new capital, but about the expenses incurred for replacements which merely maintain the property but which under the commission's rules must be charged to capital. Mr. Winslow said Mr. Walter had confirmed Judge Lovett's statement, but Mr. Walter insisted that the security owners are not asking for enough to pay for capital expenses out of earnings.

"I do not want to use intemperate language," said Judge Lovett, "but in my judgment any man would be a fool to put his money into a railroad under any such system as that. It would not attract capital into the railroads."

The present system of accounting, Judge Lovett said, results in constantly diluting the value of railroad securities if new securities are issued to cover replacements which merely maintain the property, particularly because there is a tendency on the part of operating officers to try to keep down expenses and not worry about the capitalization. He was thoroughly opposed to depreciation accounts except for equipment, and not very enthusiastic about that, but said that the practice ought to be uniform. He did not understand why the Interstate Commerce Commission has not established uniform rules. The Railroad Administration has considered doing so, and had prescribed a uniform rate on all new equipment, but it did not change the practice as to old equipment because the amount of depreciation was involved in determining the standard return. Expenditures that do not add anything to the property in his opinion ought to be charged to a reserve and paid out of operating expenses instead of being allowed to "pile up capitalization."

Unless a company had other resources it would have to use a part of its income to purchase equipment, he continued, because it is necessary to make an initial payment of 25 per cent and the equipment cannot be capitalized for more than 75 per cent of its cost.

The Warfield plan, Judge Lovett said, proposes to take the earnings over 6 per cent from a good road, whose stockholders may have paid 150, 175 or 200 for their shares, to make good the stock of a road which had been sold for 10 cents on the dollar and never was worth anything. "I was recently castigated in the newspapers for saying that," he said, "but it proposes to take money my road has saved to buy equipment for other roads and for the benefit of the labor of other lines. The Chamber of Commerce plan goes even farther and plainly says that the excess is to go into a fund for the benefit of other roads. A great many roads never will pay and never ought to pay; they ought to be reorganized and the losses pocketed. The government should not be asked to guarantee them to pay for their mistakes, but if it is to do so it should pay the bill itself, not take it from others. The Warfield plan does not mean recapturing earnings, as has been claimed. It means capturing savings; the net result of efficiency and economy. If it were desired to carry out such a purpose it might be done by an excess profits tax, the proceeds of which the government could appropriate as it saw fit, but it cannot be done as a regulation of rates, after the relation of carrier and shipper has ended, and it has ceased to be a matter of transportation or carriage. The carrier has performed its service at a legal, reasonable rate. The government may make reasonable rates and as low as it likes provided they are not confiscatory, but it cannot regulate the amount of money the railroad gets out of it. There is no reason in morals, and up to this time there has been none in law why the government should regulate earnings instead of rates. It is inconceivable that the government can make a rate and declare it reasonable and then say a railroad has to give up some of the money. If you want to tax it that is another matter."

Chairman Esch asked why there should be such a difference of opinion between the executives and the investors.

"It is very surprising," replied Judge Lovett, "but the term investors is rather broad. I don't know just who Mr. Warfield represents. I understand he has a wonderful following of investment bankers, large insurance companies and savings banks, but in my judgment he represents mostly bondholders. I know he doesn't represent the Union Pacific. I represent the Union Pacific and my directors are fully advised as to what I am doing."

In reply to questions by Representative Winslow as to whether the roads could be turned back without increasing their income Judge Lovett said it would be utterly impossible for the companies to take over their property and operate it at the present rates.

"Then isn't this committee confronted with a delicate question in proposing to return the roads, and shouldn't we hope that if the Railroad Administration raises wages again it will also provide the necessary rates?" asked Mr. Winslow.

"It isn't a matter of delicacy or hope; it is a necessity," replied Judge Lovett. "It is a question of the solvency not only of most of the railroads, but of many other institutions dependent upon them. This is no time for the popular Washington sport of 'passing the buck.'"

Representative Sims said there had been a good deal of objection because of the increase in rates last year and asked if there would not be a storm of opposition if they were increased again on being returned to private management.

"If we are going to have transportation in this country we have got to pay for it," declared Judge Lovett. "It can be paid for either by the traffic, as it ought to be, or it can be paid for out of the treasury, but no amount of popular clamor will change the fact that you can't get it without paying for it in one way or another, and as the government increased the expenses it ought itself to raise the rates before the roads are turned back—unless it can reduce the expenses."

Representative Rayburn asked if the railroads would not be able to effect economies under private control.

"I should say that as long as the present scale of wages and prices continue they will not be able to. I don't see how any great economies can be expected as long as they stay up," replied Judge Lovett. He said that the increase in the number of employees was practically due to the adoption of the eight-hour day and that the Union Pacific is being operated by the same officers as before, but he had asked the federal manager how much he could reduce expenses if relieved from government control and he had replied that he didn't know how it could be done.

Judge Lovett also urged the necessity for the creation of such a body as the proposed Federal Transportation Board, although he said that personally he had favored a secretary of transportation. "If you are going to leave the question of the sufficiency of rates and facilities to a lawsuit between the railroads and the public," he said, "the future is hopeless. I have seen statements by four of the present Interstate Commerce Commissioners which indicate that they are not aware that there is any question of railroad credit. What hope is there for an investor to put his money in railroads under such conditions?"

Representative Watson said he had tried unsuccessfully to get from the Interstate Commerce Commission figures showing the decline in railway construction, and had finally got them from the *Railway Age*. He asked if the cessation of new railroad building was attributable to the regulation of the Interstate Commerce Commission.

"I don't charge it to the commission," said Judge Lovett. "It is the general situation of which they are a part."

Howard Elliott

Mr. Elliott said in part:

"In creating this great piece of industrial machinery under new, varying and oftentimes very difficult conditions, the government, in its regulating policy, the investors, builders and managers, in their financial and managing policy, and the leaders of organized labor have naturally made some mistakes. There has been competition between the nation, the states, individuals (both in and out of legislative halls) and executive commissions representing both the national and state governments in proposing plans for taxation, regulation and supervision. This competition has resulted in action being taken by the nation and the states which has gradually weakened the capacity of the railroads to live and grow as the country grows. There have been some unfortunate and unwise policies of railroad building and managing that have been magnified and distorted and have aroused some popular distrust. Labor leaders have called or authorized, and sometimes encouraged, strikes that were unfortunate for the men and the communities served.

"The system of private ownership and government regulation, however, was successful on the whole, and resulted in the development of the railroads and the country to a marvelous extent. This growth and development were steady and continuous until the system of regulation failed to respond promptly to changed conditions, the more expensive and luxurious methods of the people, the increased wages needed by employees, the higher cost of everything necessary for keeping the railroads equal to their task, including the higher cost of capital and rapidly increasing taxes, and lacked the necessary elements of protection and encouragement to the business.

"What has been accomplished under private ownership and operation in the past is good evidence of what can be accomplished in the future if private energy and initiative

are encouraged, repressive and conflicting regulation removed, and protective measures added to the regulatory system.

"Is it wise to attempt to improve the present difficult situation by radical measures that dislocate the machinery that has in the last 50 years accomplished so much for the country and all the people in it? Is it not wiser to correct the errors and weaknesses of the present system of private ownership and government regulation rather than to 'fly to evils that we know not of?' I believe it is. If so, in order to obtain the results needed for the protection and development of the nation it will be necessary to change and modify some practices and ideas that have long prevailed.

"The owners must assent to a larger measure of governmental control, but they should also have governmental protection and encouragement.

"The great railroad labor organizations must assent to some orderly way of settling disagreements over wages and working conditions, so that the railroads may continue to serve the public pending the adjustment of disputes.

"The government, in its regulatory practices, must be more responsive to changed conditions, and there must be protection of this great industry as well as regulation, and there must be no twilight zone between national and state authority.

"While the situation is very difficult and fraught with danger to the integrity of our institutions, it is possible that the way out has been befogged somewhat by the numerous remedies proposed. It is helpful, however, that all kinds of people have made various suggestions, and Congress has the great opportunity, duty and responsibility of clarifying the situation and of considering all the plans and producing by a process of elimination a bill that will represent the needs and thought of the nation as a whole and not of any one particular class or idea.

Howard Elliott

"If, as I believe, it is for the best interest of the Nation to go on for at least another generation and have the furnishing of transportation a business function subject to governmental regulation rather than to turn over the work to the government itself, then some general amendments to our present regulatory practices will, I believe, produce the results we all desire, especially if all those in authority, either in private or public life, will advocate patience, forbearance, and a spirit of helpfulness and hard work while all are going through the period of readjustment.

"It does not seem as if we can advance the cause of the Nation or of any individuals by reducing the productive effort of the country and creating a chaotic condition while Congress is at work on this important matter.

Confidence Will Return if Definite Policy Is Announced

"I believe that if the country and the people can be made to feel that the United States has adopted a national transportation policy along the following lines, that the situation will be vastly improved. Naturally, so long as discussion continues, people of all classes will be uncertain and unsettled.

"1. That the governmental regulatory machinery that has for the past 32 years devoted so much time and energy to correcting abuses and to a certain extent punishing the companies for past errors, shall now turn its abilities in part to the encouraging of our system of transportation so that it shall receive income enough from the rates charged to pay:

"(a) All costs and expenses, including reasonable wages in accordance with the constantly improving living conditions that we hope always to have in the United States.

"(b) Returns on the system as it exists today substantially equal to the present 'Just Compensation' until such time as the fair value of the property is determined, when the return should be based on that figure as finally determined.

"(c) Returns on new capital needed to expand the facilities (so that the public will at all times be well served) sufficient to obtain that capital in the markets of the world; in other words, to put the policy and power of the government squarely behind the idea that any regulatory system to be adopted must not only correct abuses and prevent them, but foster and encourage the business and sustain the credit of the enterprise.

"2. That the present method of adjusting disputes over wages and working conditions for public utilities be abandoned and a sane method of deciding these questions be adopted and the strike abolished in the interest of the people as a whole and the forward movement of the country.

"3. That the Sherman law be modified so that consolidations and mergers will be permitted, subject to the approval of federal authority.

"4. That the federal authority be supreme as to all rates and regulations about rates, and as to securities and accounts; state commissions not to be abolished, but the Interstate Commerce Commission to be the regulatory authority for these questions.

"If the Congress will assure the people that these principles are to be the law of the land, the support and good will of the people will come back and their mental attitude will be to encourage and build up the railroads just as much as to encourage and build up agriculture, banking, manufacturing and the various enterprises in which the millions in this country are engaged.

"As rates are the one vitally important part of the financial problem of creating conditions that will permit good service, wages and development of the properties, and also bring a fair return to the owners of the securities, the railroads should have the right to initiate their rates, or prices.

"The general level of rates should be such as to bring to a railroad sufficient revenue, under honest and capable management, to maintain the property in a progressive manner, pay operating expenses, including good wages, taxes, permit proper charges for depreciation and obsolescence, and other

reserve funds, a fair return on the fair value of the property, and provide the credit the railroads must have in order to furnish to the public the necessary facilities and service.

"Another most important element in arriving at a satisfactory adjustment of the situation is that of the wages and the working conditions of the large body of employees. Wages are taking directly more than 50 per cent of every dollar of revenues, and indirectly, through materials purchased, a good deal more than that. To arrive, therefore, at any satisfactory net income, wages must be considered in connection with rates.

"The labor question is, of course, one of the most serious and important confronting the whole world, the railroads in particular, and there must be a broad, human view of it and a spirit of 'give and take' by all classes of people. All good citizens desire to see wages and living conditions improve, but there is a limit to what commerce and industry can pay and survive. It is surely better to have reasonable wages and continuous employment than to force wages so high that industry languishes, for then the wage-earners themselves will suffer most of all.

"The man who puts a dollar of his savings into the transportation business does so knowing that his dollar is subject to the power of the government to make the rules and regulations governing the business. The man who decides to earn his dollar by working for the railroads should be willing to submit to reasonable wages, rules and regulations, just as much as does the man who puts in his dollar already earned. It is in the public interest to have the dollar invested regulated reasonably, and it is equally in the public interest that the dollar paid for service and the conditions of service should be regulated reasonably.

"To bring this about there must be some method devised for fair and reasonable governmental supervision and regulation of wages and working conditions, and such regulation should eventually receive the final approval from the same power that is finally responsible for the rates of fare and freight charges by the transportation agencies, so that the question of income with which to pay will be considered at the same time and by the same final deciding power as the outgo to be paid. Just as the government should have the power to veto the wasteful use of the railroad dollar to be invested upon which the public will be asked to pay a return through rates, so should the government have power to supervise wages and conditions of service, which ultimately are paid for by the public through these same rates.

"With the preservation of private ownership and management in individual systems of railroads there will be a better esprit de corps among the great army of railroad employees than if all became employees of the government.

"Capital may be timid, but it was bold enough in the last 50 and more years to create our great American railroad system. I believe it will be willing to go on with the work if it can be assured that the policy of the government will be to sustain the railroads in the legitimate conduct of their business and allow reasonable liberty of action and will encourage and protect this business, as well as prevent any abuses. The credit of the roads will come back when people understand that Congress has laid down the rule that a reasonable rate is also an adequate rate, sufficient to reflect changed costs, increased wages and a fair return upon the property; when Congress insists that some reasonable method of adjudicating controversies over wages and working conditions shall be written into the law of the land; and when the Nation insists that it is the duty of the government to preserve, protect and expand the transportation facilities of the country as well as agriculture, banks, manufacturers, commerce or other forms of individual activity.

"I believe the plan suggested by the railway executives is a reasonable, business-like and elastic one under which our national transportation system will grow, and which can meet the changing conditions of a growing country like the United States. It preserves and encourages the initiative and energy of the American man that has done so much to build up the present system of transportation.

"It points the way to having the transportation system of the country adequate for its needs.

"It suggests the importance of a reasonable adjustment of controversies over wages and working conditions so that service to the public will be continuous.

"It retains reasonable and regulated competition as an incentive to good service and development along progressive lines.

"It permits the continuation, under suitable regulation, of any plans developed under governmental control that tend to eliminate waste and give improved service through unification of facilities, common use of terminals, co-operative methods, etc.

"It strengthens the regulatory powers of the government to make certain that abuses and wrong tendencies may be corrected and checked.

"It suggests a method of placing the influence and power of the government back of the credit of the roads, so that capital may be obtained for needed improvements and additions.

"It provides machinery of regulation, through a transportation board, Interstate Commerce Commission, regional commissions and state commissions that will be responsive, prompt, and that will safeguard the interests of the railroad users, the railroad owners, and the railroad workers.

"I am an optimist of the long future of the United States. I believe we are on the eve of the most important 50 years in the history of this country, or any country, and that we shall accomplish wonderful results if we exercise common sense, work hard, are thrifty and economical, and all pull together.

"It is very important to come to a conclusion this year as to the new railroad legislation. It can be done. When done, and with reasonable financial protection until the readjustment between income and outgo is completed, our wonderful American railroad system wil start forward again on a period of development and service. These great highways, which are the arteries through which the commerce of the country flows, will be nourished and become elastic again. With co-operation between the railroad users, the railroad owners, and the railroad employees, and with reasonable liberty of action so that the American citizen can use his individual initiative and his tireless energy, the country will go forward to meet its great future better equipped than ever before.

In reply to Mr. Plumb's charges, naming the Burlington among others as having given stock bonuses, Mr. Elliott showed that its only issues of stock during the period mentioned had been 25,000 shares exchanged for convertible bonds and 98,000 shares offered to stockholders at par, which was slightly below the market price at the time so that the rights were worth between $3 and $4 a share. As to the New Haven, he said that all of its stock had been paid for in cash at par or at a premium. Mr. Esch asked that a similar statement be filed for other roads mentioned by Mr. Plumb.

In emphasizing the necessity for legislation to protect the roads during the transition period, which the executives' plan proposes to provide by a continuation of the guarantee pending a readjustment of the rates, Mr. Elliott pointed out that the railroads in the first half of 1919 earned only about 30 per cent of their standard return and that the New England lines had a deficit. If they were turned back in this condition, he said they would be earning practically nothing, in spite of the fact that the valuation reports now being worked out by the Interstate Commerce Commission will show both the New Haven and the Boston & Maine to be worth more than the par value of their securities. He added that the 100,000 employees of the New England lines are receiving good

wages, but that their 75,000 owners would be receiving nothing but for the guarantee. He thought a 25 per cent increase in rates would be necessary to meet the situation, and said he would prefer to have the rates increased to the proper level than to have the guarantee continued.

In reply to questions regarding the effect of freight rates on the cost of living, Mr. Elliott submitted some figures estimating the amount of the trade of the United States in 1918 as $82,600,000,000, whereas the total railway revenues in that year were $5,036,000,000 and the revenues from freight and milk were $3,557,000,000, or only 6.1 per cent.

Referring to a question asked of a previous witness as to whether the railroads did not have a surplus of about one billion dollars, Mr. Elliott analyzed the surplus of the Burlington, which amounts to $213,000,000, to show that very little of it is in cash or available. Of the total, he said, $26,000,000 represents excess of current assets over current liabilities, of which $15,000,000 is in materials and supplies, and $187,000,000 has been invested in the property without capitalization, a saving of approximately $3,300,000 a year for 64 years.

Mr. Elliott called attention to the fact that government operating of railroads does not prevent strikes, and he urged the importance of legislation to regulate labor unions as one means of preventing strikes. He suggested that they be incorporated and required to submit reports to public authority, that their strike votes be counted by public authority instead of secretly, and that the wives of the employees be allowed to vote. He also proposed that the right to strike pending an adjudication be taken away. He said the majority of the men he had talked with had told him they did not want to strike, but felt compelled to by the power of the organizations, and that when the employees of the New York, Westchester & Boston struck because they were not satisfied with a 25 per cent increase, the company had bona fide applications from enough men to fill their places who would accept the pay offered, but the company had feared to take them because of the threat of a sympathetic strike on the New Haven.

Mr. Elliott thought the railroads would be able to effect an improvement in economy and efficiency after expiration of federal control. He pointed out that railroads generally have come to the conclusion that the divisional system of organization produces the best results because it enables questions to be settled at division headquarters without referring them to general officers, but that the Railroad Administration has adopted the departmental form of organization, with inspectors that are sent out from Washington to go over the heads of the officers on the ground. He said the railroads may not be able to get an immediate increase in efficiency, but that they might be able to stop some of the decrease in efficiency. However, they would have to take up "a lot of lost motion" and do an enormous amount of work to get the equipment and other property in good shape. "It will take a little time," he said, "but closer supervision in time will give better service for less money than you can get out of the present highly centralized organization, although it is made up of the same men."

Mr. Thom's Argument

Alfred P. Thom appeared before the committee on August 21 and 22, and then allowed his argument to be interrupted while Judge Lovett and Mr. Elliott and other witnesses testified. He resumed his argument on August 26, discussing the legal phases of the plan proposed by the railroads and explaining the provisions of the bill, which he said was not intended for introduction in Congress, but merely to put in the specific language of a bill the details of the plan. Regarding the proposed Federal Transportation Board, he said:

"We don't propose to put this body in a position superior to the Interstate Commerce Commission. We make its certificate subject to be overruled by the commission for cause, but we give the commission the aid of the recommendations of an independent public body as to what policy is in the public interest.

"The problem before Congress is to present a system that will appeal to the private investor in the future. To prevent oppression or extortion by discriminatory or unreasonable rates is easy enough. That is no longer your problem. The system of railroad regulation heretofore has turned always on the question of trying to control rates. That has been the single object up to this time, but that is based on the assumption that a sufficiency of the facilities and service the public needs was assured. That has been the radical oversight in our policy of regulation. Something must now be done to give the public that assurance. Our first object is to lift up to its proper place the importance of facilities and service.

"When the railroads go before the commission to urge the need for adequate rates we cannot divest the proceeding of the character of a controversy between selfish private interests and the public as represented by the shippers who oppose higher rates. We recommend that you appoint a governmental body to determine what the public as a whole needs in the way of facilities and service and what is necessary to get it."

Representative Winslow asked what kind of men should be appointed on such a board.

"Men of the highest character and ability, the best men it is possible to get, and paid sufficiently to get the best men," replied Mr. Thom. "They should be men of large business experience, but not necessarily of railroad experience; in fact, I should rather prefer that they be not railroad men, who might be hampered by previously conceived ideas."

"We take away no powers from the Interstate Commerce Commission," he continued, "but instead of proposing a definite rule of rate-making, that rates shall provide a certain percentage of return, we have preferred to leave the determination of what is required in the hands of an impartial body, to see that we have enough revenues in order to serve the public properly, and that we do not have too much. We have not felt justified in recommending to you a system of rate-making that isn't flexible enough to respond to changing economic conditions. I have never found anything but difculty in trying to put economic conditions in a straightjacket."

Mr. Thom also laid stress on the contention that the proposed board would be more free from the pressure of popular clamor or the fear of a hostile attitude in Congress than the Interstate Commerce Commission, but various members of the committee dissented from this view. Chairman Esch said the commission had been singularly free from any attempt to influence it, and Mr. Sims pointed out that it would be practically impossible to create a body that could not be subjected to whatever influence might result from the ability of Congress to cut off or threaten to cut off its appropriation. He said that a Senate committee had recently proposed to omit the appropriation for the Federal Trade Commission because it disapproved of its attitude. Mr. Sweet also said that the proposed board would be charged with matters of business policy of such a character that its duties could not be rigidly prescribed, and that its policy would be largely a matter of opinion on subjects likely to become political questions.

In discussing the proposal that the federal commission be given exclusive jurisdiction over rates, Mr. Thom read a letter sent him by the late Theodore Roosevelt, expressing the opinion that it was wrong to permit states to neutralize the action of other states or of the federal authorities, and declaring that "everything connected with interstate business should be a purely federal matter."

State interference could be prevented immediately by Con-

gress taking charge of the whole field, Mr. Thom said, and the whole rate structure should be under the jurisdiction of the Interstate Commerce Commission, so that "a state that wants good railroads will not have to contribute for the benefit of the commerce of a state that doesn't want to pay for good railroads."

In order to protect local interests and to prevent too great a centralization the plan proposes regional federal commissions, with the right of appeal to the Interstate Commerce Commission in some cases. Mr. Esch asked if this was not open to the objection that it interposes one more source of delay before a final determination. Mr. Thom insisted that the regional commissions would expedite matters because they could pass on minor cases much more promptly than the commission at Washington, and could also reach a decision on more important matters in less time than is now required to send an examiner and for the preparation and consideration of his report.

Mr. Thom said the proposal of the Warfield and other plans to distribute all or part of the excess earnings over 6 per cent is based on the assumption that there may be excessive earnings; whereas, he argued, the power of Congress to regulate rates is to prevent their being oppressive or extortionate as to individual transactions, not to regulate earnings from the business as a whole. He said the Supreme Court has held that the reasonableness of rates is not to be determined by the aggregate of the profits of a railroad.

"There is much confusion of thinking on this point," he said. The legislature never attempts to place a limitation on a carrier's earnings. It always approaches the subject from the standpoint of its power over rates. The question of the amount of the earnings has been introduced by the courts in holding rates unreasonable when they produce less than a fair return, and some persons have jumped to the conclusion that the legislature itself could fix maximum earnings. No branch of the government has the power to limit earnings, except by taxation. Earnings depend upon rates and not rates upon earnings, and the government cannot declare a rate reasonable and then take away part of the proceeds on the ground that the volume of business and the number of services performed at reasonable rates result in unreasonable earnings."

The necessity for legislation which will protect the railroads during the transition period immediately following their relinquishment from federal control and until the proper relationship between their revenues and expenses can be established was strongly urged by Mr. Thom. He pointed out that this relation has been thrown out of all proportion by the enormous increase in expenses during the period of federal control, which has caused a loss to the government of a million dollars a day in its operation of the railroads, or $546,000,000 in the 547 days of federal control up to June 30 this year, and that it is the duty of the government to tide the railroads over until they shall have had time to restore a condition of economy and efficiency. For this reason the railway executives ask that the present guaranteed standard return be continued for not exceeding a year until the Interstate Commerce Commission, in consultation with the director general of railroads and the proposed Federal Transportation Board, shall have readjusted the rates so as to restore the equilibrium between revenues and expenses and make the railroads again self-supporting.

Mr. Thom said he was not discussing the causes for the great increase in expenses, but that his concern was for the future, although he declared that "the disappearance of morale which is inevitable in a government operation, has been one of the factors. "When the railroads come back," he said, "I believe that after a time they can make a great improvement and get back to a condition which will make for economy and efficiency, but there must be a period of transition during which the morale impaired by government control is being restored. We are now confronted with expenses that we can't put down and with a degree of disorganization of forces which we must for a time inherit.

"Whose obligation is it to restore the relation between revenues and expenses which has been disturbed by the government? Is it the obligation of the owners? If the government seeks to unload that responsibility on us and place on us the onus of responsibility before the people of increasing these rates will it be doing the fair thing?

"The railroads must have the good will of the people. Isn't it better that the government itself undertake the duty of correcting the situation in the way best justified in the public interest? So we ask that you command the Interstate Commerce Commission to study the proper relation between expenses and revenues and do the thing that is necessary, and that the guarantee be temporarily continued, instead of leaving a trail of bankruptcies that would destroy the financial system of the country."

In reply to a suggestion that 75 per cent of the guarantee be continued, Mr. Thom pointed out that this would not help the roads, whose guarantee now represents their bare requirements and that 75 per cent of the standard return would be $88,000,000 less than is required for interests and dividends for the railroads as a whole.

Mr. Thom also urged provision for funding for a period of ten years the large indebtedness of the railroads to the government for capital expenditures for cars and locomotives and other additions and betterments. Speaking generally for the railroads as a whole, Mr. Thom said, it will be impossible for them to pay this amount at once, because it represents the kind of expenditures usually provided for by long term securities.

Laws to Prevent Strikes Urged

Charles Piez, president of the Illinois Manufacturers' Association, and George A. Nutter, representing the Boston Chamber of Commerce, appearing before the committee on August 21, urged the importance of legislation to settle wage disputes and to prevent the danger of strikes. Mr. Piez said in part: "In order to carry out our view that the rights of the public are paramount, and therefore that interruptions of transportation by strikes or lockouts must not be permitted, we recommend an addition to the act which will empower and instruct the Interstate Commerce Commission to appoint and provide the necessary organization and funds for an arbitration board consisting of six persons, two to represent the public, two to represent railroad managements, and two to represent railroad employees. This board shall, when appealed to by either side of a controversy, or upon failure of the carriers and their employees to agree, investigate and make a finding which shall be final and conclusive to both parties, subject only to final appeal to the Interstate Commerce Commission. As a part of the machinery thus created the employees of common carriers upon taking service with common carriers, shall, as a part of the contract of hiring, accept the provisions of the act and subject themselves to the findings of this body and waive the right to strike. The right of any individual employee to resign permanently from his employment shall not be denied."

In reply to the objections stated by Commissioner Clark in his testimony before the committee to the idea of the commission being given any responsibility for wages, Mr. Piez insisted that it is essential that some one having responsibility for the amount of revenues have a voice in the fixing of wages. He said the Emergency Fleet Corporation had made a serious mistake in surrendering al control over the amount of wages that constitute so large a factor in its cost of production and that the Chicago packers and clothing industries had made the same mistake. The railroad employees, he said, are strong enough politically to have no

reason to fear to accept such a plan as he proposed. In conclusion, he said his association wanted to record its objection to the Plumb plan, but he did not take time to discuss it.

Mr. Nutter presented the results of a referendum taken by the Boston Chamber of Commerce in which the members had put themselves on record by large majorities as being in favor of private ownership and operation of the railroads; against a regional reorganization of the roads; in favor of a return to corporate operation at once with a continuation of the guaranteed standard return for the balance of this year and with provision for an increase of rates, the increased revenues to be placed in a fund administered by the government and to be used in making up any deficiency as compared with the standard return during 1920; in favor of a direction to the Interstate Commerce Commission to authorize a rate structure sufficient to pay a reasonable return; in favor of regional commissions, representation of the public on boards of directors, consolidations and joint use of facilities, supervision of security issues, and the creation of a wage tribunal and the prohibition of a strike pending its decision.

Alba B. Johnson, president of the Railway Business Association, appeared before the committee on August 25 and presented the statement which is published elsewhere in this issue, urging the creation of a Federal Transportation Board and a clear instruction by Congress that rates shall be adequate to insure the development of the railroads. During the reading of the statement Representative Sanders asked how the volume of railroad purchases had compared during the period of federal control and under private management. Mr. Johnson replied that there had been a very large reduction in purchases since federal control. Mr. Johnson was not questioned by the committee regarding the points brought out in his statement, although numerous questions were asked about the cost of locomotives and their repairs.

Land Grants

S. T. Bledsoe, general counsel for the Atchison, Topeka & Santa Fe, replied to the "charge" made by Mr. Plumb that the railroads had received land grants, a form of charge which in past years has been very popular with people seeking grounds on which to attack the railroads. Mr. Bledsoe admitted the soft impeachment that millions of acres of lands had geen granted to railroads to induce them to build and added some additional information.

"There was not the slightest element of donation involved in any federal land grant," he said. "It was a clear-cut trade between the United States and the railway company, or between the United States through the instrumentality of the state and the railway company, whereby the government agreed to grant so much land in consideration of the construction of so many miles and in its operation by the grantee. Each and every grant was highly beneficial to the government, and the great majority of the grants proved extremely burdensome to the roads receiving them. That is to say, the government fully reimbursed itself for the value of the lands granted by doubling the selling price of the alternate sections reserved; every land grant railroad of the United States is now transporting over its land-grant mileage the property of the United States and its officers and employees at 50 per cent of the established tariff rates, and must continue to do so in perpetuity; and the land grant roads are now carrying and must carry in perpetuity the mails of the United States over the land grant mileage for 80 per cent of the compensation fixed for non-land-grand roads. In addition, the states in many instances imposed further obligations, as a condition to pass the grant received by it to the railway company. An instance of this is the 5 per cent gross receipts tax imposed by the state of Illinois on the Illinois Central.

"The amount which the government has received from various land grant roads in the form of reduced transportation and in reduced mail costs has not been ascertained, and can only be estimated. It has, however, been substantially in excess of $75,000,000. The Interstate Commerce Commission is now requiring each carrier which owns a piece of railroad property in aid of the construction of which land was granted, to report in the most complete detail the information required by the federal valuation act. However, the process must be somewhat slow, because many railroads were not able to financially survive the efforts and expenditures necessary to construct the mileage required to secure the benefit of the lands granted to them. In almost every instance construction of the lines was into territory where substantially no traffic existed. The operation of a railway in the absence of existing traffic is a most hazardous undertaking. Bankruptcy followed this effort as to many of the land grant roads. Such grants, therefore, passed from the companies to which they were made to other companies, and sometimes there was a second failure, reorganization or sale, and they passed into the hands of a third company. Some of those engaged in the conduct of public agitation against railroad companies discuss the land grants in the light of the value today and fail to mention the value at the time the grant was made, the obligations imposed upon the railroad companies in accepting the grants, and the fact that the acceptance of many of them resulted in financial disaster.

"Perhaps the only facts not submitted to the jury of public opinion are those showing how inadequate the grants were when compared with the obligations assumed by the railroad companies and how the construction of the roads in pursuance of the obligations assumed in the grants resulted in financial ruin."

Mr. Bledsoe also discussed various features of the railway executives' plan, which he said was the most flexible and workable that has been presented and the only one which attempts to prescribe a definition of a reasonable rate. He also advocated strongly the federal transportation board, saying that now in order to secure a needed increase in rates it is necessary for a road to present to the Interstate Commerce Commission a state of facts that discredits the financial standing of the road and makes it difficult to sell securities because in order to get the rate increase "you have got to prove you cannot survive without it." He also urged the importance of continuing the standard return pending a rate readjustment because the President has indicated that he does not, for the time being at least, contemplate an increase in rates. He added that the stockholder has had no increase to meet the high cost of living. Mr. Bledsoe also answered vigorously some of the arguments made by Luther M. Walter in his advocacy of the Warfield plan, which Mr. Bledsoe said is thoroughly destructive of the property rights and security values of those roads that have heretofore been regarded as successful and the securities of which constitute a large part of the assets of life insurance companies, savings banks and other conservative investors.

Judge Anderson Proposes Unified Railroad System

George W. Anderson, United States district judge at Boston, formerly a member of the Interstate Commerce Commission and the principal author of the present federal control law, appeared before the committee on August 27 and proposed a plan for a unified United States Railroad, combining features of both the Plumb plan and the Amster plan. In describing the plan Judge Anderson said in part:

"Charter a federal railroad company, with very broad powers, including, inter alia, eminent domain to take existing transportation facilities, as well as land, etc., for additional facilities, stocks, bonds of existing companies, or any other kind of needed property with power to issue stocks and bonds for cash at par or for exchange with present security

holders; also to guarantee interest and principal of outstanding bonds.

"This corporation might well be managed by a board of, say, 15 directors, elected and appointed for, say, terms of 5 years each, so classified that the term of one of each class shall end each year. Five of the directors should be elected by the classified employees under by-laws, approved by th Interstate Commerce Commission. Five should be elected by the stockholders and represent capitalistic and profit-seeking interests. Five should be public directors, probably appointed by the President, probably from both political parties and confirmed by the Senate and required to have no financial interest in the stock of the company. This board should have broad, general, managerial powers, including the power to provide for regional administration as they may think wise and experience may dictate. The United States R. R. Co. should be capitalized, not less than 25 per cent nor more than 40 per cent in capital stock, the balance in bonds. The capital stock should have a standard dividend rate not less than 5 per cent nor more than 6 per cent, cumulative—such rate as will fairly ensure par market values in all normal times. Probably new issues for extensions and additions should be distributable to outstanding stockholders at par, although the stock would in ordinary times undoubtedly sell at a substantial premium. But it is desirable that there should be an adequate incentive to spend new money for needed and useful railroad development.

"I think, although this is not free from doubt, that the government should guarantee an annual dividend on this stock, possibly of 4 per cent, not less than 3 per cent. Such guarantee would, in my present view, cost the government nothing; it would stabilize the financial market, improve the credit of the company, and reduce the ultimate capital cost of our transportation facilities.

"Any surplus profits above operating expenses, fixed charges, and standard dividends should annually be divided into thirds:

"(a) One-third for the benefit of capital, applicable to an additional dividend up to a reasonable maximum, probably 7 per cent. Any balance of this 1/3 accruing in fat years should be held in a reserve for the purpose of providing for the payment of the standard dividend in bad years.

"(b) One-third as a dividend to labor on a properly classified schedule.

"(c) One-third for strictly public uses; at the outset perhaps to pay for the government's advances hitherto or hereafter to be made during the transition period, thereafter for such public purposes as Congress may authorize by statute or through the U. S. R. R. Co. and the Interstate Commerce Commission.

"Given a single federal railroad company, with broad powers and organized substantially as above, the present roads might well be taken over substantially as follows:

"An offer should be made to the stockholders of the chief roads to buy their stock by exchanging stock of the U. S. R. R. Co. in such amounts as to give to the present stockholders a return reckoned on the standard dividend of the new stock not greater, and perhaps, considering the greatly improved quality of their security, somewhat less, than that which has accrued to stockholders from the regular dividends paid during the period of federal control. To illustrate: If the standard dividend of the U. S. R. R. Co. stock is 6 per cent, Pennsylvania stockholders who have been receiving 6 per cent should be offered a chance to swap on terms not better than share for share. Northern Pacific stockholders who have been receiving 7 per cent would be given a like return by receiving one and one-sixth shares of the new stock for each share of their old stock. New York Central stockholders would have five-sixths as many shares of the new stock as of their present stock. In my present view, the new stock will be so much better than the old stock that the government ought to get some diminution in rate from the regular dividends paid even by the best of the railroad companies during federal control.

"At any rate, an offer should be made to existing stockholders so just and fair that the great majority of them would be glad to accept it. The rights of dissenters should be taken care of by due process of law substantially as are dissenting stockholders in ordinary cases of consolidation.

"No plan for the reorganization of our railroad system has any reasonable prospect of success that does not recognize the fundamental need of a radically changed status for labor.

"Labor must be given just and proper representation in the initial management of the roads, and assume a responsibility for the uninterrupted, efficient, economical and progressive development of the rail facilities—entirely different from that which has obtained hitherto when the railroads have been run by corporations, organized for profit, and by labor unions, organized for economic war. Full recognition must be given to the fact that the men who contribute faithful, efficient and long-continued service in the transportation industry are as much entitled to representation in the management thereof, and must be held as responsible for the wise exercise of managerial powers, as are the contributors of capital used to pay for the railroad facilities.

"The present status of irresponsibility and consequent threatened interruption of railroad service, together with the utter lack of proper incentive for efficiency and economy in the management and operation of rail facilities, is practically admitted by all to be intolerable. The only plan now before Congress which really undertakes to meet this essential difficulty is the Plumb plan, and that plan offers, in my view, a remedy which may not improbably be almost, if not quite, as bad as the disease that it undertakes to cure.

"Labor is entitled to a large and influential position in the management of our transportation industry. It is not entitled to control that industry, either as proposed in the Plumb plan, through management of the corporation administering the rail facilities, or as is potentially involved in the present system through the domination of extra corporate organizations called labor unions. The railroad business is a public business. It must be managed by, and controlled for, public interests. Until that fundamentally important principle is recognized and sought to be made effective, there will be neither peace, security, nor progress in our transportation field.

"I propose to meet this difficulty by providing that in the contemplated unified United States Railroad Company the classified employees shall elect one-third of the directors or governors. In addition the law should provide for a competent and impartial tribunal to deal with all wage and other labor controversies, its decision to be final. Labor should also have a one-third profit-sharing interest in any surplus profits above standard dividends.

"Given, then, a fair share of initial managerial responsibility, a competent tribunal to determine all labor controversies, a profit-sharing interest in the business, combinations of employees in restraint of trade must be made illegal on the railroads, as are like combinations of capital in general industry. Strikes are combinations in restraint of trade. They are now legal. With this radically changed labor status, labor would need no such weapon, and they must, on the railroads, be made illegal, their illegality to be dealt with by the courts of equity and the courts criminal, substantially as are illegal capitalistic combinations in restraint of trade.

"But the right of the individual employee to leave his employment, even if he breaks a contract, should remain inviolate. The railroad employee should be as free (and no freer) to break his contract as is the capitalist."

Representatives of the state commissioners were to follow Mr. Anderson, after which it was expected that Mr. Walter would return to answer some of the attacks on the Warfield plan made by the representatives of the executives.

At a party conference of the Republicans in the House the railroad question was given a prominent place in the legislative program for the session. Chairman Esch, of the Interstate Commerce Committee, said it would probably be three weeks before the hearings on the railroad legislation would be completed.

Orders of the Regional Directors

FEDERAL TAX ON LONG DISTANCE TELEPHONE MESSAGES.—The Southwestern regional director in Order 230 quotes a letter from the Commissioner of Internal Revenue, stating that telephone messages directly connected with the operation of railroads under federal control are not subject to tax. The Northwestern regional director has issued a similar order, Supplement 4 to Circular 59.

Secret Service Department.—Order 231 of the Southwestern regional director states that Charles Weinbrenner, recently appointed inspector in the Southwestern region representing the Secret Service and Police Section of the Division of Operation, will co-operate with special service departments in every way possible. Chief special agents should forward to him copies of their reports relating to important cases of theft.

Shippers' Export Declarations.—Supplement 1 to Order 110 of the Southwestern regional director states that it will hereafter be necessary for shippers to file but two copies of shipper's export declaration covering shipments to foreign countries.

Roadmasters' Convention.—The regional director of the Central Western region issues similar instructions to those issued by the Eastern regional director in Circular 102-42 (*Railway Age*, page 316, August 15).

Grain Embargo, Primary Markets.—Supplement 7 to Circular 83, canceling Supplement 6 thereto, states that grain that is included in permit regulations when reconsigned from destination originally named to a primary market will require an individual permit from the primary market to which reconsigned. This will include:

1. Cars shipped from one country station to another and reconsigned thence to a primary market.
2. Cars shipped from a country station to a primary market on road or blanket permit basis, and before reaching that market reconsigned to a different primary market.
3. Cars shipped to a primary market and afterwards reconsigned to another primary market.

National Railroad Accident Prevention Drive.—The Northwestern regional director, file 97-1-20, promulgates a letter from the director general with reference to the "National Railroad Accident Prevention Drive," October 18-31. (*Railway Age*, August 15, p. 326.)

Export Bills of Lading.—The Southwestern regional director in Circular 240 issues revised instructions governing the issuance of through export bills of lading via North Atlantic ports. The Southwestern regional director in Circular 241 issues revised instructions governing the issuance of through export bills of lading via Pacific ports.

Parcel Post Weight Limit.—Circular 242 of the Southwestern regional director quotes the order of the postmaster general fixing the limit of weight for surplus food products and other supplies under the control of the War Department, placed on sale to the public by that department and distributed to the purchasers through the parcel post service, at 125 lbs.

Special Agents' Organization.—Circular 243 of the Southwestern regional director announces the organization of the Southwestern Regional Association of Chief Special Agents, the object of which is to promote co-operation between the special service departments of the various lines in the Southwestern region. The first meeting of the association will be held at Galveston, Texas, August 27.

Pay and Vacations of Train Despatchers.—Supplement 13 to Circular 28 of the Northwestern regional director states that, because of the rather indefinite status of train despatchers in the past, they appear to have suffered the disadvantages attached both to officers and employees without enjoying the advantages attached to either class; and in view of the exceptional importance of the work of train despatchers, the men should be classed as officers and given fully the consideration due to officers. Instructions are issued to insure train despatchers the same treatment accorded other division officers.

Industry Tracks.—Supplement 12 to Circular 33 of the Northwestern regional director quotes Supplement 2 to General Order 15 issued by the director general and providing that in the absence of a written contract as to the maintenance of an industry track laid prior to March 26, 1918, the practice of the connecting carrier prior to federal control, as applied to such track of any particular industry from the beginning of its use by such industry, shall be considered as equivalent to a written contract in accordance with such practice. While contracts are desirable covering side tracks constructed prior to federal control and not previously covered by written agreement, the execution of such contracts is not now required by General Order 15. The rails and fittings in that portion of the track required to be paid for by the industry may be leased to the industry with rental at 6 per cent on the current market value of the material, provided good and sufficient security is furnished to cover the return of such material and that the rental be paid annually in advance.

Inspection and Testing of Stationary Boilers.—The Southwestern regional director in Circular 245 states that Rules 6 and 7 of Mechanical Department Circular 11, dated November 11, 1918, are modified as follows:

"Where two or more boilers are connected in parallel to one steam main, the maximum period between the testing of steam gages and the testing of safety valves will be six months. These tests should be made at the time the annual inspection certificate (Form MD-27) and semi-annual inspection certificate, (Form MD-26) are prepared."

The Northwestern regional director in file 67-1-8, issues similar information.

Issuance of Through Export Bills of Lading Via North Atlantic Ports.—Supplement 1 to Circular 240 of the Southwestern regional director states that paragraph 6 of Circular 240, which reads: "Ocean charges should be collected by steamship lines and bills of lading should read 'Ocean charges collect,'" has been amended as a result of advice from the office of the Director of the Division of Traffic so that there is no objection to accepting prepayment of ocean charges in instances where shippers desire to prepay.

Application of Floor Racks in Refrigerator Cars.—Circular 244 canceling Circular 225 of the Southwestern regional director (*Railway Age*, page 108, July 18), states that in order to reduce the loss of perishable freight in transit particular attention must be given to insure proper ventilation in refrigerator cars used for that purpose, and calls attention to the necessity for carrying out the provisions of Circular 225. Authority is also extended to provide for the application of floor racks under the conditions outlined in Circular 225 prior to securing the consent of the corporate officer. Any program should include only that work which will be finished in time to put the cars in service prior to January 1, 1920.

Roadmasters' Convention.—File 8-1-8 of the Northwestern regional director similar to Circular 102-42 of the Eastern regional director (*Railway Age*, August 15, page 316).

Master Blacksmiths' Hold Twenty-Fifth Convention

Papers on Heat Treatment of Steel, Autogenous Welding, Spring Making and Shop Equipment

METHODS OF SECURING increased production in the shops and increasing the service secured from forgings were the principal topics discussed at the twenty-fifth convention of the International Railroad Master Blacksmiths' Association, held at the Hotel Sherman, Chicago, on August 19-21. The convention was opened with prayer and an address of welcome, following which the president, W. C. Scofield, delivered an address which reviewed briefly the developments since the last meeting in 1916.

President's Address

Mr. Scofield said in part: "In reviewing the great world conflict, our craft can with reasonable pride look at the many monster guns, munitions and engines of war, and know that their ingenuity and brawn helped in making these mighty implements. In the present upheaval let us forget the fallacies of socialism, the ignorance of bolshevism, and the utter nonsense of the soviet, and return to the principles of our fathers and realize that the safety of our institutions, the success of country and the happiness of our home, depend not so much upon how much we can get, but upon how much we can do.

Cost Accounting in Blacksmith Shops

By G. F. Hinkins
Westinghouse Air Brake Company

A paper touching on the history of the association and the duties and responsibilities of its members was submitted by G. F. Hinkins. In concluding his paper Mr. Hinkins made a plea for more thorough methods of computing the cost of work, which is given in part below:

As a rule, the foremen blacksmiths have every qualification for handling shop work. By that, I mean that they possess executive and mechanical ability, but how many understand the fundamental principles on which their business is conducted? Of course, they can tell the flat labor cost of their product, but do they know the overhead expenses? This is a very complex proposition. The overhead for making a flat chisel is much less than the overhead for making an intricate drop-forging, by reason of the high first cost and upkeep of the dies. The overhead expense of producing different forgings varies in accordance with the nature and shape of the forging, as the shape of the forging will determine the cost of both the drop forging and trimming dies. Drop forgings on account of their shape and refinement will influence the life of the die. The maximum output from a set of dies will vary from 10,000 to 50,000. In order to get the cost of the product, it is necessary to get the first or original cost of the dies and also the number of times the dies are dressed before they are worn out and the number of forgings made from these dies. It will be perceived from the foregoing that everything that is necessary to produce a forging must enter into the cost of that forging, every detail operation must enter into it.

There must be business methods for ascertaining the true cost of doing work, especially if manufacturing is being done for the market. If a furnace needs repairing and the brick mason helps himself to a load of fire brick to repair it and does not charge the brick against that furnace, then some part is not charged for something it did get and some other part is paying for something it did not get. The upkeep of the various types of equipment, such as steam hammers, drop hammers and forging machines will differ and the expense for repairs must be kept separate, which is done by charging such items against the individual machine. Every machine and furnace is designated with a shop or machine number so that all repairs and renewals are charged against the equipment. In this way, the cost of maintenance of every machine and furnace is known. This is a necessary feature of a cost accounting system which gives the cost of any manufactured article. You may manipulate your charges as you please, but you cannot get away from the cost. Your firm pays the bill.

Drop Forging and Its Possibilities

By J. D. Boyle

The following is an abstract of the paper on this subject: "Steel is not a simple substance like pure iron, gold or copper, but a complex artificial substance. It is composed of groupings of elements which enter into its makeup. These elements are only visible with the aid of a microscope. The term micro-structure has been given to what is thus brought to view. Upon polishing and etching a piece of steel the structure is apparent through the action of the etching medium (acid or other corrosive materials) which affect the elements differently, causing each to assume a color or structure peculiar to itself.

When steel is heated to above its critical point for the forging operation and submitted to blows under the hammer, the molecules of the metal are forced apart. To bring the steel to its greatest maximum strength a proper scientific heat-treatment is needed. This is accomplished with proper furnaces, heat measuring instruments and trained workmen. With all the above-mentioned facilities, automatic signal pyrometers, well-designed cooling systems and semi-muffle furnaces designed for this purpose should be used. Heat-treating departments of this type are built to insure quality and progressive production. The materials going into the vital parts of a locomotive should be subjected to a chemical analysis and a heat-treatment applied. After heat-treatment, test specimens should be taken to determine the physical characteristics.

DISCUSSION

H. E. Gamble (Penn.), told of the wide variety of work made under drop hammers. At the Juniata shops hammers ranging from 1,500 to 12,000 lb. are in use, and the capacity of the largest size has been overtaxed. All reciprocating parts for locomotives are heat treated after they are drop forged. G. Fraser (A. T. & S. F.) stated that a steam hammer could be used for drop forge work by making dies similar to those used in the drop hammer. The dies are held in a box tool secured by a band and hung in the frame. Several members stated that this method was being used with satisfactory results. O. Schutze (C. M. & St. P.) told how drop forge dies had been adapted to use in a Bradley hammer for making spring hanger gibs. Ample clearance must be allowed to dispose of surplus material, otherwise the dies will have a short life. Attempts to make drop forgings under a hydraulic press had proved unsuccessful. There was some discussion regarding the best material for piston

keys, and it was agreed that tire steel was the most satisfactory for this purpose.

The Heat-Treatment of Iron and Steel; Purposes and Results

By George Hutton
New York Central

Heat treatment as pertaining to railroad work in railroad shops seems to have gone backward during the past three or four years. When first introduced on locomotive work, it was thought this method was going to create a great improvement in the quality of forgings over the hit or miss method. The method in vogue today is for the forge shop to construct the different forgings and send them to the various departments to be machined to size and then applied to the locomotive without any record or any means of knowing if these forgings are of equal strength or of uniform quality.

These are the conditions today. In forging side rods, piston rods, rod straps or any piece of work that may be important, you endeavor to have these forgings made up by the best workmen you may have, and to exercise great care in heating and hammering them. You may also be cautioned and caution your men to have them carefully annealed and laid on the floor stacked in such a way as to cool off equally, so that machining may be best accomplished. When you have carefully looked after this you have forgings that will only stand up to a strain equal to the strength of annealed material. Remember, annealing weakens forgings.

You will remember when vanadium steel was introduced in railroad work about the time when heat-treatment was also introduced or brought into shop practice. Why was heat-treatment confined to the alloy steel only? The steelmakers furnished a steel which, if no heat-treatment was applied, would not be any better or any different from the annealed open hearth steel generally in use before the time of alloys or the open hearth in use today.

You have, no doubt, noted the breakage of heat-treated alloy steel forgings that may have come to your shop off the road, and I am positive in my opinion that your verdict was, "Too hard; brittle; too hot when quenched; not drawn back enough," and this is exactly what has set back or almost killed the wonderful results of heat-treatment, especially on alloy steel. The average results of this method has been a sacrifice of elasticity for tensile strength. I am of the opinion that when the alloy steel was introduced, it was never meant that forgings should be treated to such an extent that breakage was the natural result, and certainly this has been the case.

During the 1915 convention in the discussion on heat treatment, one member remarked that if we make our forgings, get the proper heat and proper hammering we would have much better forgings than any of the heat treated ones. If we could only attain efficiency of that kind the whole problem would be solved. But who are the craftsmen who could do it and put it in effect in all our smith shops? There is too much left to guesswork when that method is compared to heat-treatment. When heat-treatment was introduced the main object was to get strength, durability and uniformity, and also to reduce the weight of forgings and castings, and to a great extent this has been accomplished with the exception of securing uniformity, and that is what we are trying to attain with this method.

Heat-treatment of locomotive forgings is a very different practice in comparison with heat-treatment on automobiles or trucks or any light forgings in other industries. We must all admit that the automobile builders have been successful. It has been proved that we can get the desired strength and also the endurance test on some forgings, and several shops have been very successful on all forgings they have heat treated, but failure has been the result in the majority of shops. I believe it has come about through the fact that all the experiments were on alloy steel only. The greatest trouble is to attain uniformity in heavy forgings. Aside from all the discouraging features of heat-treatment that are found in the average railroad shop, I believe it is a method we should all endeavor to learn more about.

There are many obstacles which are detrimental to successful heat-treatment of locomotive forgings in railroad shops. There is the cumbersome equipment and space which is essential to success. There are very few shops that could readily be prepared to treat even the lightest of forgings. Then there is the output to be considered and the extra help required. But considering all the obstacles and expensive equipment, I believe it would prove a good investment when the method was thoroughly understood.

Discussion

There was considerable difference of opinion regarding the advantages secured by heat treatment. H. E. Gamble (Penn.) stated that in addition to improving the quality of the steel, heat treatment brought out defects. G. Fraser (A. T. & S. F.) stated that he considered annealing preferable to heat treatment. While heat treated parts showed high tensile strength, they seemed to break down under the vibration to which they are subjected in actual service. W. C. Scofield (I. C.) attributed much of the trouble experienced in using heat-treated parts to the unequal rate of cooling in light and heavy sections. Large forgings are heated above the critical temperature, to treat the material in the interior of the section, and are then quenched again at a lower temperature to take care of the outer layer. Mr. Scofield thought that the high temperature might do more harm than good, and suggested that this explained why small parts have given splendid service after heat treatment, while larger parts have often failed. George Hutton (N. Y. C.) stated that the New York Central has heat treated material for three years and he had still to hear of a single failure. A motion was adopted stating that it was the sense of the convention that wherever heat treatment can be done, it is a success.

An Up-to-Date Railroad Blacksmith Shop

By George Fraser
A. T. & S. F.

The location of the blacksmith shop is an essential feature not only as it influences the design and arrangement of the building and the layout of the tools, hammers, forges, etc., but also as affecting the output of the shop. The nature of the work and the conditions surrounding it require the building to be in an isolated location in order to provide light and air on all sides. In repair work much material travels from the erecting and assembling shop to the blacksmith shop and back again, especially in locomotive work. A large proportion of the material passing between the locomotive and blacksmith shop is heavy and bulky. For this reason the blacksmith shop should be so situated in relation to the locomotive department as to provide for movement over the shortest and most direct route. Such material is usually transported on push cars and trucks, so that distances are important in economizing time and increasing output.

From the standpoint of shop production, the blacksmith shop is looked upon as a feeder for other shops of prime importance. Sometimes this is overlooked in preparing the original plans, and the average blacksmith foreman is never consulted with regard to them, so when the shop is completed he is invited into it, and it is up to him from then on to make the best of it.

The blacksmith shops at the principal shop plants of the

large railway systems turn out the forgings entering into the construction of new cars, and the bulk of the car forgings required in keeping up the repairs of both freight and passenger car equipment on the line, as well as the forgings for locomotive repairs. As there is a difference in the nature of the work for the two departments, each should occupy a section common to itself, and the machines, forges and equipment should be arranged accordingly. Naturally, the equipment for each department is situated in that portion of the blacksmith shop building nearest to the principal shop which it serves. A ground plan in the shape of the letter L is a convenient arrangement for the blacksmith shop, accessible to both the locomotive and car departments. The many conditions affecting the demands upon the blacksmith shop and the differences in the dimensions of the shops on the various railway systems render it impractical to attempt to give a definite proportion based upon any given unit.

The introduction of cast steel in many details for which forgings were formerly used almost entirely has affected the necessary size of the blacksmith shop so far as the locomotive department is concerned. The increased scope of forging machines assisted by the extended use of formers and dies for rapidly duplicating standard parts of cars has increased the possible output of car forgings without enlarging the area required by the shop building.

A general practice has been to span the entire floor without providing intermediate supports for the roof trusses, and in a number of cases this distance equals 100 feet. The trusses are usually supported by the side walls, which carry the weight of the roof structure and roof. At Topeka the steel skeleton is entirely independent, and the roof structure is carried by built-up columns, to which the walls are secured to provide stability. The roof trusses span a distance of 100 ft. The elimination of supporting columns and the long span of roofed trusses without intermediate support allow free scope in the distribution of equipment on the floor. The method of handling heavy work in the blacksmith shop by means of swinging jib cranes requires freedom of action for the crane arms, and the absence of obstructions facilitates the arrangement of these cranes. The long span of roof trusses, together with the requirement of a stiff frame construction to withstand the additional load imposed by supporting the upper ends of the crane column calls for heavy parts and careful design of the roof structure. The horizontal loads imposed by the swinging shop cranes requires stiff lateral bracing. While the distance from the floor to roof trusses at some of the older shops is about 20 ft., the height of the more modern shop has been increased to 30 ft.

Almost without exception, the floor of the blacksmith shop is of earth of some kind. This is frequently covered with a coating of cinders well tamped, and by all means should be six inches higher than the level of the outside surroundings.

The ventilation necessary in a blacksmith shop and the amount of natural light needed require a high free space not only to allow the smoke and gas to rise away from the floors and forges, but to permit the diffusion of light from long windows. It is a very noticeable fact that the cleanest, brightest, most airy blacksmith shops are those with high walls. The roof of the blacksmith shop is usually surmounted by a wide monitor extending nearly the entire length of the roof. This is provided for the sake of ventilation rather than to distribute light. The windows in the walls are depended upon principally for natural light, and it is generally considered that the window area should equal at least 60 per cent of the wall area. In order to offer the least obstruction to the free circulation of air throughout the shop in warm weather and in warm climates the windows should be hung on pivots to provide a greater opening than raising and lowering of sashes.

In addition, the shops should be provided with rolling doors and the lay of the shop should be east and west, with an open space clear from other buildings on the south side so that all alike will share the south breeze in hot weather. An arrangement frequently followed in the construction of the monitor is to alternate the windows along the sides with space having wooden slats built in on an angle, thus permitting the free circulation of air, while excluding rain and snow.

The removal of smoke and gases from the forges is provided for by different methods. Experience in some shops where great care was used in their design to provide for efficient ventilation is said to have proved that smoke hoods in high shops are unnecessary and that the interior of the building is clear and free from smoke and gas at all times.

Hand forges are usually arranged in a row along the wall, conveniently placed according to the class of work which they serve. The distance between centers of forges varies from 16 to 20 ft. and 5 ft. from the wall. Forges are arranged at a uniform height of about 24 in. and should be of uniform shape and size.

Careful provisions for tool racks is a necessary detail not to be overlooked, for the care and maintenance of tools and equipment is the duty of the energetic foreman. Tool racks are generally arranged along the wall of the shop and in the center of the shop. For hammer, tools, etc., a revolving cone shape tool rack may be provided.

Oil is the most common fuel used in blacksmith shop furnaces. In latter years it has rapidly displaced coal and coke, not only proving more satisfactory and economical as fuel, but also improving the appearance of the shop by removing the necessity of the unsightly coal and coke boxes about the shop. It has been demonstrated by practice that with oil as fuel it is possible to obtain a larger output, a better grade of work by the greater intensity of heat as well as more even heat, the elimination of the necessity of attending the fires, the shortening of the time required to bring the furnace to the desired working temperature and improvements in the conditions under which furnace men work. It is a noticeable fact that in a majority of the new shops particular attention has been paid to the furnace equipment, the design of the furnaces for the various machines and their location in relation to the machine and the movement of the material.

The location of large scrap furnaces should be on the outside of the shop with the working side of the furnace flush with the inside of the main wall. To avoid any possible shortage of steam, boilers should be installed over all large scrap and forging furnaces. By this plan no fuel expense is chargeable to producing steam as the flame and gas from the furnace does the work

In arranging the fire and furnaces, they should be so placed that the men are not too near a furnace or fire when working on the metal. Efficiency engineers will figure on the number of steps that can be saved in handling from the fire or furnace to the hammer, or anvil, overlooking entirely the comfort of the men whose vitality is sapped out by having the fires too close to the anvil or hammer. The arrangement of furnaces, anvils, hammers and machines should be left to the judgment of a practical man, one who is acquainted with shop practice and in charge of smith shops.

No part of the general railroad repair plant has undergone a greater change during the past 10 or 15 years than the blacksmith shop. A few years ago the majority of work passing through that shop was done on open fires, and a large quantity of the new material was purchased from manufacturing concerns; today, due to the introduction of forging machines, the majority of work in the modern shop is, or should be, machine work.

Modern machines without proper die equipment are of little value. The main blacksmith shop should be provided

with its own tool room, where the die work could be carried along independent of the locomotive department, thus avoiding delays. Little attention is given by other departments to assisting foremen blacksmiths along these lines. The following equipment is sufficient for the average shop: one each, planer, shaper, lathe, drill press and face plate. This equipment is installed in the blacksmith shop tool room at Topeka and greatly facilitates the work of getting out dies, etc.

In connection with furnace equipment and open fires, particular attention should be paid to the layout of blast piping. Efficient blast is a very important consideration to the blacksmith shop, as it practically governs the heating capacity not only of furnaces but of the open fires. The blast line should be overhead, and the safety valves should be provided in the up and down line leading to the forges to take care of any gas that may possibly enter the line. The main blast line should be reduced in area in proportion to the distance covered so as to maintain a good pressure at the end of the line. When compressed air is used in addition to the blast to atomize fuel oil an eight-ounce blast is sufficient. When fan blast alone is used, nothing short of ten ounces will give satisfactory results. The exhaust pipes on steam hammers should pass downward through an independent pipe suitable to carry the exhaust beyond the shop into a catch basin.

The modern shop may have all the facilities it is possible to provide and still not get results. The foreman in charge must have the good will and hearty co-operation of each and every man under him to reach the maximum of efficiency.

Discussion

The ideas presented in Mr. Fraser's paper were endorsed by the members who agreed that the arrangement outlined was practically ideal. W. J. Mayer (M. C.) questioned the advisability of restricting the exhaust from the steam hammers, and asked whether any plants used the exhaust for heating. Several plans for using the steam were described. In some cases a butterfly valve is used in the exhaust steam line to limit the pressure. At the West Albany shop of the New York Central the exhaust from the hammers is piped to the heating system and no heat is required in any part of the plant other than that furnished by the exhaust steam. A similar arrangement is used on the St. Louis-San Francisco at Springfield, Mo. The advantage of piping the exhaust down to prevent condensation, injuring the packing and dripping on the dies was brought out by several who spoke.

Reclaiming Scrap in the Railroad Shop

By Walter Constance

St. L.—S. F.

Although this subject includes scrap reclaiming by the use of both oxy-acetylene and electric cutting and welding process, electric welding is not in use at our reclamation plant, and I will have to leave the discussion of electric welding to others.

The oxy-acetylene torch is used in stripping frogs, switches, etc. Good filler blocks, reinforcement and similar parts are saved to be used again. The shop furnishes over 50 per cent of all switch material used on the system. Switch frogs, switch stands, switch rods and plates are reclaimed or repaired. Brace or slide plates are made from old Weber joints and scrap boiler steel, also transit clips for switch points from the scrap steel. We have made quite a number of oil tanks from tank cars which have been burned. These are cut up by the torch and the best of the steel is sent to the boiler shops for use. The rest is cut up under shears to make switch material and repair parts for steel frame cars. Old cisterns for locomotive tenders are cut up and used to make loading platform running boards, and coal car corner bands. Good parts of scrap steel cars are used for the same purpose. Some of our brake beam stripping is done by the oxy-acetylene torch.

We formerly welded quite a number of bolsters and baggage wagons and warehouse trucks. Oxy-acetylene welding comes in handy on these things, especially for repairing steel warehouse trucks, the frames of which are broken, as it does not pay to repair them in the blacksmith shop when they have to be stripped, but by oxy-acetylene welding they can be made serviceable again at small cost.

We formerly welded quite a number of bolsters and truck frames as well as broken couplers at this point, but of course we have discontinued doing so now. However, we are changing a large number of good couplers with 5 in. by 5 in. shank, 6½ in. butt, to 5 in. by 7 in. shank, and 9⅛ in. butt. This is done by welding tapered slabs of steel on the shanks and blocks upon the butts. These then conform to M. C. B. dimensions.

We also reclaim a number of derailing frogs, which are for smaller rails than our standard 90-lb., by splitting them and inserting a piece in the side and welding up with oxy-acetylene so as to bring them to the proper height.

There are no rolls at our plant, but all second-hand bolts are used by cutting off and rethreading, and nuts by retapping. Also all flat iron and round bars are saved for use. Bottom rods are made with solid jaws from old 1½ in. A. C. rods, dump rods, and so on. Truss rods 1¼ in. in diameter are made into brake slabs. The short pieces left over are made into brake beam truss rods, bolts and coupler rivets. Other sizes of rounds are used for handholds, bolts, etc. Rusty ¾ in. and ⅞ in. steel is rolled into brake shoe keys on an abandoned spring roll. Rusty and pitted rounds 1⅛ in. 1¼ in. and 1⅜ in. are made into grade stakes for the engineering department. All limed iron is rattled and made into frog bolts, and switch chain links. We make standard 1 3/32 in. brake pins by upsetting 1 in. iron on the forging machine.

All brake beam repairing on the system is done at this plant. We use an air bulldozer for straightening. All beams are stripped by laborers and are reassembled by blacksmiths and helpers.

All round iron and bolts are straightened under air hammers at the scrap docks. The bolts are sheared to length and sent to the threader and the iron is sheared for heading in the blacksmith shop. All serviceable track spikes are also straightened at the yard shop.

Coil springs that are standard are reset. Scrap springs are uncoiled on a special machine and made into lining bars, jack bars, rock drills and drift pins.

All track tools on the system are sent here for repairs. Worn claw bars are made into engine pinch bars and lining bars. Picks are welded, if they have one end long enough to sharpen; where both ends are to be welded it does not pay to repair them. Short picks are heated and cut off to obtain steel for welding out others. We also make new claw bars, lining bars, and tamping bars from scrap tire steel. All blacksmith's tools are made from tire steel, and we also use tire steel for bolt dies and hammer tools.

Crooked angle bars for small sized rails are straightened in tools under the steam hammer; this tool spreads the bars slightly and makes them serviceable for siding and commercial tracks.

All coupler yokes are stripped at this plant under a power shear. Yokes are repaired when possible and scrap yokes are used to obtain iron from the forging furnace.

Brake levers that are not standard are repunched, cold plugged and returned to service. All car material, such as brake rods, brake hangers, brake staffs and fulcrums which are repairable are sorted at the scrap docks and repaired in the blacksmith shop.

A very close check is kept on the costs, and if a good margin of profit is not shown we do not attempt to repair and reclaim. The welding and cutting apparatus is here to stay, because we make a specialty of repairing or reclaiming, whereas that is only a side line in ordinary shops, and naturally not so successful.

DISCUSSION

C. E. Stone (D. L. & W.) told of the good results secured by rerolling scrap bars. G. Fraser (A. T. & S. F.) brought out the advantages of reclaiming as much material as possible at the shop where it originates. He also called attention to the necessity for careful consideration of the work done in order to avoid reclaiming where it is more expensive than the purchase of new material.

Powdered Coal for Furnace Heating in Smith Shop

By H. E. Gamble

In handling producer gas and oil furnaces for forging heavy locomotive parts, drop forging, heat treating and bolt making, the question arises whether a change to powdered coal would be warranted on account of the low cost in operating. In connection with experiments on mixing crude oil with powdered coal, this might help to use up heavy grades of fuel oil coming into the markets for heating purposes. Coal in a finely divided or powdered state, represents the most advanced method for producing perfect combustion, making it possible to more nearly obtain the full heat value of the fuel than by any other known means. The generally recognized waste, unstaple or otherwise low-value coal mine products are suitable for converting into the powdered form. To give the best results as regards complete combustion and the least trouble as regards ash and slag, it is very necessary to have powdered fuel dry and keep approximately 48 hours' supply on hand to prevent the possibility of the coal absorbing too much moisture. The statement has been made that it is not necessary to build new furnaces, as by a slight change present equipment can be made to handle powdered coal. Coal rich in volatile matter is preferred, slack or screenings in preference to run of mine. To successfully burn powdered coal, it should be uniformly fine. The maintenance of a correct ratio of air to coal is absolutely necessary, as on this depends the ability to hold an unwavering and uniform temperature in the furnace, which ranges up to 2,200 deg. F.

We have unquestionably passed through one of the greatest fuel conservation periods known, and the members of this association should do all in their power to secure the best equipment and use their good judgment in conserving all fuel possible in running the blacksmith shops.

Other Business

The report of the secretary-treasurer showed a total membership of 375 and a balance of $741 in the treasury. A committee was appointed to confer with the officers of the American Railroad Association regarding amalgamation with Section III, Mechanical.

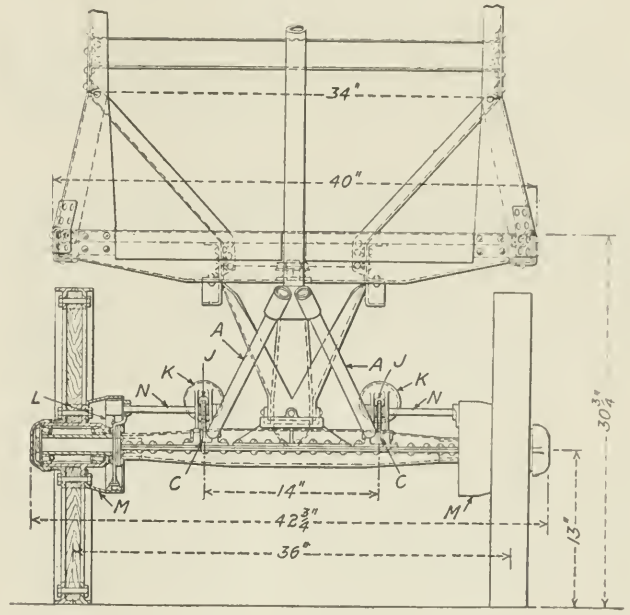
The following officers were elected: President, J. Carruthers (D. M. & N.); first vice-president, W. J. Mayer (M. C.); second vice-president, Joseph Grinc (N. Y. C.); secretary-treasurer, A. L. Woodworth (B. & O.). In the balloting for the location of the next convention, Birmingham, Ala., received the largest number of votes.

The American Institute of Mining and Metallurgical Engineers are planning to make their meeting at the Congress Hotel, Chicago, September 22 to 26, of especial interest to the local industry.

Baggage Trucks With Automatic Brakes

THERE ARE a number of four-wheeled hand-operated baggage trucks in use at various points on the Pennsylvania which stop automatically wherever the user happens to let go of them. The advantages of such a truck are self-evident. It is not necessary to chain the wheels and the truck will not move when heavy pieces of baggage or express are placed or shifted on it. Also the danger of having a truck, left unchained, run into a moving train is eliminated.

The two front wheels of the truck are equipped with inside band-brakes. Heavy coil springs connected by chains to the handle of the truck near the axle, hold the handle normally in a vertical position and keep pressure on the brakes. When the operator wishes to move the truck he pulls the handle down to a convenient position. This compresses the springs and at the same time releases the brakes leaving the truck free to move. When the operator lets go the handle it returns to the vertical position and again applies the brakes.



Front Elevation of Baggage Truck

The value of these trucks is evidenced in stations equipped with a few such trucks and a large number of others not equipped with brakes. There are a few trucks idle most of the time, but those equipped with brakes are never among the idle ones.

The New York State Federation of Labor has adopted a resolution in favor of the Plumb railroad plan.

Bethlehem Iron Ore Dock in Chile Completed.—The Iron ore dock of the Bethlehem-Chile Iron Mines, at Cruze Grande, Chile, construction of which was held up by the war, has just been completed. The dock has capacity for 30,000 tons of ore and is provided with 17 spouts, by which all 17 hatches of the standard 20,000-ton ore boats of the company may be fed simultaneously. The loading time is expected to average three or four hours per vessel, the discharge of water ballast requiring more time than actual loading. The dock is similar to the ore docks in Lake Superior. It is nearly 500 feet long and is loaded by discharging the ore from hopper cars at the top of the dock. The height of the dock from low tide to top of rail is 120 feet.—*Iron Trade Review.*

General News Department

The Canadian Northern freight office at Brandon, Manitoba, was robbed on August 20 of about $2,000.

The return of the railroads to private ownership was advocated by the Commercial Law League of America at its meeting in Cincinnati on August 19.

$100,000 in Liberty Bonds and $3,500 in cash were stolen from a vault in the office of the paymaster of the Boston & Albany at the South Station, Boston, sometime between Saturday night and Monday morning of this week.

In the New York-Toronto air race, arranged by the American Flying Club and Aero Club of Canada, for $10,000 in cash prizes and trophies, 19 of the 47 contestants, 12 American and 7 Canadians, had completed the round trip by last Wednesday night.

The American Association of Engineers, according to a recent statement, now has 35 railroad sections with memberships numbering from 20 to 250. The largest section is that of the Pennsylvania Railroad, while the Southern Railway has a section with 200 members.

A fire at the Jarecki Chemical Company of St. Bernard, near Cincinnati, Ohio, destroyed 20 cars containing corn, lumber and fertilizer. Charles Busch, engineman for the Baltimore & Ohio, and Jack White, conductor, ran a switch engine into the flames and saved 20 loaded freight cars from destruction.

A. W. Smithers, chairman of the Board of Directors of the Grank Trunk and a member of the British Parliament, arrived in Montreal, Que., recently for the purpose of making an inspection of the Grand Trunk System and also to confer with officers of the Canadian government regarding the status of the Grand Trunk in relation to the complex Canadian railway situation.

Louisville & Nashville passenger train No. 7 was held up between Columbia, Tenn., and Pulaski early on the morning of August 21 and robbed of valuable mail pouches. The bandits forced trainmen to cut the engine loose and started it towards Pulaski unmanned. It was found some time after near Wales, Tenn., a few miles north of Pulaski, where it had run out of steam.

The Traveling Engineers' Association has announced that the question of the amalgamation of this association with the Section III, Mechanical, of the American Railroad Association has been considered by a committee. Its findings will be presented at the convention which opens on September 16, at which time it is expected that the association will take definite action on the matter.

The first train over the Valley Railway reached St. John, New Brunswick, from Fredericton, on August 21. The St. John & Quebec Railway, the official name of the Valley road, has completed 159 miles of road. It joins the Canadian Pacific at Westfield and by its completion affords the shortest existing route between St. John and Quebec. The Canadian National is soon to take over and operate the Valley Railway.

The Flathead County (Mont.) Board of Equalization has denied protests by two railroad companies against assessments amounting to more than $2,000,000. The Northern Pacific asked a reduction of $1,595,405 in the assessment against its timberlands in the county, the total acreage of which is 129,675. Its value as returned by the Northern Pacific is $567,445 and that placed by the assessor, $2,162,850. An application made by the Great Northern to exempt from assessment more than $400,000 worth of tools and materials on the ground that it was government property was also denied. Appeals to the state Board of Equalization have been filed in both cases.

A threat to tie up the New York, New Haven & Hartford, helped to bring about a settlement of a strike which lasted five days on the New York, Westchester & Boston. The motormen and conductors on the New York, Westchester & Boston struck for and won the same wages as are paid on the steam railroads. With the increase of 25 per cent granted the men on August 17 this meant an advance of about 34 per cent. The men accepted a nine-hour day instead of the eight-hour day which they demanded. The New Haven owns 98 per cent of the stock of the New York, Westchester & Boston.

The Canadian Pacific social clubs held their first annual convention at Winnipeg, Man., on August 20 and 21. A constitution was drawn up centralizing all the Canadian Pacific social clubs under one governing body with headquarters in Winnipeg. J. Bending, president of the Winnipeg Club, was elected president of this governing body, and R. W. Beatty was elected general secretary. The presidents of all the existing clubs will form the central committee.

A comparative report of the amounts of materials in stock, exclusive of fuel, rail and tires in the Northwestern region shows that the value of this material has decreased from $55,778,875 on January 1, 1919, to $48,160,284 on July 1, of the same year. At the same time the number of months stock on hand, based on the June consumption, has decreased from 6.7 on January 1, to 5.8 on July 1. The value of materials transferred totals $1,115,828 for the period from December 1, 1918, to August 1, 1919.

To present graphically Safety First lessons to railroad employees has been the aim of George Bradshaw, supervisor of safety of roads under the jusisdiction of Federal Manager Frank H. Alfred. The latest bulletin issued by the safety organization under Mr. Bradshaw's direction carries out this idea in presenting to the employees one of their fellow workers who, through neglect, lost the use of one eye. His photograph, a reproduction of the piece of metal which caused the accident and the moral involved are presented graphically to the employees with the consent of the injured employee.

The Frank Thomson scholarships of the Pennsylvania Railroad have been awarded to Archibald M. Thomson, of Haverford, Pa., and Frank J. Travers, of Fort Wayne, Ind. Aside from the two who were awarded the scholarships this year, six other young men will continue their college courses this fall. The successful candidates receive certificates entitling them to payment by a trust company of a sum not in excess of $600 a year for each year during which they attend college. According to the terms of the trust, one scholarship is awarded to the successful candidate from the eastern lines and one from the western lines.

The railroad question is attracting more attention now than at any former period, according to the Chamber of Commerce of the United States, which daily receives hundreds of requests from all parts of the country for detailed information about it. The demand for data has been so heavy that republication of all the chamber's pamphlets and statements is necessary. An edition of 10,000 copies of the statement of George A. Post before the House committee on interstate and foreign commerce, in which the National Chamber plan was set forth, was exhausted within a week. Many inquiries are coming from farmers.

The United Brotherhood of Maintenance of Way Employees and Railway Shop Laborers will hold its annual convention in Arcadia Hall, Detroit, Mich., on September 8

to 20 inclusive. It is expected that 1,800 delegates will be present from the 2,500 lodges of this organization. One hundred and thirty-five general chairmen of this organization, representing the employees on that number of railroads, were in session in Detroit the week of August 19, forming a general chairmen's association and creating committees to arrange for the presentation of the various subjects which will come up for consideration at the annual meeting.

The Black Tom explosion on July 30, 1916, was caused by a German agent known as Lathar Witcke, alias Pablo Wabirski, now a federal prisoner at San Antonio, Tex., according to the statement of Dr. P. B. Altendorf, late of the U. S. Military Intelligence Department. If the cause of the explosion was incendiarism the Lehigh Valley would be cleared of liability for damages. In two suits that railroad has been held responsible for the explosion by juries that gave judgments aggregating nearly $1,500,000 to the Bethlehem Steel Company and Howell & Co. of New York. A suit of Jersey City claimants against the Lehigh Valley is on the Supreme Court calendar for trial in the September term.

George W. Hunter, receiver of the Louisiana & Northwest, nas filed a petition before United States Judge G. W. Jack of Shreveport, La., asking authority to abandon the southern end of the Louisiana & Northwest, i. e., the division running between Natchitoches, La., and Gibsland. The petition stated that funds are not available to keep that portion of the road in safe repair and that it is impossible to sell the railroad in its entirety. A sale was ordered sometime ago by Judge Jack but no bids were received. The petition has been referred to the Louisiana State Railroad Commission whose report and findings will be advisory only. The hearing before the Commission will be held at Shreveport on November 3.

Upon an inquiry from the Railroad Administration the Bureau of Internal Revenue has recently ruled that where transportation taxes have been collected by carriers on the basis of their legally published rates, and such rates have subsequently been declared excessive and unreasonable and ordered reduced by the Interstate Commerce Commission, reparation payments to the shippers being required, the carriers making the reparation payments may refund the amount of the taxes collected on the charges found excessive; or, in the event the taxes have been turned into the treasury, the carrier in making reparation may refund the tax on the amount found to be excessive and take credit for the same against amounts included in any subsequent monthly returns.

In a rear collision on the Pennsylvania at Elwood, N. J., on Sunday morning, August 24, one man was killed and more than 20 persons were injured. Ralph Townsend, engineer of the second section of the Washington excursion train, which telescoped the rear end of the first section, was held responsible for the accident by a committee of five railroad men appointed by R. L. O'Donnel, general manager of the Pennsylvania. The committee reported that the engineer's failure to see a yellow caution signal 4,400 ft. from the scene of the wreck made it impossible for him to bring his train to a stop in time. Director General Hines has announced that a "special inquiry will be made into every phase of the occurrence to ascertain the cause and locate and deal with the responsibility."

West Texas is facing a railroad blockade due to the exceptionally heavy oil traffic, the result of developments in the Wichita Falls district, according to Edward P. Byars, traffic manager of the Fort Worth (Tex.) Freight Bureau and Commerce Counsel of the Texas Petroleum Refiners Association. Appeals have been made by the Texas Petroleum Refiners Association, the West Texas Chamber of Commerce and the Texas Wholesale Fruit and Produce Dealers to the Railroad Commission of Texas and also to Director General Hines urging that action be taken at once to end the congestion. It is claimed that oil companies have no cars in which to transport their oil and that tanks, oil well supplies and equipment are being packed in the Fort Worth yard. In addition to the oil traffic, a large grain crop is being marketed and repeated calls are being made for cars in which to ship this grain. A telegram to the director general advocated the placing under the jurisdiction of Regional Director B. F. Bush of a forceful man to take complete charge of the situation with absolute authority to direct movement of traffic over any line he sees fit. The telegram intimates that there has been a competitive spirit manifested between the Southwestern Region and Central Western Region lines which has added to the congestion. The director of the Division of Public Service has advised the Texas shippers that the situation is being handled vigorously and that reports will be made in the near future.

The Canadian Railway Board of Adjustment No. 1 has issued six awards relating to wages and working conditions. By one of these rulings various clerks, express, roundhouse and station employees and freight handlers on the Canadian National Railways, who have been receiving $60 and $62.50 a month, will now receive the minimum of $87.50. The new scale is made retroactive to September 1, 1918. Another award gives an increase of $10 a month to Canadian Pacific Morse operators at what is termed "outside points" and $12 a month to the three percentage groups in the percentage offices. By the decision of the board in the controversy between the Canadian Pacific and its dining car service employees the allowance for excess mileage, terminal delay, etc., was abolished and monthly rates were substituted.

To Accompany Prince of Wales

H. R. Charlton, general advertising agent of the Grand Trunk, has been designated to accompany the Prince of Wales when he uses the lines of the Grand Trunk System on his visits to the principal Ontario cities. Mr. Charlton has been the representative of the company on the various Canadian tours of important personages during the past twenty years.

Railway Tool Foremen's Convention

The ninth convention of the American Railway Tool Foremen's Association opened at the Hotel Sherman, Chicago, on August 27. Following the invocation an address of welcome was delivered by a representative of the states attorney. W. E. Dunham, assistant to the general superintendent motive power and car department of the Chicago & North Western, spoke on the relation of the tool foremen's work to the general efficiency of the shop and C. A. Shaffer, president of the association, delivered an address. An abstract of the proceedings will appear in next week's issue.

St. Paul Adds 110 Miles to Electrified Line

President R. M. Calkins of the Chicago, Milwaukee & St. Paul says that in a few days electric current will be turned on over another 110 miles of main line from Othello to Cle Elum, Washington. By January 1, the road will be completely electrified from Harlowton, Mont., to Seattle, 885 miles, or within 200 miles of half the entire length of the St. Paul-Seattle line.

The last stretch from Cle Elum to Seattle, 130 miles, will cost about $9,000,000, or 25 per cent to 40 per cent more, relatively, than preceding units, on account of higher prices of labor and material.

Electrification has doubled train tonnage, says Mr. Calkins.

Report on Railroad Annual Pass Holders

Director General Hines has recently sent to the Senate in response to a resolution a statement giving the names of holders of annual all-line railroad passes and Pullman passes. A preliminary reply was sent to the Senate on July 21, as noted in these columns at the time. The later report states that 2,418 all-line Pullman passes have been issued by the Railroad Administration as of July 1, 1919, of which 515 have been cancelled, leaving 1,903 outstanding. As corrected, 4,200 all-line railroad passes have been issued up to July 1, of which 119 have been cancelled, leaving 4,081 outstanding on July 1, 1919. The lists of names include, although out of their alphabetical order, the name of W. G. McAdoo as special counsel for the Railroad Administration for the State of New York, and also of Mrs. McAdoo and a dependent son

and daughter. April 4, 1919, is given as the date of mailing. At about that time Mr. McAdoo returned east after a vacation in California and his appointment as special counsel made unnecessary the observance of the tariff formalities regarding the number of fares required for a private car.

National Industrial Traffic League Meeting

The docket for the summer meeting of the National Industrial Traffic League, which will be held at Pittsburgh, Pa., September 4 and 5 is as follows:

Report of the Executive Committee—Proposed change in Article 6 of the constitution, increasing minimum dues from $15 to $25 per annum; investigation relative to car situation; recognition of established rate relationships in advances or reductions in rates; recommendations to Congress with respect to the railroad situation.

Report of Special Committee—Through Export Bills of Lading.

Report of Special Committee on Railway Leases and Sidetrack Agreements—Liability Clause in Railroad Leases and Sidetrack Agreements.

Report of Committee on Car Demurrage and Storage—Status of Recodification of the Demurrage Code.

Report of the Committee on Transportation Instrumentalities.

Report of Bill of Lading Committee—Uniform Bill of Lading; Two Year and One Day Limitation in paragraph 3 of Uniform Bill of Lading—Intervention in Jos. E. Decker & Sons Case.

Report of Express Committee.

Report of Committee on Rate Construction and Tariffs—Furnishing classifications free of charge to shippers and commercial organizations; consolidation of tariffs of individual lines into agency issues.

Report of Baggage Committee—Uniform Baggage Tariff.

Report of Freight Claims Committee.

Report of Special Claim Committees.

Report of Organization Committee.

Report of Membership Committee.

Report of Weighing Committee.

Report of Classification Committee.

Two business sessions will be held on September 4, one at 10 a. m. and the other at 2 p. m. and a third business session will be held at 10:00 a. m., September 5.

Federal Trade Commission Sees Scandal in Bumping Posts

Asserting that the ownership of refrigerator cars by the packers is a principal factor in their control of the meat industry, the Federal Trade Commission has made public a special report to the President on private car lines, recommending that the government acquire all cars used for the transportation of meat animals and all refrigerator cars and all necessary equipment for their proper operation and that such ownership and operation be declared a government monopoly or that the cars and equipment be owned and operated by the railroads under government license regulation.

"The volume of traffic of the five packers," the report says, "has enabled them to secure from the railroads advantages over competing shippers. Formerly in the shape of direct rebates, these advantages are now usually in expedited service to the big packer cars; in favorable mixing rules which include all their diversified products and even many articles not related to the packing industry; by allowances paid to some of the big packers by carriers for the performance of a part of the transportation service; by favorable arrangements and lease of stockyards by the railroads to some of the big packers; and by the sale to the railroads of bumping posts manufactured by a subsidiary of one of the big five packers."

How much of the high cost of living is due to excessive prices paid for bumping posts is not stated.

A. R. E. A. Co-Operation with A. R. A. Questioned

The advisability of the American Railway Engineering Association continuing its present working arrangement with the American Railroad Association has been questioned by George D. Hill, assistant valuation engineer of the Seaboard Air Line, and a member of the A. R. E. A. Mr. Hill has sent a letter to the members of the engineering association which calls attention to the present working arrangement between the two organizations whereby the committees of the American Railway Engineering Association have been appointed as similar committees of the newly organized American Railroad Association and have formed a part of the engineering section of the American Railroad Association. He calls attention to the vote of the members taken last July in which 577 voted against the consolidation of the engineering association with the American Railroad Association, while 83 voted for it, some of whom qualified their votes by adding "only during the period of the war." Mr. Hill states that the working arrangement "has the ratification of *only* the Board of Directors of the American Railway Engineering Association and *perhaps* a majority of the small representation of members present at the last annual meeting." To ascertain whether he represents the feeling of the majority of the members of the engineering association that this action should be recalled before it is too late and "that a complete divorce of the American Railway Engineering Association from the American Railroad Association be accomplished by a working arrangement or otherwise and return the American Railway Engineering Association to its status quo before the war" a ballot is attached on which the members are urged to express their position.

Workmen Strike at Car Company's Plant

A strike of employees of the Standard Steel Car Company's plant at Hammond, Ind., which has been in progress for almost a month, recently assumed a serious aspect with the outbreak of fighting between the strikers, police and deputies. The belligerent attitude of the strikers during the past week led to the issuance of orders calling for protection of the company's plant by 11 companies of the Indiana state militia, charged by Governor Goodridge of Indiana with the "most rigorous exercise of force" if necessary. Adjutant-General Harry B. Smith, in command of the troops, also carries a proclamation from the governor declaring martial law in Hammond, which will be put into effect if the fighting is resumed. Approximately 1,700 employees are on strike for higher wages and practically all attempts at arbitration have failed. The troops were called by Mayor Dan Brown of Hammond, who feared serious trouble if the company attempted to end the strike by the importation of strikebreakers. With the guards furnished by the state, however, approximately 400 men were brought to the company's plant after the employees had refused a compromise offer which would give them an increase of 7 per cent in pay. The importation of strikebreakers complicated the situation by the necessity for housing them near the plant. Many of the cottages in which the workmen live are owned by the company and they feared that they will be forced from these dwellings to make room for new workers. Officers of the company admit that some provision must be made for quartering the men and that the strikers will be compelled to move if they refuse to return to work.

Latest reports indicate that there has been a break in the ranks of the strikers, approximately 200 having returned to work, and others indicating their intention to do so as soon as they are assured protection.

Safety History

J. C. Silling, conductor on the Joplin Division of the Missouri Pacific, presented some interesting history of the safety movement at a recent Safety Committee meeting. Mr. Silling said in part:

"In many quarters it is believed that the Safety First movement is of comparatively recent origin. Many manufacturers, however, have been engaged in safety work for over 20 years. The Crane Company of Chicago was one of the pioneers in safety work, particularly as regards eye protection. In 1897 this company commenced to furnish goggles to its men, and in 1898 began giving glasses to the men free of charge. As a result of this policy, the number of eye injuries has been greatly reduced.

"It was not until about 1913 that it was taken up generally. Then automobile associations, protective associations and street railway companies financed a program of instruction on Safety First in the schools. In some cities they distributed propaganda and literature stating the causes, results and precautions for preventing further accidents. The plea for preparedness and caution originally came from the United States Public Health Service, Bureau of Mines, Department of Agriculture, Interstate Commerce Commission, Navy Department and War Department.

"There has been considerable discussion as to the origin of the words 'Safety First,' and I have seen an announcement that one of the railroads used the words 'SAFETY SHOULD BE THE FIRST CONSIDERATION' in the seventeenth century, but I think it is generally conceded that the Illinois Steel Company at its South Chicago plant was the first to consciously use the 'Safety First' although, as often happens, it was not supposed then that the words would become popular and express our conservation for life and limb in the industries. Many people deplore the use of the words—they say it is impossible to have Safety First—and some of the companies

are using a substitute slogan, 'BE CAREFUL' But whatever the slogan may be, I believe it should be affirmative and constructive, for very few of us give a thought to the price we pay for our modern transportation.

"In the beginning of the 'Safety First' movement, the cause had the impetus that attaches to a fad, and it was taken up with remarkable rapidity throughout the country. Since then the concern of those who realized the intrinsic value of the agitation has been to denude it of the faddish features in order to prevent a decline of interest on the part of those participating in it, and to insure its permanence as a fundamental principle in the management of men. Proof that such a difficult thing has been accomplished is at hand today in the mere fact that the 'Safety First' movement is as alive now as it ever was. It is universally recognized not only as a humanitarian but as an economic measure and its principles cannot now be ignored by anyone who is engaged in the administration of important business."

Engineering Council Suggests Engineer on I. C. C.

Engineering Council has opened a campaign for the appointment of an engineer familiar with transportation problems to the vacancy now existing on the Interstate Commerce Commission. In order to bring this matter to the attention of President Wilson, who will make the appointment, a letter has been addressed to him, signed by J. Parke Channing, chairman of engineering council, which states in part:

"Engineering Council, being aware of a vacancy on the Interstate Commerce Commission, begs leave to request the Chief Executive that in filling this vacancy, he give earnest thought to the selection of a man who, to his other qualifications, adds the training and experience of an engineer familiar with transportation problems.

"Engineer members widely chosen would bring to the investigations and deliberations of the Interstate Commerce Commission not only technical knowledge of great value, but also experience in executive duties, a judicial attitude gained through the direction of work under contracts, minds of analytical habit, familiarity with costs of construction and operation, experience in dealing with employees of many vocations, and integrity of thought cultivated by that inescapable obedience to the laws of nature involved in the practice of this profession. The engineer's training fits him for that mode of thinking which is indispensable to impartiality of judgment. One important function of the Commission is valuation of public utilities and another is the determination of relationships and responsibilities of the management of such utilities to the public. No other body of men has given so extensive and so scientific consideration to these matters as have members of the engineering profession.

"Council's purpose is not to further the interests of any individual or group, but solely to serve the nation by strengthening one of its most important regulatory bodies. Upon the wisdom, intelligence and courage of this Commission depends in large measure the commercial welfare of the country. It is believed that the engineering profession can and should contribute to the country's well-being through the channel of membership in the Interstate Commerce Commission."

"Our Country First Conference"

The call to "Our Country First Conference," to be held under the auspices of the Illinois Manufacturers' Association at Chicago on September 8 and 9 inclusive, has been sounded as follows:

"Agitation of the causes of our national unrest, coupled with indiscriminate charges, makes the frank discussion by all patriotic citizens of the problems and conditions underlying the situation an absolute necessity.

"Several distinct groups are endeavoring to create public sentiment by the presentation of exparte views. Congress, to arrive at a just conclusion, needs the facts, as well as the views of all classes of citizenship. A clear and fearless expression of opinion should be formulated and proper committees appointed to present the conclusions reached to Congress and others concerned, in order that fair and honest legislation may be enacted, a square deal given to all and the nation freed of the agitators who are trying to overthrow the very foundations of our government."

Invitations to attend the meeting have been sent to every national and state organization, including financial, manufacturing, distributing and wholesale and retail organizations, 415 agricultural societies and consumers organizations wherever organized. Invitations have also been sent to the American Federation of Labor and the Department of Labor to have representatives present to outline their views on reconstruction problems. Approximately 1,000 of these invitations have been accepted and the replies indicate that the attendance at the conference will be exceptionally heavy. The suggestion has been made that a resolutions committee representing all interests be formed and that group meetings of the various industries represented be held prior to the conference. As a result of the latter suggestion arrangements have been made for holding these meetings either on the evening prior to the opening of the conference or on Monday night, the first day of the conference.

More Tentative Valuations

The Division of Valuation of the Interstate Commerce Commission has issued tentative valuation reports on the Tampa & Jacksonville, Louisville & Wadley, Albany Passenger Terminal Company, Macon & Birmingham, Mississippi Eastern, Norfolk Southern and the San Pedro, Los Angeles & Salt Lake. No notable changes have been made in the form or substance of these valuations as compared with those previously served except that "other values or elements of value" are reported as follows: "No other values or elements of value to which specific sums can now be ascribed are found to exist." The value of the property is not reported but the statement is made that the order will be supplemented by such further findings and order with respect to the value of the carrier property as may be deemed appropriate.

In the case of the Norfolk Southern the capital stock outstanding was $16,000,000 and the bonded debt outstanding was $17,426,142. The investment in road and equipment as reported by the carrier was $28,333,531. This, the report says, is too large. It is reported that the original cost cannot be ascertained but the investment in equipment is given as $4,018,619. The cost of reproduction new of common carrier property other than land is given as $24,067,374, and the cost of reproduction less depreciation as $19,800,019. The cost of carrier lands is given as $1,655,427 and of the non-carrier lands as $105,812, while the present value of the carrier lands owned is given as $2,418,698 and of the lands used as $583,272.

The capital stock of the San Pedro, Los Angeles & Salt Lake was $25,000,000 and its long term debt $56,274,000. The investment in road and equipment as stated by the carrier was $76,391,598, but the report says this includes $25,000,000 to balance the stock issue, and with some readjustments the report states it as $42,873,561. It is said to be impossible to state the original cost to date. The cost of reproduction new of the property used, not including land, is given as $43,127,960 and the cost of reproduction less depreciation as $35,701,567. The present value of the lands owned is given as $4,043,749 and of the non-carrier land as $3,624,677.

Pacific Coast Railway Men Strike

Enginemen, trainmen and yardmen employed on the Los Angeles division of the Southern Pacific went on strike August 21, in sympathy with the striking trainmen of the Pacific Electric and the Los Angeles (Cal.) street railways. As a result the entire Los Angeles division of the Southern Pacific as well as the Pacific Electric and the Los Angeles Railways have been completely tied up. Embargoes have been placed on livestock and perishables from, to and through Los Angeles, Fulton and San Bernardino and dead freight is being handled subject to delay. Service to Los Angeles on the Atchison, Topeka & Santa Fe has also been seriously affected by the strike, the westbound movement terminating at Barstow, Cal., although the line from Barstow north to San Francisco is open.

The striking employees of the Pacific Electric and Los Angeles Street Railways demand reinstatement and full pay for all men on strike, for the time they have been out, the discharge of all strike breakers and the discharge of employees who have remained loyal to the company. The strike of the steam railway men is entirely in sympathy with the electric railway workers and no grievances have been presented. The sympathetic strike on the part of the steam railway men has been undertaken without the sanction of the international brotherhood officers and in disregard of in-

structions issued by Warren S. Stone, president of the Brotherhood of Locomotive Engineers. It is estimated that approximately 3,500 men formerly employed on the steam roads in and near Los Angeles are now out and the strike is extending northward and eastward, reports on Tuesday indicating that the switchmen of the Southern Pacific at Indio, Cal., have walked out, cutting off traffic to Texas and Arizona points.

Because of repeated attempts at intimidation and threats of violence, the Los Angeles Street Railway Company obtained an injunction against the amalgamated association of street and electrical railroad employees of America, Division No. 835, restraining them from interfering with the running of cars on that line. The electric railway companies have endeavored to break the strike by the importation of strike breakers and has maintained operation although greatly curtailed. According to officers of the electric line violations of the injunction have been frequent and evidence is being gathered against those who are believed to be directing the strike, among whom are officers of the Brotherhood of Railroad Trainmen and other officers of the steam railway brotherhoods.

Reports filed from San Francisco on August 26, state that yardmen employed by the Southern Pacific at San Francisco and Oakland have gone on strike practically without warning. This strike, which involves men caring for engines in the yards as well as switchmen, went into effect as the day shift went off duty and at a time when it was necessary to handle the evening rush of commuters to suburban points. The men agreed to leave a sufficient number of workers on duty to care for this rush, however, and no serious difficulty was experienced. At Oakland the yardmen left their work without warning shortly before 8 P. M., and it is not known whether or not their strike is connected with the strike in San Francisco.

Indications that the strike is spreading to other branches of railway men were confirmed with the receipt of reports indicating that car repairmen at the Southern Pacific shops at Los Angeles have walked out in sympathy with the striking trainmen and yardmen. Press reports estimate that a total of 1,500 shopmen are out.

Valuation Progress

In a statement issued by Frederick H. Lee, secretary of the President's Conference Committee on the Federal Valuation of the Railroads, under date of August 15, the suggestion is made that no necessity now exists for the carriers to incur the expense of accumulating evidence on the cost of acquisition of lands, parcel by parcel, in view of the attitude of the Interstate Commerce Commission as evidenced in its decision in the Texas Midland case. An effort has been made to secure a definite understanding with the Commission or the Bureau of Valuation, that should the Commission announce in the future that such evidence will be received and such costs reported by it, a reasonable opportunity will be allowed the carrier to assemble such evidence. Difficulty has been encountered in securing a definite agreement in this respect, but the Director of Valuation has suggested that carriers should assume that the Commission would adopt a fair and reasonable course in the matter.

Pending the appeal of the Kansas City Southern Railway Company from the decision of the Commission declining to receive such testimony, it seems reasonable to assume that no change in the present attitude on this question will be made unless or until the Supreme Court of the United States renders a decision on this subject.

In this statement attention is also called to a letter addressed to the regional directors by C. A. Prouty, director of the Division of Valuation on July 25, with reference to valuation order No. 3, a portion of which reads as follows:

"This revised order was served some months ago. The first returns to be made under it are due July 31. As director of valuation, I recently caused a visit to be paid to the officers of the principal railroads with a view to ascertaining what was being done to comply with this order. To my utter surprise, I learned that in most cases the very existence of the order was unknown to the responsible heads of the Administration, often to the auditor himself, and that no steps had been taken to comply with the order. Now it is perfectly evident that the Commission must insist upon a prompt compliance with this order if it is to obey the behest of Congress. The Commission probably has authority today to enforce compliance, but if it has not, it will undoubtedly be given ample authority in the near future.

"After a good deal of consideration and in the light of the facts developed by my recent investigation, it is my own opinion that every railroad must create an organization for the purpose of dealing with Order 3. That organization may be a part either of the accounting or engineering department, and the size of it will depend entirely upon the extent of the railroad system, but there ought to be on every Class I road at least one individual whose sole duty is to look after this order, who will become imbued with the spirit and the requirements of the order, and who will stand responsible for its enforcement.

"Inasmuch as this must go on after these properties are returned to their owners, the matter is one of even greater importance to the corporation than to us, and I would suggest that you get in touch with the corporation and co-operate so far as may seem desirable."

Some Views on the Plumb Plan

Governor John J. Cornwell of West Virginia has sent the following letter to certain railroad employees who appealed to him to support the Plumb plan:

"Of course I regret that any of my fellow citizens should disagree with, or feel aggrieved with me because of my views upon any public question, but that cannot deter me from having and exercising the same freedom of opinion that you have. When you asked for an eight-hour day I was with you, heart and soul. I was then and am now, in favor of your securing not only a fair, but a liberal wage, but when you ask the farmers and the laborers in other lines of work to go in debt 20 billions of dollars through the medium of the federal government to buy the railroads and give them to you to operate for your benefit and to use as you please, you are making a proposition that is neither sane nor fair.

"To me it is little short of amazing that men possessing the intelligence of the trainmen I meet should be gulled into making such unreasonable and outrageous demands.

"If the people bought the railroads and gave them to you to run for your benefit, telephone and telegraph employees would demand the same thing of those properties. They have as much right to it as you have. Then the coal miners would demand that the mines be purchased and given to them, and they have as much right to make the demand as you have.

"Then the farm laborers, with even better right would say, 'We produce the food you live on—buy the farms and give them to us.' Then we have, not Socialism, but Chaos. They are trying to run things that way in Russia and we know the result.

"I intend to try to present to the people of the state what this plan means. First, as to the shifting of the burden of taxation, or some four million dollars of it, in West Virginia from the railroads on to the farmers and home owners if the Plumb plan was to go through. It would make Cabell, Wayne, McDowell, Mercer and Mingo counties unable to pay the debt they are creating to build public roads. It would stop road building, building of school houses, and all public improvements.

"I have been a laboring man myself—carried a dinner bucket—for a dollar a day. My labor now is not regulated by eight, ten or twelve hours but often sixteen and sometimes eighteen. I am not now and never expect to be a capitalist, but I am an American, not a Bolshevik. I stand for law and order and I am not asking somebody to buy property and give it to me, but want to work and give honest service for every dollar I receive."

In a special message to the general assembly Governor Davis of Virginia transmitted a communication received by him from the state corporation commission setting forth what would be the effect in Virginia should the Plumb plan of railroad operation be enacted into law by Congress.

Operation of the Plumb plan would take from the tax revenues of the state approximately $224,000 the first year, $446,000 the second year and $669,000 the third year, according to the commission. At the end of 10 years it was estimated that it would cost the state in taxes $2,500,000 per annum, or approximately 25 per cent of the entire revenue of the treasury. It would cost the city of Richmond alone the greater part of $154,689.73. These figures include, besides revenues from steam railways, revenues from telegraph and telephone companies also, but these latter represent only a small fractional proportion of the total.

Traffic News

Four fast freight trains carrying 10,000 bales of raw silk, valued at $8,500,000 left Vancouver, B. C., for New York on Tuesday of this week. The goods were part of a $10,000,000 cargo of silk brought from Hongkong on the Canadian Pacific liner *Empress of Asia*.

Because of the condemnation of the bridge over the Tennessee river at Chattanooga the Southern Railroad has announced a readjustment of passenger train service between Cincinnati and Chattanooga, and between Cincinnati, Atlanta, Macon and Florida, effective Sunday, August 31.

Two of the forty 2,000-ton barges built for the United States Railroad Administration for use on the Lower Mississippi river have been delivered to the Railroad Administration and are now in commission, and the third will be delivered by the end of next week and the fourth about the middle of September. After that date the deliveries will be very frequent.

The last of the harvest trains have arrived in Winnipeg, Man., from eastern Canada over the lines of the Canadian Pacific, the Canadian Northern and the Grand Trunk Pacific. The number of men who have been transported is below the figure asked for, 18,000, but the authorities declare that it will be ample for requirements now that harvesting is well advanced.

Under the new rules of the American Express Company to go into effect December 1, 1919, shippers are required to adopt a new system of packing their merchandise by introducing outside containers of different weights. The United States Railroad Administration has endorsed the new regulations, the purpose of which is to stop the pilfering of goods in the course of transit.

A land-clearing special train will leave Cordele, Ga., on September 1 on a trip to 17 other south Georgia towns. The special was planned by the extension division of the Georgia State College of Agriculture with the co-operation of six tractor companies, three stump-pulling companies and one powder concern. Two days will be allotted to each town for demonstrations on stump pulling, ditch blasting and general work by the tractors.

There were more monthly sixty-ride commutation tickets sold on the Long Island during the month of July than in any one month in the history of the road, according to a statement by Ralph Peters, federal manager. Exactly 44,595 commutation tickets were purchased in July, 1919, being an increase of 8,883 tickets over the same month of 1918. In July, 1917, 30,943 commutation tickets were sold. There are now 13 stations in Long Island with more than 600 commuters each.

A report on traffic conditions throughout the country for the week ended August 18, made to the director general, shows that the strike of railway employees retarded the movement of both freight and passenger business. The effect was especially noticeable in the New England district and the Pocahontas, Southern, Northwestern and Central Western regions, statistics showing that in each of these regions there was a decided falling off in freight movement. However, it was noted that with the ending of the strike conditions were rapidly returning to normal.

I. T. Sparks, traveling freight and passenger agent for the Southern Pacific at El Centro, Cal., states that the cantaloupe and watermelon crops produced in the Imperial Valley this year have required the use of 7,830 freight cars. The gross return for this crop totaled approximately $9,208,080 and the net return to the growers, $1,710,072. During the month of June over 1,000 carloads of other products were shipped from the Imperial Valley with a net value to the ranchers of $1,122,660. The total value of the products shipped out of the Imperial Valley during the month of June was $11,336,140 gross and $2,898,972 net.

According to a report on overseas traffic made to the director general, for the week ended August 20, 1919, 6,108 cars of commercial export freight were received at North Atlantic ports as compared with 1,031 cars for the same week of 1918. This is an increase of 5,077 cars or 492 per cent for the week ended August 20, 1919, as against the same period cent. There was a total of 12,971,087 bushels of grain stored in elevators at North Atlantic ports on August 20, 1919. There were received during the week 6,050,202 bushels, while 5,019,154 bushels were cleared. At South Atlantic and Gulf ports there were 5,148,142 bushels of grain stored in elevators.

Flat rates on logs, bolts and billets are now charged by all railroads, according to J. H. Townshend, secretary-manager of the Southern Traffic Association. The new rate takes the place of the gross rate which has been in effect and will relieve lumber shippers of the burden of making reports and paying money running into hundreds of thousands of dollars which is held in the hands of the carriers indefinitely before being refunded. At the same time the change will not affect the carriers' revenues. A bond will be given by each shipper to assure the roads that the shipping will be over the same road on which the forest product was brought to the milling point. The lumber shippers were formerly forced to pay the gross rates on the shipment of lumber from milling points and later a refund was made on the first rate.

Strikes Cause Slump in Coal Production

The production of bituminous coal slumped again in the week of August 16, largely as a result of the recent strikes on the railroads and in the coal fields, according to the weekly report of the Geological Survey, which says that "the lack of market has ceased to be the principal factor limiting production in most districts, and car shortage, or more broadly speaking, transportation disability, is of greatest importance. Mine operating time reported lost in the week of August 9, because of car shortage, was 22.5 per cent, the highest recorded in any week since March, 1918, while "no market" was responsible for only 8.8 per cent and labor shortage and strikes for only 4.9 per cent. Production of bituminous coal in the calendar year to date is now nearly 92,000,000 tons, or 25 per cent, behind that of last year, for the corresponding period.

Arrangements for Labor Day Travel

Director General Hines has issued a notice urging that in view of the extraordinary heavy travel anticipated over Labor Day, the public, if desiring to travel on the railroads over Labor Day, make their traveling arrangements, including the purchase of railroad and sleeping car tickets, as far in advance as possible so as to avoid adding to the congestion which usually occurs at this period. As far as is possible, he says, everything that can properly be done has been done, to care for the expected heavy travel over Labor Day. Several weeks ago, the regional directors were asked to give special consideration to this matter and each of them has answered that he has issued the necessary instructions and has taken steps to provide as much equipment as possible to adequately care for the travel as far as its volume can be anticipated.

The arrival, within the next two weeks, of the First and Third Army divisions from France will require a large number of cars, and there is also still a very heavy movement of discharged soldiers from camps to their homes, which takes up a great deal of space in passenger equipment, but all equipment that the Troop Movement Section can possibly spare has been assigned to the Labor Day traffic.

Arrangements have also been made to supply extra baggage men at all large centers and other points where congestion might occur. Also, extra ticket forces have been arranged.

Foreign Railway News

Internationalizing Russian Railway Property

All property in Russia belonging to the International Sleeping Car Company has been nationalized. The clerical and technical employees will be regarded as in the employ of the Soviet.

Italian Import Restrictions

A decree published in the Gazzetta Ufficiale of July 31, to take effect on August 1, abolishes all previous import restrictions, and institutes a new list for which import licenses are necessary. This list includes railway rails of iron and steel, sheet iron and steel, and railway rolling stock. (Times Trade Supplement, August 9.)

Allocation of War Locomotives in England

LONDON.

An article published by the Railway Magazine states that a considerable number of the large 2-8-0 locomotives built for War Office use, to the designs of J. G. Robinson, chief mechanical engineer of the Great Central Railway, are now being taken over by the railways in England. Thirty have already been allocated to the London & North Western, 20 to the Great Western, and a few to the Midland. All locomotives retain the Westinghouse brake.

German Locomotives in France and Belgium

LONDON.

On the signing of the armistice, Germany was required, as has been previously mentioned in the columns of the *Railway Age*, to deliver 150,000 cars and 5,000 locomotives to France and Belgium. Of the cars 80,000 went to Belgium and 70,000 to France, most of which were given to the Nord and Est railways. The locomotives were split up between the Americans, British, Belgians and French; the Americans receiving 500 locomotives, the British 1,300, the Belgians 600, and the French 2,600. The British locomotives have been turned over to the Belgians, and the 500 locomotives assigned to the American Army have been delivered to the French military authorities, which in turn will distribute them between the various railways in France and railways in other countries. Up to July 25, Poland had received 54, Roumania 14, and Czecho-Slovakia 22.

Under the terms of the Peace Treaty these German locomotives will either be bought by the countries now having them, due credit being given in payment of indemnities, or they will be returned to Germany and the indemnity money will be used to purchase new equipment.

England's Import and Export Figures During July, 1919

LONDON.

The English Board of Trade states that the returns for July show that imports into the United Kingdom for the month were valued at £153,140,032, an increase of £44,000,794, as compared with July last year, while the exports were valued at £65,315,422, an increase of £21,671,024. The increase in the amount of re-exports was £9,735,077.

The imports of machinery during July amounted to £1,317,799, as against £850,391 in July last year, making an increase of £467,408, and the imports of railway carriages and trucks (not of iron), motor cars, cycles, carts, etc., amounted to £677,360, as against £2,207,734 of July, 1918, showing a decrease of £1,500,374. These figures include the cost, insurance and freight.

The value of the exports are as follows: Coal, coke and manufactured fuel during July, 1919, £9,110,920, as against £4,658,878 during the same month last year, thus showing an increase of £4,452,042; machinery during July, 1919, £2,802,217, as against £1,436,688 during July, 1918, showing an increase of £1,365,529, and railway carriages and trucks (not of iron), motor cars, cycles, carts, etc., during July, 1919, amounted to £1,035,670, as against £341,360 during July, 1918, showing an increase of £694,310. These figures include the cost and charges of delivering the goods on board the boat.

Steam vs. Electrical Working of Locomotives

LONDON.

An abstract by the Technical Supplement of the Review of the Foreign Press from an article in the Zeitschrift des Oesterreichischen Ingenieure- und Architekten-Vereines, states that the railways of German-Austria only use about one-tenth of the entire coal consumption of the country. Details of the coal consumption are given, pointing out that with the modern superheaters the locomotive has become much more efficient than formerly. Steam locomotives are stated to work more efficiently than electric locomotives, especially where goods trains are concerned; and even in Switzerland the cost per ton-kilometer on the electric railways is often higher than on the railways worked by steam. The whole argument is to the effect that only under certain conditions will electrical working prove cheaper than steam working.

Railway Extension in Mexico

Announcement is made by the Department of Communications and Public Works of the Mexican government that the immediate resumption of construction of the division of the Kansas City, Mexico & Orient Railroad, between Falomir, state of Chihuahua, and the proposed crossing of the Rio Grande, three miles below, Presidio, Texas, has been authorized. This work was suspended in 1912. It is stated when Juan F. Trevino, representative of the Kansas City, Mexico & Orient in Mexico, brought the matter of building the line to the border, to the attention of the Mexican government he was assured that General M. M. Dieguez, military commander of the state of Chihuahua, would give ample military protection to the construction force. The distance from Falomir to the Rio Grande is 75 miles. The Kansas City, Mexico & Orient also plans to begin construction of the extension of its main line from Alpine, Texas, to the proposed crossing point below Presidio at an early date, it is announced. The filling in of these gaps will give a through rail route between Kansas City and Western Mexico, via the city of Chihuahua.

Export Abbreviations

LONDON.

Considerable trouble and unfortunate misunderstanding has arisen between some of the American exporters with importers in Australia, over the meaning of the abbreviation f. o. b. The London Times Trade Supplement, commenting on this expression, says that the accepted interpretation of this abbreviation means that goods will be placed free on board ship, and that the responsibility of the exporter does not end with placing the exported material on the ship's dock. Numerous cases have been found where this was not done by American exporters with the result that their customers in foreign lands, assuming that their goods had been placed aboard ship, were at a great disadvantage in not knowing when to expect the goods, and further that additional charges were made for dock storage. It cannot be too strongly urged that a distinct understanding be had between American exporters and their foreign customers. The exporter is in a far more convenient position to see that the goods are definitely placed on board ship and to advise his client to that effect than the client who often is thousands of miles away. Such service as this will help to make American export business attractive to foreign agents.

Railway Construction in Colombia

LONDON.

In the August 9 issue of the London Times Trade Supplement is given an account of the proposed railway extensions in Colombia together with a map, which is reproduced here, showing the existing lines, those under construction and those which are under consideration. From this map it will be noted that the lines are many and short and that there is no continuity between them. They have been built chiefly to supplement the service of the Magdalena river, which is 1,060 miles long and traverses three-fourths of the country. At the present time the Colombian government is adopting a systematic policy of railroad construction for the purpose of stimulating the national productivity, as Colombia includes some of the richest mineral and agricultural country in South America. The Times Trade Supplement describes the existing and projected lines as follows:

Of railways connecting with the Magdalena the most important are the Barranquilla and Cartagena lines, links between the river and the Atlantic; the Antioquia line from Puerto Berrio to Medellin, which, though having a 14-mile break in the mountainous region between Cisneros and Botero, taps a very prosperous part of the country; and the Girardot line from the river-port of that name to the Plain of Bogotá. The Puerto Wilches and the Ibagué (Tolima) lines are but the beginnings of railways that will, when finished, go far towards completing the systems that the government has projected for joining up the most important cities and districts of the Republic, while that from La Dorada to Beltran is an alternative to the river, filling in the gap between the two steamboat services where they are separated by the Honda Rapids.

Among the new lines planned the most important for Colombian commerce is the extension of the Buenaventura-Cali line in a northerly direction through the Cauca Valley as far as Amaga; another line to run eastward from Cali across the Central Cordillera to join up with the Tolima line at Ibagué, will put Bogotá into direct railway communication with the Pacific; the Ferrocarril del Norte is being extended through Bucaramanga to Puerto Wilches on the Magdalena.

The completion of the latter section would greatly expedite traffic between the Atlantic coast and the capital, providing an all-rail route; but meanwhile an extension of the Ferrocarril de la Sabana, via Pacho, to the Magdalena, now under construction, will greatly relieve the present situation, obviating handlings of freight at the Honda falls, Beltran, Girardot, and Facatativá.

Three out of the four lines indirectly connected with the Magdalena have Bogotá as their center. The Ferrocarril de la Sabana connects with the Girardot line at Facatativá, though unfortunately the two lines are of different gages, and the other two, the Ferrocarril del Norte and the Ferrocarril del Sur, run in northerly and southerly directions along the plain. The fourth line coming under this category is a short length between Medellin and Amaga, which will, when the Cauca Valley line reaches Amaga, help to form a long link between the Pacific Ocean, at Buenaventura, and the Magdalena, at Puerto Berrio.

Work on the Ferrocarril del Norte is being pushed on from Nemocón to Chiquinquira, as a contribution towards the Puerto Wilches line, where construction has also been resumed; the section between Girardot and Ibagué is almost completed; the Antioquia extension is rapidly proceeding to

Map of Colombia Showing Existing Railways and Proposed Extensions

Note.—The following table gives a list of some of the railways in Colombia with certain information regarding them as shown in the Universal Directory of Railway Officials:

RAILWAYS IN COLOMBIA

Name of railway	Length of line: Open	Length of line: Under construction	Equipment: Locomotives	Equipment: Passenger cars	Equipment: Freight cars	Gage	Main offices
Ferrocarril de Antioquia	168 km.	25 km.	27	50	209	3 ft.	Medellin, Colombia. Dr. Juan de la C. Posada, general manager.
Barranquilla Ry. & Pier	17 mi.	.....	15	16	220	3 ft. 6 in.	39 Coleman St., London, E. C. F. Belcher, secretary.
Ferrocarril de Cartagena	106 km.	.....	8	15	112	3 ft.	62 London Wall, London, E. C. F. Thomas, secretary.
Colombian Northern	181 km.	12 km.	..	..	...	3 ft.	9 Bishopsgate, London, E. C. E. A. Green, secretary.
Ferrocarril de Cucuta	73 km.	.....	20	16	116	3 ft.	San Jose de Cucuta, Colombia. Alberto Camilo Suarez, president.
Ferrocarril de la Dorada	114 km.	.....	8	15	115	3 ft.	Finbury Pavement House, London, E. C. T. Lee C. Pilditch, managing director.
Ferrocarril de Girardot	132 km.	.....	17	32	126	3 ft.	Walter House, 418 Strand, London, W. C. 2. John Wharton, secretary.
Great Northern Central	500 km.	154 km.	..	..	...	1 meter	130 Dashwood House, New Broad St., London, E. C. William Chaplin, secretary.
Ferrocarril de la Sabana	40 km.	.....	15	40	82	1 meter	Apartado de Correos No. 127, Bogotá, Colombia. Alejandro M. Olivares, general manager.
Santa Marta	99 mi.	.....	20	17	287	3 ft.	57½ Old Broad St., London, E. C. 2. Thos. Bolter, secretary.

Caldas, the Cucuta line will, in all probability, be extended to Bucaramanga to link with the Puerto Wilches and Norte lines; and the long-discussed extension of the Santa Marta line to the Magdalena, at El Banco, is seriously projected. If, as has been again reported, the United States now intends to make the compensatory payment of £5,000,000 offered to Colombia in 1914 but delayed by Congress, a considerable sum will be available for construction work. British engineers and manufacturers of construction and railway machinery should look to their laurels in this connection.

British engineering, and investment in transport facilities in Colombia are of importance and old standing. The Barranquilla and the Cartagena lines are both British built and owned; the Santa Marta line, the original Cauca railway, the Puerto Wilches, the La Dorada, and the Girardot lines, the Ferrocarril del Norte, the harbor works at Puerto Colombia, and Barranquilla are included in the lists of British construction and capital in Colombia. The Colombian government has of late developed its policy of national or departmental ownership and construction of public services.

Profits of Colonial Railways

An article published by the Zeitung des Vereins Deutscher Eisenbahnverwaltungen and abstracted by the Technical Supplement of the Review of the Foreign Press, gives a comparison of profits earned by a number of colonial railways. The Congo railway from Matadi to Leopoldville is 400 km. long with a gage of 2 ft. 5½ in., and was opened in 1898, the average profits between that date and 1912 being 9.7 per cent. In 1912 the company paid 22½ per cent and in 1913, 19 per cent. The Delagoa Bay railway from Lourenzo Marques to Garcia in the Mozambique is 89 km. long, and was opened in 1890. The interest on the capital in 1901 was 15.2 per cent, and in 1910, 55.47 per cent. The author states that Great Britain endeavored to obtain possession of the line owing to the enormous profits, and compares with these profits the dividend earned by the Uganda railway, which was 3.52 per cent in 1912, and 5.98 per cent in 1917.

The Otavi railway in German Southwest Africa is 671 km. long with a gage of 2 ft., was opened in November, 1906, and paid an average dividend of 11.7 per cent after being bought by the state. The Dutch line in Java paid 6.12 per cent in 1914.

These figures, the author says, prove how profitable such colonial railways are.

Locomotive Building in France

Some interesting figures showing the effect of the war on the locomotives of the French railways were recently given in the Journal des Transports. At the beginning of the war, apart from the railway shops, there were six locomotive building plants in France, of which four were in the invaded zone. Their average annual output was 650 new locomotives, while the railway shops turned out another 50, and as the average annual needs of the French railways were only 575, a balance was constantly available for export, of which the bulk went to Algeria and the French colonies. An average of about 1,570 locomotives underwent repairs every year. One effect of the war was greatly to diminish the possibilities for repair work, with the result that at the beginning of 1918, 2,336 locomotives were "immobilized." New construction also fell off, so that while the Paris, Lyons & Mediterranean should have received 337 locomotives in 1914 and 1915 which were ordered before the war, only 75 were delivered up to the end of 1916. In 1917, 660 locomotives were ordered from the United States and 170 from England, of the Consolidation, Mikado and Pacific types, of which the last should have been delivered by January 1, 1919. The prices were 125 per cent higher than the pre-war quotations; 1,412 locomotives were also lent by the Allies during the war, which helped towards making good the deficiency in new construction between 1914 and 1917 amounting to 1,725 engines. The French railways received a portion of the 5,000 locomotives surrendered by Germany under the armistice terms, and it is hoped that with the reconstruction of the shops in the invaded districts the annual output will eventually amount to from 800 to 1,000 locomotives.

Another Opportunity for Americans Missed in China—Other Chinese Correspondence

PEKING.

The past month marks the missing of two more opportunities for American capital in China due to the absence of a financial agent with power to act—if symptoms are to be trusted. A certain harbor site in North China has been known for some time to be quite essential to the development of a dormant American railway project. A Chinese capitalist who seemed to be able to secure development privileges approached American interests for mutual support. While negotiations were under way, a Sino-Japanese company was formed and apparently has secured the privileges. In a similar way a certain European firm which has started the construction of a considerable line was known to be courting American support. This courtship has ceased, and the issuance of passports to 55 Japanese to travel through the province served by the proposed line seems to offer the explanation.

* * *

Dr. Yen Teh-ching, a graduate engineer from Cornell '06, has been appointed successor to the late Dr. Jeme Tien-yu as managing director of the Hukuang lines now under construction. (The Hukuang lines embrace not only the Canton-Hankow but also the Hankow-Ichang section of the line into Szechuan.)

* * *

The Southern miltary government of China has given permission for the construction of three railways by private enterprise. One line will run from Canton to Macao, another from Swatow to Changlin, and the third will be a branch line of the privately owned Sinning line, and will run from Sinning to Paishaho. All of these lines are short and will require altogether not more than $3,000,000.

* * *

The Ministry of Communications, it is understood, has given sanction to a private company to build an extension to the Mentoukou branch of the Peking Suiyuan line to tap another coal deposit in the Western Hills. The line will not be more than nine or ten miles long but the route to be followed is that frequently mentioned as offering the best grades to the Mongolian plateau. At present the Nankow Pass presents a grade of three and one-half per cent for the Peking Suiyuan to surmount, which will have to be rectified if business ever develops over that route.

* * *

In spite of reported Japanese opposition and an interpellation from Parliament as to why he had not been discharged, the Ministry of Communications has renewed its contract with the American adviser, J. E. Baker, for another year. This is probably not to be construed as favorable to the general unification of Chinese railways, for promoting which Mr. Baker encountered so much opposition, but rather a disposition to temporize. Discussion upon the unification subject has again come to the fore in connection with the reported deliberations of the Consortium. The Japanese press in China and the Chinese militaristic press contain from day to day articles in identical language in opposition to the Consortium as being synonymous with unification.

* * *

Delivery has begun of 500 goods wagons purchased in America by the Peking Mukden line. The Peking Hankow line has purchased ten ten-wheel locomotives from a Belgian firm, delivery promised in ten months.

* * *

Dr. Hirai, Japanese, general adviser on railway affairs to to the Ministry of Communications, has signified his intention to resign shortly on account of ill health. He will be succeeded, so it is reported, by a Dr. Okada.

* * *

The Peking Hankow and the Peking Suiyuan, the only remaining lines upon which the depreciated Peking notes of the Bank of China and the Bank of Communications are accepted, have given notice that after July 25 these notes will no longer be accepted in payment of interline fares or baggage charges. This probably marks the beginning of the end for the depreciated note in railway revenues.

Equipment and Supplies

Equipment Inquiry from Belgium

The Wall Street Journal is authority for the statement that Belgium is inquiring for 400 locomotives and 20,000 freight cars. But equipment manufacturers, it says, are frank to admit that there is little chance of the business being accepted at this time since Belgium wants long-term credits covering the delivery of the order.

Locomotive Deliveries Week Ended August 9

The following new locomotives were shipped during the week ended August 9:

Works	Road	Number	Type
American	N. C. & St. L.	4	USRA Mount.
	Vgn.	1	USRA Mallet.
		5	
Baldwin	P. L. W.	4	Santa Fe.
	At. & S. F.	6	Santa Fe.
	P. L. W.	7	USRA S. F.
	T. & P.	4	USRA Mik.
	C. & O.	1	USRA Mallet.
	P. & R.	1	Mallet.
	N. & W.	1	Mallet.
		24	
	Total	29	

Locomotives

The Pennsylvania Equipment Company, 1420 Chestnut street, Philadelphia, is in the market for one second-hand, 30 to 50-ton four-wheel or six-wheel saddle tank locomotive; must be in first class condition.

Freight Cars

Wilson & Company, Chicago, is inquiring for 200 refrigerator cars.

John R. Walsh has ordered three 8,050-gal. tank cars from the Pennsylvania Tank Car Company.

The Washington, Idaho & Montana Railway, Potlack, Idaho, is inquiring for 20 40-ton flat cars.

The Commercial Car Line has ordered 25 8,050-gal. tank cars from the Pennsylvania Tank Car Company.

The Bolene Refining Company has ordered 25 8,050-gal. tank cars from the Pennsylvania Tank Car Company.

The Wilhoit Refining Company has ordered six 8,050-gal. tank cars from the Pennsylvania Tank Car Company.

The Mexican Petroleum Company, New York, has ordered 600 10,000-gal. tank cars from the American Car & Foundry Co.

The Ohio City Gas Company, Columbus, Ohio, has ordered 200 8,000-gal. tank cars from the American Car & Foundry Co.

The Livingston Refining Company has ordered 20 8,050-gal. and 80 10,050-gal. tank cars from the Pennsylvania Tank Car Company.

The White Eagle Oil & Refining Company, Wichita, Kan., has ordered 20 8,000-gal. and 30 10,000-gal. tank cars from the American Car & Foundry Company.

The United States Railroad Administration is inquiring for 500 to 1,000 55-ton steel hopper car bodies and from 500 to 1,000 50-ton composite gondola car bodies.

The Pennsylvania Equipment Company, 1420 Chestnut street, Philadelphia, is in the market to lease for one year 100 to 200 tank cars of 8,000 to 10,000-gal. capacity for crude oil service.

Supply Trade News

The Chicago Railway Equipment Company, Chicago, is completing plans for the reconstruction of that part of its plant damaged by fire on August 2. About $25,000 will be expended on the work.

The Schroeder Headlight & Generator Company, Evansville, Ind., has appointed **S. Herbert Lanyon** as its representative on the Pacific coast, with office at 507 New Call building, San Francisco, Cal.

T. L. Dodd & Co., Railway Exchange building, Chicago, have been appointed western sales representatives of the Worth Steel Company, Claymont, Del., manufacturer of fire box steel plates, boiler and tank plates.

The Goulds Manufacturing Company, Seneca Falls, N. Y., will open a district sales office in the Dime Bank Building, Detroit, Mich., on September 1, in charge of **E. B. Gould,** who has recently returned from 18 months' service in France.

E. L. Ruby, railway supply agent in the Real Estate Trust building, Philadelphia, Pa., has taken over the manufacture and sale of the Hilliard portable milling machine, a device designed to mill stock rails for housing in switch points, previously manufactured by the Hilliard Portable Milling Machine Company, Oil City, Pa.

The Ryan Car Company, Chicago, is constructing an all-steel, steel car plant 90 ft. by 600 ft., upon a recently acquired 50 acre tract one-half mile east of its old plant at Hegewisch, Ill. In addition to the main plant three smaller buildings are being constructed. It is expected that operation will begin in the fall. The approximate cost of the new buildings with new equipment will be $350,000.

E. H. Bull, for the past seven years in the engineering department of the Green Engineering Company, East Chicago, Ind., and **D. A. Livensparger,** for nine years in the sales department of the same company, have taken over the Chicago sales office of the **Green Engineering Company,** as sales representatives, handling Green chain grate stokers, sealflex arches, steam jet ash conveyors and cast iron ash tanks.

The American Steam Conveyor Corporation, Chicago, announces the appointment of **Morton McI. Dukehart & Co.** as its representative in Baltimore, Md., and surrounding territory, including all of Maryland, the District of Columbia, and a few counties in Pennsylvania, Delaware, West Virginia and Virginia. This firm consists of Mr. Dukehart and E. S. Denise, both power plant engineers and sales engineers.

Charles W. McKay is now in charge of the appraisal division of **L. V. Estes, Inc.,** industrial engineers, Chicago. The appraisal division specializes in the appraisement of industrial properties for federal income tax purposes and in the appraisement of public utility properties in connection with rate cases. Mr. McKay is the author of "Valuing Industrial Properties," published in 1918, and of a book entitled "Telephone Rates and Values," to be published on or about September 1.

Henry R. Moore, general traffic manager of the **Republic Iron & Steel Company,** Youngstown, Ohio, died suddenly on August 8, at the Youngstown Country Club. Mr. Moore was born at Warrensville, Ohio, in February, 1856. Prior to entering the employ of the Republic Iron & Steel Company 20 years ago he was general freight and passenger agent of the Lakeside & Marblehead and general freight agent of the Cleveland, Canton & Southern, with offices at Cleveland. During the war he was chairman of the committee which supervised freight movement in the Youngstown district.

The American Construction Company, St. Louis, Mo., has been organized under the laws of Arkansas with an authorized capital of $250,000 and with the following officers: **F. W. Fordyce**, chairman of the board; **Charles H. Sommer**, president; **George Moldenschart**, secretary; **W. V. Delahunt**, treasurer. The new company will construct an extension of the Fort Smith, Subiaco & Rock Island, formerly the Fort Smith, Subiaco & Eastern, which road had been in receivership for some time and was purchased by other interests who will complete the line between Paris, Ark., and Dardanelle.

On August 1, the promotion and inspection bureaus of the **Universal Portland Cement Company**, Chicago, were combined under the name of service bureau. **J. H. Libberton**, formerly engineer, promotion bureau, an inspecting engineer, in the general offices at Chicago, became manager of the service bureau; **G. E. Warren** was appointed assistant manager; **J. W. Lowell**, eastern manager, Pittsburgh; **J. H. Chubb**, northwestern manager, Minneapolis; and **O. L. Moore**, chief cement inspector, Chicago. The two bureaus which were combined formerly had separate and distinct duties, the promotion bureau handling special service and furnishing of information to cement users and the inspection bureau having charge of the physical testing at the mills.

George Hull Porter, who has been in charge of sales in the middle west, for the **Western Electric Company, Inc.**, New York, has been appointed railway sales manager and will direct the company's railway business for the entire country. Mr. Porter will continue to have his headquarters at Chicago. He was born on July 30, 1883, at Danbury, Conn., and received his education at the Mount Pleasant Military Academy, at Ossining, N. Y. Since 1902 he has spent practically all of his time in the electrical industries, becoming a member of the Western Electric Company's organization in April, 1908, as a steam railway salesman connected with the Chicago office. Sometime after that he became western manager of the railway sales department. Mr. Porter, in addition to becoming president of various railroad and electrical associations and chairman of civic societies and committees, has also been for some time captain in the First Regiment of the Illinois Reserve Militia. In 1918, he entered the government service, serving on the staff of the quartermaster general as a private and received a commission of captain sometime after. He rejoined the ranks of the Western Electric Company in December, 1918.

G. H. Porter

The Detroit Seamless Steel Tubes Company has begun construction of a $3,000,000 plant on a 60-acre tract at Detroit, Mich. The first unit of the plant will cost $1,000,000 and will be completed by January 1, 1920. The building plans call for a structure of steel and glass with brick and concrete facing. The plant proper will occupy a space of 350 ft. by 700 ft. It will consist of three bays for manufacturing units, a separate heating plant and a two-story administration building. The three manufacturing units will be each 90 ft. wide, by 700 ft. and 550 ft. long and 45 ft. high, to permit the use of traveling cranes and other labor saving machinery. The interior layout and special tube mill machinery was designed under the direction of C. A. Ross, consulting mechanical engineer, and C. L. Stafford, mill superintendent. The plant will be equipped with the latest types of modern labor saving devices and machines, and a powdered coal system will be used for all the heating and annealing processes used in manufacturing operations. The total capacity of the first unit of the new plant will be 2,500 tons of seamless steel tubing a month, the range of sizes being from one-half inch to six inches outside diameter, and No. 13 gage and heavier.

American Car & Foundry Company

The directors of the American Car & Foundry Company, New York, having recently abolished the office of general manager, **James M. Buick**, formerly vice-president and general manager, has assumed the direction of the sales division of the company and will be known as vice-president in charge of sales.

The production division will be directed by **William C. Dickerman**, who will be known as vice-president in charge of operations. He will be assisted by **Frederick A. Stevenson**, as assistant vice-president in charge of operations, who will be head of the manufacturing section and have charge of production in the car plants, rolling mills and foundries, also supervision over the engineering, improvement and research, patent and industrial relations sections. The headquarters of both divisions will be at the general offices, 165 Broadway, New York. Mr. Dickerman, as head of the war division, and Mr. Stevenson, as his assistant, directed the company's recent program in the manufacture of munitions for the government of the United States and its allies.

W. C. Dickerman

William Carter Dickerman was born on December 12, 1874, at Bethlehem, Pa. After a preparatory course at William Penn Charter School, Philadelphia, he was graduated from Lehigh University in 1896, with the degree of mechanical engineer. Mr. Dickerman entered the employ of the Milton Car Works, Milton, Pa., in 1897, and when the American Car & Foundry Company was organized he was made assistant district manager for the Milton district. In 1900 he became sales agent of the company and in 1905 was elected to the vice-presidency.

F. A. Stevenson

Frederick Alfred Stevenson was born on April 6, 1880, at Detroit, Mich. After completing the high school course, he entered the employ of the American Car & Foundry Company in 1899, as an apprentice in the machine shop at the Detroit plant. In 1902 he was transferred to the Berwick plant and served as master mechanic in charge of all mechanical work in the steel car department, and in 1907 he returned to Detroit to assume a similar position in the company's plant. In 1909 he entered the assistant general manager's department at Chicago and carried on the development of new ideas and methods until October, 1910, when he became assistant general superintendent of the Detroit plant. In 1912 Mr. Stevenson was made general superintendent at Detroit and held this position until January, 1916, when he was appointed assistant general manager.

Financial and Construction

Railway Financial News

BROOKLYN RAPID TRANSIT.—A group consisting of the Chase Securities Corporation, the Bankers Trust Company, the Central Union Trust Company, J. & W. Seligman & Co., and Hayden, Stone & Co. have purchased $18,000,000 six per cent, two-year certificates from Receiver Lindley M. Garrison. The certificates are dated August 1, 1919, and are being sold privately at 98 and interest.

Judge Julius M. Mayer, in the Federal District Court of New York, has made permanent the appointment of Receiver Lindley M. Garrison.

CHICAGO & WESTERN INDIANA.—In announcing the offer of this company to extend $15,000,000, 6 per cent notes, maturing September 1, 1919, for one year at 7 per cent, President E. H. Lee states that the company has entered into a contract with the United States Railroad Administration fixing annual compensation sufficient to pay all present fixed charges and taxes, including the sinking funds on the bonds deposited as security for the notes, and also including 7 per cent interest on said notes for the ensuing year, if federal control shall continue that long. Interest and sinking fund requirements on the collateral bonds are also provided for by rentals, payable directly to the mortgage trustees by other railroad companies for the use of its lines and terminal facilities.

GEORGIA COAST & PIEDMONT.—This road will be offered for sale for the third time in Brunswick, Ga., on October 7.

ROANOKE RIVER.—This road, extending 12 miles from Manson, N. C., to Townsville, was sold at auction on July 26 for $70,000 to J. R. Paschall of Richmond, Va., the principal owner. The property will be turned over to the railroad trustees for Townsville township upon certain terms agreed upon. The Townsville Railroad has been incorporated and organized to operate the line, and the township has voted $75,000 bonds to subscribe to its stock. Equipment is to be secured and the line again put in operation.

Railway Construction

FORT SMITH, SUBIACO & ROCK ISLAND.—The American Construction Company, St. Louis, Mo., has been awarded a contract for the construction of an extension of this line between Paris, Ark., and Dardanelle, a distance of 30 miles. The line will connect at Dardanelle with the Chicago, Rock Island & Pacific and at Paris with the Arkansas Central and will provide a through line from Fort Smith, Ark., to the Chicago, Rock Island & Pacific main line at Ola, Ark., opening up new territory for traffic moving to the southwest via Little Rock, Ark. A contract for the grading, bridging and track laying has been let to the P. J. Hannan Construction Company of St. Louis and this work was started during the latter part of August. There will be considerable heavy grading, especially where the line crosses the mountains at Hays Creek, Ark., and Shoal Creek, where there is considerable solid rock. The line will be laid with 70 lb. steel rails. It is expected it will be open for traffic about January 1, 1920.

PANHANDLE SHORT LINE RAILWAY.—A charter has been submitted, in the name of the Panhandle Short Line Railway Company, to the attorney general's department of Texas. This road contemplates building a line from Dalhart, Tex., to Lubbock, a distance of 200 miles.

PORTLAND & SOUTHEASTERN.—This company, which was incorporated recently with a capital stock of $2,000,000 with headquarters in the Spaulding building, Portland, Ore., plans to build a railroad from Portland's southeastern boundary through Waldo Hills, Ore., and Santiam to Bend.

Railway Officers

Railroad Administration

Regional

F. E. Dewey has been appointed general assistant to Percy R. Todd, director of the New England district of the Eastern Region, with office at Boston, Mass., not F. E. Desey as was incorrectly reported in our issue of August 22, on page 384.

A regional committee on loss and damage freight claims has been organized in the Southwestern region with the following personnel: **W. G. Vollmer**, assistant regional director, chairman; **H. M. Adams**, traffic assistant; **C. G. Weinbrenner**, inspector in the Secret Service and Police Section; and **R. B. Williamson**, at large.

Operating

W. H. Merritt, in addition to the duties heretofore assigned to him, has been appointed assistant to **W. D. Duke**, federal manager, of the Richmond, Fredericksburg & Potomac, the Washington Southern and the Richmond Terminal Railroad, with headquarters at Richmond, Va.

Captain W. E. Ausman, formerly trainmaster of the Cherokee, Sioux Falls and Onawa districts of the Illinois Central with headquarters at Cherokee, Iowa, has received his discharge from military service and has been re-appointed to his former position, succeeding I. L. Anderson, who has been assigned to other duties.

Engineering and Rolling Stock

The positions of district engineer on the Cleveland, Cincinnati, Chicago & St. Louis, at Galion, O., and at Springfield have been abolished; **W. C. Kegler**, district engineer at Galion, has resumed his duties as engineer maintenance of way on the Cleveland-Indianapolis division, with headquarters at Galion, vice **J. E. Kissell**, who has resumed his duties as engineer maintenance of way on the Cairo division, with headquarters at Mt. Carmel, in place of **E. J. Bayer**; **W. S. Burnett**, district engineer, at Springfield, O., has resumed his duties as engineer maintenance of way on the Cincinnati-Sandusky division, with headquarters at the same place, vice **L. B. Elliott**, who has been transferred as acting engineer maintenance of way to the Peoria & Eastern division, with headquarters at Indianapolis, and **C. F. Hinchman**, who has returned from military service, has resumed his position as engineer maintenance of way on the Indianopolis Terminal division, with headquarters at Indianapolis, vice **N. L. Arbuckle.**

Purchasing

W. A. Miller has been appointed division storekeeper on the Southern Railroad, with office at Spencer, N. C., vice **C. J. Norman**, deceased.

Corporate

Executive, Financial, Legal and Accounting

E. N. Brown, chairman of the board and president of the Pere Marquette Railway, with headquarters at New York, has been elected also chairman of the board and president of the St. Louis-San Francisco Railway, succeeding **Henry Ruhlender**, resigned.

Traffic

W. E. Hellmuth has been appointed traffic manager of the Colorado Springs & Cripple Creek District Railway, with headquarters at Colorado Springs, Colo.

A. T. Weldon, assistant freight traffic manager on the Canadian National Railways, at Moncton, N. B., with jurisdiction in the maritime provinces, has had his jurisdiction extended to include all lines east of but not including Port Arthur and Armstrong, Ont., and his headquarters are now at Montreal, Que.; **M. F. Tompkins,** assistant general freight agent at Moncton, N. B., has been promoted to general freight agent, with jurisdiction over lines Matapedia, Que., Edmundston, N. B., and east thereof, with office at Moncton.

Operating

W. J. Stinson, assistant superintendent of the Trenton division of the Canadian Pacific, with headquarters at Trenton, Ont., has been transferred to Havelock, Ont., succeeding **R. de L. B. Girouard,** who has been transferred.

R. A. Sewell, who has been appointed superintendent of car service, on the eastern lines of the Canadian Pacific, with headquarters at Montreal, Que., as has already been announced in these columns, began railroad work on the Canadian Pacific in December, 1898, as an operator and despatcher, resigning from that position in March, 1912. He returned to the service of the Canadian Pacific in July, 1914, as agent and chief despatcher. In October, 1918, he was appointed assistant superintendent at the Montreal Terminal, which position he held until his recent appointment as superintendent of car service on the eastern lines of the same road, with headquarters at Montreal, as above noted.

R. A. Sewell

Engineering and Rolling Stock

T. C. Fischer, office engineer of the Central Railroad Company of New Jersey, with headquarters at New York, has been appointed corporate engineer, with the same headquarters.

C. S. Ogilvie, assistant engineer on the Grand Trunk, at Ottawa, Ont., has been transferred to the Montreal Division, with headquarters at Montreal, Que., vice **C. Murgatroyd,** resigned.

Purchasing

F. A. Hamilton has been appointed purchasing agent of the Colorado Springs & Cripple Creek District Railway, with headquarters at Colorado Springs, Colo.

Obituary

Henry Hammersley, formerly and for many years previous to 1916, local treasurer of the New York, Chicago & St. Louis at Cleveland, Ohio, died on August 20, at his home in New York, at the age of 77.

W. H. Watkins, master mechanic of the Illinois Central with office at Memphis, Tenn., who was granted a leave of absence in the early part of this year, died at his home in Memphis on August 22, at the age of 50.

George J. Duffey, superintendent of motive power of the Lake Erie & Western, with headquarters at Lima, Ohio, died at his home in that city on August 16. He was born at Clinton, Ont., Canada, on May 24, 1863, and began railway work as an apprentice on the Michigan Central at St. Thomas, Ont., and served later as roundhouse foreman and general foreman on that road. In 1907, he left the service of the Michigan Central to go to the Chicago, Indiana & Southern, as general foreman at Gibson, Ind. On June 1, 1908, he was appointed superintendent of shops of the Lake Erie & Western, at Lima, Ohio; on November 1, 1903, was promoted to assistant master mechanic, and in March, 1911, was again promoted to master mechanic. Since January 1, 1916, he served as superintendent of motive power on the same road.

Theodore Cooper, for many years a consulting engineer in New York City and an authority on iron and steel construction, who retired from active work about 10 years ago, died on August 24, at his home in New York City, after a week's illness of pneumonia. Mr. Cooper was born on January 12, 1839, at Cooper's Plains, N. Y., and was graduated from Rensselaer Polytechnic Institute, Troy, N. Y., in 1858. He served as an engineering officer in the United States Navy from 1861 to 1872 and part of this time, from 1865 to 1868, was assistant professor at the Naval Academy. In 1872, with Captain James B. Eads, he was in charge of the manufacture and construction of the St. Louis bridge, later serving as resident engineer in charge of its erection. After its completion he served as engineer and superintendent. He was subsequently superintendent of the Delaware Bridge Company's shops and then assistant general manager and superintendent of the Keystone Bridge Company. Mr. Cooper was assistant engineer in charge of construction of the first elevated railroads in New York City. Since 1879, until his retirement, he was in practice as a consulting engineer in New York City and designed many important bridges, aqueducts, buildings and railroad shops. He was also consulting engineer for many railroads in the United States, Mexico and Japan and for the New York Public Library and the Quebec Bridge over the St. Lawrence river. He was the author of Cooper's Specifications for the Superstructure of Railroad and Highway Bridges; also many papers on engineering subjects.

T. Cooper

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Scenes from Foreign Ports—Train Arriving at Puerto Colombia, Colombia

EDITORIAL
Railway Age

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There is no question but that a railroad could be managed more effectively if it was all located at one place instead of being spread over several states. The scattered condition of railroad property is a special handicap in handling maintenance of way work and other activities not directly associated with the conduct of transportation. Many widely separated operations are not readily administered, while any attempt at concentration introduces transportation charges. In scrap reclamation the expense of hauling the worn out appliances to the plant and the renewed parts back again must always be watched carefully. In the case of rail re-sawing this consideration has resulted in the development of portable plants mounted on cars so that the sawing may be done at or near the place where the rail is taken up. The latest development of this kind is a portable creosoting plant now in use on the Pennsylvania Railroad and described on another page of this issue. While many reasons may be given to argue the greater economy of a stationary plant, the transportation charges which arise on some roads in the backhaul of ties that are to be placed in tracks near the point of tie production, but at a distance from the treating plant, constitute an ample justification for this endeavor to overcome them.

Taking the Mountain to Mohammed

In strong contrast to the general condition of unrest and suspicion in the industrial world is the action taken by the representatives of the employees of the Midvale Steel & Ordnance Company, the Cambria Steel Company and subsidiary companies in session at Atlantic City August 22 and 23, in adopting a resolution condemning the persistent demands of workmen generally for shorter hours and higher wages. The resolution states that "the high cost of living needs to be abated by diligent, efficient and conscientious labor, by thrift, and by avoidance of waste and extravagance," and that "the price of commodities is regulated by the day's work of a man and the real unit of value or unit of compensation is not a dollar but the purchasing power of a dollar," which is regulated by the average compensation for one hour's work received by all who labor. The resolution further states that "we believe any workman who demands a greater proportionate return for his labor than his fellow workmen in other lines are getting is as guilty of profiteering as a grocer who charges exorbitant prices for the necessities of life." It is worthy of note and highly encouraging that the representatives duly elected by the great body of employees in the various plants of the Midvale and Cambria companies, numbering some 30,000, have so sound an understanding of the fundamental necessities for the improvement of the present unsatisfactory economic conditions. The pertinent fact in this connection is that the Midvale employees are organized under what has been designated as the shop committee system for collective bargaining and consideration of grievances and working conditions with the local and general managements of the company, an organization which tends to promote open dealings and mutual freedom from suspicion. It is a question whether the great mass of workers in the country at large are not as sound in their estimate of the situation as the Midvale employees, the difference in expression being due largely to the general feeling of suspicion between wage earners and employers, which apparently does not exist in the relations of the Midvale company and its employees.

A Sane Attitude on the Wage Question

For many years prior to federal control railway managers were criticized with some justice for yielding to the pressure of organized labor with respect both to rates of pay and working conditions, while largely ignoring similar claims of equally or more deserving employees in maintenance of way, clerical and station service who had formed no organizations to represent them. In partial defense of the managers it must be admitted that the continually narrowing margin of net income left them in the position of having little to divide after submitting to the demands of the organizations. However, this did not remove the element of unfairness resulting from the increasing disparity in wages. It was then contended by certain advocates of government ownership that such inequalities would not exist if the government was to assume charge of the roads, because it would have no incentive to deal other than fairly with all employees. Yet after nearly two years of federal control and operation, we find some inequalities as bad as or worse than any that existed before. Today a *laborer* in a car repair yard receives 58 cents an hour with time and a half after eight hours, while a section *foreman* receives only about 50 cents an hour with straight time up to ten hours and time and one half only after that period. On the basis of a 10-hour day and 26 days per month the car repair laborer actually receives 25 per cent more wages than the section foreman. He has no responsibility beyond that of his immediate duties as a workman in a gang, while the foreman is responsible for the work of a force of men and for the safety of travel on several miles of main line. It is because of this situation that there is more dissatisfaction and unrest among maintenance of way employees today than ever before. It is also because of this fact that these men are organizing to an extent never before attempted and are taking a strike vote as a means of enforcing their demands. It is fully as difficult to secure equity in the matter of wages under government as under private operation.

Justice to the Unorganized Employee

For the past 19 years the mileage of automatic block signals on the railroads of the United States has increased steadily. During that time approximately 37,000 miles of road have been equipped with such signals. In 1901 only about 2,000 miles of road was protected in that manner. During the next six years the annual average rate of increase was about 800 miles, but, following the depression of 1907, it is interesting to note the extraordinary advance in the application of automatic block signals which was so marked that it almost amounted to a boom. During 1907 alone more than five times the previous annual average increase was recorded, while for the six years beginning with 1907 the average annual rate of increase was approximately 2,500 miles of road, or more than three times that during the preceding

Progress of Automatic Block Signals

six years. In 1913 another very marked increase was noted, for during that year automatic block signals were added on more than 4,000 miles of road, this addition being about the same as in 1907. During the six years beginning with 1913, the annual average rate of increase was about the same as in the previous six-year period, but apparently a break in the cycle has now occurred, because this year there has been no such marked advance. Information received earlier in the year indicates that the best that can be expected in the way of additional protection in 1919 will not exceed 2,000 miles of road, which is less than one-half the mileage added during the years of maximum progress. The principal work which is now being done with respect to automatic block signals is the investigation by some of the more progressive roads of the additions and changes that can be made to facilitate the movement of trains and to increase the capacity of existing tracks, concerning which the Signal division of the American Railroad Association has made extended study. Because of the war and other unfavorable conditions, the country is sadly behind in railroad construction. Additional facilities must be added and enormous railway expansion must be made during the next few years to meet the demands of the country's growth. Some of these needs can and will naturally be met by the more extended use of automatic block signals.

Railroad Labor Situation Improves

DEVELOPMENTS LAST WEEK in the railroad labor field were most of them as unexpected to most people as they were gratifying. With his long and almost unbroken record of supporting the demands of organized labor, there seemed reason to expect that President Wilson would grant another general advance in wages to railroad employees largely regardless of the justification for it. On the contrary, the President, on the advice of Director General Hines, granted the shop employees only a small increase to equalize the advances in their wages with those of other railway employees, and definitely announced that pending the administration's efforts to reduce the cost of living no general advance in railroad wages would be granted.

The employees of the railroads in California had struck in sympathy with the striking employees of the Pacific Electric Railway. It was pointed out to them that the Pacific Electric was not under government control and therefore the government had no authority over its management. The heads of the railroad brotherhoods ordered their followers to return to work. When they failed to do so the director general announced that unless they were back at work on the morning of August 30 their places would be filled and the entire power of the government would be used to restore operation. The strikers promptly returned to work.

Meanwhile Samuel Gompers, president of the American Federation of Labor, returned from Europe. The advocates of the Plumb Plan had been claiming Mr. Gompers was in favor of their scheme. They had been advertising him as "honorary president" of the Plumb Plan League. But Mr. Gompers, since his return, has refused to comment on the Plumb Plan—a strong indication that either he never authorized the use of his name in support of it, or that when he did so he did not understand what it was.

The propaganda for the Plumb Plan, and the numerous recent strikes and threats of strikes, especially upon railroads, seemed to show that organized labor, and especially organized railroad labor, had passed into the control of the most radical and even revolutionary element of its membership. The result of the firm stand taken by the national administration against railroad strikes and another general advance in railroad wages at this time, seems to indicate that all that was needed to cause more conservative councils to prevail in organized labor was energetic resistance on the part of the government and the public to the demands of the radicals. The more conservative element in organized labor apparently was not unwilling to follow the radicals as long as it appeared that by doing so it might benefit. When, however, the conservative element saw that railroad labor was moving directly toward a conflict with the government, in which it was certain that the government would have the support of a large majority of the public, the conservative element began to exert its influence very effectively.

It cannot yet be assumed that the danger of a general railroad strike is past. The two main grounds upon which the leaders of the shop crafts have advised their members to vote against a strike are that, first, they should give the government time thoroughly to test its measures for reducing the cost of living, and, second, if there is to be a railroad strike it should involve all the employees and not merely the 22 per cent employed in the shops, since if the strike was successful all employees would benefit. There is much ground for skepticism as to whether the government's attacks upon the high cost of living will, in the long run, be highly successful. It cannot permanently reduce the cost of living by dumping upon the market surplus commodities bought to carry on the war and by prosecuting so-called "profiteers." In the long run, the cost of living will be determined by the relationship between the supply and demand of commodities. The only way in which the supply of things can be increased is by producing more of them. The artificial reduction of prices by governmental measures will merely increase consumption and in the long run increase the cost of living.

On the basis of the cost of living, railroad labor generally is not entitled to a further advance in wages. The increase in the average railroad wage during the last five years has been greater in proportion than the increase in the cost of living. Since, however, not only the leaders of the shop crafts, but also the leaders of other railroad organizations, have made their abstention from strikes at present conditional upon the success of the government in reducing the cost of living, it may be that the general railroad strike which seemed imminent a few weeks ago really has only been postponed for a few months. The present leaders of organized railroad labor, especially the heads of the train service brotherhoods, are not only very radical but very daring men, and nobody who knows them will doubt that they will "go the limit" if they believe that they will gain anything thereby.

However, as we have remarked, the influence of the more conservative members of the organizations is beginning to make itself felt. Furthermore, a clearing of the atmosphere occurred when the government took a firm stand against wage advances and announced to the strikers in California that unless they returned to work it would fill their places and use the most drastic measures to prevent interference with operation. Government operation has some serious disadvantages, but it has the advantage that it can put back of the railroad management the entire power of the government and of public opinion in resisting unreasonable strikes and threats of strikes. This may not seem an advantage of government operation to the radical labor leaders, but in view of recent experience, it certainly does seem such to the American public. Whether, in view of the stand taken by the government and the obvious fact that it has the backing of public opinion, the labor leaders will feel that they dare in any circumstances order a general strike under government operation begins to seem somewhat doubtful.

The serious mistake made by President Wilson three years ago in failing to stand for arbitration in the eight-hour basic day dispute has caused a large part of the serious labor troubles which have occurred upon the railroads since then. While his course at that time was unwise and harmful, his present stand is wise and promises to be beneficial.

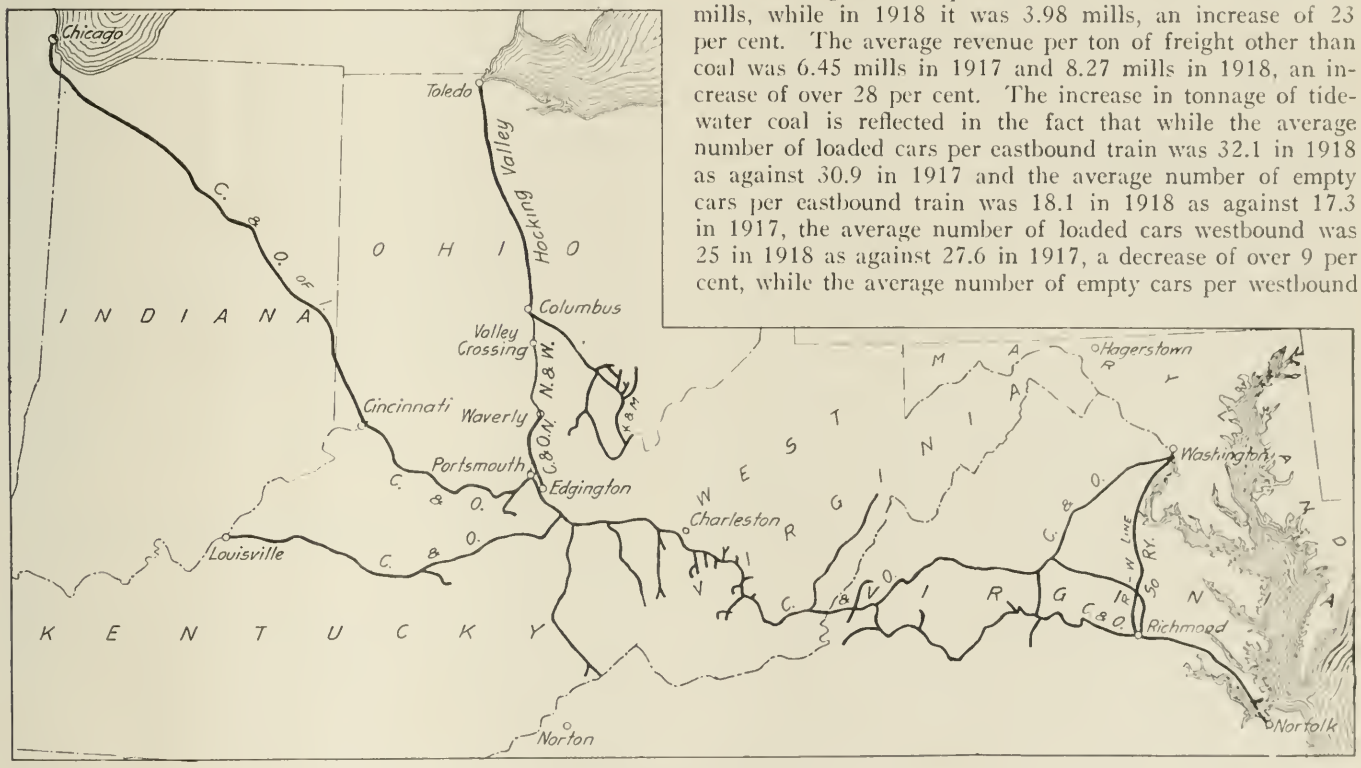
Chesapeake & Ohio

An increase in tidewater coal business and an increase in passenger traffic together with the increase in freight and passenger rates which were put into effect by the Railroad Administration, were more than sufficient to offset increased labor and material costs in 1918 on the Chesapeake & Ohio. The rental which the government pays for the road is tentatively fixed by the Interstate Commerce Commission at $13,227,000. In 1917 the Chesapeake & Ohio earned $14,890,000 operating income after paying expenses and taxes. In 1918, under government operation, the road earned $17,716,000 operating income. There was, therefore, after making certain adjustments, a profit to the government of approximately $4,000,000 over and above the rental paid the company. On the basis of the showing of 1918, it would seem easy for the company to take back its property on the present schedule of wages and of rates and operate it with a reasonable profit to stockholders. An analysis, however, of the 1918 showing gives no sure warranty that present conditions and a return to private operation would assure the company financial success. Coal is not moving to tidewater in any such volume as it did in 1918 and it would appear that the large proportion of coal moving to tidewater in 1918 was an important factor in the ton-mile cost of handling business. Neither is it certain that the passenger business will, under present and future conditions, remain as good as it was in 1918. Maintenance costs on the Chesapeake & Ohio increased about in line with maintenance costs on other roads in its territory, but, like other roads, there is, of necessity, considerable deferred maintenance.

The total tonnage of all freight carried in 1918 was 40,237,000, an increase of 2,357,000 tons, or 6.2 per cent, over 1917. The average haul was shorter in 1918 than in 1917—267 miles and 271 miles respectively,—so that the number of ton miles increased only 4.5 per cent. For some years the development of the Chesapeake & Ohio had been predicated on the assumption that tidewater coal business was of so paramount an importance as to warrant large expenditures for reduction of grades, strengthening of bridges, etc., to more cheaply handle this particular business. Prior to 1914, however, traffic conditions were such that a very considerable proportion of the coal tonnage was handled westbound. On some of this business the Chesapeake & Ohio got a short haul with a considerable loading cost, but a poor division of the rates. With the opening of the Chesapeake & Ohio Northern, which gives the parent company its connection (with trackage rights) with its subsidiary, the Hocking Valley, this rate situation was greatly improved. With the completion of the Chesapeake & Ohio's ore dock at Norfolk, Va., it was in a position to handle coal at tidewater profitably. The war turned the tide of coal and other traffic to the seaboard and the results were reflected in the very profitable showing of 1917. With the elimination of competitive conditions, the establishment of zone systems of coal distribution and the pooling of coal traffic the Chesapeake & Ohio system found itself in a very favorable condition.

The average revenue per ton mile of coal in 1917 was 3.23 mills, while in 1918 it was 3.98 mills, an increase of 23 per cent. The average revenue per ton of freight other than coal was 6.45 mills in 1917 and 8.27 mills in 1918, an increase of over 28 per cent. The increase in tonnage of tidewater coal is reflected in the fact that while the average number of loaded cars per eastbound train was 32.1 in 1918 as against 30.9 in 1917 and the average number of empty cars per eastbound train was 18.1 in 1918 as against 17.3 in 1917, the average number of loaded cars westbound was 25 in 1918 as against 27.6 in 1917, a decrease of over 9 per cent, while the average number of empty cars per westbound freight train was 25.1 in 1918 as against 18 in 1917, an increase of ever 39 per cent. Thus total loaded car mileage increased by 2.4 per cent, while total empty car mileage increased by 22.5 per cent; but good operation combined with the improvement work which had been done to lower the cost of handling tidewater coal more than offset the increase in empty car movement. The average tonnage of revenue freight per train was 1,099 in 1918 as against 1,043 in 1917, an increase of 5.4 per cent. A good improvement was shown in car loading also, the average per loaded car being 38.2 tons in the year 1918 as against 35.6 tons in the preceding year.

Transportation expenses (the out-of-pocket cost of doing the business) on the Chesapeake & Ohio amounted to $26,190,000, an increase of $7,652,000. Of this increase, $1,239,000 is accounted for by the increased cost of fuel for train locomotives alone. Notwithstanding the increase in rates of wages, the increase in the amount spent for train



The Chesapeake & Ohio

enginemen was not in proportion to the increase in coal costs. Train enginemen's wages in 1918 were $2,778,000, an increase of $694,000; while the cost of fuel in 1918 was $4,848,000, an increase of $1,239,000 over 1917.

Maintenance of way cost $9,701,000 in 1918, an increase of 40.5 per cent over 1917, and maintenance of equipment cost $16,179,000, an increase of 53.8 per cent. Apparently, the increase in cost of track labor was particularly great. In 1918 only 589,000 untreated, first-class white oak ties were used in maintenance as against 864,000 used in 1917, and the total of all ties, including creosoted and second-class ties, was 1,148,000 as against 1,468,000 in 1917. On the Chesapeake & Ohio 100-pound rail is standard for main line and in 1918 only 6,130 tons of this rail was used in renewals, compared with 20,056 tons used in 1917.

The average cost of repairs of locomotives was $6,082 per locomotive in 1918 and $3,789 in 1917, and the average cost of repairs per freight car was $150 in 1918 and $92 in 1917. The average cost of repairs per passenger car was $1,634 in 1918 and $1,077 in 1917.

The Chesapeake & Ohio Railway Company on December 31, 1918, had $1,969,000 loans and bills payable and owed the government $16,536,000 for advances, etc. There was $119,000 cash on hand and the government owed the company $10,927,000 out of the $13,227,000 rental certified to by the Interstate Commerce Commission; the government also owed the company $10,714,000 for cash, agents' and conductors' balances, depreciation, etc., which it had taken over on January 1, 1918. In addition, the company claims that the government owes it $1,047,000 annual rental not included in the amount tentatively certified to by the Interstate Commerce Commission.

In concluding his annual letter to stockholders, Frank Trumbull, chairman of the board and president of the company, says:

"The president of the United States has announced that federal control will terminate on December 31, 1919. The practical certainty that operating costs cannot be substantially reduced below their present high level and the probability that determined efforts will be made by shippers to prevent further increase of rates and even to effect reductions, will render it very difficult, after federal control has ended, to maintain between revenues and expenses the margin necessary to insure an adequate return to your company and provide the basis of credit necessary for the improvement and development of its property. This prospect, which faces every railroad in the country, makes it of the highest importance that some plan be devised and enacted into law, which while protecting the proper interests of the public, shall yet also insure the financial stability of our transportation system."

The following table shows the principal figures for operation of the road under government operation in 1918 as compared with operation in 1917 by the company. This is not the corporate income account.

	1918	1917
Mileage operated	2,485	2,478
Freight revenue	$55,720,373	$42,998,223
Passenger revenue	13,629,892	7,899,452
Total operating revenues	73,720,797	54,643,794
Maintenance of way and structures	9,700,660	6,905,579
Maintenance of equipment	16,178,533	10,521,724
Traffic expenses	484,418	694,131
Transportation expenses	26,189,743	18,537,582
General expenses	1,179,251	1,119,732
Total operating expenses	54,081,537	38,105,806
Taxes	1,920,000	1,644,075
Operating income	17,716,459	14,890,416

Corporate Income Account

	1918
Standard return	$13,226,983
General expenses	135,809
Federal income tax accruals	358,184
Income	1,118,414
Gross income	13,851,404
Net income	4,837,507
Dividends	2,511,264
Surplus	8,565,727

Letters to the Editor

Credit for Wage Increase for Engineers

Chicago.

To the Editor:

In your issue of August 22 you devote an editorial to "Justice for the Technical Man" in which you call attention to the recent adjustment of salaries made by the regional director of the Northwestern region and in which you give the credit for this adjustment to the committee of three engineers appointed by the regional director and also to the officers of the Northwestern region for recognizing the justice of the case and having the courage to set a precedent for the other regions. You also mention that the matter of this salary adjustment was the subject of a hearing before the Board of Wages and Working Conditions, but you do not inform your readers that it was the American Association of Engineers which obtained the hearing and presented testimony and evidence collected by the association from all parts of the country. It was the evidence presented at this hearing which caused the wage board to refer the matter to the various regional directors for adjustment. The association then took the question up with the regional directors, furnishing each with a report on his region based on some 1700 questionnaires received from men on 91 railroads, the originals of which were filed with the wage board. I think the adjustment of salaries in the Northwestern region is fair and just and the regional director and his committee of three chief engineers are to be commended for the action taken.

W. W. K. Sparrow,
Chief Engineer, C. M. & St. P. Ry. Co.,
Director, American Association of Engineers.

Condition of Mexican Railways

Guaymas, Sonora, Mexico.

To the Editor:

I have read with much interest the second of P. H. Middleton's articles (*Railway Age*, June 20, page 1530) concerning the condition of railway lines in Mexico. There are some portions of the article, however, which do not reflect the actual conditions. For instance, the statement is made that through billing has been discontinued since 1915 and that American-owned freight cars are only coming into Mexico under bond furnished by the shipper. This condition is not true insofar as the Southern Pacific Railroad Company of Mexico is concerned. We enjoy through billing arrangements with the United States Railroad Administration and there is also a free interchange of equipment.

We have been endeavoring to inaugurate Pullman service on our line, but to date we have not succeeded in procuring the cars from the United States Railroad Administration, possibly due to working arrangements through Texas ports which are not applicable in connection with the Southern Pacific Railroad Company of Mexico.

The statement is also made that the Southern Pacific Railroad Company of Mexico is compelled to operate armored cars on all trains. This is not correct as we only protect our trains with armored cars through the so-called Yaqui Zone, which runs from Torres, Sonora, to Esperanza, a distance of 205 kilometers, which is equivalent to 128 miles. We operate the armored cars through this zone as a precautionary measure and not in anticipation of any trouble.

As a matter of information I wish to state that we delivered the past season, to the United States Railroad Administration lines at Nogales, Ariz., 583 cars of tomatoes which were moved in Pacific Fruit Express cars. We are now moving the garbanzo (Spanish pea) crop, all of which will be transported in foreign equipment. The garbanzo movement will amount to approximately 1,000 cars. We are giving you this information in order that you may see that foreign line equipment is being given to us quite readily

W. H. FRANCIS,
Assistant to General Freight & Passenger Agt.,
Southern Pacific Railroad Company of Mexico.

Eliminating the Flagman

WASHINGTON, D. C.

TO THE EDITOR:

The article by C. H. T. in your issue of August 22 struck a responsive chord in my mind, for the reason that I have long recognized the inefficiency with which flagging generally is performed in automatic block signal territory; even in those cases where flagmen have plenty of time to go back a sufficient distance to afford ample protection, they often fail to perform their duty, and my experience in accident investigation work leads me to believe that in a great majority of cases flagmen depend upon the signals instead of doing the things they are required to do by the rules. We are confronted with the familiar evil of divided responsibility, and it is a natural thought that the logical way to cure this evil is to place the entire responsibility on one man. To put the matter of protection in automatic signal territory entirely up to the engineman would certainly produce excellent results in one direction, at least, where reform in existing practice is sadly needed, namely, it would have a strong tendency to enforce obedience to the caution indication.

While it is true that in automatic block signal territory generally flagging is very poorly performed, and it would appear that better results might be obtained by relying entirely on signal indications, I would hesitate to advocate the complete elimination of the flagman. What I do contend for is a rule for flagging in automatic signal territory different from the rule in force on track not protected by automatic signals. It is unreasonable to expect the same obedience to all the provisions of rule 99 on track that is fully protected by automatic signals that is required on track which is not so protected. In automatic signal territory the flagging rule should fully recognize the function of the signals, and the only thing a flagman should be held responsible for is knowledge that a stop signal is displayed full braking distance behind his train. This principle is recognized in the rules of at least three of our large railway systems with which I am familiar.

Rule 99B of the Baltimore & Ohio, effective January 1, 1913, reads as follows:

> In locations protected by automatic signals and so designated on the time table, the flagman must go back immediately with stop signals a sufficient distance to protect the train, or until he can plainly see that the signal not less than one-half mile to the rear of the train displays stop, and must know that it continues to display stop while the train requires protection.

A similar rule, No. 514, in force on the Northern Pacific reads as follows:

> In block signal districts, where the automatic block signal governing the track in use can be plainly seen from the rear of a standing train to be at stop, such signal being not less than one-half mile from such train, it will not be necessary to protect the train by a flagman. Under all other circumstances, Rule 99 must be fully observed in block signal districts.

Rule 508 of the block signal rules of the Union Pacific reads as follows:

> An engineman of a train entering a block as provided for by these rules will be held responsible in case of accident caused by overtaking the preceding train.

When a flagman has done what is required of him by the Baltimore & Ohio and Northern Pacific rules above quoted, namely, assured himself beyond question that his train is amply protected by a stop signal, nothing further should be expected from him. Complete responsibility should then rest with the engineman of the following train.

When all is said, however, we find ourselves back to the crux of the whole matter, which was pointed out by Commissioner McChord in the article published in your issue of June 20, namely, the necessity for improved discipline and morale, insuring that whatever flagging rules are in force shall be strictly observed. To illustrate what I mean by this statement I will say that in discussing the Baltimore & Ohio rule with an employee of that road some time ago I was told that the rule was no good, for the reason that since its promulgation flagmen never left the rear end of the caboose. This, of course, was an exaggeration, but it forcibly directs attention to that human tendency to minimum effort which was pointed out by Commissioner McChord.

W. P. BORLAND.

More on the Cost of Driving a Spike

NEW YORK

TO THE EDITOR:

On page 190 of the issue of the *Railway Age* for August 1 there appears a letter entitled "Valuation ad Absurdum," signed by "A Liar Who Figures." Prompted by a desire to correct any misapprehension as to the methods and costs of valuation work in general, which may have been instilled in the minds of those unfamiliar with the subject by a perusal of the letter referred to, I desire to present the following:

The writer of "Valuation ad Absurdum" is wrong in saying he is a man "who figures." He states that as it took 10 seconds to drive the track spike, at 40 cents an hour, the cost of driving a track spike is 1-10 of a cent. It will only require the use of simple arithmetic to show that this cost from the data he gives is 1-9 of a cent, instead of 1-10 of a cent.

To prove the misleading character of the original communication it is necessary to answer the question: "Why was $21,849 spent to determine the cost of driving track spikes?"

It has been estimated that there are approximately 350,000 miles of all tracks in the United States. Assuming that there are 2,700 ties per mile, with an average of 5 track spikes per tie, the total number of track spikes in place is 4,725,000,000. A variation of one-half of a mill in the cost of driving spikes when the valuation of the railroads is determined will mean a variation in the total value of $2,362,500. In other words, if the valuation were too high by that amount the public would be compelled to pay 6 per cent interest annually on $2,362,500; and if the figures were too low, the investors in railway securities would lose the interest on that sum. Six per cent interest on $2,362,500 per annum is $141,750, which, less the cost of determining this value given by our friend, "A Liar Who Says He Figures," as $21,849, gives a saving either to the public or to the investors of $119,901 for the first year that the valuation operates, and a saving of $141,750 for each succeeding year.

The amount of this saving at the end of any period of years, computed with compound interest, is left to the imagination of the reader.

We will trust the judgment of the valuation engineers rather than the "Liar Who Says He Figures" as to whether the money expended for valuation is being spent wisely or foolishly.

D. B.

The Senate Committee's Tentative Railroad Bill

Provision Made for Adequate Rates, Limitation of Profits, Federal Incorporation and Gradual Consolidation

WASHINGTON, D. C.

LEGISLATION to establish a new governmental policy of railroad regulation after the return of the railroads to private management was brought a step nearer this week when A. B. Cummins, chairman of the Senate committee on interstate commerce, introduced in the Senate on Tuesday the tentative bill drafted by a subcommittee which is to afford the basis for further consideration by the full committee. The bill contains several important features of various plans which were submitted during the hearings before the committee earlier in the year by the railway executives and other interests, although with many modifications by way of compromise and with some new provisions resulting from the work of the subcommittee, which was composed of Senators Cummins, Kellogg, Poindexter, Pomerene and Robinson. While it contains several features which will probably be objected to both by the railroads and by those who object to any radical changes in the policy of regulation, it also contains many provisions which have long been advocated by the railroad officers and others interested in a policy of encouraging transportation development. It does not provide either for a guarantee or for a definite percentage of net return but it indicates a policy to see that rates are made adequate. On the other hand it limits the profits which may be retained by a railroad to a fair return.

Some of the principal features are:

A railway transportation board, somewhat similar to the federal transportation board proposed by the railway executives and by the National Transportation Conference, to take over many of the administrative functions of the Interstate Commerce Commission and to outline a general transportation policy.

Provision for a gradual consolidation of the railroads into 20 to 35 competing systems, incorporated under federal authority.

An instruction to the Interstate Commerce Commission to lower or advance rates by districts to produce a fair return on the value of the property.

A limitation of earnings of an indivdual road to a fair return and a division of the excess earnings above such fair return, one-half for the benefit of labor and one-half to be expended by the transportation board for equipment or for loans to carriers.

Provision for the settlement of labor disputes by a committee of wages and working conditions and the railway transportation board, and for making a strike or lockout a criminal conspiracy.

Representation of the employees and the government on boards of directors.

Temporary continuance of the guaranteed standard return pending a readjustment of rates.

The following summary or analysis of the bill was made by Senator Cummins in connection with his introduction of the bill in the Senate:

SUMMARY OF THE PRINCIPAL SECTIONS OF THE CUMMINS BILL

SECTION 1.

This section repeals the federal control act of March 21, 1918. The repeal takes effect on the last day of the month in which the bill becomes a law, and the railroads are to be returned to their owners at that time. Rates in force at the time the repeal takes effect are to remain in force until changed by competent authority.

SECTION 2.

Advances made by the government to the railroads and properly chargeable to capital account are to be evidenced by bonds or other securities payable in five years, with interest at 5 per centum per annum; other indebtedness to be evidenced by demand notes, with interest at 6 per centum per annum.

SECTION 4.

Upon the passage of this act the Interstate Commerce Commission is to divide the country into rate districts and the carriers into rate groups, for rate-making purposes; and hearings are provided for with respect to the adequacy of rates for revenue purposes, considering the rate district or rate group as a whole. This issue is to be tried separate and apart from the question of the reasonableness of rates upon particular commodities or for particular communities.

SECTION 5.

New schedules of rates which are filed within 30 days after federal control ceases become effective at the end of four months after they are filed, with such changes as the commission may, in the meantime, order; and, until the expiration of the four-months' period, this act constitutes a guaranty to the railroads which have entered into contracts respecting compensation under the act of March 21, 1918, of a proportionate amount of the contract compensation, and with respect to the railroads with which no contracts have been made, it constitutes a guaranty of a proportionate railway-operating income. At the end of this period the guaranty ceases. If, during this period, any railroad earns more than the guaranty, the excess is to be paid into the Treasury of the United States.

SECTION 6.

In making rates for the groups the commission is to take into consideration the interest of the public, the shippers, the wages of labor, the cost of maintenance and operation—including taxes—and a fair return upon the value of the property used or held for the purpose of transportation, and it is required to lower or advance rates accordingly If any railroad in the group receives more than a fair return upon the value of its property the excess is to be paid to the railway transportation board, mentioned hereafter. One-half of the excess is to be used by the board in the following manner:

First. The promotion of invention and research to ameliorate the conditions of labor and to lessen the hazards of employment;

Second. To extend and improve hospital relief;

Third. To supplement existing systems of insurance and pensions;

Fourth. To afford opportunity for the technical education of employees; and

Fifth. To establish a system of profit sharing by employees.

In the administration of this fund, the board is to organize an employees' advisory council, composed of one representative from each organized craft of railroad employees. The remaining one-half of the excess is to be deposited in a fund and expended by the board in the purchase of equipment to be leased to railroads under proper terms, or to be loaned to carriers unable to provide themselves with proper equipment and facilities upon reasonable security.

No excess earnings above a fair dividend are to be capitalized or used as a basis for increased rates.

SECTION 7.

This section creates a railway transportation board and is one of the most important in the bill. The board consists of five members appointed by the President, with the advice and consent of the Senate. Its members are to receive a salary of $12,000 per year. No member of the board during his term of office can hold any office or employment under any railroad corporation, or be pecuniarily interested in the stock or bonds of any such corporation It has the same powers with respect to summoning witnesses and securing testimony as the law now gives to the Interstate Commerce Commission.

SECTION 9.

This section furnishes the keynote of the solution of the railroad problem presented by the bill. It declares it to be the policy of the United States that the railways of the country shall be divided in ownership and for operation into not less than 20 nor more than 35 separate and distinct systems; each of said systems to be owned and operated by a distinct corporation, organized or reorganized under this act. It provides that, in the division of the railways into systems, competition shall be preserved as fully as possible, and wherever practicable existing routes and channels of trade shall be maintained; that the several systems shall be so arranged that the cost of transportation as between competitive systems and as related to the value of the railroad properties shall be the same so far as practicable, to the end that these systems can employ uniform rates in the movement of competitive traffic and, under efficient management, earn substantially the same rate of return upon the value of their respective properties.

SECTION 10.

As its first duty the railway transportation board is required to adopt a plan for the consolidation of all the railway properties of the country into not less than 20 nor more than 35 systems. When it has agreed upon a tentative plan, it is to give it publicity and provide for full and complete hearings upon the plan. The plan must receive the approval of the Interstate Commerce Commission; but, after it is finally adopted, the voluntary consolidations which are provided for must be in harmony with it, and the compulsory consolidation which are also provided for are to complete it. Street railways and interurban railways used chiefly in the transportation of passengers, and certain other railway facilities which can not be properly consolidated, are excepted from the plan.

The transportation board is clothed with many and most important

powers, in addition to making the plan of consolidation. It is to make continuous inquiry respecting the transportation needs and facilities of the whole country and ascertain when and how they shall be enlarged or improved. It is to inquire into the state of the credit of all common carriers and inform itself respecting the relation between revenues and net income and the like. It is to inquire with respect to the new capital which may be required for adequate and efficient transportation service and the conditions under which it can be secured. It is to certify to the Interstate Commerce Commission its findings in these respects, and the commission is to accept such certificate as prima facie evidence in any hearings which it may conduct. It has authority to lay before the commission any matter of public interest and show such cause as it may deem proper and appropriate. It has authority to make reports to Congress and recommend such measures and policies as will promote and protect the interest of the public concerning the efficiency of the transportation service and the adequacy of transportation facilities.

This section transfers from the Interstate Commerce Commission to the transportation board many of the functions and powers heretofore conferred upon the commission, notably the administration, of the car-service act, the administration of the safety-appliance acts, the administration of the hours-of-service act, the administration of the locomotive-inspection act, and many others which need not be specifically mentioned but which are of the same general character.

It is required also to inquire into water-transportation facilities and the relations between hand carriers and water carriers, the best methods of coordinating the two kinds of transportation, and the most practical plan for preserving in full vigor the two kinds of transportation when they are competitive.

SECTION 11.

The board also has the power, where congestion of traffic exists upon any road to divert it over other lines of railway, in order to relieve the congestion. It has the power to compel a common or joint use of terminals or other facilities when the public interest requires it, and, in a general way, to compel such unification as is necessary to secure the most efficient use of railway facilities for prompt and economical transportation.

SECTION 12.

This section makes lawful the consolidation of railways, but only under the following conditions: First, the consolidation must be in harmony with and in furtherance of the ultimate complete consolidation already referred to, and must be recommended by the board and approved by the commission. Second, the corporation which is to become the owner of the consolidated properties must be either organized under federal authority or reincorporated under this act. Third, the capitalization of the consolidated corporation must not exceed the value of its railway property, as determined by the Interstate Commerce Commission.

Public hearings are to be held in any case of a proposed consolidation, of which the state authorities are to be notified.

SECTION 13.

This section provides that at the end of seven years, in which the voluntary consolidations may take place, the transportation board is to proceed to the completion of the plan of consolidating the railway properties of the country according to its original determination. The compulsory consolidation is to be accomplished through the organization of railway companies under this act, or the enlargement of reincorporated companies which have been organized under state laws. It is not necessary to enter into the details of this section. It is sufficient to say that it is to be so carried out that no obligation on the part of the United States will be created, and that when the work is finished the railways of this country will be divided into the number of competitive systems prescribed by the board, and that the capitalization of each of the companies will represent the actual value of the property used in transportation, as fixed by he Interstate Commerce Commission.

SECTIONS 14, 15, 16, 17, 18 AND 19.

These sections provide for the reincorporation of corporations now owning and operating railways, so as to give them the character of federal corporations, and the only feature of these sections which need to be mentioned is that in any such reincorporated company the classified employees of the corporation are to be represented by two members on the board of directors and the government is to be represented by two members appointed by the transportation board.

SECTION 20.

This section provides that existing railway corporations must have upon their boards of directors two members representing the classified employees and two members representing the government.

SECTIONS 21 AND 22.

These sections relate to the original organization of railway corporations under this act. The two distinctive things in it are, first, that the system of railways which it has organized to own and operate can not be capitalized for a greater sum than the actual value of the property as determined by the Interstate Commerce Commission, and each corporation so organized must have on its board of directors two representatives of the classified employees and two representatives of the government.

SECTION 24.

This is a section which confers upon the Interstate Commerce Commission exclusive authority to regulate and control the issuance of railway stocks and bonds, and needs no comment.

SECTION 25.

This section provides for the use of the excess earnings of any railway company in behalf of its employees. It has already been mentioned.

SECTION 26.

This section provides a new method for settling disputes between railroad companies and their employees. It creates a committee of wages and working conditions, which is to be composed of eight members, four of them representing labor and four of them representing the railway companies. Each railroad craft is to nominate candidates for this committee, and the board is required to appoint four from among such nominees. Each railroad corporation is to nominate a candidate for membership and the board is to appoint four persons from among such nominations. This committee is to consider all complaints submitted by representatives of the employees or of the carriers, and is to decide by a majority vote, and its decisions are to be certified to the transportation board. If the committee of wages and working conditions is evenly divided upon any dispute, the whole matter is to be certified to the board, and the decision of the board is final and constitutes a governmental judgment with respect to the matters in controversy.

SECTION 27.

This section prescribes some of the things which must be taken into account by the committee of wages and working conditions in determining wages. It provides that the committee and transportation board shall take into consideration, among other relevant circumstances, the following: First, the scale of wages paid for similar kinds of work in other industries; second, the relation between wages and the cost of living; third, the hazards of the employment; fourth, the training and skill required; fifth, the degree of responsibility, and sixth, the character and regularity of the employment.

SECTION 29.

This section imposes a penalty of fine or imprisonment, or both, upon any carrier, or any officer of any carrier, who refuses to obey the decisions of the committee after it has been approved by the board, or of the board itself, in the cases referred to. It also provides that if two or more persons enter into any combination or agreement with the intent substantially to hinder, restrain, or prevent the movement of commodities or persons in interstate commerce, or enter into any combination or agreement which substantially hinders, restrains, or prevents the movement of commodities or persons in interstate commerce, such persons so combining and agreeing shall be deemed guilty of a conspiracy, and shall be punished by a fine not exceeding $500 or by imprisonment not exceeding six months, or by both such fine and imprisonment: *Provided*, That nothing herein shall be taken to deny any individual the right to quit his employment for any reason. It will be observed that this section applies equally to the officers or managers of railway companies and their employees. The intent is to prevent any substantial interruption in transportation, and the effect of it is to forbid not only what is ordinarily known as a "lockout," but also what is commonly known as a "strike" of the employees of a railway company. It must be remembered, in this connection, that the bill in forbidding a strike, or combination for a strike, has also provided for the settlement of all disputes by government tribunal.

SECTION 31.

This section increases the compensation of the members of the Interstate Commerce Commission to $12,000 per annum.

SECTION 32.

This section materially enlarges the scope of what is commonly known as the car service act, and transfers its administration to the transportation board. One of its features is that it requires the approval of the government for the extension of an old line of railroad or the construction of a new line.

SECTIONS 33, 34 AND 35.

These sections are amendments to well-known provisions of the act to regulate commerce, and, while important, need not be specifically mentioned.

SECTION 36.

This section authorizes a division of traffic or earnings between carriers, but only when in the interest of better service and economy and not so as to unduly restrain competition. There can be no such division of traffic or earnings until the arrangement is expressly approved by the Interstate Commerce Commission after full notice and hearings.

SECTIONS 37 AND 38.

These sections are amendments to the act to regulate commerce, and need not be described in this summary.

SECTION 39.

This section gives the transportation board full authority to require connections between water and land carriers, so as to utilize water transportation to the fullest extent.

SECTION 40.

This section empowers the Interstate Commerce Commission to make both maximum and minimum, or maximum or minimum joint rates, and this authority is also conferred in another section with respect to all rates.

SECTION 43.

This section deals with the conflict between intrastate rates and interstate rates, and gives the Interstate Commerce Commission full authority to remove any unjust discrimination against interstate or foreign commerce.

CONCLUSION.

There are many amendments to the interstate commerce act in the bill to secure more efficient administration, but it is assumed that they need not be referred to at this time.

The bill was referred back to the committee on interstate commerce, which is expected to hold some hearings on it, and where it will doubtless be further modified after some rather lively controversies as to some of the most important new features. If its general principles are adhered to by the full committee the crucial fight on the question of regulatory policy may be staged in the conference on the Senate and House bills as finally enacted by the two bodies, because it is believed that the House committee will report a more conservative measure, based on the Esch-

Pomerene bill with some additional features suggested in the various plans that have been proposed, and that the bills as reported by the two committees will afford the basis for the bills finally adopted by the two houses.

The House is so far considerably behind the Senate in its work on a bill, because its committee has spent the summer in general hearings which the Senate committee got out of the way in January and February, and the Senate committee was able to take up the work of actually drafting a bill while the House committee was still listening to plans which left little time for the committee to get together by itself. The House committee now expects to spend another week or so in hearings and to report a bill possibly by the end of the month. If it is able to reach an agreement without spending too much time it may therefore be able to catch up with the Senate committee.

The Senate bill is still open to the possible objection that the Interstate Commerce Commission is merely required to "take into consideration" the elements mentioned as affecting the adequacy of the rate level, and the question of what is a fair return is left entirely to it, but there is at least a plain expression of policy that rates are to be viewed "from the standpoint of their effort in producing revenue in any rate-making group as a whole, which it has frequently been argued the commission cannot legally do, under the present law, and it is provided that the commission 'shall' from time to time determine the value of the property in each district and 'so lower or advance the rates of transportation as nearly as may be to provide said fair return as herein provided.' The fair return allowed before the turning over of the excess also "may include a just allowance to provide reasonably for future years in which there may be insufficient earnings."

Conflicts between state and interstate rates are dealt with in section 43 by adding as an amendment to section 13 of the commerce act a provision that whenever there shall be brought in issue any rate, fare, charge, regulation or practice made or imposed by state authority the Interstate Commerce Commission, before hearing and disposing of the issue, shall cause the state or states to be notified and shall confer with the state authorities with respect to the relationship between the state or federal rates, and is authorized to hold joint hearings and to avail itself of the co-operation, services, records or facilities of the state authorities.

"The commission shall, after full, hearing, make such findings and orders as will in its judgment remove any undue or unreasonable advantage, preference or prejudice as between persons or localities in state and interstate or foreign commerce, or any undue, unreasonable or unjust discrimination against interstate or foreign commerce, which is hereby forbidden and declared to be unlawful, and such findings or orders shall be observed while in effect by the carriers parties to such proceeding affected thereby, and shall make the rates, fares, charges, or the minimum and maximum of such rates, fares, and charges, and any classification, regulation or practice which, in its judgment, will remove such advantage, preference or prejudice, "but, nothing in this act shall be construed to amend, repeal, impair, or affect the existing laws or powers of the states in relation to taxation or the lawful police powers of the several states, including the power to make and regulate intrastate rates, except as in this act otherwise provided."

Section 35, which Senator Cummins did not specifically mention in his analysis is an amendment to section 4 of the commerce act to provide a rigid prohibition against charging as much, or more for a short haul as for a long haul and provides that whenever a railroad shall, in competition with a water route, reduce its rates to or from competitive points, it shall not be permitted to increase such rates unless after hearing by the commission it shall be found that such proposed increase rests upon changed conditions other than the elimination of water competition.

Section 44 provides that whenever the commission shall be of opinion that any rate, fare or charge is unjust or unreasonable or unjustly discriminatory, or unduly preferential or prejudicial, or otherwise in violation of the law, it may prescribe what will be the just and reasonable rate, fare or charge, or the maximum, or minimum, or maximum and minimum to be charged for the future.

Some criticism will probably be made of the low salaries proposed in the bill, but it is very difficult to get large salaries approved by Congress. The members of the transportation board are to receive $12,000, whereas in proposing such a board the railway executives suggested $25,000. The members of the committee of wages and working conditions are to receive $4,000, whereas the members of the Railroad Administration's Board of Railroad Wages and Working Conditions receive $10,000. The salaries of the members of the Interstate Commerce Commission are, however, increased by the provisions of the bill from $10,000 to $12,000.

In introducing the bill in the Senate, Senator Cummins ventured the suggestion that "unless some such plan as this can be carried into effect government ownership and government operation are but a question of time." He said the bill represents the painstaking work of the subcommittee for three months, and while it does not represent in every particular the views of every member of the subcommittee, it does represent their composite judgment and the points of difference between them are very few.

"The insuperable difficulty which the Interstate Commerce Commission has always met," Senator Cummins said, "and which it has never been able to overcome, is this: The diversity of the conditions surrounding the carriers have rendered it entirely impossible for the commission to prescribe rates that would be at once fair and just to the public and fair and just to the several carriers. The rates which were in force prior to the possession of the railroads by the government, for instance, would produce for one railroad company an excessive revenue, while they would produce for another railway company which must compete for the traffic, substantially no net operating income. The result was that it either had to prescribe rates that would give to some railway companies an inordinate earning capacity so that they might sustain the weaker railroads, or give to the stronger railroads rates that would be wholly inadequate to sustain the weaker railways. Both kinds of railways are essential to the business and the commerce of the United States; they must both be sustained if the people of this country are to be served as their commerce and their business demand that they shall be served." He then explained that the bill endeavors to meet this condition by providing for consolidations and by enabling the commission to make rates knowing that if they produce excessive earnings for some roads the roads will not be allowed to keep them.

"The earnings of some of the railroads, when the rates are sufficient in the group as a whole to make a fair return upon the value of the property as determined by the Interstate Commerce Commission, will be large," he said. "The earnings of some of the railroads will be small; and the latter must struggle as best they can without complete relief until the process of consolidation takes place."

Senator Lenroot asked what is provided for the case of a particular road where the average rate of fair return upon the group does not afford an adequate return for the particular road.

"Unfortunately we have not been able to provide any assistance of that kind to the weaker roads," replied Senator Cummins, "other than the accumulation of this fund coming from one-half of the excess earnings of the stronger roads in loans to the weaker roads, funds which they may be

unable to secure in the general market of the country."

"That leads me to ask the Senator whether, in his opinion, we have any constitutional right to deprive a particular road, that may be well managed and well conducted, of an adequate return upon the value of its property," said Senator Lenroot.

"Personally I have no doubt about that," replied Senator Cummins. "That has been a question very much disputed, but it will be remembered that we have provided that the excess shall be over and above a fair return upon the value of its property."

"Not its property but of all the property of the group, as I read the bill," said Senator Lenroot, who also asked whether the inevitable result would not be to force the weaker roads into bankruptcy.

"The weaker roads are in bankruptcy," said Senator Cummins.

Regarding the labor provisions of the bill Senator Cummins said that this is "a somewhat delicate subject" and the committee has given it its most careful attention, but the provisions in the bill represent their unanimous conclusions. "It is in accordance with a universal and, as I believe, a just movement in this country and in every other to give the employees of any industry an opportunity to know the policies, the reasons which move the corporations in any given direction. I feel sure that time will but verify my prediction when I say that it will not be long until all industries are organized in that way. If transportation is a governmental function or allied to governmental functions, it is impossible to contemplate continued and disturbing controversies between railway companies and employees. It is the intention of the subcommittee that decisions with regard to all controversies between the employees and the corporations shall be conclusive upon every citizen who desires to be a law-abiding man.

"I have always regarded the strike as a legitimate and inevitable weapons as between the employer and the employee. I have looked upon it as substantially the only weapon that could be employed by the laboring man in order to secure that justice which is his due. But when we advance to the point at which the government undertakes to fix his wages in the event of dispute, when we advance to the point where we authorize a government tribunal to enter a decree with regard to the justice of the particular matter, there is no room longer for the interruption of a strike or a combination among men of any kind, whether employers or employees, to hinder, delay, or restrain the movement of commerce."

Senator Norris asked if, since the corporation could retain only so much money anyway, there would not be a temptation to agree with the employees on the matter of excessive wages.

Senator Cummins answered this by saying that the public would not be unprotected because the Interstate Commerce Commission is not obliged in fixing rates to accept the wages that have been agreed upon.

Regarding the new transportation board Senator Cummins said:

"We have attempted to clothe the board with authority over the physical operation of the railroads, hoping to leave to the Interstate Commerce Commission its judicial or semi or quasi judicial duties, unencumbered by the accompaniment of these administrative affairs which have very greatly hindered the commission in the performance of its wider and more far-reaching duties."

Senators Robinson and Pomerene of the subcommittee also discussed the importance of the labor provisions of the bill. "Current and recent events," said Senator Robinson, "have given emphasis to the fact that it is impossible for the Congress to perform the constitutional function of regulating commerce unless some tribunal is established by the government empowered finally to decide disputes between the railroads and their employees—disputes which might result in a suspension of commerce and in the misery and suffering which we all realize would result from a universal or general lockout or strike. Believing that the time has come when the Congress should act promptly and courageously in considering and disposing of this all-important question, your subcommittee has written into the bill some paragraphs which create a government tribunal authorized to determine disputes between railroads and their employees. There is no purpose to oppress or permit the oppression of the employees. On the contrary the bill is intended to secure to them their just rights.

"Having done this, it cannot be considered unfair to protect the public against the dangers of strikes and lockouts."

Senator Pomerene concluded his speech by saying: "It is the function of government to govern, and when it fails to govern it fails in its purpose. The welfare of the whole people is vastly more to be desired than the advance in wage of a single class, although I believe in good wages and good working conditions for all. When the people as a whole are prosperous, the people of the classes are prosperous, and when we legislate for all we are legislating for the benefit of every individual. I know of no sound reasoning, either in politics or morals, which will permit 2,000,000 men engaged in moving interstate commerce to refuse to adjust their differences with their employers or to submit them to trial and decision before a properly constituted tribunal, and thereby bring distress, if not ruin to the entire people."

From the Hartford Courant

Do the Director General's Rules on Courtesy to the Traveling Public Cover This?

Gen. W. W. Atterbury Contrasts French and American Railroads

Brigadier General W. W. Atterbury, vice-president of the Pennsylvania Railroad Company, and late Director General of Transportation of the American Expeditionary Forces in France, has given an original interview to the editor of the Baltimore & Ohio Employees Magazine, which is published in the September number, issued Monday. In his talk, General Atterbury, after paying a warm tribute to the work of the railroad men who enlisted in the Transportation Corps of the United States Army, discusses features of the relative merits of French and American railroading and of the operating methods prevailing in the two countries. Portions of the interview follow:

General Atterbury was requested to express his views as to the relative safety of French and American operating methods. He replied:

"I believe that we in this country have been 'fed up' on the greater safety of French railroads. It is, of course, quite difficult to arrive at a fair measure of comparison, considering the great differences in the way of equipment, methods of operation, etc., but taking everything into consideration, my opinion is that, on the whole, the operation of our railroads is in reality, even safer than theirs, because of our highly developed method of train despatching, our superior signal systems, and the general and increasing use in this country of steel or steel underframe passenger cars."

Racial Characteristics Shown

"Is it not possible that the idea that French railroads are safer than our own has become general because the representative Frenchman is a much safer man that the representative American?" was asked.

"That is true to a considerable degree," was the answer. "The French and the Germans, too, for that matter, are much more highly disciplined than our Americans; they have greater respect for laws and regulations. As you know it is the breaking of the rules of our American railroads that is so often the cause of our accidents.

"The national characteristics of the French show interesting contrasts to those of our own countrymen in many other aspects of their transportation system. For instance, we know that their roadbeds as a whole are better than our own. Why is this? Simply because the French build more slowly and more surely than we do. Their ballast and their drainage are better. And this insistence on permanency and stability is not only shown in the construction of their roadbeds, but also in the building of their bridges and other structures of all kinds.

French Railroads Stood War Test Well

"This was clearly shown when we got to France. They had been suffering the devastation and destruction of war for three years. Yet their tracks and equipment in general had stood up under the excessively hard usage remarkably well; and this with very little time and money having been devoted to maintenance.

"It is not an uncommon thing to see an engine on a French railroad which is 60 years old and still giving good service. While this is a tribute to their careful workmanship and exacting repair methods, it must be remembered that our own engines would last as long if they were not continually being discarded, before being worn out, for newer and more powerful types. In France, generally speaking, they scrap locomotives only for age; here we scrap them for obsolescence. We live faster in America, and changes in railroad operating methods and in the needs of our commerce come too quickly for us to use a piece of motive power 60 years old, even though still mechanically in good order.

French Density of Traffic

"Another thing which should be remembered in contrasting French and American railroads is the difference in the nature of the countries and the consequent difference in the kind of transportation handled. For instance, you will probably be surprised to know that just before the war the Paris, Lyons & Mediterranean, the largest privately-owned line in France, carried more passengers in a single year than did the Pennsylvania System. Yet this is not so strange when we consider the greater destiny of population in France and the closer proximity of their cities, both productive of a large amount of short distance passenger traffic.

"It is to a large extent because of this dense passenger traffic that they are ahead of us in the matter of grade crossing elimination. Their roads were built through populous communities where it was immediately apparent that grade crossings were a source of danger. Our railroads were laid out through sparsely settled sections and brought the growth of the cities with them. What in earlier years here was a safe method of constructing a railroad through a thinly populated section does not continue to be safe when the population expands as rapidly as it does in the United States.

"This same thought can be used to explain in a measure the greater permanency of all French construction work and especially that of the railroads. They have been building for a large and actual population. We built to develop a potential population which has grown much faster than have our transportation facilities."

Will the French Adopt American Methods?

"Do you think, General Atterbury, that the work which our Transportation Corps did in France is going to leave a permanent impression on their transportation systems?"

"Without any doubt. The French now have no system of despatching. Their trains run on what they call 'marches'; that is, at regular intervals of say 8.10 a. m., 8.30 a. m. and 8.50 a. m., etc. Despatching is not necessary. But if an engine breaks down or a derailment or other accident occurs all the schedules are thrown into confusion until the trouble is rectified.

"Again, they have no car record office. A car is sent out in a train in about the same manner as we post a letter in the mail box. Ordinarily it gets there on regular schedule. But sometimes it does not and, if not, it has to be traced practically without guiding records from its point of origin until it is found.

"These are two of the fundamentals of American operation which will probably be instituted on the French systems. On two of our divisions we installed train despatching, with the selector telephone system. French railroad men worked in the towers with our American operators and saw the advantages of our methods. But it will take some time, I believe, for a system similar to our system of train despatching to make headway on the French lines, largely because of the difference in the way their trains are controlled. A chef de gare has his headquarters at each station and his control of track and operation between his station and the station of the next chef de gare is absolute.

"This official is the foundation of the French operating personnel. He controls the movement of the train, the receiving, loading and distribution of the freight. In fact he is all powerful in the territory which he controls and has become not only the most important cog in the railway wheel but also a man of much influence from a civic standpoint in his immediate vicinity. A system of train despatching would take a good deal of power out of his hands, not without objection on his part. And because he is so much of a local power in dispensing service and privileges to the citizens of his community, he naturally will endeavor to retain that power as long as he can."

A Complete Wood Preserving Plant Mounted on Cars

Portable Equipment on Pennsylvania May Be Readily Moved to Sources of Timber Supply

The Pennsylvania Railroad has been using a tie treating plant for the past 18 months that is mounted entirely on cars. This includes not only the retorts but the adzing and boring equipment as well, so that the complete outfit, ready for immediate use, may be transported to the points of principal tie supply and thus save the possible back haul occurring where ties must be transported from the wood lots to the treating plant and then to the point of use in the track. Such a plant is particularly adaptable to districts wherein a large proportion of the ties used are purchased locally and stored along the right of way to season. However, the distribution of ties has been so dislocated in recent months that the plant on the Pennsylvania has operated continuously in the Mt. Union (Pa.) tie yard, where, in 1918, 276,156 ties were treated, adzed and bored at a cost, exclusive of royalties, rentals, etc., of $0.1211 per tie.

The Car Containing the Adzing Machine and Power Plant

Essentially the plant consists of a car housing the power plant and adzing and boring machines, two cars carrying tracks on which the retort cars travel and a car for the treating cylinders. All of these cars are built specially for their particular purposes and are arranged in the train in the order named. The train may be moved from one locality to another as any other train, clearances having been maintained in the design of cars, or it may be moved locally under its own power, the adzing and boring car being equipped with the proper gearing for this purpose.

The adzing car, in addition to containing the adzing and boring machines and conveyors located in one end of the car, furnishes space for a 60-hp. gas engine, a stationary boiler of 50 hp. for generating steam for the operation of the pumps on the treating car, fuel storage for the boiler, tanks for gasolene and kerosene, a bench gainor knife setter, bench grinders turned by a small gas engine, and a work bench for general purposes. The boiler is located in the far end of the adzing car to keep the fire as far as possible from the creosote. The shavings and borings are conveyed away from the machines and are used with coal for fuel under the boiler.

The track cars, two in number, are 50 ft. long with two tracks for the tram cars on their deck, with two additional tracks raised on steel frame work to the elevation of the upper cylinder on the treating car. A ball bearing gravity roller conveyor extends alongside the adzing car leading from the machine to the first track car, which is supplied with turntables at the end adjoining the adzing car. Switches at the end of the second car adjoining the treating car permit flexible operation of the tram cars, it being possible to discharge from either cylinder to either side of the track car as occasion demands.

One of the photographs shows the arrangement of the treating cylinders on the treating car. As may be seen, two are placed on the deck of the car with the third superimposed. The treating car equipment consists of two pumps and the necessary gages and valves, one a low pressure pump working to about 200 lb. and used for pumping creosote into the cylinders, and the other a high pressure pump (600 lb.) used for treating purposes. Steam coils carried on the inside of the cylinders through which all exhaust steam passes serve to heat the creosote.

Each cylinder is supplied with oil sprinkling or spraying apparatus consisting of a main pipe, 2 in. in diameter, running the full length of cylinders with smaller pipes leading into the cylinders to spray the creosote over the ties. The creosote for the plant is furnished in tank cars, which are spotted beyond the cylinder car, and which, with little

trouble, can be connected up with the pumping apparatus on the treating car.

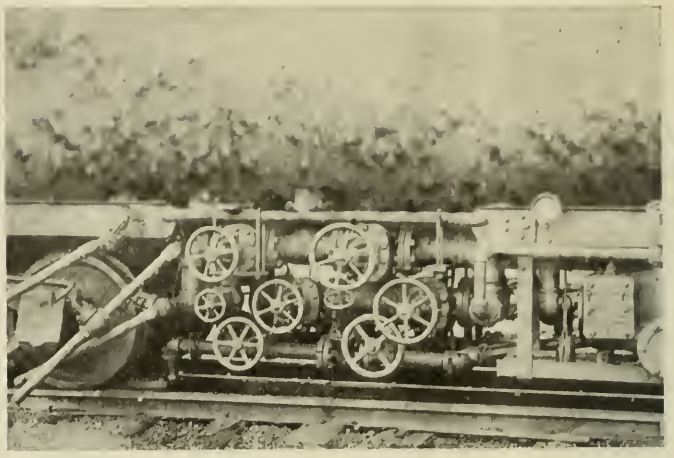
The cylinders are 4 ft. in diameter and 6.5 ft. long, or sufficient to admit seven tram cars with their loads, which average 100 ties. Running to capacity, the outfit is capable of treating 100 ties per hour.

Under normal conditions the force employed consists of two men on the treating car, one to run the pumps and one to open and shut the doors of the cylinders, three men on the adzing and boring car, including an engineman, a

The Cars Carrying the Retort Tracks Have Two Decks

fireman and an operator at the adzing and boring machine, and eight laborers. The engineer is in charge of operations, including general repairs, and supervises the labor forces.

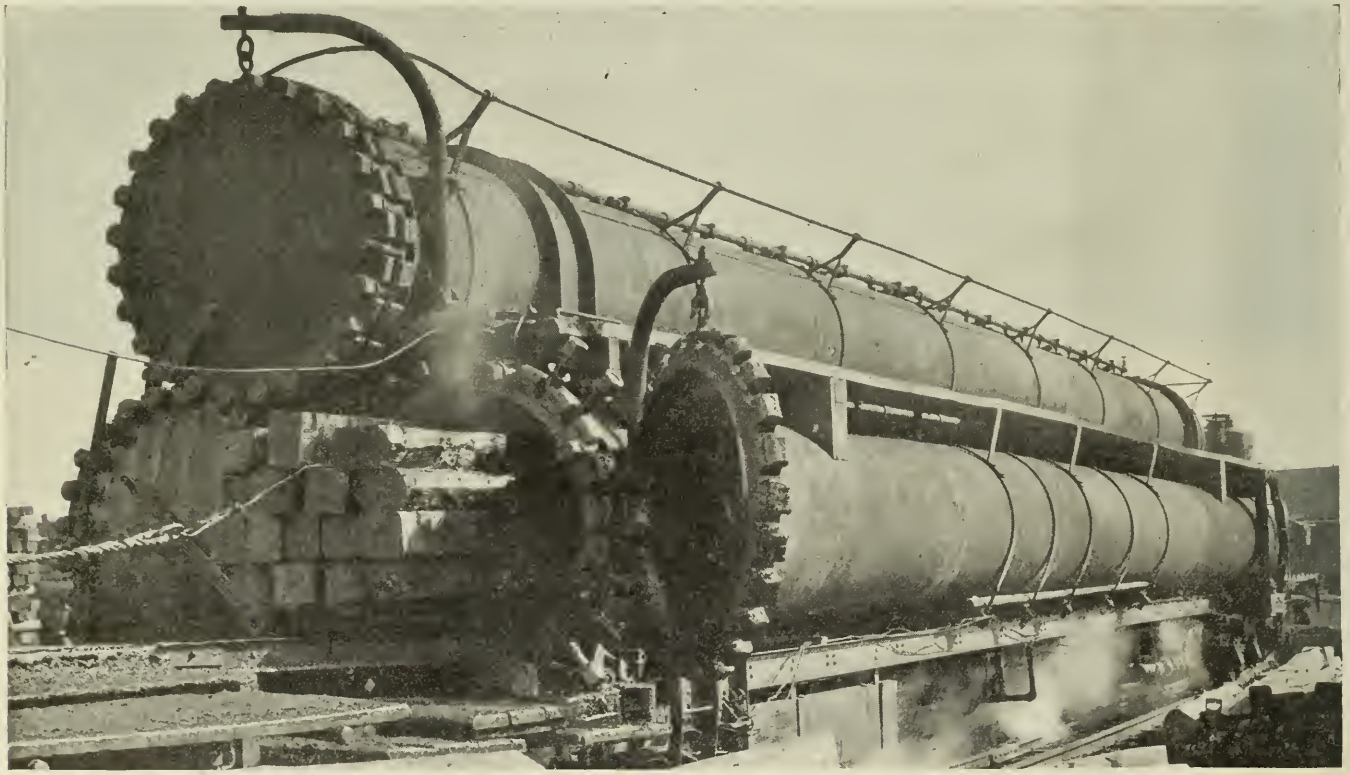
In operation the ties are conveyed from the ground or piles to the adzing machine, where they are shaped for tie plates, after which they pass on to the boring machine and then out to the gravity roll conveyor leading to the tram cars ready for introduction into the cylinders for treatment. When in use along the right of way the operation is so planned that a car containing untreated ties is spotted at the adzing car and the ties are unloaded on



The Air Control Valves Under the Cylinder Car Are Located for Convenient Operation

to the conveyor. The empty car may then be shifted slightly ahead to the proper position for receiving the ties as they are discharged from the cylinder. As noted above, however, the track arrangement on the cars permits the varying of this cycle to meet different conditions.

In operating the plant it is not necessary to utilize all three cylinders. For convenience in describing the operation it will, however, be assumed that all three are to be used and reference will be made to the cylinders by the letters *A*, *B* and *C*. To start, a charge of ties is placed in any cylinder, which will be called *B*. Cylinder *C* is then filled with creosote by means of the pump, letting the air escape into *A*. The air from *A* is then let into *B*,



The Three Cylinders Are Mounted on One Car

while at the same time the charge of ties is being sprinkled with oil from the spraying apparatus, thus subjecting the ties to pressure and oil simultaneously. After the sprinkling, all of the air in *A* is pumped into *B*, treating the charge in *B* by pumping oil from the source of supply, raising the pressure in *B* to 450 lb., holding it approximately 30 min. During this operation cylinder *C* becomes ready to receive a charge of ties which is placed. Then in treating *B* air is forced into the charge in *C*, drawing a vacuum in *A*. That is to say, when running high pressure on a charge that has had air and oil a vacuum is drawn on a treated charge while running oil on the last charge in. The cars are hauled in and out of the cylinders by a line operated by the gas engine.

This plant was built and is owned by the Railway Tie Treating Company of New York. It is operated by the railroad under the direction of the superintendent of the treating plant at Mt. Union, Pa.

The British Transport Bill Becomes a Law*

England Has Entered Upon a Great Experiment in the Solution of Its Transport Problems

By Robert E. Thayer
European Editor of the *Railway Age*

London, August 19, 1919.

Approximately six months after the first presentation of the Ways and Communications Bill to the British parliament, that body has adopted the government's plan of solution of the transport problem in Great Britain. It is an experiment, if not a gamble, which will be watched with the greatest of interest by all democracies. The vast power it reposes in the Minister of Transport is without a parallel in any other democratic nation in times of peace. It has been adopted against the better judgment of many able British subjects, for want of a better plan and for the purpose of postponing for two years—the time this bill will remain in effect—any direct action of the government on the question of the nationalization of railways. The government which has so strongly backed the bill has not had the opposition which such an important measure, and which such an innovation in the policies of a democratically controlled government demands. Particularly is this true of bodies or groups of individuals outside of Parliament. The reason for this is that nobody has put forth a better solution than is contained in the government transport bill, and between it and nationalization, the former was chosen as the lesser of two evils. Parliament has been goaded into prompt action regarding the passage on the bill because of the present disorganized condition of the transport system of Great Britain, and because it realized that adequate transport facilities is the basic requisite of a successful nation.

The Earl of Lytton, who was in charge of the bill for the government in its passage through the House of Lords, stated, in presenting it, that the country which could first put its transport system on a normal basis would be the first to recover from the war, and that owing to the fact that the railway companies were handicapped by the lack of cars and skilled men, the government believed that the only way to solve the problem was to set up some such machinery for coordination and uniform control as was contained in the bill. But at the same time, the Earl stated that the bill did not seek to substitute state management for private management.

As in the House of Commons, the bill was strongly attacked on account of its tendency toward eventual nationalization of England's transport systems, and again an effort was made to obtain from the government a statement as to its policy with regard to the nationalization of the railways by a motion moved by Lord Buckmaster, but which was not passed, to the effect "that this House declines to proceed with the second reading of this bill until the government has stated its policy with regard to the nationalization of the railways and has furnished further information with regard to the extent of the financial obligations imposed by the bill and the measures it is proposed to adopt by which these obligations can be met." He claimed that it was impossible to escape from the conclusion that the passage of this measure was a concession of one of the most important outposts in the great struggle which was bound to take place between private and national ownership of the means of wealth. In criticizing the general policy of nationalization he said that he believed it would prove nothing but a curse to the poorer people of the country, because it would diminish the production of commodities necessary for the support of life. In addition he wanted to know the cost to the country of this tremendous experiment, and how the government intended to raise the money to meet these costs.

Lord Montague, called attention to the fact that conditions might be such at the end of two years that the railways would be in such a state of deterioration that the shareholders would be absolutely at the mercy of the government which was in power at that time, and would have to take any price that was offered to them. Furthermore the bill created a national monopoly from which there was practically no possibility of appeal. The government by the enactment of this bill, he said, was creating a monopoly exceeding in extent any that now existed in other parts of the world.

Viscount Devonport, chairman of the Port of London Authority, in commenting on the fact that the bill revolutionized the whole transport system of the country, stated that the bill was more characteristic of Prussianism than of a sane democratic government, in that it gave the Transport Minister unfettered authority to operate the nation's transport facilities according to his own wishes and ideas.

Lord Balfour characterized the bill as it now stands as "a very clumsy piece of legislation," and said that "although many provisions, such as that enabling the government by an order in council to nationalize the undertakings, had been taken out of the bill, many provisions which were more consistent with the principle of nationalization had been allowed to remain." At the same time he recognized that some organization of the railways was necessary in order to be rid of that system of suicidal conditions which prevailed too much in the past.

Viscount Middleton referred to a statement credited to Bonar Law to the effect that the government did not intend the railroads to revert to the old system, and what the government sought was some control of railroads, stating that "what we want is a simple system of advice." The Viscount denied that this bill was a system of advice, and said that it was a system for absolute control and one from which

*The consideration of this bill before the House of Commons was discussed in the *Railway Age* of July 25, page 161.

there could be no turning back when once it had become law. He strongly urged a division of the bill, having it only apply to the railroads. One of the greatest objections to the bill was, he stated, that it would put the employment of men on a scale which had never before been known into the hands of the government.

Lord Lytton stated that the government was not seeking authority to take over and manage the transport facilities, but what it asked for was power to see that these undertakings were managed by their existing owners in such a way as not to be detrimental to the transport interests of the country as a whole, and further he firmly believed that the bill was the only alternative to complete nationalization of the railways at the moment.

The Marquis of Salisbury contended that on account of the revolutionary character of the bill it should be divided into two parts, that the railways should be considered at once and the rest of the bill allowed to stand until more time could be given to its proper consideration.

Lord Buckmaster very pertinently asked that if Parliament passed this measure in its complete form, would it help the country out of its difficulties or plunge it deeper and deeper in the morass of debt from which at the present moment there seemed no possibility of extraction?

There was a large amount of discussion on splitting the bill as suggested by the Marquis of Salisbury, but the Earl of Lytton for the government, claimed that both parts of the bill were in need of immediate action, that a constitutional crisis would be raised by such action of the House of Lords after the bill had been passed by the House of Commons. He also argued that on account of the Labor conditions existing in England such action would be liable to precipitate danger from "direct action" on the part of labor which would be of dire consequences. The motion to divide the bill was lost by a majority of 51, the number of votes "for" amounting to 59, and those "against" 110.

Regardless of the opposition to the bill as leading towards nationalization, and the opposition to placing so much power in the hands of one man, no definite action was takeng nor could the government be made to express any definite policy on this important subject. In the consideration of the bill in detail very little change was actually made although numerous changes were suggested. An effort was made to require the Transport Minister to confer with the owners or local authorities when improvements in service were required, but this was objected to by the government which held that the Minister should have absolute control.

An unsuccessful attempt was also made to prevent the Minister fixing rates and fares without the approval of a competent committee, as this unrestricted control would place the whole commercial and trading interests of the country at the mercy of the Transport Minister; but the government claimed that if this were done, the responsibility for any increase in rates would not rest with the Minister but with a committee which would not be answerable to Parliament. There was, however, a provision made that notwithstanding anything contained in the act, the right of traders, or port or dock companies to complain to the railway and canal commission should not be deemed to be affected.

One part of the bill calls for an advisory committee of five members for the purpose of advising and assisting the Minister of Transport, one of which is to be nominated by the Lord Chancellor; two to be representatives of trade and agricultural interests, nominated by the Board of Trade; one to be a representative of the transport interests nominated by the Transport Minister, and one to be a representative of the labor interests, nominated by the Minister of Labor. Viscount Midleton moved an amendment to this clause to alter the constitution of the committee to include six persons, one to be an impartial person who should be chairman and nominated by the Railway and Canal Commission, two to be representatives of trading interests nominated by the chairman of the Associated Chambers of Commerce; one to be a representative of agricultural interests nominated by the chairman of the Central Chamber of Agriculture, and two to be representatives of labor interests nominated by the chairman of the committee of the Trades Union Congress. While this amendment was approved by the House of Lords it was rejected by the House of Commons, much against the desire of the labor members. The purpose of the amendment was to provide a committee independent of the government, whereas the House of Commons committee was one which was tied to the government, which would be as Viscount Midleton expressed, "a camouflage committee." It was agreed, however, that the bodies mentioned in the Lords' amendment should be consulted when making appointments.

Likewise the House of Lords voted to restrict the amount of expenditure permissible to be spent by the Transport Minister without the approval of the chairman of the committees of the House of Lords and the chairman of Ways and Means in the House of Commons from £1,000,000 to £500,000, but this too was rejected by the House of Commons.

Thus England has settled for two years, at least, its transportation problem. The roads, which since the war have been marking time, may now expect to take definite action on long deferred improvement programs. There unquestionably will be a development in electrification of the roads, deferred maintenance will be systematically taken up, standardization will be given consideration, larger cars undoubtedly used, and marked changes will be made in the consolidation and joint operation of the properties.

Sir Eric Geddes, who is Minister Designate, in a speech on the transport bill and its provisions, has stated that there will be an elimination of services simply given for the purpose of competition. The private freight cars, of which there are about 700,000, will be eliminated. There will be judicious electrification where the decrease in the cost of production by this method warrants. The rolling stock will be gradually brought up to the best standard and the loading gage will be improved.

In this speech Sir Eric Geddes outlined his proposed organization, stating that with the one exception of roads (highways), which must be treated as a separate department, it is proposed to organize the Ministry in different branches, —civil engineering, mechanical engineering, and so forth. Sir Alexander Gibb, who has been chief engineer of the docks with the British armies in France and who is senior partner of Easton, Gibb & Co., has been chosen as the head of the civil engineering department. The consultant mechanical engineer is to be Sir John Aspinall, formerly general manager of the Lancashire & Yorkshire, who has an absolutely unique knowledge and experience of standardization. The mechanical engineer is to be Lt. Col. L. Simpson, formerly traction superintendent of the Buenos Aires & Pacific Railway, and who has been in charge of the railway equipment and rolling stock of the British armies in France. Sir George Beharrell will be chief of the statistics and accounts. He was formerly statistician to the gun and ammunition department of the Ministry of Munitions, to the transportation department in France, and then to the Admiralty. Sir William Marwood, who is joint permanent secretary of the Board of Trade will have control of licenses, labor questions and regulations. Sir Philip Nash, who was assistant general manager of the East Indian Railway and late director-general of transportation in France, will be placed in charge of the movement and traffic. Rear Admiral Sir C. Bartolome, who was controller of the Admiralty up to the end of the war, will be charged with all question of development. Sir Edwin Maybury, will be in charge of roads, and Sir Hardman Levere will be in charge of finance.

Labor Leaders Adopt More Conservative Policy

Federation of Labor Not Yet Ready to Endorse Plumb Plan— President Calls Conference of Capital and Labor

WASHINGTON, D. C.

OUTSTANDING DEVELOPMENTS in the labor situation affecting the railroads during the past week have been the following:

President Wilson, in his Labor Day message, announced his intention of calling a conference "in which authoritative representatives of labor and of those who direct labor will discuss fundamental means of bettering the whole relationship of capital and labor and putting the whole question of wages upon another footing."

The railroad bill drafted by a sub-committee of the Senate committee on interstate commerce would make a strike or a lockout affecting the transportation of interstate commerce a criminal conspiracy, and provides for the creation of a bi-partisan committee of wages and working conditions to consider labor disputes and certify its findings to a proposed railway transportation board whose decision would be final. The bill also provides for two representatives of the employees on the board of directors of each railroad and for the use of one-half of the excess earnings above a fair return for the benefit of labor.

Executive officers of the shop craft unions, after a conference with Samuel Gompers and the executive council of the American Federation of Labor, advised the shop employees that a strike at this time would be a fatal mistake.

Train employees of the steam railroads on the Pacific coast who had walked out in sympathy with the striking employees of the Pacific Electric Railway, returned to work after Director General Hines had issued an ultimatum announcing that the entire power of the government would be exercised to carry on the railroad service.

President Gompers and the executive council of the American Federation of Labor failed to endorse the Plumb plan and deferred final action determining the position of the Federation on it pending an investigation.

The firm stand taken by the President and Director General Hines against a new cycle of wage increases and the announced intention to use the entire power of the government to keep the trains moving in case of a strike seems to have caused the labor leaders to adopt, temporarily at least, a more conservative attitude. The general manifestation of approval of the position taken by the President that general wage increases at this time would serve to defeat the efforts to reduce the cost of living, which Warren S. Stone, president of the Brotherhood of Locomotive Engineers, has been quoted as endorsing, may have been taken as a warning of the state of public opinion toward strike talk, and the influence of Samuel Gompers, president of the American Federation of Labor, who returned suddenly last week from Europe because of disquieting cablegrams he had received from Washington, is also described as adding a steadying factor to the situation. Whether Mr. Gompers and his lieutenants are merely trying to curb an unruly team with the purpose of preventing something like the result which is to be expected from a collision of an irresistible force with an immovable object, or whether they are strategically postponing action until their forces can be gathered for united action at a more effective time, perhaps remains to be seen.

Predictions of an early strike of the shop employees were freely made at labor headquarters shortly after the President and Mr. Hines announced their position, but these soon gave way to calmer counsel as the unpopularity of such a course became more and more apparent and later reports indicated less of a desire to force the issue.

The various phases of the general labor situation now confronting the country, which include not only those affecting the railroads but the proposed strike of employees of the United States Steel Corporation, were thoroughly considered at a three-day session of the executive council of the federation held at Washington on Mr. Gompers' arrival on August 28. One of the first results was the sending of a letter by the officers of the shop craft unions affiliated with the American Federation of Labor recommending against a strike at this time of the shop employees alone on the ground that such a step would be a fatal mistake and that the question of suspending work be left in their hands. The letter to the shop employees also expressed the opinion that "the next 90 days will bring the entire situation to a head" and said that if a strike is to take place every class of railway employees should be willing to join in the movement. If the government fails to effect a substantial reduction in the cost of living "within a reasonable time" the officers reserve the right to put the strike vote into effect.

If the "reasonable time" is meant to be synonymous with the "90 days" and this means that the President is to be given that amount of time in which to make good on his predictions of a reduction in living costs, and that the railroad labor organizations are prepared to stand together at that time to force an increase in wages just before the date set for the return of the railroads to private management, the chances for trouble in December would appear to be still very good, because there is some well-informed opinion that any reduction in prices that the government will be able to effect from its present campaign will be but a drop in the bucket as compared with the increases in wages which the labor organizations have demanded as necessary.

On the other hand, if the President and Mr. Hines have convinced the labor leaders of their earnestness and that they do not intend to be bluffed on this occasion the danger of a conflict may be avoided unless action is forced by an aggressive minority of the more hot-headed members of the unions.

The steam railroad trainmen who had gone on strike on the Pacific coast in sympathy with the striking employees of the Pacific Electric Railway and had practically tied up the transportation of California for several days, lost little time in returning to their work after Mr. Hines had announced on August 28 that all who did not report for duty on the morning of August 30 would be regarded as having terminated their employment, that their places would be filled and that the entire power of the government would be exercised to keep the railroads in operation.

Mr. Hines' statement also directed attention to the fact that while there is no effective law on the statute books to prevent strikes the federal control act contains a provision, which has attracted little notice, calculated to deal with some of the usual manifestations of a strike by making it a criminal offence to interfere with or impede the possession, use, operation or control of a railroad which the government has taken over.

Mr. Hines Issues Ultimatum

The statement addressed to public officers, railroad officers and employees, and citizens generally in California, Arizona and Nevada, was as follows:

"A strike is in progress on the part of the train and enginemen and yardmen on the steam railroads being operated by

the United States government in parts of California, Arizona and Nevada. This strike began at Los Angeles purely as a sympathetic strike on account of a controversy between the Pacific Electric Railway Company and certain employees of that company. The property of that company is not in the control of the government of the United States. The strike of the employees on the steam railroads was entered upon without any grievance being presented or alleged. The strike was and is a violation and repudiation of the agreements between the striking employees and the steam railroads upon which they worked and also of the national agreement between the United States Railroad Administration and the chief executives of the organizations to which the strikers belong, such national agreement providing for the adjustment of all causes of complaint in an orderly manner without suspension of work. The strike is also an illegal strike under the laws of the organizations to which the strikers belong and has been so characterized by the chief executives of those organizations.

"The chief executives of these organizations stated that they believed they could induce their men to go back to work and urged that they be given time to enable them to do this. The Railroad Administration has given the time for this purpose. The director general has also by publication in the newspapers of San Francisco and Los Angeles urged upon the strikers the absence of justification for their action and the importance of returning to work. Nevertheless many of the strikers have not yet returned to work and to a large extent the public service which the government must render to the public is at a standstill. It follows that the only course which the government can adopt is to exercise its entire power for the purpose of rendering the public service and the President has so instructed.

"All striking employees who do not report for duty on and after seven o'clock on Saturday morning, August 30, when and as called for duty, will be regarded as having terminated their employment and their places will be filled.

"Anyone who interferes with or impedes the possession, use, operation or control of any railroad property, or railroad under federal control, commits an offense against the United States, punishable by fine and imprisonment, and will be arrested and prosecuted accordingly. Anyone who obstructs or attacks persons assisting or endeavoring to assist in the possession, use, operation or control of any railroad under federal control, will be guilty of the offense described and will be dealt with accordingly. Anyone who obstructs or retards the passage of the mail or any vehicle or person carrying the same likewise commits an offense against the United States punishable by fine, and imprisonment and will be arrested and prosecuted accordingly. Instructions have been issued to the United States district attorneys and to the United States marshals, to take the necessary steps to enforce these provisions of the statutes of the United States.

"The governors of the states involved, the mayors of the cities involved, and all other state and local peace officers are relied upon to lend assistance in the performance of the public service as above outlined in every possible manner, including giving aid in the enforcement of the statutory provisions above referred to, and also in enforcing all state statutes, municipal ordinances and other local public regulations which will aid in protecting the railroad property and its operation and in protecting those assisting or endeavoring to assist in the operation of the railroads."

Mr. Hines had previously made it clear that the strike would not be dealt with as proposed by the employees, by the government taking over the Pacific Electric Railway, by stating that it had no authority to do so.

The executives of the four train service brotherhoods ordered their men back to work and on August 29 large numbers of them had returned. By the time set in Mr. Hines' statement the strike had been brought to an end.

Meanwhile the strike vote ordered by the shop crafts after the President and Mr. Hines had offered them only a comparatively small increase in wages by way of equalization, is still in progress. Some of the first local organizations to hold their meetings voted for a strike but it is now regarded as probable that the advice contained in the letter sent out by the shop craft executives on August 28, about the same time that Mr. Hines' statement on the California situation was made public, will be followed.

Text of Letter to Shop Employees

The letter began by quoting Director General Hines' letter instructing the Board of Railroad Wages and Working Conditions to consider only applications for readjustment of wages to correct inequalities of relationship, and continued:

"In our opinion, the importance of this communication warrants the placing of it in the hands of the entire membership.

"It must be understood that practically every class of railroad employees has presented demands for substantial increases in wages or have notified the administration of their intention to do so at an early date. In effect, it is our understanding that this letter is a notice to all railroad employees that there shall be no further general increases in railroad wages unless the efforts of the United States authorities prove unavailing in reducing the present high living cost.

"The federated shop trades represent approximately 22 per cent of the total number of railroad employees.

"It must be obvious that in the event living costs are not reduced, wage increases must and will be made, and if that is done it must also be obvious that the Railroad Administration must give equal consideration to all classes of employees.

"As you are well aware, President Stone of the Brotherhood of Locomotive Engineers and President Lee of the Brotherhood of Railroad Trainmen are on record to the effect that wages must go up or living costs go down. Coupled with this fact practically 78 per cent of the railroad employees have made requests for wage increases that equal or are greater than the requests submitted by the federated shop trades.

"Their requests have been denied except where it can be shown that they have not been given relatively the same consideration. This means that only adjustments of inequalities will be made where it can be demonstrated that such inequalities exist.

"If the federated shop trades strike now, they carry the full burden of securing the same general increase for the 78 per cent of the railroad employees who have not yet decided what action they propose to take. We do not believe that we should allow ourselves to be placed in that position. In our opinion, the next 90 days will bring the entire situation to a head, and if a strike is to take place every class of railroad employee should be willing to join in the movement, share their full measure of responsibility, and not leave the issue to be decided by the 22 per cent of the railroad employees represented by the federated trades.

"The adjustment in wages that has been offered to the federated shop trades, if accepted, will establish increases that are practically equivalent to the increases granted any other class of railroad employees. This must not be lost sight of in considering the situation we now face. It is conceivable that men may decide to do a thing in a manner that will lessen their chances of ultimate success, but common sense dictates that 22 per cent of the railroad employees should not undertake to fight the battle for the 78 per cent who have asked for general wage increases, and who have been denied, as we have, any further general increases, unless the effort to increase the purchasing value of the dollar by reducing living costs proves unsuccessful.

"With a reasonable degree of certainty, we recognize that

this letter, coupled with the recommendation we propose to make, will draw criticisms from the individuals in our organizations who have not as yet indicated a desire to listen to reason or abide by any criticism not of their own making. There is not now, nor has there ever been, objection to honest criticism. Such criticism is not objectionable; on the contrary, is welcome, and this comment is made for the express purpose of directing the attention of the membership to members who have by various means introduced methods of procedure which must appeal to every right-thinking union man as detrimental to the organization that we have perfected as the result of 30 years' untiring effort, and generally against every obstacle that could be invented to defeat us.

"In view of the facts as above stated, your executive officers and national agreement committee recommend that the question of suspending work be left in our hands, with the understanding that no strike order will be issued unless such action becomes absolutely necessary to meet the conditions arising from the present situation, or in joint action with other railroad organizations for a general wage increase.

"The above recommendation is made after mature deliberation and consideration of all the elements entering into this controversy. It is our honest judgment that a fatal mistake would be made by our members to assume the responsibility of tying up the railroads at this time, when the President is evidently doing all possible to reduce the high cost of living. It is but fair to assume that the President will have the loyal support of a majority of the American public in his effort to procure this much-needed relief. We would, no doubt, be charged with obstructing his efforts.

"It should be understood, however, that if the government fails to effect a substantial reduction in the cost of living within a reasonable time we reserve the right to put the strike vote into effect.

"We sincerely trust that the contents of this letter will be given the consideration that this important subject merits."

Mr. Gompers and members of his council also discussed the general labor situation with President Wilson but no announcement was made as to the results. One of the subjects discussed is supposed to have been the threatened strike of the employees of the Steel Corporation whom the federation has been trying to organize and it is reported that the President was asked to intervene. At any rate the time limit set for Chairman Gary of the Steel Corporation to answer the request for a conference, which he had previously refused, expired without an answer being received.

A. F. of L. Executive Council Not Ready to Endorse Plumb Plan

The Plumb plan received one of the hardest jolts of its brief career when it failed to receive the endorsement of Samuel Gompers and the executive council of the American Federation of Labor at its meeting last week, in spite of the fact that Mr. Gompers is named as honorary president of the Plumb Plan League and although the plan was presented to the House committee on interstate commerce and in literature being distributed to the public as having the backing of the federation.

After a three-day session of the council, Mr. Gompers issued a statement on August 30 saying that it had decided to defer final action but had created a subcommittee to make a thorough investigation and report back. The next meeting is to be held about October 6, which is also the date set for the report of a committee appointed by the "leaders of national thought" recently called together by the Plumb Plan League.

Possibly the jolt had its origin in the manner of the presentation of the plan to Congress, accompanied by such threats that it immediately aroused the resentment of Congress and almost universal condemnation throughout the country. Whether the unfavorable reception of the plan caused Mr. Gompers and the executive council to go slow lest the reaction prove dangerous, in the same way that the conference called by the Plumb Plan League declined to endorse it until after an investigation by a subcommittee, or whether Mr. Gompers and his associates are really more conservative than the railroad labor executives who have brought the plan forward and they were premature in seeking to give the impression that it had received the official endorsement of the federation, is a point that still remains to be cleared up. At any rate the statement given out by Mr. Gompers is in such marked contrast to the statements made before the House committee and in the Plumb plan literature as to amount almost to repudiation. The statement follows:

"The executive council had before it the representatives of the labor organizations and their counsel who favored the Plumb plan of railway ownership or railway control and administration. The council considered the plan as well as the provisions of the Sims bill dealing with this important subject. The plan and the bill, so the council declared, are of such transcendent importance to labor, to the people and to the country that the council decided to defer final action determining the position of the American Federation of Labor thereon and in the meantime a subcommittee was created for the purpose of examining into all the facts and evidence obtainable, to secure the advice of all we can who can contribute to a full understanding of the subject, and the subcommittee after its examination and investigation is to report to the executive council of the American Federation of Labor upon the entire subject."

A pamphlet entitled "The A. B. C. of the Plumb Plan," circulated by the league, says that "over 6,000,000 American citizens and voters, through the organized railway employees of America, composed of the 14 railroad internationals, together with the American Federation of Labor, the Nonpartisan League, various farmers' organizations and civic bodies, support the Plumb plan as the only rational solution of the railroad problem."

Before the House committee on August 6, W. S. Stone, president of the league, said he spoke as the voice of two million railroad men, delegated by them to announce "that they are supporting this measure with all the unity of purpose that can move so large a body of citizens" and that "joined with us and represented by Mr. Morrison is the American Federation of Labor, adding three million and a half men to that body of railway employees who instituted this movement." Even Mr. Stone's figures represent a duplication of approximately a million railroad employees who are also members of the American Federation of Labor.

Frank Morrison, secretary of the American Federation of Labor, followed Mr. Stone saying: "I am here representing the American Federation of Labor to testify that it stands behind labor's plan for the reorganization of the railways." He also presented a copy of a resolution considered at the thirty-ninth convention of the federation at Atlantic City on June 17 "that we hereby approve, endorse and adopt the plan for the reorganization of the railway industry" presented to the Senate committee by Mr. Plumb and Mr. Garretson, and that "we hereby pledge ourselves to use every legitimate end to promote the enactment of this plan into law." The resolution apparently was not adopted by the convention but, according to Mr. Morrison's statement, the resolutions committee submitted a report on it which was unanimously adopted as follows:

"With reference to the subject matter contained in the executive council's report and in the above resolution, your committee, in submitting a declaration in favor of ownership or control of railroads by the United States government, recommends that inasmuch as the details connected with the same are at present in a formative stage, the subject matter

be referred to the executive council with instructions to co-operate with the organizations representing the railroad employees."

Mr. Morrison also said that "President Samuel Gompers of the American Federation of Labor accepted the honorary presidency of the Plumb Plan League organized among the rank and file of the 14 railway national and international organizations and generally among the organizations affiliated with the American Federation of Labor, to carry to the public and to Congress the principles of the plan now embodied in the Sims bill which has been endorsed by the chief executives of the 14 railroad organizations."

An interview cabled from Paris recently quoted Mr. Gompers as endorsing the plan but when he arrived at New York last week from his return voyage, although Mr. Plumb was one of the first to confer with him, Mr. Gompers steadfastly declined to discuss the matter for publication until after the meeting of the executive council. Officers of the Plumb Plan League were also among the first to appear before the executive council when it began its session on August 28. These included Glenn E. Plumb, counsel; W. S. Stone, president of the league and grand chief of the Brotherhood of Locomotive Engineers; W. G. Lee, president of the Brotherhood of Railroad Trainmen; B. M. Jewell, acting president of the Railway Employees' Department of the federation, and E. F. Keating, business manager of the league.

President Calls Conference of Capital and Labor

The President's announcement of a conference of representatives of employees and employers was contained in his Labor Day message in which he stated that he was "encouraged and gratified by the progress which is being made in controlling the cost of living" and that he "confidently looked for substantial results." He also appealed to citizens not only to refrain from doing anything which will tend to increase the cost of living but to do all in their power to increase production. He also expressed the earnest hope "that the workers generally will emphatically endorse the position of their leaders and thereby move with the government instead of against it in the solution of this greatest domestic problem."

In two recent messages the President has expressed a view that the relations between capital and labor should be placed on a new footing and he is expected to outline his ideas on the subject at the time of the conference, which will be held after he returns from his speaking tour to the west late in the month. Recently Secretary Lane of the Interior Department as a "happy and timely illustration of the truth of one such a meeting had been introduced in both Houses of Congress.

What, if any, specific plan the President has in mind for placing the question of wages on a new footing has not yet been indicated, although he expressed some general ideas in his previous messages. The fact that the announcement was made on the same day as a statement issued by Secretary Baker of the War Department that good results had been accomplished by a plan adopted at the Rock Island arsenal of giving a measure of responsibility for the conduct of business at the arsenal to employees' committees, who have a voice in the determination of wages and in fixing prices for products of the arsenal which have been sold since the armistice in competition with other industries, was seized upon with avidity by the Plumb plan leaders as indicating a degree of government approval of their plan. In a Labor Day address at Philadelphia Mr. Plumb said of the President's message:

"This represents a movement in the right direction. It indicates a realization on the part of the President that the existing oppressive industrial conditions can be relieved only by an understanding of the fundamental causes of the existing injustice and a readjustment of the forces of society in such manner as to give effect to the promise of the President that 'the object of all reform in this essential matter must be genuine democratization of industry, based upon a full recognition of the right of those who work, in whatever rank, to participate in some organic way in every decision which directly affects their welfare or the part they are to play in industry.'

"But the President was discussing the application of these principles to industry in the abstract. Labor's plan makes a concrete application of these principles to the railroad industry. If permitted, the men supporting labor's plan for democratic control of the railroad industry will gladly join with the President in seeking the solution of these tremendous problems. However, we recognize that there must be a clear distinction drawn between those industries based on a grant or privilege and other industries still conducted as individual enterprises. Another distinction we bear clearly in mind is that the federal government has not been authorized by the states to deal with industries in general, but only with transportation industries; whereas the states still retain their sovereign power over corporations they have created for purposes other than those of operating the national public highways.

"It is extremely gratifying to note the announcement that the administration has already applied, so far as it may without additional legislation, the principles of the Plumb plan to the industries which it is conducting in the United States arsenals. Secretary Baker has called to his aid the skill and ability of the employees, has conferred upon them authority and responsibility for the conduct of the business. They have a voice in the determination of their own wages, in fixing the prices for their own products, and in the organization of the forces to create and preserve the highest possible efficiency. This movement sprang from the workers themselves and at their own suggestion. They have devised and installed the agency which the Secretary of War has adopted and approved.

"The new day breaks. Civilization is built on labor, and labor now supports on broad foundations democracy in government, in industry, in life."

Edward Keating, manager of the Plumb Plan League, also issued a statement referring to the Rock Island experiment as a "happy and timely illustration of the truth of one of the basic principles for which we are contending."

This made it necessary for Secretary Baker to issue another statement saying that "wide misunderstanding of the situation has resulted from the publication of correspondence between representatives of arsenal employees and the Secretary of War. The War Department had encouraged the formation of committees of its employees in the arsenals, which committees consult freely with the men and act in an advisory capacity to the management on questions of shop conditions, production and wages; by this means hearty co-operation has been secured, and complete sympathy between the management and the employees has resulted. The authority of the management, however, is wholly undiminished by the advisory relation of the committees—the management of the plants is undisturbed—the government operates them and the authority of the commanding officer is as complete as it always has been."

During the Pittsburgh street car tie-up from August 14 to 29, the Pittsburgh division of the Pennsylvania daily handled 50,000 passengers who ordinarily travel on the street cars, through the Pennsylvania Station. This, in addition to the 60,000 regular railroad patrons made a total of 110,000 passengers handled daily through the station. Between Pittsburgh and Pitcairn during the busy hours of the morning and evening, trains were run at intervals of three to five minutes.

Railway Supplies for the Dutch East Indies

By J. W. Evans

The Colonial Government of the Dutch East Indies a few weeks ago ordered in this country through its purchasing agent in New York, C. Y. Ankersmit, 12 locomotives at a total cost of $600,000.

This incident in itself partly answers some of the questions which American railroad and railway supply men are just now asking about the Dutch East Indies as a market, both for American-made railroad equipment and American railway engineering talent.

The war produced in the Dutch East Indies a commercial situation which may prove much to our advantage in the United States. The Dutch East Indies used to get their manufactured goods mostly from Europe, and sent their tea, coffee, copra, quinine, etc., to Europe in exchange. When we wanted Dutch East Indian products, we bought them in Europe and paid a substantial commission to the European middleman. Of course, that condition had the effect also of limiting our railway supply market in the Dutch East Indies. They did their shopping in Europe.

Then came the war and closed the path; and the Dutch East came to us for the manufactured products which it had to have and could get no where else. The result was that our trade with them went up by leaps and bounds Their exports to us went from $6,000,000 in 1913 to $80,-000,000 in 1918—that is, multiplied 16 times. Our exports to them, in spite of very unfavorable shipping conditions, embargoes and everything else, jumped from $3,000,000 in 1915 to $20,000,000 in 1918—that is, multiplied 8 times. Fully one-fourth of our exports to the Dutch East have been in iron and steel products, ranging from kitchen utensils to the largest machines.

But what we could send them was far short of their needs, and particularly have their railroads had to peg along on less equipment than they needed. That order for 12 locomotives is a promise of more to come. They want, not locomotives only, but more adequate equipment of all kinds.

The question is, how much of that trade are we going to keep? Will the Dutch East Indies divert their trade toward Europe again?

The answer is that we can retain a substantial part of this new market if we will; and that the Dutch East Indies like American-made goods, like Americans, and want to trade with America direct. And particularly does it want to get as much of their railway equipment from this country as they can.

The first thing for the American railroad supply man to understand about the Dutch East Indies railroads is that the colonial government owns practically the whole system, and is operating and expanding the system in accordaince with a program which will ultimately embrace the whole archipelago. In other words, it is a market that is bound to grow. It is not enormous, but it will be some day. The man who gets into that market now finds something substantial and has the promise of something much bigger later.

The colonial government expands the railroads generally out of the earnings of the old roads. The whole system is out of debt, and every cent over and above operating costs goes for building up the system. What are the possibilities of this expansion may be better understood from the fact that the length of the archipelago is 3,000 miles, and that it has an area of 750,000 square miles, of which 500,000 are still undeveloped. In other words, the railroad project in the Dutch East Indies is partly a project for pushing railroads as rapidly as possible out into the wilderness and so developing the whole region. How much remains to be done may be understood from the fact that there are at present 3,400 miles of railroad in the Dutch East, of which about 2,300 miles are in Java alone.

Industrially, Java is three-fourths of the Dutch East Indies. Of the 50,000,000 population of the archipelago it has 36,000,000. And, of course, it is in that thickly populated island, one-third as large as California and with 700 people to the square mile, that the most rapid railway development takes place.

No figures are available at this time to show with any exactness the size of the market for railway supplies in the Dutch East Indies. An idea may be had of the importance of the field, however, from the figures that appear in the Yearbook of the Netherlands East Indies for 1916. They run to the beginning of the war, and, owing to the difficulty of expansion since, they are sufficiently accurate to form a good basis for calculation now. The figures are in guilders (a guilder being about 40 cents in our money):

	1906	1914
Cost of construction	$178,386,442	$234,495,886
Length of track opened for traffic (miles)	1,316	1,588
Gross revenues	16,506,198	34,714,830
Working expenses (renovation, repair of extraordinary damage and written off capital included)	9,745,895	19,543,195
Net receipts	6,760,303	15,171,635
Staff:		
European	1,480	2,535
Native	*	18,509
Number of engines	424	513
Number of passenger cars	975	1,589
Number of freight cars	5,858	10,094
Length of track in construction in miles	35	436
Capital expenses	2,646,367	20,312,846
Staff at survey and construction:		
European	54	492
Native	22	268

A study of those figures will show the extraordinary way in which those railways have flourished. The work has been done under the management of "the Chief Inspector of Railroads and Tramways," an official of extensive powers.

This official is responsible, not only for the management of the railways, but also for the necessary preliminary work, such as surveying. He has charge of all construction work, purchases equipment, and governs the system by which the roads are run.

Plans for the extension of the railroads in Java are constantly being worked at, and surveying and preliminary work goes on unremittingly. Plans have been completed for putting in several new lines, and surveys have also been made with a view to building a branch line of the South Sumatra Railway which will link the prosperous Lampong districts and the so-called Way Lima region with the harbor on the Bay of Lampong. Investigations are being made also with regard to the available water power in Java, and estimates are being made of the prospective consumption of such power by the railways.

The revenues derived from the State Railways in 1910 and 1914 were as follows, in guilders:

	1910	1914
Length of line in use, miles	1,234	1,380
Number of passengers	26,067,100	39,212,177
Quantity of goods carried (in tons)	3,080,894	4,569,015
Cost of construction	166,507,513	209,361,662
Gross receipts	21,421,617	31,914,555
Working expenses	11,314,977	17,869,600
Net revenues	10,106,640	14,044,955

One promise for the future comes from the recent discovery of a billion-ton deposit of iron ore in Celebes, containing stocks of nickel alloys, common iron ore, chrome iron and manganese.

As Celebes is also extremely fertile, it is intended to run a railroad from the coast to the interior, bring in immigrants from over-crowded Java, and thus develop the country both industrially and agriculturally. The call for machinery, particularly railroad supplies, will be very large.

Another enterprise of moment to railroad men is the development of a $4,000,000 harbor at Belawan, Sumatra, to afford a shipping point for the rubber and tobacco men

of the interior. That harbor will establish a terminal at which much of the railway system of Sumatra will converge.

The purchases of railway equipment by the colonial government in the United States are made through C. Y. Ankersmit, who is its purchasing agent in New York.

Special efforts are now being made by the colonial government to lay before American business men not only the opportunity that awaits them in trade and investment in the Dutch East Indies, but also the need for suitable banking adjustments that will make easy exchanges possible.

An exceptional opportunity will occur next May for American railway men to get in close touch with the whole industrial situation in the Dutch East Indies at the engineering convention which will take place during the industrial fair at Bandoeng, Java. The congress will be held in English, and it will have particular reference to the question of developing and opening up the resources of the archipelago. It will offer an opportunity to American railroad supply men to appraise the prospects, to get personally acquainted with the railroad men of the Dutch East, and to set forth their ideas and explain what they have to contribute to the big problem. That fair will be the entering wedge for many American manufacturers who see the promise of the Dutch East Indies.

The Electrification Problem in England

In a speech by Major Philip Dawson to the members of the Association of British Chambers of Commerce delivered recently and quoted in the Railway Gazette of London, important references were made to the extension of electric traction on railways. The speaker's experience and service to the Brighton Railway in this respect gave additional weight to his remarks, from which we extract the following:

The reasons which have so far brought about electrification are: congested suburban and interurban traffic; tunnel lines with difficulties of ventilation; mountain heavy grade lines; congested lines and difficulties at termini in which electrification will obviate costly widenings; electrification in countries in which coal does not exist but where abundant water power is available. The factor which limits the possibilities of electrification is the capital expenditure involved in the contact, distributing and transmission system and which will be about £5,000 per mile of single track. Interest, sinking fund and maintenance will be chargeable upon this, and this amount will have to be added to the ordinary working expenses and divided over the units of traffic per car, per ton and per passenger or train-mile. How vast this expenditure might be is shown by the fact that there are over 50,000 miles of single track in the country. It is obvious that the denser the traffic the smaller this unit charge becomes. As regards the other operating expenses, including cost of power and maintenance, other things being equal, electrical haulage generally comes out best.

An additional point made in favor of electric haulage is that, provided the generating station supplying power can be economically loaded up, electric haulage will tend towards an economy in coal consumption. The most sanguine American partisans of electrification claim a saving of over 66 per cent in coal on this basis, which would amount to about 10,000,000 tons of coal per annum in Great Britain. Against such a saving must be set off the capital charges already referred to.

The problem of electric power supply will in many cases be tied up with the question of electrification; but this will not always be the rule. There is little doubt that in an industrial area where electric supply stations already abound, and where dense mineral, goods and passenger traffic exists, electrification will be good business, so that we may anticipate the electrification of a very large portion of our railways in such areas as Glasgow and the North East Coast, as well as the counties of Yorkshire, Lancashire, Cheshire, Derbyshire, Staffordshire and parts of Worcestershire, Warwickshire and South Wales. In all these cases, owing to the good industrial loads obtainable, power stations will be in relative proximity and electrification can be classified under the heading of short distance electrification.

As regards long distance electrification, the applications in this country will be far less numerous, as coal abounds and water power is scarce, and electrification will only pay in the case of dense traffic, where the railway load will be such as to provide a good load factor for the power station. There are relatively few lines of this description to be found in this country, and by far the best example, and which should serve as a model and from the results of which conclusions for less favorable conditions could be drawn, is that of the London, Brighton & South Coast Railway. This railway was one of the pioneers as regards electrification in London, and the results of its suburban electrification during the last 10 years have been most satisfactory, the receipts of the electrified lines being more than doubled, and but for the war the whole of the suburban lines, amounting to over 150 miles of track, would have been now electrically operated. In deciding to electrify the directorate and management of the company fully realized that theirs was a case, not only of suburban electrification, but of the electrification of their Southern system as far as Brighton, and hence they, I think, wisely adopted a system which lends itself to indefinite extension. Here is the case of a long distance line operating heavy express passenger and freight trains with such a density of traffic that, without widenings, the train service could not materially be increased and where, owing to the density of service, a good load factor would be guaranteed for the generating stations. This is the one line ready for electrification immediately, and on which work could be proceeded with at once, as practically all the calculations have been made and the plans and specifications are available; the contracts for the suburban section were let before the war, but are not being proceeded with owing to the present uncertainties. The putting in hand of any other electrification would take time, as complete schemes would have to be prepared and contracts let, and there is no other long distance line as eminently suitable for electrification as that from London to Brighton. Unfortunately, present circumstances have and are materially retarding an improvement which would go a long way towards helping to cure the present overcrowding of trains, as well as to simplify and assist the housing problem, and give employment to a large number of workmen.

The completion of the suburban section would naturally be followed by the electrification to Brighton, for which plans are practically completed, and which would simultaneously result in providing plentiful and relatively cheap electric power supply throughout the whole of the purely agricultural and residential districts served by the railway.

The electrification of the suburban system would demand and justify the creation of a super-station, which would comply with the recommendations of the Board of Trade Committee on electricity supply and which could be the first step in the unification of greater London electric power supply on rational and business lines.

Summarizing the position as regards the future of electric power supply, the prospects are very encouraging, provided the government and legislation assist every class of electric enterprise, whilst safeguarding the legitimate interests of the consumers.

Railroad Hearings Before House Committee

Executives and Security Owners' Association in Controversy as to Who Represents the Railroads

WASHINGTON, D. C.

IF MEMBERS OF CONGRESS seem to be experiencing some difficulty in making a diagnosis of and in applying a remedy for the malady of the railroads there may be some excuse for them in view of the wide differences of opinion among those they have called in consultation on the case, including many close relatives of the patient. Also some of the difficulty lies in the fact that the victim of previous quackery that they are trying to cure is not really one patient but a whole hospital full of them in varying degrees of health or ill-health, some of them suffering with various symptoms and some of them sufficiently robust to object strenuously to medicine that others would accept eagerly and hopefully. Some of them are merely experiencing growing pains, others are reaping the consequence of irregularities in their youth, some of them are candidates for the operating table but shrink from the knife, most of them are suffering from insufficient nourishment, a few need only fresh air and sunshine, while still others are ready to be discharged.

The hearings on railroad legislation before the House committee on interstate and foreign commerce have rapidly been degenerating for some time into a free-for-all controversy in polite language between the advocates of the various plans. The confusion into which the minds of some members of the committee seem to have been thrown by the mass of undigested information that has been hurled at them day after day in hundreds of printed pages of prepared statements, thousands of words of oral arguments and hours of questioning, is not materially lessened by the fact that most of those who have plans find it much simpler to direct their arguments against an inaccurate and at times very unfair statement of the other plans which they attack than to meet them squarely.

Many of the witnesses also have sought to save themselves some trouble or perhaps save the committee some time, although most of them are not especially solicitous about the time of the committee, by loosely bunching together a number of plans based on similar principles and proceeding to discuss them generally in terms which apply strictly to none of them. While the apparent lack of scruple on the part of some of those who have testified against the other fellow's plan may perhaps frequently be attributed to the fact that they do not believe it means what its proponent says it does, such an explanation seems hardly applicable in the case of some of the attacks which ignore the fundamental principle of the plan under consideration.

Those who may be characterized as the anti-railroad witnesses, including the labor leaders, some of the shippers and some of the state commissioners, have added force to their rhetoric, if not to their reasoning, by loudly denouncing the railroads, the security owners and the business men for seeking a guarantee, although none of the widely differing plans that have become prominent provide for any guarantee to any one, if the proposed temporary continuance of the present guaranteed standard return be excepted.

On of the most important points of disagreement, leaving aside the general differences between the Plumb plan advocates and almost everyone else, is that between the railway executives and the Warfield plan and the National Transportation Conference plan. The executives have taken a strong position against any division of the so-called excess earnings above 6 per cent, which is provided for in both of the plans mentioned, although under different methods, but the controversy seems to be particularly between the executives and Mr. Warfield and his associates, who are as bitterly opposed to the plan of federal incorporation advocated by the executives and also by the National Transportation Conference as the executives are to what they term the confiscation of excess earnings. The controversy had previously been manifested in two statements made public by Judge Lovett and Mr. Warfield, but it has broken out anew at the hearings.

A few of the characterizations applied by the representatives of the executives to the Warfield plan were mentioned in last week's issue. S. Davies Warfield, president of the National Association of Owners of Railroad Securities, appeared before the committee on Friday, August 29, after his counsel had previously made its presentation of the plan, and replied to remarks made by T. De Witt Cuyler and Judge R. S. Lovett, implying some question as to whom Mr. Warfield represented, by submitting a "memorial to Congress by or on behalf of the fifty million American citizens owning or directly interested in railroad securities" with the signatures of 5,000 institutions and over 8,000 individuals. After this he entered upon a vigorous "correction of misinterpretations," some of which he said were deliberate, and told the committee there was a division of sentiment among the executives themselves, who he said, "have little or no financial interest in the properties that employ them," as well as questioning their representation of their stockholders or even of their directors.

"They certainly do not represent the security owners," he said. "What stockholders they represent I do not know, but I doubt whether they represent their directors."

Memorial Presented to Congress

The memorial urged the adoption by Congress of the fundamental features of a fixed percentage return on the aggregate investment in the railroads and a division of earnings in excess of 6 per cent, which are contained in the Warfield plan. The signers of this memorial declare that these requirements are essential to the investment of trust funds in the railroads, and that if Congress does not provide the protection given by these fundamentals it will fall short in the enactment of legislation to give stability to general railroad credit.

The memorial has signers, Mr. Warfield said, in every state in the union, the District of Columbia and in every urban community in the country, including approximately 5,000 investing institutions, savings banks, life insurance companies, fire, marine and surety companies, national and state banks, and trust companies, and other fiduciary institutions as well as 8,189 individual investors. Sixteen business organizations such as boards of trade, and chambers of commerce, are signers. It was estimated that these organizations with those who have endorsed the plan by resolution represent 30,000 people. Big international banking houses, investment bankers and brokers in the large cities are not included in the signatures, but the smaller institutions in every city in the country are represented.

After citing the necessity of legislation bodying those features of the Warfield plan and stating that many state laws prohibit holding of railroad securities by state institutions in the present situation affecting the railroads the memorial contains this paragraph:

"It becomes a duty to those we represent, and to your

honorable body, believing you would expect us thus to inform you, that without an unmistakable declaration by Congress of its policy toward these properties, embodying adequate assurances against destructive exertion of the regulatory power or the equally fatal results of congressional inaction, we would be wholly unjustified in investing further fiduciary funds inthe securities of the railroads."

In presenting this document Mr. Warfield said:

"The representations made on behalf of millions of American citizens that I present through this committee to the Congress, is the collective voice of each individual and not as members of or concerned in any particular railroad corporation, or in furtherance of the ambitions of any executive of any railroad. They come before you in the exercise of the prerogative of every American with the hope and in the belief that this committee will patiently and patriotically frame the laws for the protection of all without respect to whether such laws do or do not suit the individual wishes of any particular railroad or may curtail the powers heretofore exercised by operating heads of railroad properties.

"We do not ask the continuation of autocratic railroad methods of the past, or of a system which in some instances permitted performances in railroad manipulation, both of which the adoption of legislation based on the principles laid down in the plan of this association heretofore submitted to you could forever end.

"I doubt if the Congress has ever had presented to it a more representative or more important appeal from the investing public of the United States, and from every part and section thereof. Not only are investors and investment institutions signed hereto, but, as already stated, there is a substantial representation from the business and shipping interests of the country.

The total resources of the investing institutions of the United States, exclusive of international banking houses, private banking houses and private banks, investment bankers and brokers, and traders in securities, are	$47,835,330,165
The signatures to this memorial, excluding, in addition to the exclusions above named, individual investors, colleges, universities, etc. (whose resources it would be difficult to estimate, but which, if ascertained, would add a large sum), represent	$27,550,544,032

which equals 57 per cent of the total resources, and a very great percentage of the institutions of the country.

"This includes savings banks, life insurance companies, fire, marine and surety companies, national and State banks and trust companies.

Taking the largest cities of the country, to the number of fifty-six (56), the total resources of the institutions therein amount to	$27,967,310,398
The resources of the institutions of these cities that have signed the memorial amount to	$19,511,627,303

which equals 70 per cent of the total.

"Since in these 56 largest cities are located the great investing institutions representing the majority of the funds available for railroad investment excluding those above mentioned, it seems fair to assume that these institutions represent a percentage of such funds far in excess of 70 per cent, certainly to the extent of between 10 per cent and 20 per cent greater than that figure—or from 80 per cent to 90 per cent of the total.

"The savings banks signing this memorial have depositors numbering over 5,500,000 of the 9,000,000 total depositors in the mutual savings banks of the country. The number of policyholders represented by the life insurance companies, in unduplicated policies, signed to this memorial is 23,000,000 of the 33,000,000 total unduplicated policies. The total number of stockholders of national and state banks, trust companies, fire, marine and surety companies, and fiduciary institutions, is difficult to estimate. But, taking the average number of stockholders of the various institutions, it is estimated the number of stockholders of the signing institutions would be from 1,500,000 to 2,000,000. The institutions or individuals signing the memorial are located in 2,046 cities, towns and communities of the United States, every state of the Union of course being represented. Signatures are continuing to be received in large numbers, so the figures herein given will be largely increased in a short time."

Mr. Warfield Replies to Executives

Mr. Warfield took sharp issue with the position taken by representatives of the Association of Railway Executives in their recent testimony before the committee, quoting Daniel Willard, president of the Baltimore & Ohio, as having "unequivocably endorsed the fundamentals of the Warfield plan." Mr. Warfield also quoted from the earlier testimony of Chairman Cuyler and General Counsel Thom of the executives before the Senate committee, saying they had admitted the necessity for governmental supervision of excess earnings of the more favorably situated railroads. Director General Hines was also quoted as having unequivocably endorsed the position that any legislation to be enacted by Congress must provide a fixed percentage return of not less than 6 per cent upon the property invested in the railroads taken in the aggregate, as essential to credit.

Mr. Warfield contended that it is utterly impossible to make rates to enable the great bulk of the railroads in the country to perform adequate service and to receive sufficient revenue to take care of their financial obligations unless the railroad act provides for regulation of excess earnings of the railroads beyond the 6 per cent return, the excess earnings to be divided in the interest of the railroad, labor and the shippers in such proportion as Congress may determine.

Mr. Warfield said in part:

"Our effort is to endeavor to relieve the apparent barrier between the Interstate Commerce Commission and the representatives of the railroads by asking that the first consideration of the commission in adjusting rates shall be the amount of primary return to the railroads necessary to keep life in them, which should be a known factor, and we ask you to determine this factor as a minimum and state it to the Commission so that this at least may be set up primarily as an essential to the preservation of the transportation system of the country. The result would be that the first consideration would be so to adjust rates as to produce sufficient net railway operating income to let the great majority of the railroads live, and as much more as the public interest may justify; next, to ascertain what is necessary to pay a fair wage to the employees, and what is essential to buy equipment and the other things necessary for adequate railroad service which the public and shippers demand. That makes the rate. We believe practice would result in nearly an automatic arrangement in respect to the adjustment of railroad rates.

"Now, there is nothing revolutionary about this. Very little change is required in the use of the tools you now have to accomplish the result. Under this suggestion we do not consider it necessary to create a new body, such as a board or department of transportation, to go between the railroads and the commission for deciding the question of rates. Furthermore, can you expect one man, or a newly appointed board of two or three men, to do any different or better than what has already been done in the past unless there is some specific instruction to these new appointees? And if you are to give such specific instructions, why not give them directly to the commission with its experience and with such knowledge of its work as would take years of service for any newly appointed men to acquire. As a practical question, what need is there for two regulatory bodies, the new one to advise the present and supposedly well-posted body what to do, except there be lack of confidence in the existing body in its relations to the railroads. The difficulty has arisen out of not providing the commission with methods of procedure and a declaration of policy definite in its character.

"We have sympathy for the four brotherhoods when they say they do not want to see the railroads returned under the system of the past wherein it affects the question of the settlement of wages. In that respect named we agree with them. Let us see what the employees have had to do in the past in regard to any increase in wages. The employees of each railroad go to its president and ask an increase. He is not in position to meet these men. He has no control over the revenue which his railroad is to receive from rates and he is perforce placed in a combative attitude. He cannot give something he has not got, or something which he does not know whether he will get back if he pays it out. His road may be hardly getting along on what he has in sight, so there comes the refusal to the men and then the strike, or their descent in overwhelming force upon Congress or the administration. Under existing laws it cannot be avoided.

"What would be the difference under the plan we propose? The same idea that solves the question of rates and the question of a reasonable primary return that will stabilize not only railroad credit but all credit, will also solve this problem. When the employees go to a railroad president, that officer would have to consult with the rate-making body before he could give any answer so far as any raise is concerned. We suggest six boards of conciliation, in the six rate-making regions, to act in matters of this kind under procedure to be laid down by the Interstate Commerce Commission. These six Regional Commerce Commissions, which we suggest to assist the present Interstate Commerce Commission, act also as such boards of conciliation. They are to act in rate matters, their work, together with that of the Interstate Commerce Commission, to be co-ordinated with the work of the state commissions under procedure to be laid down by the interstate commission.

"We do not suggest that this arbitration be made compulsory, excepting that no strike shall occur until negotiations have failed, but it forms a basis for decentralized wage adjustments in the several districts of the country wherein the railroads affected operate, through bodies clothed with authority to bring about between the railroads and their men those relations that should properly exist, and without which, no matter what laws may be enacted, the transportation system will not be made successful. This is the simple remedy we suggest and it would be effective.

"The basic principle to be met in any legislation for the railroads, if such legislation is to be constructive and successful, must rest on the limitation of excess earnings of the roads. It is very important, that the members of Congress should realize just what this means and the reasons for it. You cannot make rates to suit the needs of each individual railroad of the country. Further, it is well known that if rates are made that will give sufficient revenue to permit the proper performance of service by the great bulk of the railroads of the country, this will give what the commission considers too much money to what are known as the prosperous or more favorably situated roads, and the result has been that adequate facilities and service have not always been given the public. This is the whole question, and upon its decision rests the success of any regulatory measure in respect to railroad rates. It has prevented the commission from adjusting to a level necessary to establish an efficient transportation machine as a whole. How are you to meet it? And if you do not meet it, we feel that your bill will fall short of giving adequate service to the people of the country, whether they be investors, passengers or shippers of freight."

Mr. Warfield then said there were only two ways to solve the present problem which needs fundamental treatment. One of these is through the reduction of excess earnings and the other through formation of 20 big companies. He declared the formation of such companies would be impractical and unconstiutional and cited the opinion of counsel that it would be unconstitutional. Even if it could be done, he said, the holders of present railroad securities could not be compelled to accept new securities in the new companies, making for endless litigation and the destruction of competitive service. He continued:

"Let us return to excess earnings reduction, which Judge Lovett in criticism of the association plan characterized before this committee as confiscatory and which he states will endanger the securities of the privileged railroad for which he speaks and which owes its origin and success to the government that furnished the bonds and land grants that brought it into being. But it would seem to be a selfish position to assume at this time for the representative of one of the roads that secured the benefits of such government assistance and protection to ask that his railroad be let alone, to the destruction of others, and allowed to continue even in these times on the basis of earning 34 per cent more than its full standard return, or a total of 134 per cent, whereas the Atchison is earning but 68 per cent of its standard return, the Pennsylvania Lines, East, 23 per cent, and the Pennsylvania Lines, West, but 6 per cent. And so it goes down the line until you reach the Reading and Baltimore & Ohio systems which are not even making their operating expenses, and where all the railroads taken as a whole are earning for the six months ended June 30, 1919, an average of only 39 per cent of the standard return now being paid them by the government. The dislike of parting with any portion of earnings, excess or otherwise, seems to be hereditary with the executive officers of this railroad. The question now is whether Congress will legislate to sustain those hereditary privileges or to sustain transportation as a whole.

"You have seen a complete endorsement of the vital features of the plan of our association by Mr. Willard of the steering committee of the Association of Railway Executives —concurred in, as I am definitely informed, by at least two other members of that committee; recognition on the part of the chairman of their association that this problem would have to be met, and a distinct statement on the part of their general counsel, Mr. Thom, that the question of excess earnings would have to be dealt with by some means of having governmental supervision over what we term the excess earning power of those roads. If there could be any better endorsement of the necessity for the main fundamentals of the plan of this association I fail to know it."

Mr. Warfield then quoted Director General Hines as to the necessity of dealing with excess earnings. "Unless excess earnings are dealt with in a proper manner, there is great danger of the contingency happening to which Mr. Hines refers—government ownership," he continued. "Is it not, therefore, a serious question for railroad executives with little or no financial interest in the properties that employ them to consider whether their attempt to nullify the efforts of the owners of the properties, as expressed here in the tremendous percentage thereof signed to this memorial, may not bring down upon the country the evils of government ownership and upon the owners great financial loss.

"In his address delivered in Chicago on April 10, 1919, Director General Hines recognized and endorsed the soundness of the rule of rate making and process of excess earnings reduction which is the fundamental basis of the association plan. The two requirements which are fundamental to any legislation which the Congress may pass, if it is to be considered constructive and is to solve the problems of the railroads, are that the act provide a fixed percentage return of not less than 6 per cent on the aggregate property investment in the railroads, as a whole, not on the property investment accounts of each individual railroad, and shall also provide for the division of earnings in excess of 6 per cent; one-third to be retained by the railroad earning such

excess, one-third in the interest of the employees and one-third in the interest of the shippers. This proportion is a suggestion; it is for Congress to determine such division as it may deem wise.

"I have presented to you not only the thought and wishes, in respect to the vital requirements of the railroads, of the thousands who have signed the memorial, which it is fair to consider is representative of millions of other citizens similarly situated in life; and practically every witness connected with the railroads or their owners with the exception of Judge Lovett, who have appeared before the committees of both houses of Congress when questioned has either admitted the absolute necessity of providing for these vital requirements (without the recognition of which Congress will not have been constructive in railroad legislation) or have specifically endorsed the principles involved, from the director general down, and these fundamentals have been adopted by the National Transportation Conference and submitted before this committee. The Transportation Conference applies the excess earnings in a different manner from that we suggest, but all this is 'mere machinery.'

"The continuous statement made by Judge Lovett, utterly unable to read the changed attitude of the times, that under the plan the excess earnings taken by the government from the more prosperous roads are to be handed over to the weak roads is, of course, untrue, and I cannot but feel that Judge Lovett is aware of the fact that this plan provides for nothing of the kind, either directly or indirectly.

"The evidence produced here today so utterly refutes the position taken by Mr. Cuyler that I will not further discuss it. When he stated, however, that his association represents all the railroads in the plan and bill submitted, with all due respect, let me say, that statement is not in accordance with the facts. One provision of that Bill alone, compulsory federal incorporation of the railroads, if submitted to the stockholders of the railroads of the country would, I believe, be overwhelmingly turned down, involving as it does a complete change in the very foundation upon which the railroads were organized. Many lawyers connected with the railroads are utterly opposed to compulsory federal incorporation, as are railroad executives and directors; and I have no hesitation in asserting that the association of executives has been admonished that important member railroads do not concur in any such proposal. The main purpose of compulsory federal incorporation is to kill the state commissions, notwithstanding the fact it has been generally recognized by all lawyers that intrastate rates may be adjusted by the Interstate Commerce Commission so that they will not interfere with the interstate rate structure.

"We believe that a grave responsibility is assumed by those who take issue with the deliberate judgment of those who have used the trust funds of others in support of the railroads particularly when they oppose a fixed percentage return on the investment in the railroads, accompanied by regulation of the excess earnings of these properties. Both of those processes are necessary not only to obtain reasonable return on the investment, but to produce the amount essential to adequate railroad service.

"The situation will be utterly hopeless if the railroads of the country are returned to their owners without constructive legislation embodying methods of regulation differing with those of the past. The questions entering into the regulation of a railroad are purely administrative and can hardly be dealt with by following entirely the procedure of a court of justice. We cannot expect these questions to be satisfactorily settled upon their presentation and discussion under such conditions before the regulatory body to which Congress has delegated unlimited power, unless specific directions from Congress govern the rules and procedure. At a time like this is would seem the Interstate Commerce Commission should be glad to receive these directions. Questions which will now arise are business problems of great moment, having relation to the life of the railroads which the commission has power to give or withhold. Should not the questions involved in the adjustment of railroad rates, upon the proper adjustment of which the business of the country depends, be solved along the general basic lines on which every other great industry solves the problems of its business, one being the price at which its product is to be sold, to determine the margin between the cost and the selling price which is the amount necessary to maintain the business and produce a reasonable profit? Can such questions be properly determined and settled—and I say this with all due respect, having a firm belief in the principle of a regulatory commission—where a railroad operator is required to present a subject of such vast importance to the people of the country in the attitude entirely of a witness supporting an unpopular cause, confronted by a statutory burden of proof, and using great masses of figures dealing with the questions at issue, and subject to intervention at any time by an able lawyer or lawyers who for effect may destroy the presentation of any man, and who upon entering the room finds himself on the defensive? The decision of such questions by the commission must necessarily be subject to such influences and impressions which perforce array the shippers at once against the railroads and, partly at least, has caused the feeling of hostility which before the war had grown up against the roads. No business, whatever its character, could have its problems properly and satisfactorily settled under such circumstances.

"In place of the board of transportation suggested by the executives, we advocate the organization of the National Railways Association with trustees composed of the Interstate Commerce Commissioners and representatives of the railroads selected from various sections of the country, the commissioners being the majority.

"We believe that questions incident to the consolidation of railroad properties and those that relate to the joint use of terminal and other facilities under such unification plans as may be deemed expedient and in the public interest, can be better determined by a board of trustees composed as this board would be, and without expense to the government, than by a newly appointed board. This corporation would give the most effective means to deal with suggested consolidations of railroad properties under the supervision of the Interstate Commerce Commission. Questions of joint use of railroad facilities, division of rates and transfer of equipment from one road to another could best be settled by a trained body of men operating through an organization of this description. This National Railways Association could be used as the means of financing future equipment for the railroads to be leased to the railroads requiring the same and thus save an immense capital charge to the various railroad companies, and saving to the shippers a very substantial amount in the making of rates. Under this plan the railroads would only be required to own equipment to meet their average business, using the equipment of the Association to take care of extraordinary demands.

"The measures used under the association plan for computing the return to the railroads are the property investment accounts of the railroads of the country taken in the aggregate in the three classification territories.

"It will not be necessary to deal with the individual property investment accounts of any carrier, whether each in itself is too high or too low, if you have in mind that sufficient net operating income is required by each of the railroads not earning up to 6 per cent, to make the wheels go round and below which these railroads, comprising a majority of the railroads of the country, cannot be operated in the public interest. The amount of net operating income each railroad would receive from rates adjusted to yield 6 per cent on the aggregate property investment accounts of

a district would be a figure below which those railroads that receive less than 6 per cent could not be operated to give adequate facilities and service. These railroads, which constitute a majority of the mileage of the country, would receive an average of 4.6 per cent on their property investment accounts. Some would earn less than 2 per cent, some 3 per cent, some 4 per cent, some 5 per cent and some just below 6 per cent. Therefore, without respect to their individual property investment accounts, less than 6 per cent would not yield sufficient net operating income for these railroads to be operated in the public interest. The amount of the property investment accounts of these 109 railroads in the aggregate is $8,766,932,000. These 109 railroads fall short $121,459,000 of earning 6 per cent on the aggregate of property investment accounts of their territory, which capitalized at 6 per cent equals $2,024,000,000. Taking the excess earnings reduction, under the plan, $83,000,000, capitalized at 6 per cent equals approximately $1,500,000,000 more upon which no return is received by the railroads, a total of $3,524,000,000. Therefore, when considering this plan it is fair to eliminate this from the aggregate of the property investment accounts of these particular roads. Mr. Walter in his testimony gave figures that were recently published by the Interstate Commerce Commission showing that $6,000,000,000 of actual cash had been spent on the property of the railroads of the country since 1907. Figuring the proportion applicable to the Class 1 railroads, that would be $5,200,000,000 cash put into these properties since 1907. Quite a considerable amount of so-called or possible over-capitalization is thus absorbed under the operation of the plan.

Wages

"There is another point to be considered in respect to the value of these properties. In 1917 the amount paid to the employees of the railroads was $1,700,000,000. This was increased by Mr. McAdoo in 1918, $900,000,000, or a total of $2,600,000,000, 53 per cent of the gross earnings of $4,900,000,000, of that time, and with an estimated increase of $800,000,000 in 1919, or a total of $3,400,000,000 or 62 per cent of the $5,500,000,000 gross earnings of today. If the value of labor has increased over $1,700,000,000 in 1917 to $2,600,000,000 in 1918, it may be asked what should now be added to the total value of all of the railroads. I think the question of over-capitalization may be disposed of, certainly in the consideration of the application of the 6 per cent fixed percentage return on the property investment in the railroads in the aggregate, using this amount as the measure which the custom of the past has made use of; so we have not brought an innovation into the situation.

"In a legislative use of this measure for computation we presume you would state in the act that this is the only purpose of its use and it is in no manner whatsoever taken to reflect any actual value of these properties.

"We have asked that pending the putting into effect the fundamentals of this plan that the standard return now being paid to the railroads be continued. It would be most disastrous owing to existing conditions for these properties to be returned, no matter what may be the legislation enacted, if the time is not given within which to bring about the proper adjustment of the affairs of the railroads and to meet such existing conditions. I think the owners of these properties have shown a fine spirit in this whole situation. I do not know of another instance where the owners of great properties have come forward with a suggestion of limitation of earnings to an amount which would give them a mere legal minimum return on their investment."

Mr. Warfield asserted that the railway executives had apparently experienced a change of heart after Judge Lovett became a member of their "steering committee." He also criticised their attitude toward state commissions, saying that nothing has so interfered with the solution of the railroad problem as the "antiquated policy of damning the state commissions."

In reply to questions as to what would prevent the railroads from making extravagant expenditures if assured an average return of 6 per cent, Forney Johnston, of counsel for the Warfield plan, said the Interstate Commerce Commission should supervise expenditures and establish a standard of maintenance.

Representative Sanders of Louisiana asked whether, if the roads of a given region should earn much over 6 per cent in one year, the commission would not probably reduce rates the next year. Mr. Johnston replied that it could.

"Then there would be no excess earnings to divide," said Mr. Sanders.

State Commissions Want Jurisdiction Restored

C. E. Elmquist, president of the National Association of Railway and Utilities Commissioners, appeared before the committee on August 28, urging the amendment of the Esch-Pomerene bill in such a way as not only to preserve the state jurisdiction over local rates and service, but also, according to some members of the committee, as to restore some of the powers already taken from them by court decisions. Mr. Elmquist said the state commissions were in favor of consolidations, federal regulation of security issues and other provisions of the bill but want to have a chance to pass on local features of the various questions to be passed on by the Interstate Commerce Commission. He suggested that each state commission might be used as a regional commission. He also made a general attack on other plans which he said provide for some kind of a guarantee of return, on the ground that he did not know of any regulating commission, state or federal, that believes the government should guarantee any return and because of a general opinion that as a practical matter rates could not be made on such a basis. He also asserted that a guarantee would result in inefficiency and extravagance because there would be no incentive to a railroad to earn money "to contribute to a jackpot." He ignored the provisions of various plans for allowing a railroad to keep a third or some other proportion of anything it could earn over 6 per cent. Mr. Elmquist opposed the Plumb plan on the ground that it would take away $214,000,000 of taxes a year from the states.

After the return of the roads to private management, Mr. Elmquist said, the rate question will be one of reduction rather than of increase, because "under the highest level of rates ever known" the railroads would have no reason to fear bankruptcy.

H. R. Platt and W. R. Evans, representing the Great Lakes Transit Corporation, and Harvey Goulder, representing tramp vessels on the Great Lakes, opposed giving the Interstate Commerce Commission jurisdiction over water rates.

Bryan Wants Dual Government Ownership

W. J. Bryan appeared before the committee on August 29, attracted, he said, by the widespread interest in the railroad question at this time, to the opportunity to present again his old plan of dual government ownership of the railroads, the main trunk lines to be purchased and operated by the federal government and the intrastate lines by the states. He said this plan would make is possible to acquire the railroads gradually, one state at a time, while the federal government would have to pay out only about $4,000,000,000 or $5,000,000,000, and perhaps could buy the lines cheaper if given the right to construct new lines. He insisted that it would cause no difficulty if some state acquired their lines before the others did. Mr. Bryan refrained very carefully from discussing practical details, particularly after

several members of the committee had asked him some practical questions and showed that most of his information on the railroad situation was 10 to 25 years old, and after Representative Winslow had told him he was not quite confident that Mr. Bryan was not doing some "romancing." He said that a private monopoly is "indefensible because it cannot be defended and intolerable because anything that cannot be defended cannot be tolerated." He did not care either to condemn or endorse the Plumb plan, saying he was for it on the ground that it provided for nationalization but thought that it was bad in some other respects. He preferred government operation as well as ownership and objected to the proposed division of the board of directors. He did not think that the officers and employees together should have two-thirds of the board and the public only one-third, nor that 20,000 officers should have as many as the rest of the employees or the rest of the public.

Bird M. Robinson, president, and Ben B. Cain, assistant to the president, of the American Short Line Railroad Association, proposed a number of amendments to the Esch bill for the protection of the interests of the short lines. Mr. Robinson said that the "ruthless treatment" of the short lines by the Railroad Administration would result in wholesale liquidation of their affairs unless Congress does something for them. He said he was speaking for 35,000 miles of line. Mr. Cain said the transportation industry is faced with a crisis which perhaps threatens our national economic structure and that the question of government or private ownership depends on whether the railroads are allowed sufficient revenues to place them on a sound financial footing. He pointed out that there are only 14 of the railroads of the country whose stock has sold at par or above from 1914 to January 1, 1919.

Maximum Earnings of Engineers and Conductors

REPRESENTATIVE THOMAS L. BLANTON, of Texas, has been putting into the Congressional Record some interesting statements regarding the maximum earnings of engineers and conductors which he has received from the Pennsylvania and the Baltimore & Ohio, with some further comments on how the earnings were built up furnished by Director General Hines. Mr. Hines said the high earnings resulted from overtime, but he did not show the total number of hours worked.

August 19, Mr. Blanton inserted the following letter from R. L. O'Donnel, general manager of the Pennsylvania Railroad, relative to the maximum wages paid engineers and conductors for July, 1919:

"In accordance with your request of the 14th instant, we show below the highest maximum wages paid to any freight engineer, passenger engineer, passenger conductor, and freight conductor during the month of July, 1919, in the service of the Pennsylvania Railroad, eastern lines:

Freight engineer	$392.35
Passenger engineer	376.85
Passenger conductor	313.90
Freight conductor	308.55

Later Mr. Blanton inserted the following letter from Mr. Hines:

"I have noted in the Congressional Record for August 19 your remarks giving the highest maximum wages paid any freight engineer, passenger engineer, passenger conductor, and freight conductor on the eastern lines of the Pennsylvania Railroad in July, 1919.

"I find the figures given by you to be correct, but I think you should know the circumstances under which these wages were paid. I inclose herewith a memorandum giving just how the wages received by each of the men mentioned were built up, how many days they worked, and how many days they have been in the service in order to reach the wages given. You will notice that in order to return the amounts given two of these men worked 31 days, one of them worked 29 days, and the fourth worked 26 days; only one of them gets Sundays off. You will also note that each of these men worked overtime —one of them 7.4 hours overtime, the second 121 hours overtime, the third 144.8 hours overtime, and the fourth 159.9 hours overtime, and with one exception the overtime made up a very large proportion of the total wages received. To show that these earnings are not typical, I quote herewith a table showing the average of rates in effect in 1917 and the average of rates in effect following the increase in pay given to this class of employees in April of 1919:

Service	Occupations	1917	Now ordered
Passenger	Conductors	[1]$135.00 to $165.00	[1]$180.00
Passenger	Engineers	[2]4.47	[2]5.79
Freight	Conductors	[2]4.09	[2]5.40
Freight	Engineers	[2]5.33	[2]6.64

[1]Per month. [2]Per day.

NOTE.—Because of the wide variety of rates it is impossible to do other than show the increases on the average, ignoring both maximum and minimum rates.

"In view of the wide comment caused by the earnings which you quoted, I hope you may have the facts presented in this letter also inserted in the Congressional Record."

STATEMENT FROM DIRECTOR GENERAL ACCOMPANYING THE FOREGOING LETTER.

W. S. Laurie, passenger engineer, West Jersey & Seashore Railroad. Entered service as engine cleaner in July, 1894; made fireman in 1895; promoted to engineman June, 1903. Paid $376.83 in July, 1919.

58 trips at $5.68 a trip	$329.44
27 back overs, at $0.16	4.32
22.6 back overs, at $0.71	16.05
166 miles back overs, at $0.0568	9.43
4.2 miles terminal, at $0.0568	.24
2 days at $6.05	12.10
7.4 hours overtime, at $0.71	5.25
Total	$376.83

Runs passenger train from Hillside Station, Philadelphia, to Cape May and return. Paid a minimum day in each direction, distance of 94 miles each way. Worked every day in the month.

R. C. Christy, passenger conductor, Renova, Pa., Pennsylvania Railroad. Entered service in 1890 as passenger brakeman; promoted to conductor in May, 1896:

Made 5,579.6 miles, at $0.04 a mile	$223.18
121 hours overtime, at $0.75	90.75
Total	$313.93

Runs passenger train in short-turn run. Worked 26 days in July and laid off one day. Does not work on Sundays. Paid on average of 4 hours 55 minutes overtime per day.

M. McGowan, freight engineer, West Jersey & Seashore Railroad. Entered service as truck watchman April 22, 1884; made fireman in June, 1890; promoted to engineer in July, 1900.

3,198 miles, at $0.0716	$228.98
563.1 miles, at $0.0568	31.98
144.8 hours overtime, at $0.895	131.39
Total	$392.35

Runs between Camden and Atlantic City. Laid off two days during month. Averages 123 miles per day.

John FitzGibbon, freight conductor, Allegheny Division. Entered service January, 1887, as freight brakeman; promoted to freight conductor March 26, 1891, and then he went from freight conductor to engineer of steam shovel in April, 1902; freight conductor again in December, 1902:

32 trips, 3,200 miles, at $5.92	$189.44
159.9 hours overtime, at $0.74 an hour	118.33
1.2 hours switching service at end of run	.80
Total	$308.57

Runs local between Oil City and Brockton. Made one additional trip in July, account doubling one day. Normally makes 31 trips per month.

Mr. Blanton also put in the record the following letter from C. W. Galloway, federal manager of the Baltimore & Ohio:

"In answer to yours of August 14, addressed to the general manager of Baltimore & Ohio Railroad, I give below, as requested, the highest maximum wages paid to each freight engineer, passenger engineer, freight conductor, and passenger conductor for month of July in the Baltimore & Ohio service:

Passenger engineer	$349.85
Passenger conductor	345.60
Freight engineer	334.60
Freight conductor	305.05

Doings of the United States Railroad Administration

Railroads Earned $2,000,000 More Than Standard Return in July. Shop Hours Increased to Nine

WASHINGTON, D. C.

AFTER nine months of deficits since last September the railroads in July earned about $2,000,000 more than the guaranteed standard return although if the recent increase awarded the shop employees, retroactive to May 1, which they have not yet accepted, had been included, the month's net would have been reduced by nearly $4,000,000, as the increase in wages is estimated at about $40,000,000 a year.

Detailed statistics will shortly become available of the operating results for July of practically all the Class I railroads and large terminal companies in federal operation. These results will indicate that the net operating income for the month was about $77,000,000. After allowing for one-twelfth of the annual rental due the railroad companies whose railroads are covered by these statistics, the net gain to the government was about $2,000,000. The net loss for the seven months ended July 31 was $290,526,307.

The corresponding net gain or loss for these same properties by months of the present calendar year, as given out by the Railroad Administration, has been as follows:

	Net gain or loss to the Government after allowing for one-twelfth of the annual rental		
Month	Net gain	Net loss	
January	.....	$57,782,557	
February	.....	65,430,850	
March	.....	64,881,856	
April	.....	48,757,056	
May	.....	33,642,128	
June	.....	22,031,860	
July (estimated)	$2,000,000	.....	
Net loss for seven months			$290,526,307

The falling off in freight business as compared with the years 1918 and 1917 continues to be an important factor, but the month of July, 1919, shows a slight improvement over June, 1919, in the actual business handled. The percentage of decrease compared with the same month of 1918 and 1917 is also less than in June. This is indicated by the following comparison of net ton miles per mile of road per day:

	Revenue and non-revenue ton miles per mile of road per day		
	1919	1918	1917
January	4,275	3,878	4,770
February	4,002	4,591	4,511
March	4,059	5,273	5,192
April	4,134	5,471	5,257
May	4,524	5,226	5,617
June	4,615	5,423	5,694
July	4,878	5,487	5,441
Seven months ended July 31	4,351	5,044	5,107

The net operating income for July for the past six years has been as follows: 1919, $75,600,000; 1918, $137,800,000; 1917, $92,600,000; 1916, $90,500,000; 1915, $72,200,000; 1914, $63,200,000. The July earnings when compared with the traffic moved and the extent of the railroad plant, are next to 1914 the lowest in many years. Ten years ago the July net was above $70,000,000, and since then nearly six billion dollars, or nearly one-third of all the railroad capital in the country, has been added to the actual investment.

Comparison of the month's earnings with July, 1918, shows a loss of about $60,000,000 in net. The two months are comparable, because the present level of freight and passenger rates was fully effective after July 1, 1918.

A preliminary comparison of this year's with last year's earnings shows these results:

	July, 1919	July, 1918	Increase or decrease
Revenues	$447,952,000	$463,001,000	3.2% dec.
Expenses	353,889,000	313,500,000	12.8% inc.
Net oper. income	75,331,000	136,026,000	44.6% dec.

The eastern roads earned $33,200,000, a loss of $28,400,000 as compared with last year. The western roads earned $32,900,000, a loss of $20,100,000, and the southern roads earned $9,300,000, a loss of $12,000,000.

Freight traffic in July was 11 per cent less than a year ago, but 25 per cent greater than the July average in the three-year test period. Passenger traffic again showed a considerable gain over last year.

Despite the reduced tonnage hauled, the July expenses are $40,000,000 greater than a year ago, and $120,000,000 greater than two years ago. As compared with the average for July in the pre-war test period, expenses have risen $170,000,000, or 95 per cent.

Report Asked of Uncompleted Or Deferred Improvement Work

D. C. E. Circular No. 22, issued by the Division of Capital Expenditures, directs that in order that the director general may be enabled to furnish the railroad companies with definite information as to the status of all uncompleted work involving a charge to capital account which has been discontinued or indefinitely deferred, together with the expenditures made by him in connection therewith, and for the purpose of dropping from all D. C. E. reports the unexpended authorizations, federal managers (or general managers where federal managers have not been appointed) should cause to be prepared a detailed report on D. C. E. Forms 18 and 18-A, including the following:

1. Projects originally authorized by the railroad companies prior to federal control but which were not brought to a completion, leaving the work in an uncompleted state.
2. Projects commenced during federal control which have been discontinued or indefinitely deferred or so modified that portions of the work will be left in an uncompleted state.
3. Projects authorized during federal control but on which no work was done nor any expenditure made.

Status of U. S. R. A. Open-Top Cars

Director General Hines has a statement in connection with the car supply situation, giving the status as of August 26, 1919, of the open-top cars contracted for by the Railroad Administration. Of the total of 50,000 open-top cars mentioned, 45,000 are coal cars.

OPEN TOP CARS

	55-ton Hopper	Com Gond.	70-ton Hopper	70-ton low side	Total
Number ordered	22,000	20,000	3,000	5,000	50,000
Completed and in service August 26	12,935	8,051	762	2,397	24,145
Completed and in storage August 26 (the numbering and placing of these cars in service is now in progress)	8,186	8,498	.....	794	17,478
To be built	879	3,451	2,228	1,809	8,377

The cars shown as being in storage, the statement says, are being numbered by the car works and placed in service at the rate of 250 to 275 per day. The railroad shops have been called upon to assist in numbering such cars and this will increase the daily number of such cars placed in service hereafter.

The cars shown as yet to be built are being built and placed in service at the rate of 75 per day, so that from 325 to 350 cars of this class are being put into service daily.

The composite gondolas are being delayed because two

of the large plants have been on strike for the last month and consequently are turning out very few.

Two plants are building 70-ton low-side cars. One is now on strike.

Hours of Shop Employees Increased to Nine

The effect of the recent strikes of shop employees is plainly seen in the reports of bad order freight cars as of August 9, when the percentage of bad orders had increased to 9.3, although the strikes were not terminated until about a week later. On August 9 there were 144,000 cars requiring heavy repairs and 83,000 requiring light repairs. Since then the shop employees have been put on a nine hour a day basis. On August 2 the bad order cars were 8.5 per cent, as compared with 7.1 per cent on the corresponding date in 1918. About 135,000 required heavy repairs and 73,000 light repairs. A year ago the classification was not recorded. On July 26, the date of the last report preceding the strike, the percentage was 8.5 as compared with 7.2 the year before, and 139,183 required heavy repairs and 68,922 light repairs, a total of 208,105. On that date 106 roads or 77.9 per cent had more than 4 per cent of their cars in bad order and 30 roads, or 22.1 per cent, had less than 4 per cent. Forty per cent of the bad orders were box cars and 25 per cent were gondolas. The number of bad order cars increased during the spring months while traffic was light and while the Railroad Administration was exerting great pressure to effect economies. In February the hours of the mechanical forces were reduced from the war basis to eight hours a day and in March the forces were reduced. At that time there were 400,000 to 500,000 surplus freight cars. In the latter part of June, when traffic began to pick up and a large number of cars were automatically put in the bad order class by being assigned for grain service, orders were issued to increase the car repair forces, but the strike came before much headway had been made.

New Reports on Coal Car Performance

The Car Service Section has taken steps to secure more detailed information of its own regarding the performance of and requirements for coal cars so that it may have a check against the figures furnished by coal operators and published weekly in the bulletins of the Geological Survey, which have been used by the National Coal Association in its propaganda of criticism of the Railroad Administration for not supplying enough coal cars. The coal association has been making particularly effective use of these reports since the strike of the railroad shop employees, in its testimony before the Senate committee that is investigating the coal situation, as showing a large percentage of full time output lost by the mines by reason of car shortage. For the week ending August 23 this was reported as 25.7 per cent, but railroad men say this is in comparison with perfect conditions and that if the coal mines actually produced their full ideal output the result would be nearly twice the country's normal requirements. The figures are also affected by the fact that those who want coal or cars badly place orders for more than they need. The new reports are called for in Circular C. S. 70 as follows:

"Beginning with the report for week ending September 6, 1919, coal loading railroads in reporting to the car service section their weekly performance of coal cars, required, furnished, loaded and left over, will report not only the figures for the railroad as a whole, as is now done, but will report also the figures for individual coal loading districts according as the same may be assembled now by the reporting officer of the railroad.

"The purpose of this is to furnish us weekly with information as to the performance by individual railroads in various coal-loading districts, thereby enabling us to check more closely the reports of the railroads against the reports made by operators to and published by the Geological Survey of the Interior Department.

"You should also submit to the car service section with the report for September 6 a statement showing as accurately as possible the station or geographical limits of each individual district for which report is made that week and will be made subsequently."

W. C. Kendall, manager of the Car Service Section, also issued a circular recently directing the roads to put into service coal cars of a capacity of 75,000 lb., or less, which were put in storage at the time of a heavy car surplus in the spring, but they are not to be utilized in coal service generally, for which cars of higher capacity will be used preferentially.

Freight Traffic Movement and Car Performance

The net ton miles of revenue and non-revenue freight handled during the month of July show a decrease of 11.3 per cent as compared with July, 1918, according to the monthly report of the Operating Statistics Section. The net ton miles per mile of road per day were 4,878 as compared with 5,487 in July of last year. Train mileage decreased 13 per cent and car miles decreased 8.7 per cent, while the percentage of loaded to total car miles increased 4.8 per cent, from 64.9 to 68. The net ton miles per train mile increased from 710 to 724 but the net ton miles per loaded car mile decreased from 30 to 27.8. The car miles per car day decreased from 26.3 to 24.1 or 8.4 per cent. The net ton miles per car day decreased 11.1 per cent. The percentage of unserviceable cars was 8.7 as compared with 6.9 last July.

For the seven months of the calendar year ended July 30 the net ton miles show a decrease of 14 per cent and the net ton miles per car day of 13.3 per cent. The net ton miles per train mile show an increase from 660 to 677, or 2.6 per cent and the net ton miles per loaded car mile show a decrease from 28.7 to 27.8 or 3.1 per cent. The car miles per car day for this period averaged only 21.9 as compared with 24.2 in the corresponding period of 1918.

From the Columbus (O.) State Journal

Melodrammer

Ninth Convention of Tool Foremen's Association

Standardization of Small Tools and Devices for Facilitating Work Are Principal Topics Discussed

The American Railway Tool Foremen's Association held its ninth convention at the Hotel Sherman, Chicago, Aug. 27-29. Following the opening prayer, the convention was welcomed by G. C. Niemeyer, representing the states attorney. The president then introduced W. E. Dunham, assistant to the general superintendent motive power and car department, Chicago & North Western, who spoke of the relation of the tool foremen's work to the efficiency of the shop.

Address of W. E. Dunham

Mr. Dunham said in part: The tool foremen and the tool foremen's organization are the heart and life of a railroad shop. What the tool room is and what the tool room foreman accomplishes ramify to every department. If the tool room is not furnishing efficient tools, the morale and spirit of the entire shop is gone. The tool foreman ought to give attention to every tool in the plant and those from which the proper output is not being secured should be overhauled so that the utmost production can be obtained. We must see that the equipment the railroads have in their shops is in efficient condition. In this matter, the Tool Foremen's Association has a very vital part to play in the reconstruction period through which the railroads are going.

President's Address

The president, C. A. Shaffer, (I. C.) reviewed the activities of the association since the last convention in 1916. He urged the members to put forth a special effort to enlarge the organization and to continue the work which would bring about higher efficiency in railroad tool service.

Standardization of Tools

By E. J. McKernan

Supervisor of Tools, A. T. & S. F., Topeka, Kan.

In this day and age, the individual idea should be subordinated to such an extent that we should adopt practices that would give better efficiency, reduce the cost of output and on the other hand simplify the tool situation whenever possible. It has been plainly shown that the adoption of standard practices by the Railway Master Mechanics' Association was a good move. When a standard practice was adopted by that body, it was carried out to the letter on all railroads and considered standard.

In the past eight years the members of the American Railway Tool Foremen's Association have attended meetings and returned to their respective homes and made reports to their local officers on these subjects but unfortunately they did not get the co-operation that they should have received. As all the tool foremen who attend these conventions receive instructions from their superiors to attend, they should be invested with such confidence that when they make a report to their superiors that a certain tool has met with the approval of the association and been adopted as standard, the higher officers should put forth an effort to put this into practice. If we could standardize the tool equipment on all American railroads and use the same methods and practices there is no question that it would eliminate a great deal of the making of unnecessary tools. While I appreciate the fact that the tool room foremen and the superintendents of motive power have a certain amount of self-pride in the making of all tools for their respective railroads, nevertheless, the progressive man of today must be able to give and take whenever necessary in order that he may develop a method that will get proper production.

In the automobile industry, where all parts must be interchangeable, the first practice is to get the tools made to the standard before starting production and these tools are maintained to an extremely high standard of accuracy. If this is found to be good practice from a manufacturing standpoint, why is it not a good practice in the railroad shop? There is only one solution and that is co-operation and the insistence on the adoption of practical methods and standards.

On the Atchison, Topeka & Santa Fe, in order that we may get the proper results, it has been found very essential that the tools be standardized and whenever possible, drawings are made of the tools and then submitted to the tool room foreman so that they will be made up in a standard way. It is further found advisable that only tools which cannot be secured from the manufacturer for a reasonable price should be made in our tool room. It is not good practice for a railroad shop tool room to manufacture tools that can be secured from the manufacturers for the same price or less than it would cost to make them locally. In some shops such tools are made but I consider it false economy due to the fact that there is a certain amount of loss incurred by the tool room and when standard tools are secured from the factory all the possibility of loss is overcome due to the fact that all tools are furnished in first class condition and free from flaws and defects.

There is a vast difference of opinion between railroads in regard to a standard locomotive frame reamer. The greatest difference seems to be in the length over all and in the taper. If a standard length and taper of locomotive frame reamers could be universally agreed on, it would be possible to eliminate the excess cost due to ordering reamers of special type from the manufacturer as well as eliminating the carrying of many different lengths of reamers locally in the tool rooms.

For illustration, on the Santa Fe lines a standard reamer has been adopted with a left hand spiral flute and of a standard length that will take care of the maximum and minimum requirements. Heretofore, there were a great number of different lengths which have been eliminated by standardization. By the adoption of the left hand spiral fluted reamer, the breakage has been reduced to about 20 per cent. While using the straight fluted reamer trouble was encountered due to the chipping out of portions of the flute and also chattering, while now this has all been eliminated for the left hand spiral retards the reamer to such an extent that it does not gouge or seize, especially while reaming steel frames on locomotives. All our reamers are tapered 1-16 in. in 12 in. and I feel confident that with the proper co-operation of the mechanical heads on the various railroads throughout the United States, this point could be agreed upon. This standardization not only pertains to reamers but also to all other tools and equipment.

Discussion

Several questions were raised regarding standard forms of reamers. There was some difference of opinion regarding the relative advantages of flutes in the form of spirals having

short and long pitches. The majority favored long spirals on reamers used with air drills, but the statement was made that the shorter spirals reduced the time but required heavier thrust to feed them.

Promoting Safety in the Shop

By J. C. Beville

Tool Foreman, E. P. & S. W., El Paso, Tex.

We must not forget while manufacturing new devices and tools that in each case we should keep in mind "Safety-First." The prevention of injuries should be considered even more than the efficiency of the tool or device. Do you ever inspect the tools that are in daily use in your shop to see that they are in safe condition? The tool foreman should make this his business as he is more capable of determining the safety of tools. Our shop safety committee demands a report from the tool foreman on tools in all departments and this has brought about wonderful results in a decrease of injuries. The blacksmith shop, boiler shop, and even the different tool rooms are good places to find defective tools. There are numerous things in the shops and engine houses that are unsafe at their best and we must see that they are at their best.

Other Papers

J. J. Sheehan (N. & W.) described improved devices used in boiler work. A discussion of the making of carbon steel forgings for tools was submitted by J. P. Fuhrman (Great Northern). A paper on the heat treatment of steel by electric furnaces was presented by H. Otto (A. T. & S. F.). Descriptions of gages, tools and devices were also received from J. B. Hasty (A. T. & S. F.), A. Connell (K. C. S.), J. B. McFarland (N. Y. C. & St. L.) and J. Berling (S. P.).

General Business

The association discussed the advisability of amalgamation with the American Railroad Association and a committee was appointed to consider and report on that question. The secretary reported a substantial increase in the membership. The following officers were elected: president, J. C. Beville, (E. P. & S. W.); first vice-president, J. B. Hasty, (A. T. & S. F.); second vice-president, G. W. Smith, (C. & O.); third vice-president, C. Helm, (C. M. & St. P.); secretary-treasurer, R. D. Fletcher, (Crucible Steel Company); chairman of executive committee, B. Hendrickson, (C. & N. W.).

Watt-hour Meter for Recording Effect of Regeneration

TEN NEW ELECTRIC LOCOMOTIVES for the Chicago, Milwaukee & St. Paul are being equipped with Economy duplex-dial watt-hour meters, which will measure accurately the energy consumed in driving the trains and also that returned to the line through regenerative braking, each reading being shown on one of the two cyclometer type dials. The locomotives are of the Baldwin-Westinghouse passenger type. Each is equipped with six 533-hp. twin-armature motors, and one Sangamo Economy railway meter. These meters are a modification of the single dial type which is used ordinarily on street car and interurban systems. They are manufactured by the Sangamo Electric Company, Springfield, Ill., and sold by the Economy Electric Devices Company, Chicago.

The Chicago, Milwaukee & St. Paul uses watt-hour meters on its electric locomotives for three main reasons: (1.) Because certain accounting charges are distributed on the basis of the watt-hour consumption required by electric locomotives for the respective classes of train service. (2.) To check the economical use of power in connection with the handling of the train. (3.) To provide operating and engineering data to check the economical and satisfactory operation of the electrification system as a whole.

The electric locomotives in use at present are equipped with watt-hour meters, which give the net power used for any run; that is, the regenerated reading is subtracted from the motored reading, but in order to get the approximate values of motored and regenerated energies respectively, it is necessary to read the meters at certain points on the road between which the general use of power is either on the

The Economy Watt-hour Meter Showing the Dials for Recording Power Used in Motoring and Power Developed by Regeneration

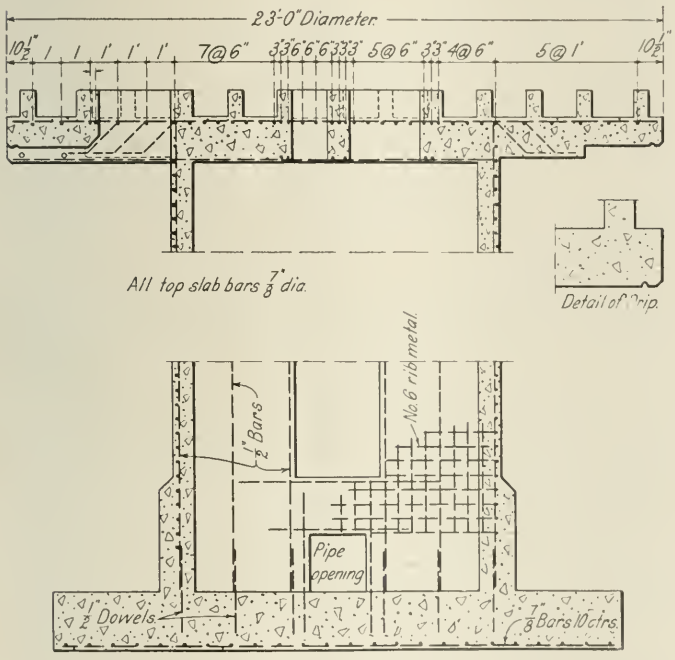
motoring side or the regenerating side. The Economy duplex-dial meters, however, make separate records of the motoring and regenerated energy, so that readings of the meter are required only at the beginning and end of a run, and the results will be exact instead of approximate.

In mechanical design these duplex-dial locomotive meters differ from the regular Economy meters used in electric railway power-saving work only in the dials and gear trains. The dial is of the duplex type with openings for two sets of figures as shown in the illustration. The reading for the motoring is above and for regenerating below, so that a subtraction can easily be made to get the actual net energy used for any period. The single meter element drives the two gear trains through a differential which is arranged in such a way that when the locomotive is motoring the energy drawn from the trolley is registered on the upper train, and when it is regenerating the energy is recorded on the lower train. The reversal is made without loss of motion in the gear train.

In the design of this meter standardized parts are used. The meter element is so mounted on a sub-base that it may be removed from the case with little effort and without disturbing any heavy circuits. The case which protects the element is of heavy construction with tight-fitting joints designed to exclude dust. These meters, without their shunts, may be checked easily as 10-ampere units.

A Concrete Foundation for a Wooden Water Tank

A NEW IDEA IN WATER tank supports has been put into practice by the Chicago & North Western in the form of a reinforced concrete substructure for its 24-ft. by 16-ft. wooden tub tanks. As shown in the drawings the design embodies the use of a concrete tower 10 ft. square inside, with walls heavy enough to carry the tank load. The space inside the tower is occupied by the service pipes so that the design obviates the need for a separate frost box which was an expensive auxiliary of the standard steel and wooden tank towers constructed by the North Western previous to the development of the concrete tower. The roof of the box is expanded to form a circular slab 23 ft. in diameter with the top provided with ribs 6 in. wide and 1 ft. high, spaced 1-ft. 9-in. center to center to carry the planking of the tub in the same manner as joists and thus provide the necessary ventilation to resist decay. With a tub of creosoted planks these ribs could be omitted and the tank set directly



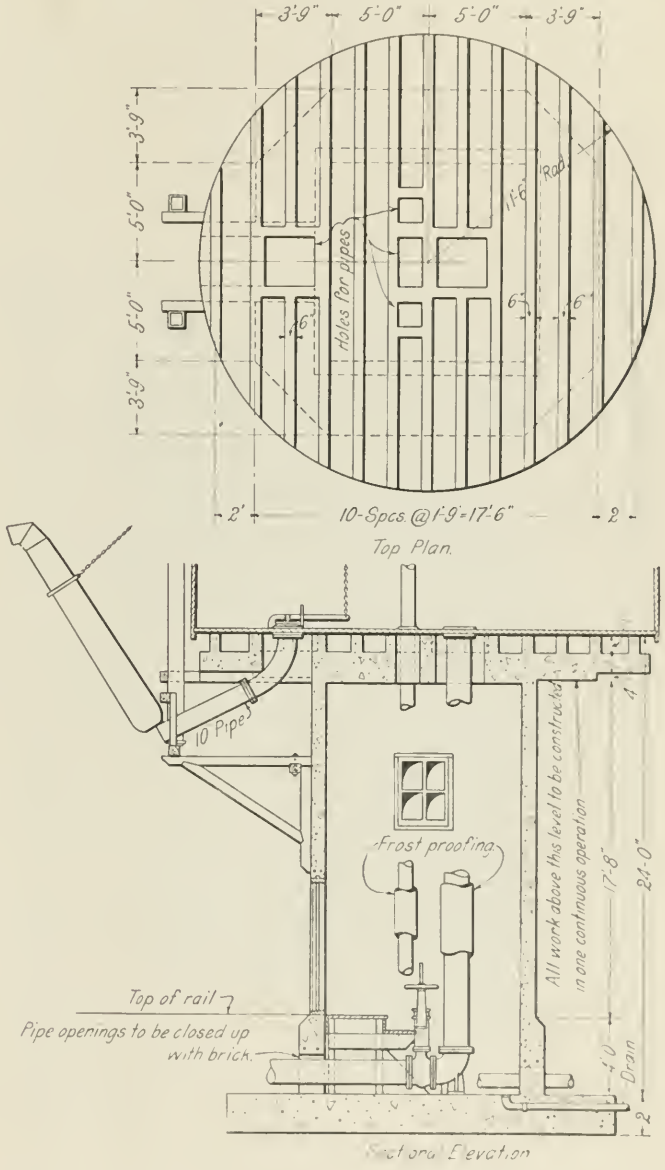
Details of the Reinforcement in the Top and Bottom Slabs and Walls

on the solid top surface of the slab. Square holes through the top slab afford the necessary opportunity for pipe connections, but no openings to the outside are permitted which would serve to let in cold air in the winter time. The thickness of the slab varies from 1 ft. 6 in. directly over the tower to 1 ft. around the edge.

The tower has walls 9 in. thick above the top of rail level but the part below, which normally extends about 4 ft. below the surface, is 1 ft. 3 in. thick. There is a door on the track side 3 ft. by 7 ft., with a window in each of the adjacent sides, 2 ft. 8½ in. by 3 ft. 9½ in. The footing support for the structure consists of a square slab of concrete 20 ft. on a side with a thickness of 2 ft.

The tower was designed for a weight of 429,000 lb. for the tank when filled with water and a weight of 325,000 lb. for the concrete substructure. The footing was designed for an average bearing pressure of 1,900 lb. per sq. ft. and a maximum pressure of 2,300 lb. per sq. ft. The top slab is reinforced with a grid of ⅞-in. sq. bars in both the top and bottom faces, the bars in the bottom extending only to the limits of the portion that is 1 ft. 4 in. thick. The walls are reinforced with No. 6 Rib metal while the footing has a grid of ⅞ in. sq. bars 10 in. spaced center to center in both directions in the bottom. In cases where a track spout is installed it is supported from a wooden bracket carried on the side of the tower.

This structure requires 81 cu. yd. of concrete, 7,735 lb. of reinforcing bars, 730 lb. of Rib metal, and 35 lb. of No. 16 wire. With the minimum depth of excavation as shown in the drawing about 80 cu. yd. of excavation is required. The type of tower shown in the drawings was selected after a study of several different designs including some with



Plan and Section of the Tower

columns and one having a circular wall, but the one chosen was found to be the cheapest and also the simplest to construct. Estimates based on 1918 figures showed the cost of this design to be about the same as for a steel tower. Water tanks with concrete towers of the kind described were built last year at De Kalb, Ill., West Elgin and Caledonia and at Carroll, Iowa, and Deep River, while structures of this kind will be built this year at De Kalb, Ill., Manitowoc, Wis., and South Omaha, Neb. This design was developed by O. F. Dalstrom, bridge engineer, under the general direction of L. J. Putnam, chief engineer of the Chicago & North Western, Chicago.

Train Accidents in June[1]

THE FOLLOWING is a list of the most notable train accidents that occurred on the railways of the United States in the month of June, 1919:

Collisions

Date	Road	Place	Kind of accident	Kind of train	Kil'd	Inj'd
19.	Atlantic C. L.	Santa Fe	rc.	F. & P.	0	24
*21.	C. C. C. & St. L.	Mackinaw	rc.	F. & F.	0	0
25.	Louisville & N.	Faxon	bc	F. & F.	3	1

Derailments

Date	Road	Place	Cause of derailment	Kind of train	Kil'd	Inj'd
1.	Chicago, B. & Q.	Ashland	.....	P.	0	27
4.	Central Vt.	S. Royalton	d. track	P.	0	16
5.	Chi. & N. W.	So. Omaha	acc. obst.	P.	0	2
9.	Pitts. & W. Va.	Hopedale, Pa.	d. track	P.	0	0
11.	Pitts. & W. Va.	Smithfield, O.	d. track	P.	0	2
*12.	Ches. & Ohio	Waugh	slide	F.	3	0
12.	Texas & Pacific	Ranger	.....	P.	..	43
12.	Atlantic C. L.	Scranton, S.C.	unx	P.	0	0
16.	Pitts. & L. Erie.	Carbon, Pa.	b. wheel	P. & F.	2	0
22.	Gt. Northern	Fergus Falls	tornado	P.	0	1
24.	Seaboard A. L.	Alamo	cow	P.	1	0
25.	Union Pacific	Schuyler	boiler	P.	0	2

Other Accidents

Date	Road	Place	Cause of accident	Kind of train	Kil'd	Inj'd
13.	Fort Worth & D. C.	Ft. Worth, Tex.	boiler	P.	2	0

The trains in collision at Santa Fe, Fla., on the 19th, were northbound passenger No. 38, and a following train, loaded with logs. The passenger train had been stopped because of a burning trestle bridge. Twenty-two passengers and two trainmen were slightly injured.

The trains in collision at Mackinaw, Ill., on the 21st, were westbound freights, through train No. 95 running into the rear of local No. 61, which was standing at the station. The caboose and four cars were wrecked and thrown against the station building, a new structure, finished last year. The wreck took fire and the station building and 16 cars were destroyed or badly damaged. Estimated total damage $17,000. The collision is reported as due to neglect of flagging on the part of the local train.

The trains in collision on the Louisville & Nashville at Faxon, Tenn., on the 25th, about 1 a. m., were northbound freight train No. 124, and southbound freight train No. 115, third section. Both enginemen, one fireman (of No. 124) and one brakeman were killed, and one brakeman was injured. The cause of the collision was, evidently, the forgetfulness of the engineman of No. 124, who had an order to wait at Faxon. He ran past the north switch before the conductor knew that the southbound train was not clear of the main track. The headlight of the northbound train, shining on a window of the telephone booth near the north end of the passing track, misled the conductor into thinking that he had seen the headlight of the southbound train (dimmed).

The engines of both of these trains had electric headlights of 250 c.p. each. The telephone booth is about 500 ft. south of the north switch and its window has four panes, each 8 inches by 10 inches. Train 124 had 18 cars, and the conductor of this train first saw the reflection of the light when he was about 2,200 feet short of the siding, his train being on a curve. When he drew near and discovered his error, he rushed for the conductor's valve. He found that the flagman had already opened it, but not in season to prevent the collision. The engineman of the southbound train had seen in the sky the rays of the light from the northbound train when a considerable distance short of the siding, and concluded that No. 124 was waiting at the station, mentioning his conclusion to a brakeman. Both engines were knocked off the track, and both boilers were dislodged from their frames.

[1]Abbreviations and marks used in Accident List:
rc, Rear collision——bc, Butting collision——xc, Other collisions——b, Broken——d, Defective——unf, Unforeseen obstruction——unx, Unexplained——derail, Open derailing switch——ms, Misplaced switch——acc. obst., Accidental obstruction——malice, Malicious obstruction of track, etc. ——boiler, Explosion of locomotive on road——fire, Cars burned while running——P. or Pass., Passenger train——F. or Ft., Freight train (including empty engines, work trains, etc.)——Asterisk, Wreck wholly or partly destroyed by fire——Dagger, One or more passengers killed.

The train derailed near Ashland, Neb., on the first of June, was a westbound special carrying troops. Four cars were overturned and fell into the Platte River, and were partly submerged. Twenty-seven soldiers were injured.

The train derailed near South Royalton, Vt., on the 4th of June, was a northbound through passenger, the New England States Limited. One car was partly overturned and fell down a bank, and 16 passengers were injured, none very seriously. The cause of the derailment was distortion of the track by solar heat.

The train derailed near South Omaha, Neb., on the night of the 5th of June, was eastbound passenger No. 8. The locomotive was thrown off the track at a switch by a piece of a brake hanger which had fallen from a westbound train. The engineman and fireman were injured.

The train derailed on the Pittsburgh & West Virginia near Hopedale, Pa., on the ninth, was westbound passenger No. 3. No persons were seriously injured. The derailment was due to a defect in the track.

The train derailed at Smithfield, Ohio, on the 11th, was eastbound passenger No. 2, running at about 35 miles an hour. One passenger and one trainman were slightly injured. The derailment was due to uneven track.

The train derailed near Waugh, Va., on the 12th, was an eastbound freight. The engine was thrown off the track by a landslide, and with ten cars fell into James River. A part of the wreck not submerged took fire and 10 cars were burnt up. The fireman and one brakeman were killed, and the engineman was fatally injured. The landslide followed a cloudburst. The fire was started by coals from the locomotive firebox.

The train derailed on the Texas & Pacific at Ranger, Tex., on the night of the 12th, was an eastbound passenger. Three cars, next behind the sleeping cars, were thrown off the track at a switch and ran against a freight car on a side track. Forty-three passengers were injured.

The train derailed near Scranton, S. C., on the 12th, was southbound passenger No. 83. The train was running at regular speed and two sleeping cars were damaged. No passengers or trainmen were injured. The cause of the derailment is reported as undetermined.

The trains involved in the accident at Carbon, Pa., on the evening of the 16th were an eastbound freight and westbound passenger No. 19. Several cars in the freight train were derailed by the breaking of a wheel and the wreck fouled the westbound track. Into this obstruction the passenger train ran at about 25 miles an hour—and the engine was overturned. The engineman and fireman were killed. No passengers were seriously injured.

The train derailed on the Great Northern near Fergus Falls, Minn., on the 22nd, was the westbound Oriental Limited. The train was struck by a tornado, and 7 of the 11 cars were thrown off the rails. One baggage car was ditched. Only one person, a passenger, was injured.

The train derailed on the Seaboard Air Line, at Alamo, Ga., on the 24th of June, was westbound passenger No. 11. The locomotive was overturned by striking a cow, and the engineman was fatally scalded.

The train derailed on the Union Pacific at Schuyler, Neb., on the 25th, was a westbound passenger, extra No. 279, carrying soldiers. While running at about 35 miles an hour the locomotive was wrecked by the explosion of its boiler and the engine and five cars were thrown off the track. Estimated damage $13,255. No soldiers were injured. The engineman and fireman were to all appearances uninjured, but the physician ordered them to lie off, the engineman two weeks and the fireman one week. The crown sheet had failed because of low water.

The train involved in the accident on the Fort Worth & Denver City, near Fort Worth, Tex., on the 13th, was a

northbound passenger. The locomotive was wrecked by the explosion of its boiler, and the engineman and fireman were scalded to death.

Electric Car Accidents.—The most serious electric railroad accident reported in the newspapers in June, was a rear collision on the Elevated Railroad in Brooklyn, N. Y., on the 23rd. Forty persons were injured.

Canada.—Eastbound passenger train No. 14, of the Grand Trunk, was derailed near Cardinal, Ont., on the third, while running at full speed; cause, defective track. Six passengers slightly injured. A similar derailment on the same road occurred near Lindsay, Ont., on the 17th, two coaches being overturned; twelve passengers injured. An express train of the Canadian Northern was derailed near Port Arthur on the 13th, a dining car being ditched; four persons injured.

Orders of the Regional Directors

AUTOMOBILE CARS—SAFETY CHAINS ON END DOORS.—Order 233 canceling Order 227 of the Southwestern regional director states that the Safety Section recommends that chains or some other suitable device be applied on automobile cars with end doors to prevent these doors opening further outward than the line of the side of the car, and suggests that all cars, regardless of ownership, be so equipped as rapidly as possible.

Repairs to New Freight Car Equipment.—The Southwestern regional director, in Order 232, states that when new freight car equipment built for the Railroad Administration is placed in shop or on track shop for repairs all bolts should be gone over and nuts tightened to insure taking up all shrinkage that has taken place since the cars were built.

Freight Claims for Loss and Damage.—Circular 246 of the Southwestern region director states that a regional committee on loss and damage freight claims has been organized to meet from time on the call of the chairman, and that this committee may call upon federal and terminal managers or their subordinates for representation at these meetings and for information. All concerned are requested to co-operate with this committee in order that aid may be given to the prevention of causes which bring about claims for freight loss and damage.

Through Bills of Lading Via North Atlantic Ports.—The Northwestern regional director, file 93-33-9, issues instructions governing the issuance of through bills of lading on traffic moving via North Atlantic ports, Newport News, Va., and north, including Canadian Atlantic ports, which supersede all previous instructions. The order outlines by whom and under what conditions through export bills of lading will be issued.

Grain Embargo—Primary Markets.—Supplement 8 canceling Supplement 3 to Circular 83 of the Northwestern regional director states that the permit system on grain for New Orleans, La., Galveston, Tex., Texas City and Port Arthur became effective August 18. Individual permits will be required on grain moving to these ports for either domestic or export. Applications for such permits are to be made by shippers in writing to representatives designated in Circular 83.

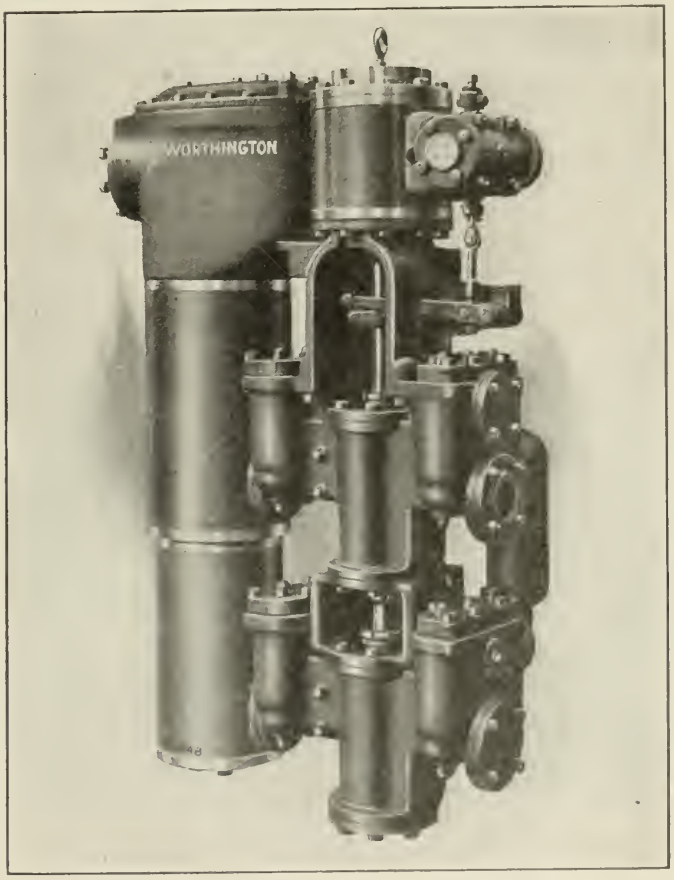
Routing Instructions Allegheny Region.—Supplement 1 to Circular 103A-Chicago, issued by J. E. Weller, resident traffic assistant at Chicago for the Allegheny region, cancels Circular 103A-Chicago (*Railway Age,* issue of June 20, page 1544).

Routing Instructions-Eastern Region.—G. H. Ingalls, senior traffic assistant at Chicago to the Regional Director of the Eastern region in File 1871-1-301 cancels Circular 78-C (*Railway Age,* July 18, page 108).

A New Departure in Locomotive Feedwater Heaters

THE WORTHINGTON PUMP & MACHINERY CORPORATION, New York, has developed and has in service on several Mikado locomotives a combined feed pump and feedwater heater, which follows closely its marine practice. This heater is of the open type, which is now generally used in stationary power plants and is capable of handling 60,000 lb. of feedwater per hour. The full pressure of the exhaust steam is maintained in the heater, so that feedwater temperatures above 212 deg. F. are obtained when there is sufficient exhaust steam pressure available. It is designed for convenient attachment to the side of the locomotive boiler in a similar manner to that used for air compressors.

The pump is of the vertical type with the steam cylinder at the top. It has two water cylinders, the upper or cold water cylinder taking cold water from the tender and delivering it to the heater, and the lower or hot water cylinder taking the heated water from the heater and delivering it to



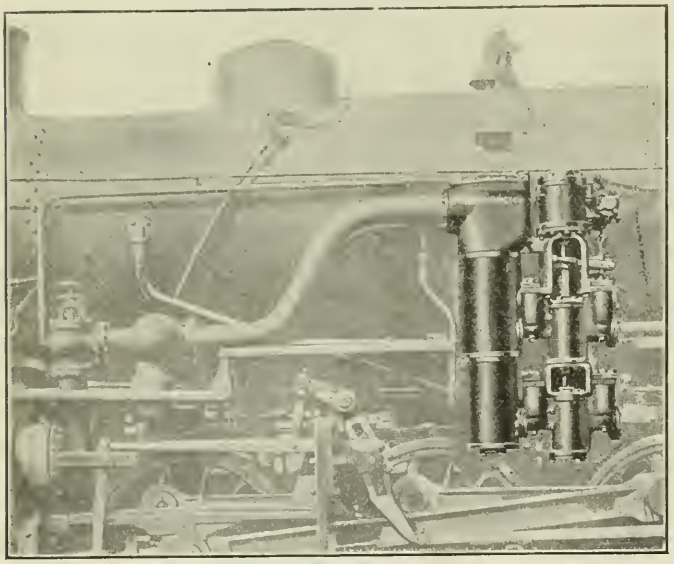
The Feed Pump and Heater Unit

the boiler. The cold pump cylinder has a 6½-in. bore and the hot pump cylinder a 6-11/16-in. bore. Each of the pistons has four packing rings composed of ⅜-in. square (rockhard) piston packing. The drawing shows the pump valve assembly for both pump cylinders. The pump valves consist of three sheets of thin bronze, assembled with the smaller sheet on top and the largest on the valve seat. The pump valve seats, bolts, guards and springs are assembled before being placed in the pump. The suction valve seats are assembled with the long valve bolt projecting through the bottom of the pump chamber when the valves are in position. These valve seats make their joint on the pump chamber casting on the flat and not on the taper. The suction valves are held to their seat by the cap nuts on the lower end of the valve bolt, which is drawn up tight against two thin copper

gaskets. The discharge valve seats are larger than the suction valve seats and also make their joint on the flat.

The heater is a cast iron box attached to the side of the pump by various pipe connections. The cold water that is taken from the tender by the upper water cylinder is delivered through a port in the side of the heater at the top, where it is sprayed into the upper part of the heater. Exhaust steam from the exhaust ports of the locomotive is led into this upper part of the heater through a six-inch opening on one side of the heater close to the top. The cold water sprayed into this space condenses as much of this exhaust steam as is required to heat the water, and, mixed with the condensate, drops to the bottom of the heater, where it is taken by the lower cylinder of the pump and delivered to the boiler. A ½-in. air vent is provided to prevent the accumulation in the heater of the air carried into it by the cold water and by the exhaust steam. A pipe from this air vent is led to a point where the air can conveniently be discharged between the tracks.

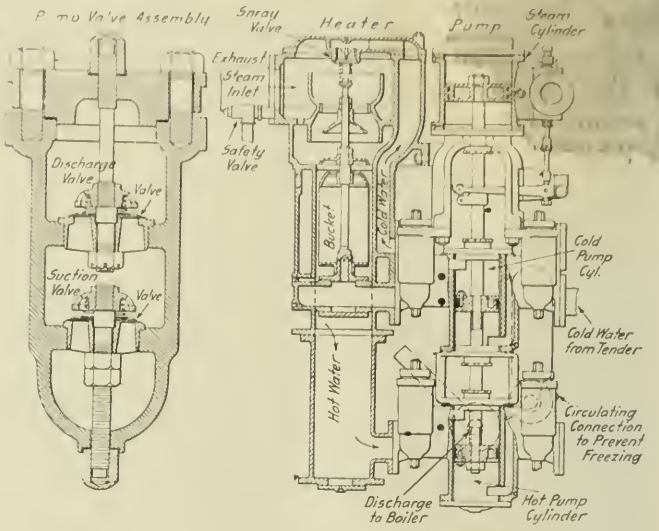
The varying amount of exhaust steam condensed in heating the water necessitates some means of regulating the water level in the heater, and this is accomplished by proportioning the pistons of the two pump cylinders so that there will be a tendency for a slight excess of water to accumulate in the heater. This excess of water will return to the upper pump cylinder where it mixes with the cold water from the tender passing through that cylinder, and is again delivered to the heater. The water level in the heater is regulated by a bucket which is free to move vertically on the central stem, and



Applied to a Mikado Locomotive

having holes in its top through which it is flooded when there is too much water in the heater, causing it to sink. In sinking it uncovers holes in the central stem on which it slides, permitting this excess of water to pass through a port to one of the suction valves of the cold water pump cylinder, from which it is returned to the heater with the water that is being taken from the tender. When the water level in the heater falls the bucket is partly emptied and rises, thus covering these holes and causing the cold pump cylinder to take all its water from the tender. The height of water in the boiler is regulated by the feed pump throttle, which consists of a 1¼-in. globe valve located in the cab. The valve connections between the heater and the locomotive are shown above.

Exhaust steam is taken from the locomotive cylinders through holes cut in the back of the cylinder saddle casting and led through an angle stop check valve, thence through an oil separator having a continuous drip for the oil and water, and from this through the curved pipe to the top of the heater. The pump is driven by steam supplied through a pipe, which has a throttle valve conveniently located in the cab so that the pump can be operated at such speeds as conditions may require. The exhaust steam from the pump is led into the stop check valve, passes through the oil separator and thence to the heater with the exhaust steam from the locomotive. The pipe which conducts the cold water from the tender is shown passing behind the air compressor and entering the side of the upper or cold water pump cylinder. The



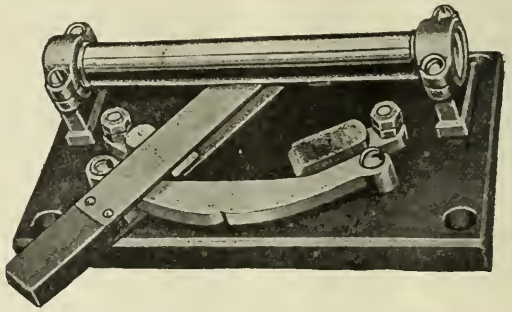
Section of Pump, Heater and Valve

heated feedwater leaves the lower or hot water pump cylinder by an opening in the rear and passes through a feed line to the boiler check valve.

So far as practicable the feed pump should be run continuously while the locomotive is in operation, with the throttle open, but as the heater cannot recover any heat when there is no exhaust steam coming to it from the locomotive cylinders the injectors should be used to fill the boiler when the locomotive throttle is not open.

Locomotive Headlight Switches

THE KEYSTONE locomotive headlight switches now being made by the Electric Service Supplies Company, Philadelphia, Pa., are especially designed for control of electric headlights on locomotives. They are made in different types to meet the varied conditions which exist in



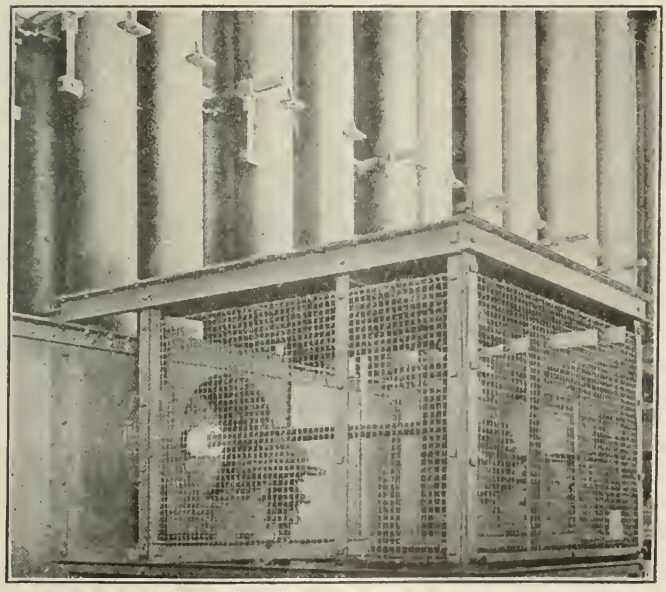
Headlight Switch for Road Engines

this service. The switch, as illustrated, however, is typical of the entire line, and probably is the most commonly used, since it provides "off" and "on" connections, and in addition has a ferrule type resistance mounted upon its base which is used for dimming the headlight lamp. The switch illustrated, therefore, has three positions from left to right, "on," "off" and "dim."

The switch blades operate in a plane parallel to the base and so close to it that the blade handle is not so liable to injury, in any position, as is the case with the ordinary knife switch. The base is of heavy composition insulation. The switch blades are of the duplex type, spaced apart at their upper end by a contact bridge and bolted to it. At the lower end of the blade this spacing is made by the handle. A curved guide, which acts as a support to the blades, prevents bending or distortion. The blades wipe over the upper and lower surfaces of the side contact blocks. The switch blade is held at its "off" point by a spring plunger, which engages momentarily into a notch in the guide. Resistance units used are of the ferrule type. The switches are of rugged design to meet the severe requirements of locomotive service. All parts are made on an interchangeable basis so that repair parts will fit when obtained from the factory. This applies not only to the parts for any particular form of switch, but all similar parts are interchangeable on any type of switch.

Precipitation of Solids from Smoke and Gases

In their circular no. 7375 the Westinghouse Electric & Manufacturing Company has described an electrical method for recovering valuable material from smoke and gases. The system involves the use of a considerable amount of electrical apparatus, but it is quite simple, has proved very successful and may find its application in roundhouses

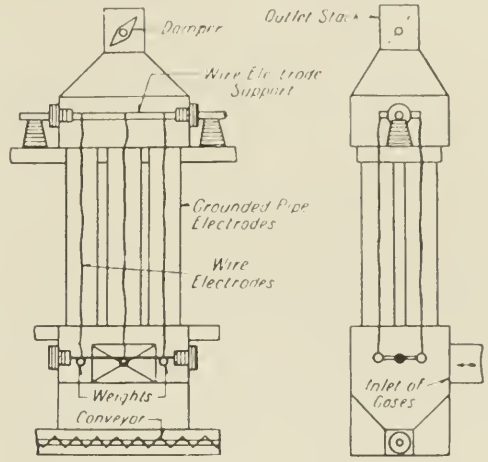


Treater at Plant of International Smelting Company, Miami, Arizona. View Shows Vertical Pipes and Hammers for Loosening Deposits

and railroad powerhouses in large cities. Up to the present time its application has been limited to smelters and cement plants and, in most cases, the by-products collected by the precipitation have paid for the necessary equipment in a very short time.

A treater for electrical precipitation is a comparatively simple structure. In general it consists of two large horizontal flues connected together by a number of small vertical pipes. Gases enter through one flue, pass through the vertical pipes and are discharged through the other flue to the stack, exhaust fan or other draft producer. The gas is then exhausted into the atmosphere. Some treaters are operated with an up draft, some with the down draft, according to the particular local conditions to be met. Some treaters employ rectangular passages instead of pipes to connect the two flues. These are generally referred to as plate or box type treaters. The principle of operation for all these types of treaters is the same.

The actual precipitation of a gas or fume occurs in the vertical pipes referred to above. Centered carefully in each, is suspended a small wire or chain. These constitute the negative electrodes of the treater system. The inside surface of the pipes constitutes a positive electrode. Each wire or chain is carefully insulated from its pipe and from the ground and is charged to a potential of from 25,000 to 65,000 volts direct current. The tubes themselves are grounded. Thus within each pipe is created an intense electrostatic field.



Schematic Diagram of Treater

The gases passing through this field become ionized and the ions travel with high velocity in a direction at right angles to the electrode causing the field. These highly charged ions collide with the suspended solid and liquid particles in the gas and the ions impart a charge of high potential to such particles, which in turn travel toward the electrode of opposite polarity. Since the negative suspended electrode is of much smaller area than the electrode formed by the inside surface of the pipe, there is much greater electrostatic stresses per unit of area in the neighborhood of the wire, and as a result a far greater ionization about the wires. Thus, the gas receives a static charge of the same polarity as the wire, and the solid or liquid particles in the gas receive charges of this same polarity, which causes them to be projected against the inner surface of the pipe, where they tend to stick and accumulate until the electric power is turned off, after which the accumulation of dust is usually collected from the pipe by rapping the sides of the pipe and collecting the dust in hoppers at the bottom.

The treater tubes are usually arranged in a series of units. Each unit or section is independent of the rest and is supplied with dampers and electrical disconnecting switches, so that it can be shut down for cleaning or repairs without interfering with the operation of the other sections.

To produce the high static charge on the suspended electrodes a uni-directional current of high voltage is used. Alternating current at low voltage is stepped up to the desired high voltage by means of a transformer and then changed to a uni-directional current by means of a mechanically driven rectifier. Accordingly, in addition to the necessary flues, tubes and high tension electrodes, the usual equipment for electrical precipitation involves the following: A source of low voltage alternating current, a step-up transformer, a high voltage rectifier, means for driving the rectifier, a switchboard and accessories.

General News Department

The offices of the Mississippi-Warrior river section of the Railroad Administration, St. Louis, Mo., have been moved from the Third National Bank building to the Federal Reserve Bank building.

Shopmen on the Baltimore & Ohio at Cumberland, Md., went on strike on Tuesday morning of this week. There are seven classes of mechanics represented among the strikers and they ask for an increase from 68 to 85 cents an hour. All mechanic helpers ask a raise from 45 to 60 cents an hour.

The Interstate Commerce Commission, Bureau of Valuation, has issued tentative valuations of the Greene County Railroad, the Carolina & Yadkin River, the Rome & Northern, the Central of Arkansas, the Alabama Northern, the Flint River & Northeastern, and the Kinston-Carolina Railroad & Lumber Company.

The Interstate Commerce Commission has extended the effective date of its latest order requiring the railroads to make their freight cars conform to its standards of safety appliance equipment from September 1, 1919, to March 1, 1920. This was done at the request of the Railroad Administration and the American Railroad Association.

The New York-Toronto air race was won by Lieut. B. W. Maynard, who made the round trip between New York and Toronto in 465¼ minutes, an average of more than two miles a minute for 1,042 miles. Lieut. Maynard, because he is in the U. S. Army, cannot accept the prize of $10,000 offered by the Hotel Commodore, New York, to the pilot making the fastest time.

The next annual meeting of the American Wood Preservers' Association has been postponed from January 27-29 inclusive, to February 10-12 inclusive. This change was made necessary because of the fact that the automobile show will be held in Chicago the last week in January and it has been found impossible to make suitable arrangements for hotel facilities during that week.

Four cars of an eastbound freight train buckled on a track adjoining that on which the eastbound Twentieth Century Limited of the New York Central was running, east of Painesville, Ohio, about 29 miles east of Cleveland, Ohio, on August 31. The Century ran into the wreckage and its engineer was killed. The locomotive and passenger cars of the Century remained on the track. A few passengers were injured by broken glass.

The Central Railway Club's annual outing at Grand Island, New York, on August 28, was voted one of the most enjoyable in the history of the organization by the 160 members who attended. A brief business session was held, during which announcement was made that the campaign for a membership of 1,000 has been progressing so well that only about 100 more are required to bring the membership list up to the desired number.

Traffic over the Altamaha river bridge has been completely blocked since Thursday morning, August 28, when a train on the Georgia Coast & Piedmont broke through the trestle about a quarter of a mile east of Darien, Ga. The train consisted of the engine, three box cars, baggage car and one coach. The box car next to the engine and the tender left the rails, falling off the trestle which is about 20 ft. high at this point. The rest of the train remained balanced on the edge of the trestle. No one was injured.

As an indication of the early completion of the field work of the federal valuation forces, all but five of the roadway and track parties in the Pacific District have already been disbanded and it is expected that the remaining parties will complete their work about November 1, when they will also be disbanded. Likewise in the Southern District, the field work has been substantially completed and the field parties either have been or will be disbanded in the near future. A large part of the field forces in the Western District are now also being disbanded.

The American Society for Testing Materials, in accordance with the policy inaugurated in 1917, will publish the tentative standards of that society in part I of the proceedings and will also publish these tentative standards in a separate volume for the convenience of those who may wish to use them in that form. The 1919 edition will contain the 62 specifications, tests, methods and definitions which have been accepted by the society as tentative of which 23 are new this year and 9 have been revised. This volume will comprise about 350 pages and is expected to be available for distribution in November, about a month earlier than the proceedings.

The Southern Pacific, through the offices of the Railroad Administration, has applied to the Railroad Commission of the State of California for authority to abandon passenger service between Long Beach, Cal., and San Pedro. According to the petition filed, competition by the Pacific Electric and auto transportation forced the abandonment of the regular service, the company compromising by attaching a coach to a switching train. This change was made in January, 1913, and as passenger service has proved a failure, the electric line and the auto transportion have been able to handle all the traffic because of their more frequent and rapid trips.

A delegation representing the railroad shopmen recently called upon Governor J. P. Goodrich of Indiana and urged the establishment of a state mediation committee to investigate strikes and threatened strikes before calling out state troops "unnecessarily." It was pointed out that great expense could have been saved the state had troops not been sent to Hammond, Ind., to end the recent disorders resulting from the strike of employees at the plant of the Standard Steel Car Company. This contention, however, was not concurred in by the governor who acted without hesitation when local authorities at Hammond admitted their inability to preserve order. Governor Goodrich has taken the matter under advisement and will hold further conferences with the shopmen's representatives.

The Canadian Railway War Board, in a recent circular, states that reports received by the Board indicate that the shipment of coal from mines in the United States is being reduced as a result of an insufficient car supply, and that any serious shortage in the output of coal will mean a corresponding reduction in the amount of fuel shipped on Canadian orders. The Board advocates eliminating all unnecessary delays in the handling of coal cars in order to assist in avoiding or reducing the anticipated coal shortage. The circular further states that "hopper" or self-clearing cars must, immediately upon release, be returned empty to the United States lines designated by existing orders of the Railroad Administration but that flat bottom cars may be used for return loading to United States points in accordance with current instructions when such loading will not involve undue delay.

The Brotherhood of Locomotive Firemen and Enginemen, the Brotherhood of Railroad Trainmen, the Order of Railroad Conductors and the Brotherhood of Locomotive Engineers recently attempted to act as mediators in the strike of street railway motormen and conductors at Muskogee, Okla., only to be compelled eventually to make a public statement that the strike was illegal and not deserving of the support of the railway brotherhoods. The car men went on strike

for higher wages on August 22. Car service was maintained, however, by the use of non-union men while efforts were made to end the strike by negotiation. After several delays the four railway brotherhoods decided to act as mediators and accordingly called a conference of the street car men, company officers and representative citizens of Muskogee, resulting in the statement on the part of the brotherhoods that the men had taken an unwarranted stand in refusing wage advances which officers of the street railway had offered.

The Missouri, Kansas & Texas of Texas, with the approval of the Railroad Administration, has closed a contract for five years with the Mexican Petroleum Corporation for its requirements of fuel oil for use on its locomotives in Texas. These requirements are estimated at two million to two and one-half million barrels of oil per year. The oil corporation agreed to advance the funds necessary to cover the capital expenditure in making the change from coal to oil, in an amount not exceeding $750,000. As the expenditures are made, the railway furnishes monthly statements to the oil corporation which advances funds to the amount covered by the statements. The receiver in turn issues his receipt for the funds so advanced, such receipts to bear 6 per cent from the date of issue until paid. Repayment is to be made at the rate of 35 cents per barrel of oil purchased. It is estimated that the saving effected by the change from coal to oil will be large while the saving in operating expenses during the period of federal control will amount to more than the sums expended in connection with the change and charged to operating expenses during that period.

General Foremen's Convention

The fifteenth convention of the International Railway General Foremen's Association met at the Hotel Sherman, Chicago, on September 2, with L. A. North, superintendent of shops of the Illinois Central, Burnside, Ill., presiding. At the opening session addresses were delivered by President North and R. H. Aishton, regional director of the Northwestern region. The meeting on Wednesday was devoted to the consideration of safety measures in shops and engine houses and opened with an address by R. C. Richards, claim agent of the Chicago & North Western. An abstract of the addresses and papers will be published in next week's issue.

National Safety Congress

The program for the Eighth Annual Safety Congress of the National Safety Council to be held at Cleveland, Ohio, October 1 to 4 inclusive, has been completed, as have arrangements for the meeting. The congress will open on Wednesday morning at 10 o'clock with the annual meeting of members at which David Van Schaack, president of the National Safety Council, will act as chairman general and sectional meetings will continue until Saturday afternoon, the last meeting being held at 2 o'clock, October 4. The general sessions to be held will deal with employees representation, Americanization, health and safety education. The safety work in various industries will be discussed in sectional meetings devoted to particular or co-related industries. In connection with the congress a safety exhibit will be held at which manufacturers of safety devices will be represented. This exhibit will be present under the joint auspices of the National Safety Council and the Safety Institute of America.

Car Shortage Continues

A close "follow up" system on freight cars to avert a serious car shortage was adopted by the nine roads entering Louisville, at a conference called by R. H. Morris, chairman of the traffic section of the Joint Operating Committee for the Railroad Administration in Louisville. At the same time the traffic department of the Louisville Board of Trade sent out a bulletin to all local shippers to enlist their aid in averting the threatened shortage.

The steel mills in the Mahoning Valley district of Ohio are threatened with a shutdown as the result of the shortage of cars. The gondola shortage is the worst since the present car shortage began.

The Savannah (Ga.) Sugar Refinery which produces more than a million pounds of sugar daily complains that its shipments are being seriously curtailed because of inability to secure empty cars.

Though the car shortage at Cincinnati terminals is still acute, John A. Morris, Cincinnati Terminal Manager of the Railroad Administration, says that it is due rather to an immense increase of railroad transportation than to an actual shortage of cars. Business in the Cincinnati district is reported to be unusually good.

Protest Against Esch-Pomerene Bill

S. H. Cowan, representing the National Live Stock Raisers' Association at Fort Worth, Tex., has protested against that section of the Esch-Pomerene bill relating to car service in a letter to Chairman Esch of the House Committee on Interstate and Foreign Commerce. Mr. Cowan said in part:

"In behalf of those I represent, in addition to what I have presented at the hearings on H. R. 4378, August 18 and 19, I appeal to the committee to strike from the bill Section 2 of this bill amending Section 1 of the Act to Regulate Commerce, under the definition of the term 'Car Service,' but really embracing the entire transportation service and operation of locomotives, cars, trains, terminals, use of the railroads and every right and duty of the railroad as to all service and the performance of it or use of its facilities for doing it.

"A careful reading of it shows that upon the mere whim of an agent of the Interstate Commerce Commission, without notice or hearing, he may stop any train service, transfer cars, locomotives, from one place or road to another, fix the pay for it, direct the use of terminals, give preference and priorities to operate trains or move cars, subject to change any time for any reason or contrary to sound reason, subject to no supervision, taking away all the rights of shippers and the liabilities of railroads."

Pacific Coast Strikers Return to Work

The striking switchmen, trainmen and yardmen employed on the lines of the Southern Pacific, the Los Angeles & Salt Lake, the Atchison, Topeka & Santa Fe and other railroads entering Los Angeles, Cal., and San Francisco returned to work on Saturday, August 30. The men, all members of the "Big Four" railway brotherhoods, have been on strike for more than a week in sympathy with a strike of trainmen of the Pacific Electric System and the Los Angeles street railways. The strike rapidly spread to other points in California, completely demoralizing traffic to southern and central California points and causing the cancellation of transcontinental lines at interior points and the virtual isolation of Los Angeles and nearby towns. The ending of the strike came as a result of the ultimatum issued by Director General Walker D. Hines that unless the strikers returned to work by seven o'clock Saturday morning, August 30, the government would undertake to restore full service on the roads affected in California, Arizona and Nevada. Added to this was the fact that the local striking organizations were not able to obtain the sanction of their international officers who declared the strike illegal and without sanction.

Director General Hines' ultimatum was addressed to public officers, railroad officers, employees and citizens generally in California, Arizona and Nevada and plainly stated that the government would not tolerate a continuance of the strike and that unless it was ended by action on the part of the men themselves, the government would take whatever steps were necessary to restore service.

"Our Country First Conference" Problems

John M. Glenn, secretary of the Illinois Manufacturers Association, under whose auspices a national "Our Country First Conference" will be held at Chicago on September 8 and 9, propounds a series of questions, under the general caption of "Are These Our Problems?", among which are the following:

"The constitution precisely enumerates and delegates limited powers to federal government. It distinctly states that the power of the federal government, as far as interstate commerce is concerned, is limited to regulation. How can congress pass a law such as proposed in the so-called Plumb plan, which compels the government to purchase the railroads and

lease sure to a small minority of people? To regulate transportation does not mean to engage in transportation.

"Would not such a nationalization of railroads, industries and farms result in adding a new pork barrel? Pork barrels are political expediencies and add unnecessary taxes upon the American people.

"Are you in favor of the nationalizing of the railroads? If so, do you favor the nationalizing of banking and insurance? Shall we extend governmental regulation, now under the Food and Drug Act, to include the licensing as proposed by the Kenyon and Kellogg bills? If so, are you willing to have your industry or your farm or organization nationalized?

"Is American industry a financial privilege or a technical achievement? Did not all of the American industries begin with little capital but with technical brains and resolute characters? Did not the present so-called captains of industries graduate from the ranks of labor because they were willing to work, to sacrifice and to face the chances of failure in order that they might give labor more work and serve labor more efficiently than under the German nationalized industrial system? Did we not defeat that arrogant and despotic system? This American system made this country the economical as well as the political hope of the world. Would the nationalization of the railroads, the basic industries, such as coal, iron, lumber and agriculture, and the licensing suggested by the pending Kenyon and Kellogg bills result in a levelling process? How would it affect our commercial future?"

The questions, which number 26 in all, cover all phases of the nation's reconstruction problems and are intended to awaken interest in the contemplation and solution of these problems which in turn is the object of the conference.

The Southern Pacific Oil Lands

The United States district court has handed down a decision finding valid the title of the Southern Pacific to its oil lands in the San Joaquin Valley.

The following statement was issued at the Southern Pacific offices in New York:

"The contention of the government, settled by the decision of Judge Bledsoe, was to cancel, for fraud, patents issued by the government to Southern Pacific Railroad Company, pursuant to act of Congress of July 27, 1866, granting land to aid in the construction of a railroad and telegraph line from the states of Missouri and Arkansas to the Pacific Coast, etc.

"Involved in the suits were 234 defendants, and some 111 other persons claimed interests in the lands in issue, which amounted to approximately 161,000 acres, situated in the oil territory on the west side of the San Joaquin Valley in California.

"The litigation was protracted. Hundreds of witnesses were examined, and nearly 15,000 pages of testimony were taken. According to the terms of the grant, and of the regulation of the Land Office of the Department of the Interior, it was required that the railroad company in making application for the issuance of patent to its granted lands should cause its land agent, duly authorized in such behalf, to make affidavit that he had caused the lands applied for "to be carefully examined by the agents and employees of the company as to their mineral or agricultural character, and that to the best of his knowledge and belief none of the lands in the list are mineral lands.

"The requisite affidavits were signed and sworn to by the company's land agent, and the contention of the government was that, nevertheless, the lands now are, and at all times were, mineral lands; that they were so known to be by the railroad company and by its land agent in particular long prior to making the affidavit required by the act, and that, therefore, in ignorance of the truth and in complete reliance upon the false representations sworn to by the land agent in his affidavit, the Secretary of the Interior was led to and did cause to be issued the patents," etc.

It is also alleged, it may be added, that the fraud thus perpetrated was not only "naturally self-concealing," but was, in fact, through the machinations of the railroad company and its agents, actually concealed from the government and all of its responsible officers until 1910.

In his opinion Judge Bledsoe said:

"Stripped to the core, the claim of the government is that the defendant company, knowing the lands were mineral and that therefore it was not entitled to them, nevertheless deliberately conceived and put into successful operation the fraudulent plan of acquiring such lands to its own use and benefit and in complete disregard of the government's rights. The case as developed by the government on the hearing and through the contentions of its counsel is to the effect that the 'Big Four Owners' of the Central and Southern Pacific Companies, the original initial owners of that great unified enterprise, 'Stanford, Crocker, Huntington and Hopkins,' together with several lesser lights, occupying positions of responsibility and prominence, were all parties to a deliberate, long enduring and wide-embracing scheme to acquire from the government wrongfully vast areas lying on the west side of the San Joaquin Valley, involving some of the richest oil lands that the world has ever known; that this scheme was conceived at some time in the 70s, or possibly early 80s, and continued to flourish uninterruptedly, but all the time concealed, either naturally or through the artifices of the instigators until its accidental discovery by the government through the filing of the Burke suit in 1910."

Exhibitors at Tool Foremen's Convention

The following is a list of the exhibitors at the convention of the American Railway Tool Room Foremen's Association held at the Hotel Sherman, Chicago, September 27-29:

American Steel Treaters' Society, Chicago, Ill. Represented by W. H. Eisaman.

American Twist Drill Company, Detroit, Mich. High speed twist drills. Represented by C. W. Cross.

Armstrong Brothers Tool Company, Chicago. Tools, wrenches, etc. Represented by H. Armstrong.

Athol Machine Company, Athol, Mass. Represented by J. D. Powell.

Besly & Co., Charles H., Chicago. Drills, taps and small tools. Represented by C. Knell.

Borden Company, Warren, Ohio. Beaver die stocks and pipe cutters. Represented by C. A. Green and W. A. Phillis.

Boss Nut Company, Chicago. Lock nuts. Represented by W. G. Willcoxson.

Brown & Sharpe Manufacturing Company, Providence, R. I. Tools, instruments and milling cutters. Represented by P. A. Topee, H. J. Johnson and T. E. Sprigings.

Carborundum Company, Niagara Falls, N. Y. Carborundum devices. Represented by H. P. Frost, J. W. Frazer, W. E. Knott and E. P. Ritzma.

Chicago Pneumatic Tool Company, Chicago. Pneumatic tools and appliances. Represented by L. C. Sprague, H. Barbee, A. C. Andresen and C. W. Cross.

Clark Equipment Company, Buchanan, Mich. Twist drills, reamers, chucks, counter sinks, tool kit holders, tool bits, flue cutters and sockets. Represented by F. H. Woodward.

Cleveland Steel Tool Company, Cleveland, Ohio. Punches, dies, rivet sets and chisels. Represented by V. D. Gilmore, G. H. Kuebusch and H. W. Leighton.

Cleveland Twist Drill Company, Cleveland, Ohio. Twist drills, reamers and screw extractor. Represented by H. O. White and C. J. Kirchofer.

Collis Company, The, Clinton, Iowa. Drill sleeves and sockets. Quick change chucks and special tools. Represented by C. M. Weaks.

Cortland Grinding Wheel Corp., Cortland, N. Y. Grinding wheels. Represented by F. A. Frisch.

Crucible Steel Company of America, Pittsburgh, Pa. Alloy tool steels, high speed steels and springs. Represented by W. M. Stevenson, F. Baskerfield, R. D. Fletcher and F. A. Lawler.

Detroit Twist Drill Company, Detroit, Mich. Drills and reamers. Represented by M. F. Crawmer.

Duff Manufacturing Company, Pittsburgh, Pa. Jacks. Represented by C. N. Thulin.

Faessler Manufacturing Company, J., Moberly, Mo. Boiler maker tools, expanders, flue cutters, etc. Represented by G. T. Manpin.

Grip Nut Company, Chicago, Ill. Grip nuts. Represented by B. G. Forsyth.

Geometric Tool Company, New Haven, Conn. Automatic threading tools.

Hisey-Wolf Machine Company, Cincinnati, Ohio. Electric grinders and drills. Represented by R. W. Wells.

Hoggson & Pettis Manufacturing Company, New Haven, Conn. Lathe chucks.

Hyland Company, R. H., Chicago. Jacks. Represented by G. R. Law.

Illinois Tool Works, Chicago. High speed, cutters, hobs and reamers. Represented by P. E. Tobin.

Independent Pneumatic Tool Company, Chicago. Pneumatic and electric tools, hose couplings, etc. Represented by F. J. Passino, V. W. Robinson, R. S. Cooper, J. D. Hurley, W. A. Nugent, J. G. Cowell and E. F. Bertrand.

Industrial Press. Represented by L. A. Racener.

Ingersoll Rand Company, Chicago. Pneumatic tools. Represented by L. W. Schnitzer, Walter Johnson and R. S. McCreadie.

Keller Pneumatic Tool Company, Chicago. Pneumatic tools. Represented by George McCabe and J. Osgood.

Liberty Tool Company, Chicago. Rivet furnace and heating torch, portable drilling presses. Holding on dolly bar and heading. Represented by E. O. Grinnes, E. T. Astin, A. B. Moore and M. C. Perrill.

Lovejoy Tool Works, Chicago. Jacks.

Ludlum Steel Company, Watervliet, N. Y. Seminole steel. Represented by J. Cran and S. T. Pearsons.

Manning, Maxwell & Moore, New York. Machine tools. Represented by R. R. Cuthbertson and R. S. Dean.

Manufacturers' Equipment Company, Chicago. Grinding wheels.

Marshall & Huschart Machine Company, Cincinnati, Ohio. Machine tools.

Oxweld Railway Service Company, Chicago. Welding torches. Represented by William Leighton, F. C. Hasse and W. A. Hogan.

Racine Tool & Machine Company, Racine, Wis. Power driven saws. Represented by F. J. Kidd and D. B. Maxwell.

Rivet Cutting Gun Company, Cincinnati, Ohio. Rivet cutting gun and Cincinnati rivet head catcher. Represented by J. M. Crowe and H. G. Doran.

Savage Company, W. J., Knoxville, Tenn. Sheet metal cutters.

Scully-Jones & Co., Chicago. Expanding reamers, tap chucks, milling machine appliances toolroom vises and adjustable spacing collars. Represented by W. G. Salkeld and R. Beanlieu.

Starrett Company, L. S., Athol, Mass. Precision instruments, saw blades, tools, vises and combination squares. Represented by J. D Powell.

Street & Co., R. R., Chicago. Tools, chucks, pulleys and hangers, roller bearings and wrenches. Represented by C. J. Butterfuss.

Western Tool Manufacturing Company, Springfield, Ohio. Expanding mandrels, tool holders, shop furniture, vises, emery wheel dressers and safety lathe dogs. Represented by J. Z. Wells.

Westhaven Manufacturing Company, New Haven, Conn. Power hack saw blades, frames, etc. Represented by R. H. Harris.

Whitman & Barnes, Akron, Ohio. Twist drills, reamers, monkey wrenches, drop forgings and wrenches. Represented by J. C. Scanlon, J. A. Dilger and M. J. Keatins.

Williams & Co., J. H., Brooklyn, N. Y. Wrenches. Represented by V. E. Nagle.

Meetings and Conventions

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

Air Brake Association.—F. M. Nellis, 165 Broadway, New York City. Next convention, May 5-7, 1920, Chicago.

American Association of Demurrage Officers.—F. A. Pontious, Supervisor of Demurrage and Storage, C. & N. W. Ry., Chicago.

American Association of Dining Car Superintendents.—S. W. Derr, C. R. R. of N. J., Philadelphia, Pa.

American Association of Freight Agents.—R. O. Wells, Illinois Central, Chicago. Next annual meeting, June, 1920.

American Association of General Baggage Agents.—E. R. Reynolds, C. G. W. R. R., Chicago. Next meeting, November 11-13, 1919, New Orleans, La.

American Association of Passenger Traffic Officers.—W. C. Hope, C. R. R. of N. J., 143 Liberty St., New York. Next meeting, October 28-29, Chicago.

American Association of Railroad Superintendents.—J. Rothschild, Union Station, St. Louis, Mo.

American Electric Railway Association.—E. B. Burritt, 8 W. 40th St., New York. Next convention, October 6-10, Atlantic City, N. J.

American Electric Railway Manufacturers' Association.—C. F. J. Dell, 50 E. 42nd St., New York.

American Railroad Master Tinners', Coppersmiths' and Pipe Fitters' Association.—Otto E. Schlinck, 185 W. 5th St., Peru, Ind.

American Railroad Association.—J. E. Fairbanks, 75 Church St., New York:

Section I, Operating (including former activities of Association of Railway Telegraph Superintendents).

Section II, Engineering.—E. H. Fritch, 431 South Dearborn St., Chicago.

Signal Division.—H. S. Balliet, 75 Church St., New York. Next annual meeting, September 17-19, Congress Hall and Annex, Chicago.

Section III, Mechanical (including former activities of Master Car Builders' and Master Mechanics' Association).—V. R. Hawthorne, 431 South Dearborn St., Chicago.

Section IV, Traffic (including former activities of Freight Claim Association).

Section V, Transportation (including former activities of Association of Transportation and Car Accounting Officers).

Section VI, Purchases and Stores (including former activities of Railway Storekeepers' Association). J. P. Murphy, N. Y. C. R. R., Collinwood, Ohio.

Section VII, Freight Claims (including former activities of the Freight Claim Association).

American Railway Bridge and Building Association.—C. A. Lichty, C. & N. W. Ry., 319 N. Waller Ave., Austin Station, Chicago. Next convention, October 21-23, 1919, Cleveland, O.

American Railway Engineering Association.—(Works in co-operation with the American Railroad Association, Section II.) E. H. Fritch, 431 South Dearborn St., Chicago. Next convention, March 16-18, 1920, Chicago.

American Railway Master Mechanics' Association.—(See American Railroad Association, Section III, Mechanical.)

American Railway Perishable Freight Association.—E. F. McPike, 135 E. 11th Place, Chicago. Regular meetings, 2d Wednesday in March and September.

American Railway Tool Foremen's Association.—R. D. Fletcher, 1145 East Marquette Road, Chicago.

American Society for Testing Materials.—C. L. Warwick, University of Pennsylvania, Philadelphia, Pa.

American Society of Civil Engineers.—Charles W. Hunt, Engineering Societies Building, 33 W. 39th St., New York. Regular meetings, 1st and 3d Wednesday in month, except July and August, 33 W. 39th St., New York.

American Society of Mechanical Engineers.—Calvin W. Rice, 29 W. 39th St., New York.

American Train Despatchers' Association.—D. L. Darling, Northern Pacific Ry., Spokane, Wash.

American Wood Preservers' Association.—F. J. Angier, B. & O., Mt. Royal Sta., Baltimore, Md. Next annual meeting, February 10-12, 1920, Hotel Sherman, Chicago.

Association of Railway Claim Agents.—Willis H. Failing, C. R. R. of N. J., Jersey City, N. J. Next meeting, May, 1920, Atlantic City, N. J.

Association of Railway Electrical Engineers.—Jos. A. Andreucetti, C. & N. W., Room 411, C. & N. W. Sta., Chicago. Next meeting, October, 1919, Chicago.

Association of Railway Telegraph Superintendents.—(See American Railway Association, Section I, Operating.)

Association of Transportation and Car Accounting Officers.—(See American Railroad Association, Section V, Transportation.)

Bridge and Building Supply Men's Association.—M. J. Trees, Chicago Bridge & Iron Works, Chicago. Next annual convention, October 21-23, 1919, Cleveland, O.

Canadian Railway Club.—W. A. Booth, 131 Charron St., Montreal, Que.

Car Foremen's Association of Chicago.—Aaron Kline, 626 North Fine Ave., Chicago. Regular meetings, 2d Monday in month, except June, July and August, New Morrison Hotel, Chicago.

Car Foremen's Association of St. Louis.—Thomas B. Koeneke, Federal Reserve Bank Bldg., St. Louis, Mo.

Central Railway Club.—Harry D. Vought, 95 Liberty St., New York. Regular meetings, 2d Thursday in November, and 2d Friday in January, March, May and Sepetmber, Hotel Statler, Buffalo, N. Y.

Chief Interchange Car Inspectors' and Car Foremen's Association.—H. J. Smith, D. L. & W. R. R., Scranton, Pa. Next annual convention, September 23-25, 1919, St. Louis, Mo.

Chief Interchange Car Inspectors' and Car Foremen's Supply Men's Association.—D. B. Wright, Lehon Company, 45th and Oakley Sts., Chicago. Next annual convention, September 23-25, 1919, St. Louis, Mo.

Eastern Railroad Association.—D. G. Stuart, Washington, D. C.

Freight Claim Association (See American Railroad Association, Section IV, Traffic).

General Superintendents' Association of Chicago.—A. M. Hunter, 321 Grand Central Sta., Chicago. Regular meetings, Wednesday preceding 3rd Friday in month, Room 856, Insurance Exchange Bldg., Chicago.

International Railroad Master Blacksmiths' Association.—A. L. Woodworth, B. & O., Lima, Ohio.

International Railway Fuel Association.—J. G. Crawford, 702 E. 51st St., Chicago. Next annual meeing, May, 1920, Hotel Sherman, Chicago.

International Railway General Foremen's Association.—Wm. Hall, 1061 W. Wabash Ave., Winona, Minn.

Maintenance of Way Master Painters' Association.—F. W. Hager, 1323 Hurley Ave., Ft. Worth, Tex. Next annual convention, October 21-23, 1919, American Annex Hotel, St. Louis, Mo.

Master Boiler Makers' Association.—Harry D. Vought, 95 Liberty St., New York.

Master Car and Locomotive Painters' Association of the United States and Canada.—A. P. Dane, B. & M., Reading, Mass. Next convention, September 9-11, 1919, Hotel La Salle, Chicago.

Master Car Builders' Association.—(See American Railroad Association, Section III, Mechanical.)

National Association of Railway and Utilities Commissioners.—James B. Walker, 49 Lafayette St., New York. Next annual convention, October 14, 1919, Indianapolis, Ind.

National Foreign Trade Council.—O. K. Davis, 1 Hanover Square, New York. Next convention, May 12-15, 1920, San Francisco.

National Railway Appliances Association.—C. W. Kelly, Kelly-Derby Co., Peoples Gas Bldg., Chicago.

New England Railroad Club.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meetings, 2d Tuesday in month, excepting months of June, July, August and September.

New York Railroad Club.—Harry D. Vought, 95 Liberty St., New York. Regular meeting, 3d Friday in month, except June, July and August, 29 W. 39th St., New York.

Niagara Frontier Car Men's Association.—George A. J. Hochgrebe, 623 Brisbane Bldg., Buffalo, N. Y. Regular meetings, 3d Tuesday in each month, Tenjost Hall, Buffalo, N. Y.

Pacific Railway Club.—W. S. Wollner, 64 Pine St., San Francisco, Cal. Regular meeting 2d Thursday in month, alternately in San Francisco and Oakland.

Railway Accounting Officers' Association.—E. R. Woodson, 1116 Woodward Bldg., Washington, D. C.

Railway Business Association.—Frank W. Noxon, 30 Church St., New York. Next annual meeting, December, 1919, New York, N. Y.

Railway Club of Pittsburgh.—J. D. Conway, 515 Grandview Ave., Pittsburgh, Pa. Regular meetings, 4th Thursday in month except June, July and August, Americus Club House, Pittsburgh, Pa.

Railway Development Association.—D. C. Welty, Missouri Pacific R. R., Little Rock, Ark.

Railway Electric Supply Manufacturers' Association.—J. Scribner, General Electric Co., Chicago. Annual meeting with Association of Railway Electrical Engineers.

Railway Equipment Manufacturers' Association.—D. L. Eubank, Galena Signal Oil Company, Richmond, Va. Next annual meeting, September, 1919, Hotel Sherman, Chicago.

Railway Fire Protection Association.—G. L. Ball, St. Louis-San Francisco Ry., St. Louis, Mo. Next annual meeting, October 21-23, 1919, La Salle Hotel, Chicago.

Railway Real Estate Association.—R. H. Morrison, C. & O., Richmond, Va.

Railway Signal Association.—(See American Railroad Association, Section II, Signal Division.)

Railway Storekeepers' Association.—(See American Railroad Association, Section VI, Purchases and Stores.)

Railway Supply Manufacturers' Association.—J. D. Conway, 1841 Oliver Bldg., Pittsburgh, Pa.

Railway Telegraph and Telephone Appliance Association.—G. A. Nelson, Waterbury Battery Co., 30 Church St., New York.

Roadmasters' and Maintenance of Way Association.—P. J. McAndrews, C. & N. W. Ry., Sterling, Ill. Next annual convention, September 16-18, 1919, Chicago.

St. Louis Railway Club.—B. W. Frauenthal, Union Station, St. Louis, Mo. Regular meetings, 2d Friday in month, except June, July and August.

Signal Appliance Association.—F. W. Edmunds, West Nyack, Rockland County, New York.

Society of Railway Financial Officers.—L. W. Cox, 1217 Commercial Trust Bldg., Philadelphia, Pa. Next annual meeting, October 16-17, New York City.

Southern and Southwestern Railway Club.—A. J. Merrill, P. O. Box 1205, Atlanta, Ga. Regular meetings, 3d Thursday in January, March, May, July, September and November, Piedmont Hotel, Atlanta.

Southern Association of Car Service Officers.—E. W. Sandwich, Western Ry. of Ala., Atlanta, Ga.

Supply Association of American Railway Tool Foremen's Association.—C. N. Thulin, Duff Manufacturing Company, 935 Peoples Gas Bldg., Chicago.

Track Supply Association.—W. C. Kidd, Ramapo Iron Works, Hillburn, N. Y. Next annual convention, September 16-18, 1919, Auditorium Hotel, Chicago.

Train Despatchers' Association of America.—J. P. Finan, A. T. & S. F. Ry., Needles, Cal.

Traveling Engineers' Association.—W. O. Thompson, N. Y. C. R. R., Cleveland, O. Next annual meeting, September 16-19, 1919, Hotel Sherman, Chicago.

Western Association of Short Line Railroads.—Clarence M. Oddie, Mills Bldg., San Francisco.

Western Railway Club.—A. F. Stuebing, 750 Transportation Bldg., Chicago. Regular meetings, 3d Monday in month, except June

Western Society of Engineers.—Edgar S. Nethercut, 1735 Monadnock Block, Chicago. Regular meetings, 1st Monday in month, except July and August

Traffic News

A special rate of one cent per mile in each direction is announced by the Railroad Administration for the twenty-ninth annual reunion of the Confederate Veterans, Sons of Confederate Veterans and United Daughters of the Confederacy to be held at Atlanta, Ga., September 7 to 10.

Among the associations which have placed themselves on record as opposing the Plumb plan for the purchase of the railroads by the federal government and their management by a board consisting of representatives of the government, the managing officers and the employees, is the Transportation Committee of the Detroit (Mich.) Board of Commerce.

According to the Association Opposed to National Prohibitions, railroad officers throughout the country have predicted higher freight rates as an indirect result of losses due to the elimination of traffic connected with the manufacture and sale of alcoholic beverages. Statistics compiled by investigators for the association maintain that the railroads will lose approximately $250,000,000 annually in earnings due to prohibition. The results of this investigation support the association's contention that the tonnage offered the railroads in lieu of the alcoholic beverage traffic will never equal or take the place of the latter traffic.

J. H. Glenn, agent for carriers originating cotton traffic in southeastern and Mississippi Valley territory, placed four tariffs on the files of the Interstate Commerce Commission on August 25, which supersede 205 inter-territorial cotton tariffs. The new tariffs are to be effective upon 30 days' notice and are a result of the commission's decision on "Fourth Section Violations in the Southeast," which made a revision of the rates on cotton from the points of origin to all destinations necessary. The large number of tariffs were accordingly simplified to four, one showing the tariffs to the ports, one to eastern destinations, one to Ohio and Mississippi river crossings and one to northern and western points. The abolition of individual line tariffs, it is believed, will reduce the chances of error in the re-issues of tariffs and the probability of error in the assessment of charges.

Director General Hines has issued instructions for the preparation of tariff which will provide for class and commodity rates upon export traffic from points in Ohio, Indiana, Illinois, including cities located on both banks of the Mississippi river from Dubuque, Iowa, to St. Louis, inclusive, also from points in the southern peninsula of Michigan, to South Atlantic and Gulf ports from Wilmington, to New Orleans, inclusive. When the tariffs have been prepared, the matter will receive final consideration in Washington. The export rates to be established will be substantially the same as the rates which apply to New York on domestic freight from the same points of origin. The export rates to Key West will be the usual differential above the South Atlantic ports. Special consideration is to be given to export traffic when destined to Mexico and Central America, because of the generally low ocean rates from Gulf ports to those countries. This action is taken after a very thorough study and careful consideration of the movement of export traffic and has for its object a more reasonable equalization of the rates on export traffic to all Atlantic and Gulf ports.

Coal Production

Production of bituminous coal increased in the week of August 23 to 10,671,000 tons, from 9,089,000 tons the previous week. The recovery to a new high level for the year is attributed to a quickening of demand and the abatement of labor trouble, mainly on the railroads. For the week of August 16 the average for the country of mine operating time lost on account of transportation disability is reported as 25.7 per cent, as compared with 22.5 per cent in the week preceding.

Commission and Court News

Interstate Commerce Commission

The Interstate Commerce Commission has assigned for hearing at Atlantic City on August 25 before Commissioner McChord the application of the Railroad Administration and the American Railroad Association for an extension of time within which to comply with the commission's order of February 1 regarding the application of safety appliances.

Personnel of Commission

T. G. Hughes, assistant auditor of the Railroad Commission of the State of California, has been appointed acting auditor of the commission, succeeding **John W. White,** deceased.

Court News

United States District Judge William C. Van Fleet recently announced a decision in the district court at Sacramento, Cal., in the suit of George H. Nash for damages resulting from injuries, that the United States government is solely responsible in suit at law growing out of injuries or negligence on the railroads of the country in the period the roads have been under federal control. In the suit the Southern Pacific was made defendant, however, application was made by Director General Hines, joined in by the Southern Pacific. Judge Van Fleet, in granting the application for the substitution of the Director General as defendant, said that the taking over of the railroads by the government under the authority of the act of Congress, December 31, 1917, an assumption of ownership by the government for the time being.

The Future of the Inland Waterways

M. J. Sanders, federal manager of the Mississippi-Warrior River Section of the Railroad Administration in speaking recently before a meeting of shippers and members of the Transportation Committee of the St. Louis Chamber of Commerce predicted that Director General Walker D. Hines would approve the request of the River section of the Railroad Administration for $3,000,000 to build river terminals on the lower Mississippi river. Mr. Sander's prediction was made in discussing the future of inland water routes, rates and service, especially on the Mississippi.

In reply to criticism which has been directed against the conduct of the barge line service on the Mississippi river, Mr. Sanders said that delays were the fault of inadequate equipment, but, that even with new equipment which is now being made available, delays could not be entirely overcome because of the lack of proper terminals, the lack of which it is said has necessitated cargoes remaining from 10 to 12 days aboard barges before they could be transshipped. Mr. Sanders is quoted as saying in this respect, "A large section of the country can be most advantageously served by the barge line in connection with the railroads diverging from Memphis, Tenn., other sections through Vicksburg and a limited portion through New Orleans, La. We are doing our utmost to obtain the authority for the construction of these terminals, it now being evident that the localities are not especially interested in river and rail transfer terminals although they should be and we must therefore construct adequate terminals for their local business."

That the project was losing money was no surprise to those familiar with the undertaking, Mr. Sanders said, but in measuring the benefit to shippers inland it must be taken into consideration that they are able to participate in the joint rail and water rates which permit a differential of 20 per cent from the all-rail rates from St. Louis south. The question of granting additional rates depended upon the construction of the terminals at Memphis and Vicksburg and other river points, Mr. Sanders said, but that if these rates were granted now there would not be adequate facilities to take care of the increased shipping at Memphis.

Foreign Railway News

Italian Transport and Shipbuilding

LONDON.

The Italian government's program regarding the transport question, says an item in the Financier, London, includes the electrification of 6,000 kilometers of line. In addition 300,000,000 lire are to be spent on improving railway communication in the Trentino. As regards shipping 1,500,000,000 lire is to be devoted to the development of shipbuilding in Italian yards.

Italian Railway Deficit

LONDON.

The expenditure of the Italian railways for 1918-19, says the Financier, London, has exceeded the earnings by about $10,000,000. The outlook for the current year is still more gloomy, and it is stated that a deficit of 540,000,000 lire, more than tenfold the above amount, is to be expected. Further considerable amounts will have to be raised for the electrification of the main lines.

Railway Communications in Serbia

LONDON.

Reuter despatch dated August 4, from the Serbian Press Bureau, states: "Direct railway communication between Belgrade and the interior, which had been broken off since the departure of the enemy, was resumed yesterday. The first train to Nish left Belgrade at 7 a. m. and the first train from Nish arrived here at night. The direct route between Belgrade, Nish, Salonica and Athens is now open."

Railway Developments in New South Wales

LONDON.

A Reuter despatch, dated August 13, to the Financier, states that the premier of New South Wales, Mr. Holman, delivering a speech on the policy of the government at Lismore, announced the completion of the railways, the building of which was suspended during the war, and the construction of new lines, the construction of a light railway in the forestry regions for irrigation and forestry development, and legislation against monopolization on the lines of the American Sherman anti-trust law. The savings banks will make increased advances for Crown settlers and builders of homes.

High Prices in England

LONDON.

An example of high prices in England is given in a letter published in the London Times, which states that railway fastenings were before the war £9 7s 6d per ton, more or less equal at home and abroad. In England in 1915 the price rose to £13 17s 6d per ton, and in 1919 to £42 10s per ton. English manufacturers were warned that this price was far above the price asked in foreign countries. An order has just been placed in Belgium at under £30 per ton as against £44 to £46 quoted by English manufacturers. It is pointed out that no tariff in England would prevent buying in Belgium and shipping to South America, and no tariff, unless it were a veritable crusher, would enable home manufacturers to put up British home prices sufficiently to repay them for losses on export; or, in other words, to make "dumping" possible.

Extension of the Congo Railway

The authorities of the Belgian Congo, says the Times (London) Trade Supplement, are considering the extension of the Katanga Railway, which now ends at Bukama, to a new terminus at a place called Kibouerno, on the upper waters of the Congo. This would overcome the difficulties of navigation on the upper channels between Kabalo and Bukama, which often necessitates early discharge of cargo owing to the lowness of water. No increase in the price of goods landed at Elizabethville would result, as the cost by rail would be equivalent to the present charge by boat, while more regular and quicker transit would result.

A further line is proposed from Kongolo southward to Kabalo, which would effect a junction with the existing lines from the Upper Congo at the latter place eastward to Lake Tanganyika.

Openings for railway and motor materials exist in the Congo owing to a keen movement in favor of improving means of transit either by motor cars, motor omnibuses, or by railroad.

German Railway Deficit

LONDON.

Representatives of the German railway managements are discussing the question of how the large financial losses of the railways can be made up, says an item in the Times, London, of August 14. To make up the full estimated loss, all railways would have to increase their present tariffs 100 per cent, but this increase will not be contemplated at present in order to avoid putting too great a burden on trade and traffic, but it is certain that both freight and passenger rates must be raised.

The increased price of coal and other articles and the high wages and salaries are the principal reasons for the present losses. Further restrictions in traffic will be introduced from August 20 onwards, within the district of the Berlin railway administration, owing to the situation with regard to coal supplies. These restrictions will go even beyond those already fixed for the whole of Germany from August 15, onwards.

English Railwaymen's Wages

LONDON.

In keeping with their American cousins the English railwaymen are bringing pressure to bear on the government for still greater increases in wages. The men refused the offer of the Railway Executive Committee for a standard wage varying from 7s. 6d. per day during the first year of service to 12s. per day for the twelfth year and after, for engineers; 5s. 6d. per day for the first year and 6s. 6d. per day for the fifth year and after, for firemen; and 28s. per week for cleaners 18 to 19 years of age; 35s. per week for 20 and 21 years of age, and 41s. per week for 22 years of age and over. In addition to this the engineers and firemen already receive 33s. per week as a bonus on account of the high cost of living which will remain in effect during the year and after that is to be changed according to the cost of living. The matter is now being handled by the English Board of Trade and on August 14, the National Union of Railwaymen wrote that body to the effect that if prompt action were not taken by the Board "we fear we shall be unable to restrain the men any longer."

Water Power in Spain and Electrification

Spain's water power in the various parts of the country available for immediate use for electricity has been computed as follows by España Economica y Financiera:

	Kw.
Atlantic slope of Leon and Galicia	70,000
Asturias	40,000
Santander	30,000
Ebro above Saragossa	65,000
Rivers of the Pyrenean slopes	490,000
Ebro from Saragossa to the sea	130,000
Douro within Spain	90,000
Douro on the Portuguese frontier (falls)	150,000
Tributaries of the Douro	50,000
Tagus	110,000
Tributaries of the Tagus	50,000
Guadiana	35,000
Guadalquivir and other Andalusian rivers	40,000
Jucar and Cabril	90,000
Other Mediterranean rivers	60,000
Rivers of minor importance	500,000
	2,000,000

Certain American financiers, in co-operation with important units of the Constructora Naval, are said to be proposing to found a company which will utilize all the electric power in the country for the purpose of electrifying the whole railway system of Spain. The capital of the proposed company will be Pes. 200,000,000.

The Eight-Hour Day in South Africa

[Special Correspondence]

JOHANNESBURG, July 8.

An important statement on the introduction of an eight-hour day on the railways was made in the House of Assembly by the Minister of Railways and Harbors, who said, in introducing further supplementary estimates for working expenditure amounting to £250,000 for the current financial year, that this additional amount arises entirely from the decision to extend the eight-hour day, or the 48-hour week, in the railway and harbors service. Large sections of the railway staff have for many years past worked an eight-hour day, while the hours of the office staff have been less, and it is an important fact that at the present time approximately 50 per cent of railway and harbor servants work the eight-hour day or a shorter day.

Widening the Field of Employment

Some months ago the question of an all-round eight-hour day for the South African railways was again raised by the staff. When the matter was brought to the Minister's notice he expressed himself as being sympathetic to the principle and promised to do his best to get it carried into effect as far and as soon as practicable. At an interview between the National Council of the National Union of Railways and Harbor Services and the Minister at the end of February last, the union representatives made it quite clear that the desire of the union was that every effort should be made to reduce actual working hours as far as practicable to an average of eight hours per week day. That is what the management has been asked to aim at. The Minister felt that where what might be regarded, in normal times and under modern conditions, to be long hours, are being worked by the staff, the case would not be met by a nominal, as distinct from an actual reduction in hours; it would not meet the desire for a shorter day, and it would restrict opportunities for the employment of suitable returned soldiers. Therefore in the extension of the eight-hour day, or the 48-hour week, the sound course has been taken not only to reduce actual working hours but to widen the field for employment as far as is reasonably practicable. The supplementary estimates are prepared on that basis and it is expected that approximately 1,600 men are provided for in addition to those for whom provision has already been made on the main estimate passed by the House for the current year.

The probable ultimate cost cannot yet be estimated but the preliminary estimates show that the additional working expenditure may amount ultimately to £800,000 per annum, while to secure the extension so far as is reasonably practicable of an all-round actual eight-hour day very heavy capital expenditure, probably running into millions, will have to be incurred at a later stage.

In conclusion, the Minister stated that it had been clear to him for some time past that South Africa could not expect and it was not fair to expect her to proceed any longer upon a basis of the employment of railway and harbor servants different from that which prevailed practically throughout the civilized world. Heavy as he knew the responsibility was, and fully as he recognized the position the country would be placed in by having that additional burden placed upon it, he had come to the deliberate conclusion that there was no other way of dealing fairly, honestly and properly with the situation that presented itself to them than by making that endeavor to introduce the eight-hour day.

Return of Sir William Hoy

Sir William Hoy, general manager of these railways, who has been in England for the past eight months, is now on the water on his return to South Africa with the Prime Minister of the Union.

Imperial Government's Gift of £500,000

It may be of interest to mention the gift by the Imperial Government to the Union of railway material to the extent of £500,000. The Minister of Railways in announcing the gift in Parliament said that it was another mark of the cordial relations between Great Britain and the Dominion of South Africa.

Equipment and Supplies

Locomotive Deliveries Week Ended August 16

New locomotives were shipped during the week ended August 16 as follows:

Works	Road	Number	Type
American	Nt&StL	1	USRA Mount.
	Virginian	1	USRA Mallet
	ACL	3	USRA Pacific
		5	
Baldwin	T&P	2	USRA Mik
	PLW	3	Santa Fe
	PLW	7	USRA S. F.
	AT&SF	7	Santa Fe
	C&O	2	USRA Mallet
	P&R	1	Mallet
	SAL	1	USRA S. F.
	SP	1	Santa Fe
		20	

Freight Cars

The Justice Cox, Jr., Company, Philadelphia, Pa., is inquiring for 30 50-ton box cars.

The Midland Packing Company has ordered fifteen 8,050-gal. tank cars from the Pennsylvania Tank Car Company.

The Georgia Rosin Products Company has ordered five 8,050-gal. tank cars from the Pennsylvania Tank Car Company.

The Champlain Refining Company has ordered 100 8,050-gal tank cars from the Pennsylvania Tank Car Company.

The Georgia Rosin Products Company has ordered five 8,050-gal. tank cars from the Pennsylvania Tank Car Company.

The International Vegetable Oil Company has ordered eight 8,050-gal. tank cars from the Pennsylvania Tank Car Company.

The Shell Company of California has ordered three 10,050-gal. class IV insulated tank cars from the Pennsylvania Tank Car Company.

Willits & Patterson, San Francisco, Cal., have ordered 25 standard 8,000-gal. tank cars equipped with steam coils for handling vegetable oils imported from the Orient, from the Standard Tank Car Company, Sharon, Pa.

The Ozarka Company, Eureka Springs, Ark., has ordered from the Pennsylvania Tank Car Company two 10,050-gal. insulated tank cars for the transportation of high grade spring water for drinking purposes.

Passenger Cars

The International Railway of Central America, New York, have ordered 1 first-class passenger car, 2 second-class passenger cars and 1 baggage car from the American Car & Foundry Company.

Signaling

The Lehigh Valley has ordered two 8-lever Saxby & Farmer interlocking machines for use at Conway, Pa., and Fairview. Both machines are being furnished by the Union Switch & Signal Company, Swissvale, Pa., and will be installed by railroad forces.

The Staten Island Rapid Transit is installing a mechanical interlocking plant at the crossing of its line with the Richmond Light & Railway Company's line at Richmond Terrace, N. Y. A 12-lever Saxby & Farmer mechanical interlocking machine and electrical equipment comprising T-2 alternating current signals, electric lockings, etc., is being furnished by the Union Switch & Signal Company, Swissvale, Pa.

Supply Trade News

E. F. Kidd, assistant traffic manager of the **Republic Iron & Steel Company,** Youngstown, Ohio, has been promoted to traffic manag, succeeding H. R. Moore, deceased.

The Schroder Headlight & Generator Company, Evansville, Ind., manufacturers of the "Sunbeam" electric headlight system, has pened an office at 1051 McCormick building, Chicago, in arge of **Harlow A. Varney,** as district sales manager.

A. M. Crai consulting engineer with offices in Detroit, Mich., speciaing in the construction of railway terminals, grain elevato power plants and industrial buildings, has been appoint vice-president of the **Witherspoon-Englar Company,** Chgo.

D. B. Fultc assistant to the chief engineer of the American Brake Sh & Foundry Company, New York, has entered the sales depment of the Railway Steel Spring Company, Chicago, whehe will be associated with **N. C. Naylor,** sales agent, in thicago office.

The Chica Pneumatic Tool Company, Chicago, has removed its Cinnati (Ohio) office from the Mercantile Library building the Walsh building, Pearl and Vine streets, where a servstation with a complete stock of pneumatic tools, electricols, air compressors, oil engines, rock drills and repair pawill be maintained.

The Williaort Wire Rope Company, Williamsport, Pa., announces thstablishment of a branch office and warehouse at Chic under the direction of **C. M. Ballard,** formerly connecvith the Williamsport organization at Cleveland, Ohio. Chicago office is located at 122 South Michigan avenue, ahe warehouse at 755 West Quincy street.

Major H. Cyless, formerly mechanical engineer on the Minneapolis, Paul & Sault Ste. Marie and the Great Northern bute recently chief inspector of ordnance for the War Depent at the Standard Steel Car Company's plant at Haml, Ind., has been appointed combustion engineer and ner of the **Superior Pulverizer Company,** Chicago, in wcapacity he will have entire charge of engineering and and general supervision of **coal installations.**

The Duff Mcturing Company, Pittsburgh, Pa., is building an additioft. by 160 ft., to its works at Pittsburgh. The new buils to be of brick and steel construction and is design accommodate the forge shop and heat treatment depnt. Provision has also been made for installing 16 stemmers with an equal number of trimming presses. The reating department will be equipped with furnaces of tlst type, burning either oil or gas. It is expected that provements will be completed about October 1.

The Electr Oxy-Hydrogen Laboratories, Inc., announce the fo of a sales and manufacturing company under the nathe **Electrolabs Company.** The Electrolytic Oxy-Hy Laboratories, Inc., will continue in charge of the tories and maintain a technical supervision over th of the new company. The general offices and worloth companies have been moved from Dayton, Ohio arger quarters at 2635 Penn Avenue, Pittsburgh, Pa eneral sales offices are being continued at 15 William New York City, and branch sales offices have been opthe Morris Building, Philadelphia, and in the Mercha hange Building, San Francisco. **I. H. Levin** continu harge of technical and research work, and **D. J. Ton** in general charge of sales.

A. W. Thon resident of the **Inland Steel Company,** Chicago, has and P. D. Block, vice-president, has been elected accessor. L. E. Block, vice-president and treasurer, has been elected chairman of the board of directors which is a new office and **G. H. Jones,** vice-president, has been elected first vice-president. **E. M. Adams,** secretary; **E. J. Block,** assistant to the vice-president, general purchasing agent and assistant secretary and assistant treasurer; and **H. C. Jones,** asistant to the vice-president, have been elected vice-presidents. **D. P. Thompson,** assistant to the vice-president, has been made assistant to the president and **J. W. Lees,** superintendent of the Indiana Harbor plant, has been appointed works manager. **W. D. Truesdale,** general auditor, has been elected treasurer and **J. A. Morris** has been made general auditor.

M. A. Long has resigned as assistant to the chief engineer and architect of the Baltimore & Ohio Railroad and will engage in general engineering and construction work at 1523 Munsey building, Baltimore, Md., under the name of the **M. A. Long Company.** The first piece of construction work on which Mr. Long will be engaged will be the design and construction of the McCormick building, Light and Barrie Streets, Baltimore. This is to be an eight-story reinforced concrete structure, having a floor space of 55,000 sq. ft., and will cost $1,500,000. Mr. Long has been connected with the Baltimore & Ohio Railroad for the past 20 years, during which time he has handled a number of important pieces of building construction, among others being the design and construction of the large terminal warehouses of the railroad at Cincinnati, O., Baltimore, Md., Pittsburgh, Pa., and New York; piers at Locust Park, station buildings at Grafton, W. Va., Wheeling, W. Va., and Pittsburgh, Pa., coal handling plants at Deshler, Ohio, Elsmere Junction, Del., Yoder, Pa., and other points; thawing sheds at Baltimore, Md., and New York, N. Y., icing and cold storage plants and rest houses, Y. M. C. A. buildings; shops and engine houses at Grafton, W. Va., Parkersburg, W. Va., Cincinnati, Ohio., and Chicago. He also superintended the construction of the Baltimore & Ohio general office building at Baltimore and Charles streets, Baltimore, Md.

M. A. Long

Trade Publications

VENTILATORS.—A six-page folder has been issued by the Garland Ventilator Company, Chicago, briefly describing and illustrating by means of drawings some of the best known and most widely used types of Garland railway car ventilators.

DATA ON SHAFTS.—Three charts giving the relations for any shaft between power, shaft diameter, torsional stress and speed have been prepared by one of the engineers of the Wellman-Seaver-Morgan Company, Cleveland, Ohio, which has published them in bulletin No. 22 for the use of engineers and draftsmen.

CARE OF ELECTRIC HOISTS.—Facts for Operators of Electric Hoists is the title of a four-page pamphlet published by the Electric Hoist Manufacturers' Association, New York, for the guidance of electric hoist operators. It deals with such matters as connections, lubrication, and the care of the motor, controllers and ropes.

ELECTRIC ARC WELDING.—The Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., has issued circular No. 7149, covering the process of electric arc welding and the necessary apparatus required. A comparison is made of the different processes of welding and the advantages of electric arc welding are pointed out.

ANNUAL REPORT

The Chesapeake and Ohio Railway Company—Forty-First Annual Report

RICHMOND, VA., July 21, 1919.

TO THE STOCKHOLDERS:

The Forty-first Annual Report of the Board of Directors, for the fiscal year ended December 31, 1918, is herewith submitted.

The average mileage operated during the year by the United States Railroad Administration operating the Chesapeake and Ohio Lines was 2,479.7 miles, an increase over the previous year of 67.6 miles. The mileage at the end of the year was 2,484.8 miles, an increase of 6.5 miles over mileage on December 31, 1917.

RESULTS FOR THE YEAR.

*Standard return	$13,226,983.23
(Decrease $2,268,815.35, or 14.64%)	
†Expenses of Maintaining Corporate Organization	135,809.58
	$13,091,173.65
Net Operating Income	
(Decrease $2,404,624.93, or 15.52%)	358,184.43
Federal Income Taxes Accrued, were	
(Decrease $437,071.14, or 54.96%)	$12,732,989.22
Net Income, Taxes deducted, was	
(Decrease $1,957,553.79, or 13.38%)	1,118,414.46
Miscellaneous Income was	$13,851,403.68
(Decrease $51,646.01, or 4.41%)	283,390.64
‡Rentals and Other Payments were	
(Increase $68,960.21, or 32.16%)	$13,568,013.04
Income for the year available for interest was	
(Decrease $2,088,160.01, or 13.34%)	8,730,506.49
Interest (64.35% of amount available) amounted to	
(Increase $140,711.89, or 1.64%)	
Net Income for the year, equivalent to 7.70% on capital stock outstanding, amounted to	$4,837,506.55
(Decrease $2,228,871.90, or 31.54%)	
Dividends paid during year: Two dividends of 2% each, aggregating	2,511,264.00
Remainder, devoted to improvement of physical and other assets	$2,326,242.55

*By ruling of the Director General of Railroads, these expenses were required to be paid by the Company, although the corresponding expenses of the three years ended June 30th, 1917, were deducted as operating expenses in computing the Standard Return.

‡Rentals and Other Payments include $96,562.12, representing the difference between the amount of $745,446.08 credited account of Revenues prior to January 1, 1918, and the amount of $842,008.20 charged account of Expenses prior to January 1, 1918.

†The road having been operated in 1918 by the United States Railroad Administration, the Standard Return has been used for that year in lieu of operating and other items corresponding therewith.

RETURN ON PROPERTY.

The following table shows the amount of return to your Company, including subsidiary companies, from transportation operations only, upon its investment in road and equipment at the termination of each year of the five year period ended December 31, 1918:

	Property Investment.	Total Operating Income.	Percentage of Return.
*Year ended December 31, 1918..	$269,914,419.76	$12,871,539.79	4.77%
Year ended December 31, 1917...	263,307,068.67	14,871,459.45	5.64%
Year ended December 31, 1916...	250,247,098.33	15,359,715.04	6.14%
Year ended December 31, 1915...	244,068,206.05	12,465,058.24	5.11%
Year ended December 31, 1914...	243,144,711.90	9,314,430.78	3.83%
Yearly average for five years ended December 31, 1918..	$254,154,300.94	$12,976,440.66	5.11%

*The term "Standard Return" as used in this report means "average annual railway operating income for the three years ended June thirtieth, nineteen hundred and seventeen," as defined by the Federal Control Act, less proportion not accrued to June 30th, 1917, of one-half of war taxes for that year, and the amount of adjustment of wages under the Adamson Law, not accrued prior to June 30, 1917, and paid subsequent to that date, as tentatively certified to by the Interstate Commerce Commission. The Company's claim for additional compensation, if allowed, will increase this amount.

FINANCIAL.

Your Company undertook no new financing during the present year, but it is probable that a considerable amount of money must be provided during the coming year to meet the cost of additions and betterments to your property during Federal Control, including the cost of equipment ordered by your Company early in the year, and the cost of the equipment allocated to it by the Director General of Railroads.

The changes in funded debt in the hands of the public during the year were as follows:

	Assumed	Retired
5 per cent. Kanawha Bridge and Terminal Co. First Mortgage Bonds	$476,000.00	.....
4 per cent. Big Sandy Ry. First Mortgage Bonds	.....	$9,000.00
4 per cent Greenbrier Ry. First Mortgage Bonds	.....	20,000.00
4 per cent. Raleigh & Southwestern Ry. First Mortgage Bonds	.....	5,000.00
Equipment Trust Obligations	.....	1,114,000.00
	$476,000.00	$1,148,000.00
Net Decrease		$672,000.00

Other changes in obligations shown under funded debt on balance sheet of December 31, 1918, were as follows:

	Payments
5 per cent. Equipment Contract—Standard Steel Car Co.	$693,394.64
5 per cent. Equipment Contract—Central Locomotive and Car Works	26,074.04
6 per cent. Equipment Contract—American Locomotive Co.	80,827.09
	$800,295.77
Decrease	

Your Company acquired during the year 5,286 additional shares of the capital stock of The Chesapeake and Ohio Northern Railway Company, payment for which was made with cash derived from sale of stock of The Kanawha and Michigan Railway Company.

There were also acquired, 250 additional shares of the capital stock of the White Sulphur Springs, Inc.

During the past year your Company acquired at par an additional $500,000.00 par amount of coupon notes of the Western Pocahontas Fuel Company, a corporation owning the Dorothy and Sarita coal properties in West Virginia to which corporation, reference was made in the report for 1917.

A statement of charges to property accounts will be found on page 20, showing a net addition of $6,719,305.94; that is, $5,183,676.35 added to cost of road and $1,535,629.59 added to cost of equipment.

There were purchased by your Company Liberty Loan bonds of the Fourth Issue to the amount of $1,000,000.00 for account of which your Company borrowed the sum of $1,000,000.00 included in Bills Payable Account.

During the past ten years your Company's increase capital liabilities in hands of the public, its principal acquisitions of stocks and bonds of other companies, and its expenditures for equipment, new line construction, second track and other additions and betterments, have been as follows:

Capital Obligations Issued or Assumed:	Par Value.	
General Mortgage 4½% Bonds	$4,306,000.00	
General Funding and Improvement Mortgage 5% Bonds	11,000,000.00	
First Consolidated Mortgage 5% Bonds	2,000,000.00	
Convertible 4½% Debentures	31,390,000.00	
Three Year 4½% Collateral Trust Notes	25,000,000.00	
One Year 5% Collateral Trust Notes	3,500,000.00	
Five Year 5% Collateral Trust Notes	33,000,000.00	
Convertible 5% Secured Gold Bonds	40,180,000.00	
Coal River Railway Co. First Mortgage 4% Bonds	3,000,000.00	
Raleigh and Southwestern Railway Co. First Mort. 4% Bds.	860,000.00	
Big Sandy Railway Co. First Mortgage 4% Bonds	229,000.00	
Virginia Air Line Railway Co. First Mortgage 5% Bonds	900,000.00	
Kanawha Bridge and Terminal Co. 5% Bonds	476,000.00	
Equipment Trust Certificates Series "N"	1,700,000.00	
Equipment Trust Certificates Series "O"	3,160,000.00	
Equipment Trust Certificates Series "P"	2,500,000.00	
Equipment Trust Certificates Series "R"	3,780,000.00	
Equipment Contracts, Various	4,809,390.00	
	$171,790,390.00	
Realizing		$1814.49
Less:		
Capital Obligations Paid or Purchased:		
Six Per Cent. Collateral Gold Notes	$5,000,000.00	
Collateral Gold 6% Notes	2,500,000.00	
Peninsula Division First Mortgage 6% Bonds matured January 1, 1911	2,000,000.00	
Greenbrier & New River R. R. Co. First Mortgage 5% Bonds redeemed February 1, 1911	339,000.00	
General Funding and Improvement Mortgage 5% Bonds	7,302,000.00	
Greenbrier Railway Co First Mortgage 4% Bonds retired November 1, 1911	2,000.00	
Three Year 4½% Collateral Trust Notes	25,000,000.00	
One Year 5% Collateral Trust Notes	3,500,000.00	
Five Year 5% Secured Gold Notes	33,000,000.00	
Kincon Coal Co. First Mortgage 5% Bonds	200,000.00	
Equipment Trust Payments	13,407,000.00	
Through Sinking Funds:		
Big Sandy Railway Co. First Mortgage 4% Bonds	499,000.00	
Coal River Railway Co. First Mortgage 4% Bonds	244,000.00	
Greenbrier Railway Co. First Mortgage 4% Bonds	197,000.00	
Raleigh and Southwestern Railway Co. 1st Mortg. 4% Bds.	60,000.00	
	$93,250,000.00	
Costing		54,479.59
		$69,188,834.90
Acquisitions—Stocks of:		
The C. & O. Railway Co. of Indiana	$5,998,800.00	
Elkhorn and Beaver Valley Railway Co.	30,000.00	
The Hocking Valley Railway Co.	7,671,900.00	
Cincinnati Inter-Terminal Railroad Co.	56,000	

Levisa River Railroad Co. (of Ky.)	50,000.00	
The Levisa River Railroad Co. (of Va.)	50,000.00	
The Silver Grove Land and Building Co.	200,000.00	
White Sulphur Springs, Inc.	2,600,000.00	
First National Bank Building Corporation (Richmond, Va.)	180,000.00	
The Chesapeake and Ohio Northern Railway Co.	4,026,500.00	
Western Pocahontas Fuel Co.	1,000,300.00	
Miscellaneous	32,300.00	
	$21,895,500.00	
Costing		$23,480,441.89
Bonds and Notes of:		
The C. & O. Railway Co. of Indiana First Mortgage 5%.	7,270,000.00	
Elkhorn and Beaver Valley Railway Co. First Mortgage 5%	1,031,000.00	
Western Pocahontas Fuel Co. Coupon Notes 5%	1,000,000.00	
Miscellaneous	362,500.00	
	$9,663,500.00	
Costing		8,157,716.74
Properties of:		
Coal River Railway Co.	$2,304,359.88	
Raleigh and Southwestern Railway Co.	816,562.42	
Virginia Air Line Railway Co.	1,071,947.12	
Pond Fork Railway Co.	329,668.06	
Gauley and Meadow River Railroad Co.	116,767.98	
Kanawha Bridge and Terminal Co.	628,183.36	
Logan & Southern Railway Co.	306,105.73	
Piney River and Paint Creek Railroad Co.	270,000.00	
	$5,843,594.55	
Costing		5,843,594.55
Construction of:		
Extension of Branch Lines, costing	$2,851,107.86	
Second Track (196.11 miles) and Additions and Betterments, costing	23,004,035.25	
		25,855,143.11
(Excluding $2,680,955.25 expended on Chicago Line to Oct. 31, 1917, for which securities have been acquired.)		
Equipment:		
Additional equipment acquired (less retirals)		32,705,165.03
(Excluding—Credit—$27,319.93, included in Statement of Expenditures on Chicago Line to Oct. 31, 1917, for which securities have been acquired.)		
Costing		$96,042,061.32

GENERAL REMARKS.

During the year the following Companies were, pursuant to due authority from the stockholders, merged with The Chesapeake and Ohio Railway Company.

Pond Fork Railway Company extending from Madison, W. Va., to Mouth of West Fork, W. Va., 11.60 miles, but not yet put into operation. Gauley and Meadow River Railroad Company extending from Rich Creek Junction, W. Va., to end of line, a distance of 3.13 miles. Kanawha Bridge and Terminal Company, owning a bridge across the Kanawha River at Charleston, W. Va. Logan and Southern Railway Company extending from Monitor Junction, W. Va., to Barnabas, W. Va., a distance of 9.79 miles. Piney River and Paint Creek Railroad Company extending from Beckley, W. Va., to Prosperity, W. Va., a distance of 6.59 miles. These properties, with the exception of the Kanawha Bridge and Terminal Company, have been heretofore operated as a part of The Chesapeake and Ohio Lines.

Extensions during the year have been as follows: From Man, W. Va., to Mallory No. 2 Coal Mines, 2.7 miles; Construction of Huff Creek Branch 2.7 miles.

The following second track mileage has been completed and put into operation during the year: Second track between Bremo, Va., and Strathmore, Va., 5.0 miles; Salt Rock, W. Va., and West Hamlin, W. Va., 3.1 miles; Locks Mill, W. Va., and Peach Creek, W. Va., 3.4 miles; and additional mileage between Balcony Falls, Va., and Greenlee, Va., .2 miles; Barboursville, W. Va., and Clover Valley, W. Va., 1.4 miles; making an increase in second track out into operation during the year of 11.1 miles.

The equipment inventory as of December 31, 1918, was as follows:

Locomotives owned	665 Inc.	20
Locomotives leased	208 Dec.	20
Locomotives (title to which not yet taken)	18 Inc.	18
Total	891 Inc.	18
Passenger train cars owned	333 Dec.	1
Passenger train cars leased	62	..
Total	395 Dec.	1
Freight Train and miscellaneous cars owned	32,573 Inc.	146
Freight train cars leased	17,000 Dec.	6
Total	49,573 Inc.	140

Included in above statement are fifteen Mallet type and three Mountain type locomotives received during the year. The fifteen Mallet type locomotives were part of an order of twenty-five (fifteen Mallet and ten Switchers) placed by your Company which the Director General of Railroads has agreed to finance. Pending the conclusion of negotiations for financing, your Company has not taken title to same.

The three Mountain type locomotives were part of twenty-five (twenty Mallet and five Mountain type) allocated to the Company by the Director General of Railroads. Pending the conclusion of negotiations with the Director General, for the financing of these locomotives, your Company has not taken title to same.

The changes during the year in the accrued depreciation of equipment account were as follows:

Balance to credit of account December 31, 1917			$7,423,273.09
Amount credited during year ended December 31, 1918, by charges to:			
U. S. Government	$1,468,684.11		
Charged to account, for:			
Accrued depreciation on equipment retired during year—			
1 electric motor car, 1 ferry boat, and 369 freight train and work cars		$51,662.39	1,417,021.72
Balance to credit of account December 31, 1918			$8,840,294.81

OPERATION BY UNITED STATES RAILROAD ADMINISTRATION.

In the Annual Report for the year 1917, you were advised that the President of the United States, by Proclamation dated December 26, 1917, took possession and assumed control of the railroad systems of the country, appointing a Director General of Railroads, through whom the operation of such transportation systems was to be conducted. Under this Proclamation and under the Act of Congress of March 21, 1918 (generally known as the Federal Control Act), the railroad of your Company has, since December 28, 1917, been operated by the United States Government through William G. McAdoo, Director General of Railroads and Walker D. Hines, his successor. The Operating and Traffic Statistics contained in this report relate to the operation of your property by the Director General of Railroads.

	1918	1917		
Operating Revenues were	$73,720,796.68	$54,643,793.52	Inc.	$19,077,003.16
*Net Operating Revenues were	19,503,449.82	16,537,987.63	Inc.	2,965,462.19
Operating Ratio	73.5%	69.7%	Inc.	3.8%
Tons of Revenue Freight carried one mile	10,729,366,446	10,262,440,801	Inc.	466,925,645
Revenue train loads, tons	1,099	1,043	Inc.	56
Revenue tons per loaded car	38.2	35.6	Inc.	2.6

*After deducting expense of maintaining Corporate Organization amounting to $135,809.58.

Notwithstanding the high cost of labor, materials and supplies, and other difficulties incident to war-time conditions, the operations of your property for the year were highly satisfactory, both gross and net earnings being the largest in its history. Reference to the Federal Income Account on page 16 will show that the Government made a profit of nearly $4,000,000 above the standard return for the year. This amount would have been very substantially increased had hire of equipment been computed throughout the year at the rates prevailing prior to Federal Control. In view of the conditions prevailing, the operating ratio of 73.5 per cent., an increase of only 3.8 per cent. over that of the preceding year, was very gratifying.

The revenue coal and coke tonnage was 27,826,207, an increase of 6.1 per cent; other freight tonnage was 12,410,528, an increase of 6.5 per cent. Total revenue tonnage was 40,236,735 tons, an increase of 6.2 per cent. Freight revenue was $55,720,372.55, an increase of 29.6 per cent. Freight train mileage was 9,763,075 miles, a decrease of .8 per cent. Revenue ton miles were 10,729,366,446, an increase of 4.5 per cent. Ton mile revenue was 5.19 mills, an increase of 23.9 per cent. Revenue per freight train mile was $5.707, an increase of 30.6 per cent. Revenue tonnage per train mile was 1,099 tons, an increase of 5.4 per cent; including Company's freight, the tonnage per train mile was 1,156 tons, an increase of 4.0 per cent. Tonnage per locomotive, including Company's freight, was 977 tons, a decrease of .2 per cent. Revenue tonnage per loaded car was 38.2 tons, an increase of 7.3 per cent. Tons of revenue freight carried one mile, per mile of road were 4,326,881, an increase of 1.7 per cent.

There were 8,524,755 passengers carried, an increase of 12.8 per cent. The number carried one mile was 486,093,218, an increase of 34.5 per cent. Passenger Revenue was $13,629,892.18, an increase of 72.5 per cent. Revenue per passenger per mile was 2.804 cents, an increase of 28.3 per cent. Number of passengers carried one mile per mile of road was 196.029, an increase of 30.9 per cent. Passenger train mileage was 4,890,651, a decrease of 9.1 per cent. Passenger revenue per train mile was $2.787, an increase of 89.9 per cent. Including mail and express it was $3.067, an increase of 79.7 per cent. Passenger service train revenue per train mile was $3.110, an increase of 78.1 per cent.

There were 10,645.0 tons of new rail (1,107 tons 130 lbs., 1.8 tons 125 lb., 6,130.1 tons 100 lb., 3,406.1 tons 90 lb.) equal to 68 miles of track used in renewal of existing track.

There were 1,148,061 cross ties used in maintaining existing tracks, a decrease of 519,635.

There were 686,223 yards of ballast (297,725 yards stone) used in maintaining existing tracks, an increase of 31,917 yards.

The average amount expended for repairs per locomotive was $6,082.14; per passenger train car $1,634.03 per freight train car $150.14.

Effective February 1st, 1919, the Chesapeake and Ohio Railroad of Indiana was transferred from the Eastern Region to the Pocahontas Region, so that on and after that date the "Chesapeake and Ohio Lines" were under one regional jurisdiction.

THE FEDERAL CONTROL ACT.

The Federal Control Act authorized the President of the United States to enter into agreements with the Companies owning railroads taken over for their maintenance and upkeep during the period of Federal Control, and for the determination of the rights and obligations of the companies and the Government arising out of Federal Control, including the compensation to be received or guaranteed. The Act authorized the payment, under such agreements, of an annual compensation equivalent, generally speaking, to the average net railway operating income for the three-year period ended June 30, 1917, as ascertained and certified by the Interstate Commerce Commission. The President was also given power, in any case where the average of the three-year period appeared plainly inequitable as a measure of just compensation, to enter into an agreement for such compensation as in his judgment would be just in the particular case.

COMPENSATION CONTRACT.

The Standard Return of your Company and of its railroad subsidiaries, for the three-year period ended June 30, 1917, as tentatively certified to by the Interstate Commerce Commission, was $13,226,983.23. The directors of your Company, being of opinion that the sum named is plainly inequitable as a fair measure of just compensation, have authorized application to be made to the Director General of Railroads for a contract providing for compensation in addition to the Standard Return for the test period as follows.

1. Interest at 6% per annum on the cost of road extensions and equipment, less retirements, constructed or purchased during the six months ended December 31, 1917, the expenditures for which were not reflected in the Standard Return because not in operation during any portion of the test period.

(a) Road Extensions	$19,692.89
(b) Equipment	225,639.68

2. Interest at 6% per annum on the value of materials and supplies on hand, December 31, 1917, in excess of the quantities on hand during the test period. $8,270.28

3. Interest at 6% per annum on the cost of road extension and equipment, less retirements, constructed or purchased during the year ended June 30, 1917, the expenditures for which were not fully reflected in the Standard Return because of not being in operation during a substantial portion of the test period:

(a) Road Extensions 23,200.27
(b) Equipment 383,556.05

4. Interest at 6% per annum upon the cost of construction of, and of additions and betterments to, the line of The Chesapeake and Ohio Northern Railway Company, to January 1, 1918, the expenditures for which were not reflected in the Standard Return because the line was not in operation during any portion of the test period..... 310,049.40

Total Additional Compensation Claimed..... $1,047,408.57

Such contract will be submitted to the stockholders of the Company at a Special Meeting to be called for the purpose, when the amount of compensation which will be allowed your Company by the Director General has been finally determined.

Corporate Organization.

During the early part of the period of Federal Control, the Director General permitted the railways to be operated under his supervision by officials of the corporation for account of the Federal Government. Later separate books of accounts were opened for Federal transactions and separate officials were appointed. The Staff of the Director General for the operation of the railroad of your Company was selected from former officials of your Company and, as the officers so selected were, by order of the Director General, required to sever all connection with the corporation, the creation of a distinct corporate organization to carry on the affairs and protect the interests of your Company during Federal Control became necessary. The expense of maintaining this organization has been, by order of the Director General, excluded as an operating expense chargeable to Federal Railroad operating income, which, in effect, amounted to a deduction of the cost of maintaining the corporate organization from the Standard Return provided by the Federal Control Act.

Allocated Equipment.

During the year the United States Railroad Administration notified your Company that there had been allotted to it—

25 Freight and Passenger Locomotives,
1,000 Box Cars,
2,000 Fifty-five ton Steel Coal Cars,

at an estimated cost of $10,559,500, which your Company was expected to provide. The Directors of your Company were of opinion that the equipment so allocated was not necessary to the efficient operation of the railroad, that much of it was unsuited for your Company's purposes, and that the purchase of such equipment at the current prices, which were abnormally high, was inadvisable. Protests were accordingly made against the Company being required to accept such equipment. Notwithstanding such protests the Administration adhered to its position and notified your Company that unless it agreed to accept the allocated equipment, the entire cost of such equipment would be charged against the compensation due it under the Federal Control Act. Although your Directors believed the position of the Administration to be unreasonable, in order to protect the interests of the Company and to prevent the charging of so large an amount of capital expenditures against its income, they determined to accept the equipment so allocated, with the proviso that the Director General should assist your Company in financing its cost, which it is believed he is prepared to do.

The Future.

The President of the United States has announced that Federal Control will terminate on December 31, 1919. The practical certainty that operating costs cannot be substantially reduced below their present high level and the probability that determined efforts will be made by shippers to prevent further increase of rates and even to effect reductions, will render it very difficult, after Federal Control has ended, to maintain between revenues and expenses the margin necessary to ensure an adequate return to your Company and provide the basis of credit necessary for the improvement and development of its property. This prospect, which faces every railroad in the country, makes it of the highest importance that some plan be devised and enacted into law, which while protecting the proper interests of the public, shall yet also ensure the financial stability of our transportation system.

Your Directors have given and will continue to give their earnest consideration to the various plans that have been proposed for dealing with this problem. Its solution will require the exercise by National and State Legislatures and by public officials generally, of broad statesmanship and wise forethought. Railroad stockholders and creditors can render invaluable assistance in the formulation and discussion of any plan that may be adopted, and will, it is hoped, cooperate actively to the end that a solution may be reached which, while protecting the public, will make railroad securities attractive to investors and thus ensure the continuance of the wise principles of private ownership and individual initiative in the management and control of our transportation system.

Major James H. Dooley, a Director of your Company for many years, resigned on February 21, 1919. His resignation was accepted with regret, and Mr. H. L. Ferguson was elected to succeed him.

Your Directors regret to report the death on December 9th, 1918, of Mr. James Paul Stevens, General Manager of your property, both prior to and during Federal Control.

Effective January 1, 1919, Mr. J. B. Parrish was appointed General Manager to succeed Mr. Stevens.

Announcement is made with regret of the death on June 6th, 1919, of Mr. Carl Remington, Assistant Secretary and formerly Secretary of your Company.

On February 1, 1919, Mr. James Steuart MacKie was, at his own request, relieved of his duties as Treasurer of the Company and Mr. Arthur Trevvett, the Secretary of your Company, succeeded him in that office.

The acknowledgments of the Board are renewed to the officers and employees for all faithful and efficient service.

By order of the Board of Directors.

Frank Trumbull,
Chairman and President.

GENERAL INCOME ACCOUNT—(CORPORATE).¶

For Year Ended December 31, 1918, and Comparison with Year Ended December 31, 1917.

	1918	1917	Increase	Decrease	Per Cent
*Standard return as tentatively certified to by Interstate Commerce Commission and corresponding income in 1917	$13,226,983.23	$15,495,798.58	.....	$2,268,815.35	14.6
†General Expenses (Corporate)	135,809.58	.....	$135,809.58	.....	....
Federal Income Tax Accruals	358,184.43	795,255.57	.....	437,071.14	55.0
	$12,732,989.22	$14,700,543.01	.....	$1,967,553.79	13.4
Income from Other Sources:					
Interest from Investments and Accounts	$936,890.57	$860,077.81	$76,812.76	.....	8.9
Miscellaneous	181,523.89	309,982.66	.....	128,458.77	41.4
	$1,118,414.46	$1,170,060.47	.....	$51,646.01	4.4
Gross Income	$13,851,403.68	$15,870,603.48	.....	$2,019,199.80	12.7
Deductions from Gross Income:					
Interest on Debt	$8,730,506.49	$8,589,794.60	$140,711.89	.....	1.6
Rental Leased Roads and Misc. Rents	98,266.21	120,452.60	.....	22,192.39	18.4
Loss on C. & O. Grain Elevator	23,859.04	32,078.14	.....	8,219.10	25.6
‡Miscellaneous	161,271.39	61,899.69	99,371.70	.....	160.5
Total Deductions	$9,013,897.13	$8,804,225.03	$209,672.10	.....	2.4
Net Income	$4,837,506.55	$7,066,378.45	.....	$2,228,871.90	31.5
Amount to Credit of Profit and Loss December 31, 1917				$6,216,213.08	
Amount of Net Income for year ended December 31, 1918, transferred to Profit and Loss			$4,837,506.55		
Sundry Adjustments			30,270.89	4,867,777.44	
				$11,083,990.52	
Deduct:					
Dividend 36 Paid June 30, 1918			$1,255,632.00		
Dividend 37 Paid December 31, 1918			1,255,632.00	2,511,264.00	
				$8,572,726.52	
Appropriation of Surplus to Sinking and Other Reserve Funds				7,000.00	
Balance to Credit of Profit and Loss December 31, 1918				$8,565,726.52	

¶Does not include interest due to or from the U. S. Government.

*The term "Standard Return" as used in this report means "average annual railway operating income for the three years ended June thirtieth, nineteen hundred and seventeen," as defined by the Federal Control Act, less proportion, not accrued to June 30th, 1917, of one-half of war taxes for the year, and the amount of Adjustment of Wages under the Adamson Law, not accrued prior to June 30, 1917, and paid subsequent to that date, as tentatively certified to by the Interstate Commerce Commission, the Company's claim for additional compensation, if allowed, will increase this amount.

†By ruling of the Director General of Railroads these expenses were required to be paid by the Company, although the corresponding expenses of the three years ended June 30th, 1917, were deducted as operating expenses in computing the Standard Return.

‡Includes $96,562.12 representing the difference between the amount of $745,446.08 credited account of Revenues prior to January 1, 1918, and the amount of $842,008.20 charged account of Expenses prior to January 1, 1918.

GENERAL BALANCE SHEET

ASSETS.

(Excluding Stocks and Bonds owned of The C. & O. Ry. Co. of Indiana and of The C. & O. Equipment Corporation.)

Property Investment.			
Cost of Road		$188,087,770.80	
Cost of Equipment		69,975,814.84	
			$258,063,585.64
Securities of Proprietary, Affiliated and Controlled Companies—Pledged.			
Stocks	$16,240,499.44		
Bonds	5,110,407.01		
	$21,350,906.45		

OTHER INVESTMENTS—PLEDGED.			
Bonds	1,385,000.00		
SECURITIES—ISSUED OR ASSUMED—PLEDGED.			
Bonds	17,940,001.00		
(Includes First Lien and Improvement Mortgage 5% Bonds $47,940,000.00. See Contra.)		$70,675,907.45	
MISCELLANEOUS INVESTMENTS.			
Physical Property		378,900.23	
SPECIAL FUNDS, AND FUNDED DEBT ISSUED AND RESERVED.			
First Lien and Improvement Mortgage 5% Bonds—Drawn for Additions and Betterments	$15,000.00		
R. & S. W. Ry. Co., First Mortgage Bonds—Reserved for Construction	40,000.00		
Potts Creek Branch—Cash	48,529.98	103,529.98	71,158,337.66
WORKING ASSETS.			$329,221,923.30
Cash in Treasury	$118,683.75		
Cash deposits to pay Interest and Dividends	1,550,617.72		
Cash deposits to pay Matured Bonds and Scrip	11,214.17		
Cash deposit to pay C. & O. Grain Elevator Insurance Claims	1,044.70		
Loans and Bills Receivable	310,349.48		
Miscellaneous Accounts Receivable	345,465.14		
United States Government—Standard Return unpaid*	10,926,983.23	$13,264,358.19	
SECURITIES IN TREASURY—UNPLEDGED.			
Stocks	$4,073,823.45		
Bonds	365,995.50	4,439,818.95	
DEFERRED ASSETS.			
Accounts with United States Government	$10,714,322.96		
United States Government—Materials and Supplies	6,131,266.54		
Unmatured Interest, Dividends and Rents	445,503.79		
Advances to Proprietary, Affiliated and Controlled Companies	555,900.73		
Advances, Working Funds (Fast Freight Lines, etc.)	44,853.45		
Special Deposits with Trustees, Various Mortgage Funds	99,501.76		
Special Deposit, Cash and Securities Account Liberty Loan	195,673.98		
Cash and Securities in Sinking Funds	80,448.19		
Cash and Securities in Insurance Reserve Fund	75,260.59		
Sundry Accounts	775,273.73	19,118,005.72	36,822,182.86
Total			$366,044,106.16

*Does not include claims for additional compensation referred to in "General Remarks."

LIABILITIES.

(Excluding Stocks and Bonds owned of The C. & O. Ry. Co. of Indiana and of The C. & O. Equipment Corporation.)

CAPITAL STOCK.				
Common		$62,792,600.00		
First Preferred		3,000.00		
Second Preferred		200.00		
			$62,795,800.00	
Common—The Chesapeake and Ohio Railway Co. of Indiana			1,200.00	$62,797,000.00
FUNDED DEBT.				
First Mortgage Terminal, etc., 6% Bonds	1922	$142,000.00		
General Funding and Improvement, 5% Bonds	1929	3,698,000.00		
Convertible, 4½% Bonds	1930	31,390,000.00		
First Mortgage, R. & S. W. Railway, 4% Bonds	1936	840,000.00		
First Consolidated Mortgage, 5% Bonds	1939	29,858,000.00		
First Mortgage, Craig Valley Branch, 5% Bonds	1940	650,000.00		
First Mortgage, Greenbrier Railway, 4% Bonds	1940	1,722,000.00		
First Mortgage, Warm Springs Branch, 5% Bonds	1941	400,000.00		
First Mortgage, Big Sandy Railway, 4% Bonds	1944	4,501,000.00		
First Mortgage, Paint Creek Branch, 4% Bonds	1945	539,000.00		
First Mortgage, Coal River Railway, 4% Bonds	1945	2,756,000.00		
Convertible 5% Secured Gold Bonds	1946	40,180,000.00		
First Mortgage, Potts Creek Branch, 4% Bonds	1946	600,000.00		
First Mortgage, Kanawha Bridge & Terminal Co, 5% Bonds	1948	476,000.00		
First Mortgage, Va. Air Line Railway, 5% Bonds	1952	900,000.00		
First Mortgage, R. & A. Division, 4% Bonds	1989	6,000,000.00		
Second Mortgage, R. & A. Division, 4% Bonds	1989	1,000,000.00		
General Mortgage, 4½% Bonds	1992	48,129,000.00		
			$173,781,000.00	
Equipment Trust Obligations and Contracts			8,710,031.39	182,491,031.39
				$245,288,031.39
First Lien and Improvement Mortgage, 5% Bonds not in hands of public (see Contra)	1930			47,955,000.00
WORKING LIABILITIES.				
Loans and Bills Payable		$7,969,120.00		
Traffic Balances		674,718.52		
Audited Vouchers and Pay Rolls		235,978.17		
Unpaid Wages		17,948.84		
Miscellaneous Accounts Payable		160,614.15		
Matured Interest and Dividends Unpaid		1,964,541.00		
Matured Mortgage and Secured Debt Unpaid		11,214.17	$11,034,134.85	
DEFERRED LIABILITIES.				
Accounts with U. S. Government		$16,535,651.15		
Unmatured Interest and Rents		2,514,589.77		
Employes Payments on Liberty Loan Bonds		76,118.30		
Taxes Accrued		746,970.37		
Accrued Depreciation—Equipment		8,846,294.81		
Sundry Accounts		499,558.88	29,215,183.28	40,247,318.13
APPROPRIATED SURPLUS.				
Additions to Property through Income and Surplus		$23,859,636.38		
Reserve Invested in Sinking Funds		53,133.15		
Reserve Invested in Insurance Fund		75,260.59	$23,938,030.12	
PROFIT AND LOSS—BALANCE			8,565,726.52	32,553,756.64
Total				$366,044,106.16

This Company is also liable as a guarantor of the following securities:

Western Pocahontas Fuel Co. Coupon 5% Notes. Due 1918 to 1921 ($500,000 each year; this Company owns notes for $1,000,000 maturing 1918 and 1921)	$2,000,000.00
The Chesapeake and Ohio Grain Elevator Co., First Mortgage 4% Bonds due 1938	820,000.00
Richmond-Washington Co. Collateral Trust Mortgage (C. & O. prop'n. ⅙) 4% Bonds due 1943	10,000,000.00
The Chesapeake and Ohio Northern Railway Co., First Mortgage 5% Gold Bonds due 1945	1,000,000.00
Louisville and Jeffersonville Bridge Co. Mortgage (C. & O. prop'n. ⅓) 4% Bonds due 1945	4,500,000.00
Western Pocahontas Corporation, First Mortgage 4½% Bonds due 1945	750,000.00
Western Pocahontas Corporation, Extension Mortgage No. 1, 4½% Bonds due 1945	97,000.00
Western Pocahontas Corporation, Extension Mortgage No. 2, 4½% Bonds due 1946	51,000.00
Norfolk Terminal and Transportation Co., First Mortgage 5% Bonds due 1948	500,000.00

Railway Construction

CANADIAN NATIONAL RAILWAYS.—The Joseph Gosselin Company, Levis, Quebec, has been awarded a contract to build a car repair shop for the Canadian National Railways at Edmundston, N. B. The building will be 19 ft. 9 in. high, 48 ft. wide and 200 ft. long. It will have concrete pedestals, a frame wall and a mill roof.

A contract has also been awarded Chappell Brothers Company, Sydney, N. S., to build a stores building at Sydney, N. S. The building will be 17 ft. 5 in. high, 31 ft. wide and 80 ft. 10 in. long.

ROBY NORTHERN.—The right of way is being obtained for the proposed extension of this road from Roby, Texas, south to Sweetwater, 28 miles.

SOUTHERN RAILROAD LINES.—The Cincinnati, New Orleans & Texas Pacific will soon begin the reconstruction of its bridge over the Tennessee river near Chattanooga, Tenn. The work will consist of 10 single track deck plate girder spans approximately 105 ft. in length; two double track deck plate girder spans 105 ft. in length; one double track deck plate girder span 142 ft. in length; one double track span 88 ft. in length; lifting machinery and towers to convert the present 310 ft. double track through truss channel span into a lift span to provide for an opening 50 ft. above high water when the span is lifted; and six additional double track concrete piers containing approximately 5,400 cu. yd. of concrete. The contract for the sub-structure has been let to M. C. Monday, Knoxville, Tenn., and it is expected that the masonry will be completed by January 1, 1920. Bids for the steel superstructure and machinery have been received by the purchasing agent, Washington, D. C.

THE CHARLESTON, HICKMAN & SOUTHERN.—The promoters of this road have obtained right-of-way grants for practically the entire distance from Charleston, Mo., to Hickman, Ky., and have secured pledges of bonus and stock subscriptions from residents of Mississippi County, Mo., to the amount of $50,000, with guarantees of an additional $50,000 from the Business Men's League of Charleston, when a contract for the construction of the road has been signed and a surety bond executed insuring the construction. They have also secured from residents of Hickman pledges to the amount of $15,000 with a promise of $35,000 more to be paid when the road is completed and a river transfer service for freight is installed between that city and the Missouri terminus of the road opposite Hickman. An eastern construction company has agreed to finance the road, build and equip it complete, taking in payments the bonds of the company issued as the work progresses, plus a final payment in cash when the first train is operated over the road. The new line will serve a part of Mississippi county which has been isolated from railroad connections and will be the means of developing 30,000 acres of hardwood virgin timber in the southern part of that county. The new road will connect with the Illinois Central and the Nashville, Chattanooga & St. Louis at Hickman, the Cotton Belt at Anniston, Mo., and with the Missouri Pacific at Charleston. It is proposed on the completion of this portion of the road to proceed at once to extend the line north from Charleston to Illmo, Mo., where it will connect with railroads operating over the Thebes bridge.

THE OREGON, CALIFORNIA & EASTERN.—This road is constructing a single track line between Dairy, Ore., and Sprague River, a distance of 20 miles, including three miles of spurs. This line will cost approximately $450,000 of which $250,000 will be for grading. The bridges will be of timber. All work is being done by company forces.

THE SOUTHERN PACIFIC.—The Shattuck-Edinger Company, San Francisco, Cal., has been awarded a contract for the grading of a new branch of this road, extending through Reclamation District No. 1500 (the Sutter Basin project), Sacramento, Cal., a distance of approximately 20 miles. Work is to be started at once.

Railway Officers

Railroad Administration

Federal and General Managers

Owing to the appointment of **E. W. Mason** as general manager of the Western Pacific, the Tidewater Southern and the Deep Creek (*Railway Age*, September 5), effective September 1, the jurisdiction of all Southern Pacific officers over these lines, as in effect under the administration of Federal Manager W. R. Scott, was terminated on August 31.

E. W. Mason, formerly general superintendent of the Western Pacific and recently a lieutenant-colonel in the American Expeditionary Forces acting as general superintendent of the 14th Grand Division with headquarters at Nantes, France, has been appointed general manager of the Western Pacific, the Deep Creek and the Tide Water & Southern with headquarters at San Francisco, Cal. These roads have been under the jurisdiction of Federal Manager W. R. Scott.

Operating

E. D. Leavitt has been appointed assistant superintendent of the Tucson division of the Southern Pacific, with headquarters at Tucson, Ariz.

W. P. Christie, has been appointed superintendent of safety of the Toledo, St. Louis & Western with headquarters at Frankfort, Ind., succeeding **F. E. Myers,** resigned.

The jurisdiction of **J. S. Spelman,** general superintendent of the Western Pacific at San Francisco, Cal., was withdrawn from the Salt Lake division of the Southern Pacific on August 31, incident to the separation of the Western Pacific-Southern Pacific operating organizations.

J. C. McCullough, division superintendent on the Southwest System of the Pennsylvania Lines, with headquarters at Pittsburgh, Pa., has been promoted to general superintendent of the Central system with headquarters at Toledo, Ohio, succeeding **F. B. Robertson,** who has resigned to become associated with the B. F. Goodrich Rubber Company, Akron, O.

R. E. Sizer has been appointed trainmaster of the Hastings and Dakota division of the Chicago, Milwaukee & St. Paul, with headquarters at Aberdeen, S. Dak., and will have jurisdiction Ortonville and west, including Fargo line. **H. L. Biggs** will have jurisdiction east of Ortonville. **H. A. Hargraves** has been appointed trainmaster of the Prairie du Chien and Mineral Point divisions with headquarters at Madison, Wis., succeeding Mr. Sizer. **R. L. Blakesley** has been appointed trainmaster of the Dubuque division with headquarters at Dubuque, Iowa, succeeding Mr. Hargraves. **James E. Ryan** has been appointed trainmaster of the Chicago Terminals division with headquarters at Chicago, succeeding Mr. Blakesley.

Financial, Legal and Accounting

Philip J. Kelly has been appointed auditor freight traffic of the Philadelphia & Reading, with office at the Reading Terminal, Philadelphia, vice **R. R. Hulme,** retired. **Alfred A. Johnson** has been appointed auditor traffic receipts, succeeding **Mr. Kelly.**

Traffic

R. H. Eberly has been appointed assistant general freight agent of the Seaboard Air Line, with office at Norfolk, Va., vice **H. Govan Waring,** deceased.

Engineering and Rolling Stock

J. E. Fanning, resident engineer of the Illinois Central with headquarters at Golconda, Ill., has resigned to become chief engineer of the Gulf & Ship Island and the Mississippi Central with headquarters at Hattiesburg, Miss.

EDITORIAL

Railway Age

EDITORIAL

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Get at the Real Facts

One aspect of the disposition of the railroads which is probably overlooked by many is that the physical act of returning the roads to private control is after all but a detail. The larger problem concerns the establishment of a sound policy to foster the extension of railway facilities and service in proportion to the demands made upon them. There is no question but that the railroads would be in exceedingly sore straits today even if the government had not taken over the management as a part of its war activities. This is evidenced by the contemporaneous predicament of the other public utilities, notably the street railways and interurban transportation systems which remained under private control throughout the war. The policy of the Railroad Administration in acceding to the demands of labor unquestionably served to aggravate the present unsound condition of the railroads; a similar policy of the government toward the demands of the employees of public utilities not under government control has operated to produce equivalent conditions in these properties. The 18 months of government operation have demonstrated the utter impracticability of government ownership and operation, but the fact that the roads are temporarily in the hands of the government is but a circumstance of the reconstruction period following the war. The real problem concerns the elimination of those influences in public regulation which had been steadily sapping the life of our national transportation system for a decade or more, the effects of which were brought to a sudden and violent climax by the advent of the war.

A Development in Labor Organizations

Nearly 2,000 delegates are now in attendance at a convention of the United Brotherhood of Maintenance of Way Employees and Railway Shop Laborers which convened at Detroit on September 9, and which will remain in session most of this month. This organization claims a membership of 600,000 men in railway service. Approximately half of this number are foremen and laborers in the track, bridge and building and other maintenance of way branches. Thus for the first time in the history of American railroads, representatives of a large proportion of the maintenance of way employees meet in one labor organization. Numerous attempts have been made in the past to organize these employees, but these efforts have met with little success for a number of reasons. Under federal control, however, efforts in this direction have received such open encouragement from the Railroad Administration that the organization of the employees in this and other departments has proceeded with unparalleled rapidity. Railway officers can well afford to observe the outcome of this youngest but largest of railway organizations. The loyalty of maintenance men has been proverbial since the earliest days of railroading. Not only have these men labored long in times of storms and emergencies to maintain lines safe for operation or to restore them to service after interruptions, but they have remained loyal to their employers in critical times when others have left their work. If past history is a criterion this loyalty will soon disappear under the influence of the organization, but it is possible that the maintenance of way employees will see the wisdom of using organization to promote their own interests without impairing those of the railroads.

Delays in Yard Limits

"Keep trains moving" is the slogan of the operating department, for when trains are kept moving smoothly, the entire transportation machine functions properly. Many delays occur to tonnage trains within yard limits or on main tracks at the entrance to yards. These are often due to congestion existing at such points because of the methods of operation which may be employed. Entrances or exits to many yards are controlled by manual block which system often requires several offices with operators working three tricks at each office to handle the traffic. Even with this expense numerous delays occur. At many such locations conditions may be helped considerably by the installation of short stretches of automatic signals. One assistant superintendent has said, "that on 22 miles of track from the south end of ..... yard to another point, with the present track layout, it would be necessary to install offices with continuous service at three places in order to establish a block and even with these facilities and this additional expense a delay of approximately 25 min. would occur to a train, while with the installation of automatic signals it was possible to eliminate the expense of operators at two points and to dispense with two tricks at the third place. This saving was accomplished in addition to the better movement that the automatic signals gave over the manual block." In view of the large number of yards throughout the country, it would appear evident that a proper study of the existing conditions at such places might show the possibility of securing increased efficiency in operation and a decided saving in operating costs by the substitution of automatic for manual signals for blocking purposes. A further advantage is that these installations may be tied in easily to future automatic signal installations which may be contemplated.

Prohibition and the Railroads

The Association Opposed to National Prohibition, headquarters not given, is apparently trying to secure for its cause a reflection of the sympathy which the American public has come of late to feel for the financial and other difficulties of the railroads. In a statement issued recently it declares that the eighteenth amendment will deprive the transportation lines of the revenue from hauling yearly 8,000,000 or so tons of whiskey, beer and wines, or 20,000,000 tons, including the materials for their manufacture. The statement says that the railroads, among their other troubles, will have to find some means of making up for the loss of the revenue from these shipments, which were three times larger than the tonnage of poultry, fish and game, or more than double the tonnage of dressed meats, and which provided double the transportation revenue derived from shipments of household goods and farm implements. One of every 200 cars,

the statement says, has been used for the shipment of such goods. Even admitting that revenue is all important, the reader will fail to see the diplomacy and tact of tying in the abolition of the liquor traffic with the railroad problem. The railwaymen of this country are law-abiding and know that even if the prohibition amendment will decrease their revenues, it was properly ratified and is now the law of the land. The railways, by the enforcement of Rule G, were among the first to discourage the use of liquor among their employees. Probably the Association Opposed to National Prohibition does not realize that and the incongruity of bringing the railroads in its argument as it has in this case. We do not believe, therefore, that the efforts of the association's publicity man, as evidenced in the statement in question, will go very far towards influencing favor on the part of the railway men of the country or the great number of others now interested in the railway problem, at whom, however, this publicity is apparently directed.

Financial Results Continue to Improve

THE RAILROAD ADMINISTRATION announces that when complete statistics are available they will show that the railways under government control earned in July net operating income amounting to about $77,000,000. The net operating income earned in July in the three test years averaged $75,341,000. It follows that in July the railways for the first time in about ten months earned the government's entire guaranty to the companies. For the first seven months of the year the average net operating income in the three test years was $475,363,000, while the net operating income in the first seven months in 1919 was approximately $234,500,000. Therefore, the net operating income for the first seven months in 1919 was about $241,000,000 less than in the corresponding months of the test period. In other words, in the first seven months of the year the railways earned about 49 per cent of the amount upon which the government guarantees are based.

As pointed out in an editorial in the *Railway Age* of August 22, the proportion of the guarantees being earned by the railways has rapidly increased since March. In May it reached 51 per cent and in June 64 per cent, while in July it reached 100 per cent. Until detailed figures for July are available it will be impossible to determine whether the seemingly excellent showing made in that month was due partly to the marked increase in the efficiency of operation or partly to drastic reductions in maintenance expenditures. One thing is certain, however, and this is that the railways have been operating with increasing efficiency and economy within recent months and as a result the financial showing has become much better than it seemed possible a few months ago it could be made with existing wages and rates. The improvement in results is partly due to better business, although in July the amount of freight handled was 11.3 per cent less than the amount handled in 1918.

The course of developments during the remaining months of the year will be followed with keen interest. Ordinarily the total business and total earnings in the second half of the year are much larger than they are in the first half, and in view of the results shown in June and July it is possible to be optimistic regarding the financial showing of the rest of the year. Unfortunately, however, operating expenses in August undoubtedly will show the effects of the sporadic but extensive strikes which occurred in that month. Indeed, the effects of those disturbances will be shown by operating expenses during the rest of the year, and it is not at all improbable that before the end of the year there will be other labor disturbances. The deficit for the year promises, however, to be smaller than it threatened to be two months ago.

Condition of Freight Cars

THE ACTION of the Railroad Administration in increasing the day of the car repair forces to nine hours is wise; indeed, it is absolutely necessary. Reports showing the bad order cars do not reflect conditions accurately; nevertheless, they show that the situation is far from favorable. On August 2, 8.5 per cent of the cars were reported in bad order, of which 135,000 were for heavy repairs and 73,000 for light repairs. On August 9 the percentage of bad order cars had increased to 9.3 per cent, 144,000 requiring heavy repairs and 83,000 light repairs, and these figures, of course, do not show the full effect of the scattering strikes which took place early in August. A visit to any car repair yard will show that conditions are more serious than these figures indicate. Before the freight congestion became so severe in the early stages of the World War, the railroads generally had programs for retiring old and inadequate freight car equipment. For at least three years it has been necessary to discontinue the retirement of these old cars; the fact that many of them have been off their home lines almost continuously during this period and have received only sufficient temporary repairs to keep them in a safe condition has further complicated the situation.

During the greater part of the last three years the demand for freight cars has been so acute that only such repairs have been made as have been absolutely necessary to keep the cars in operation. Roads that have always taken a real pride in keeping their cars in first-class condition have hardly had an opportunity of seeing them and there is no question but what the cars have considerably deteriorated because of the lack of this same attention on the part of the foreign lines in whose hands they have been the greater part of the time. This is apparent on all classes of cars. Steel hopper and gondola cars will be found with the slope, floor and side sheets rusted through; in some cases, old sheets of car roofing have been bolted over the holes; in others sticks of wood, old overalls and rags have been used to fill up the holes. Under normal conditions, these cars would have received thorough and heavy repairs long ago. The condition of the older wooden cars is in many cases even worse.

Efficient transportation cannot be conducted with equipment of this sort and to a great extent the future prosperity of this country depends upon the furnishing of efficient transportation. The situation is so serious and the problem so big that immediate steps should be taken to concentrate attention upon it and to greatly improve the condition of the equipment.

The Intangible Savings

THE OPERATING OFFICER is expected to keep trains moving with the organization and facilities given him for that purpose and in many cases some one in his department passes upon all budgets submitted for new work. In these budgets there are frequently listed new stretches of automatic signals for the relief of congested districts which in the final analysis may be "blue penciled" because of the feeling that as trains have been operated satisfactorily in the past, it is not necessary to go to the expense of installing automatic signals—at least, for the present. However, under present conditions with the large increases in expenses of all kinds to be met it is imperative that every means possible be used to increase efficiency of operation in order to decrease expenses. It may be the feeling on the part of officers passing upon budgets that automatic signals represent an increased expense, no doubt largely due to the fact that such installations may not make a large showing in direct savings while the intangible savings are ove looked.

The time has now come when means for producing intangible savings should be taken into consideration the same as are those which make direct savings and automatic signals can perhaps produce as large intangible savings as any other one method employed for this purpose.

As an example two trains on a single track line recently received orders to meet at a certain station which was a register point and a water point. The engine on the eastbound freight ran short of water and cut loose from the train about six or eight miles out, running to the station for water. While there, the train was registered in and the engine started back for the train. In the meantime the westbound train pulled into the station and, as the record showed that the other train had registered in, the westbound train proceeded. The automatic signals stopped them a block apart and prevented a collision.

At another time a stretch of automatic signals had been placed in service in the late fall, prior to a severe winter. One night during the coldest weather one of the fast passenger trains was stopped by a signal and on flagging ahead it was found that about a foot of the rail had been broken out.

Numerous other instances could be mentioned but in the two cases above, an intangible saving was made which it would be hard to estimate. The cases mentioned are typical of others throughout the country. In addition to the savings made by the prevention of accidents it may be well to mention the better operating conditions produced, the saving in overtime and the releasing of equipment sooner than would be accomplished otherwise.

The Cummins Bill's Proposed Limitation of Railway Profits

The Senate probably will be a somewhat more important factor than the House of Representatives in determining the railroad legislation which will be passed. The Senate's Committee on Interstate Commerce will frame the Senate bill. A sub-committee of this committee has drafted what is known as the Cummins bill.

The new railway legislation should deal with many important phases of regulation. There is, however, one phase which is much more important than any other. This is the question of adopting means of making rates and earnings such that they will promote efficiency in operation and enable the railroad companies to raise sufficient capital for the development of their facilities. If the new legislation deals wisely with the question of railroad revenues, it probably will be successful, even though in other respects it may not be well designed. If it does not deal wisely with the question of railroad earnings, it will be a failure, no matter how skillfully it may deal with other phases of the problem.

Therefore, the provisions of the Cummins bill relating to the way in which railroad earnings are to be dealt with, are its most interesting and important features. Most of its provisions indicate that those who drafted it have a statesmanlike grasp of the railroad problem. Unfortunately, the bill is weak just where it is most important that it should be strong.

It provides that for the purpose of rate-making the Interstate Commerce Commission shall divide the railways into rate-making groups. It continues:

"In viewing them (the rates) from the standpoint of their effect in producing revenue in any rate-making group as a whole, the commission shall take into consideration the interest of the public, the shippers, the wages of labor, the cost of maintenance and operation (including taxes), a fair return upon the value of the property in the group . . . the requirements for additional capital in order to enable the carriers to adequately perform their duties to the public and the conditions under which the same can be secured; and for the purposes aforesaid, the commission shall from time to time determine the value of the property in each district and so lower or advance the rates of transportation, as nearly as may be, to provide said fair return as herein provided."

Elsewhere the bill provides for the creation of a Transportation Board and makes it the duty of this board to "inquire as to the new capital which the public interests may require the carriers, or any carrier, to secure in order that adequate and efficient transportation service and facilities may at all times be provided, and into the conditions under which said new capital may be secured. From time to time it shall certify to the Commission its findings in these respects, and the Commission shall accept such certificate or certificates as prima facie evidence in any hearing upon the matters to which such certificate or certificates respectively relate."

The apparent purpose of these provisions is to insure that the railway companies will be allowed to earn revenues sufficient to pay a reasonable return upon the value of their present properties and to raise sufficient new capital adequately to develop their facilities. But the bill contains a provision which seems to be inconsistent with those above quoted and adapted largely to nullify the good effects they would tend to produce.

Section 6 provides as follows:

"If any carrier shall receive from operation in any year more than a fair return, to be determined by the commission, upon the value of its property, held or used for service in transportation, which may include a just allowance to provide reasonably for future years in which there may be insufficient earnings, the excess above such fair return shall be paid to the transportation board within the first four months of the succeeding year, to be invested or expended for the following purposes, namely: One-half of all such payments to the Board shall be invested or expended for the purposes set forth in Section 25 hereof, and one-half thereof shall be deposited in a fund which, from time to time, shall be expended by the Board in the purchase of equipment to be released under proper terms to carriers in order to facilitate transportation, or to loan to carriers upon reasonable security in order to purchase equipment or other facilities in the event that such carriers are unable to secure elsewhere the funds with which to provide themselves with adequate transportation facilities."

The "purposes set forth in Section 25" referred to are all purposes relating to the improvement of the condition of employees.

This provision, if we interpret it correctly, means that if any railway company shall earn any more than the Commission shall have held to be a "fair return," all such surplus earnings shall be taken from it and used for the purposes outlined in the quotations from the bill which we have made. The result would be that if the Commission held that 6 per cent, for example, was a "fair return" upon the value of the Union Pacific, and the Union Pacific earned 10 per cent, the entire surplus over 6 per cent would be taken and used for purposes which had no relationship to the progress or prosperity of the Union Pacific. One-half of the excess would be used for the benefit of railway employees generally. The other half would be loaned to railway companies whose credit was not good enough to enable them to raise adequate capital in the market, or used to buy equipment for such carriers. The Union Pacific, under this plan, would not get the use of any of the surplus it earned, because, presumably, the fact that it had surplus earnings would exclude it from the class of carriers which could not finance their own requirements.

Students of railway regulation know what is meant by "a fair return upon value." This is a phrase invented by the courts to indicate the limit *below* which regulating bodies cannot go in fixing rates without unconstitutionally confiscating property. Therefore, what the bill provides is that the earnings of any group of railways shall be made barely large enough to avoid confiscation of the property of the entire group, and that at the same time no individual railway shall be allowed to earn and retain a return any larger than is necessary to avoid confiscation of its property.

For ten years the old system of regulation has been attacked upon the ground that railroad commissions, whatever the

provisions of the laws have been, have constantly tried to make railway rates as low as they could without confiscating property. It has been contended that the purpose of regulation should be, not to make the rates as low as was possible without involving confiscation, but to make them no lower than they must be made to enable the railways to render good service and adequately develop their facilities. The Cummins bill is an attempt to reform the old system of regulation, and yet it would specifically enact into law the restrictive and destructive principle upon which the regulating commissions have acted, namely, that the return of all railroads and each railroad shall be fixed regardless of the public welfare and as low as they can be fixed without confiscation.

The effect of the proposed legislation might be to improve the credit of some railways which under the old system of regulation have been prevented, regardless of constitutional provisions, from earning a fair return. But on any road which is, or might become, able to earn a "fair return," the incentive to increase efficiency of operation would be destroyed. Indeed, under this proposed legislation there would be a direct incentive, when a railway became able to earn more than "a fair return," to begin adopting measures to promote *inefficiency*. If a road earned more than a fair return, one-half of the excess would be turned over to the government to be used in helping other railways which were earning less. These railways might be direct competitors of the railway which was able to earn more than the so-called "fair return," in which case its surplus earnings would be used to enable them to compete against it more effectively.

The managers of a railway company which is, or which became able to earn the maximum return, unless they were angels rather than human beings, would, therefore, have an incentive to begin casting about for means of preventing the net return from increasing. The result might be, and probably would be, the payment of excessive salaries, exorbitant expenditures for maintenance, perhaps the payment of exorbitant prices for materials and supplies. Probably the government would then intervene. But government intervention would never be an effective substitute for the initiative and enterprise of the owners and managers. It would probably do more harm than good.

It will require changes in these provisions to make the Cummins bill a good bill. It might be changed to provide that any railway company earning more than "fair return" would be allowed to retain only three-fourths, or two-thirds, or one-half, or even one-third, of its surplus earnings, depending upon how large the surplus earnings were. As long as every increase in efficiency will result in some increase in the amount of return a company will be allowed to earn and use for its own purposes, the incentive to increased efficiency will not be destroyed, although it should be frankly recognized that even a partial limitation of profits will tend to reduce the incentive to efficiency.

It is now generally conceded in this country that private management is preferable to government management of railroads, upon the ground that it is more efficient. But many of those who concede this do not seem to recognize the further fact that the greater efficiency of private management is almost entirely due to the fact that heretofore the relative profits earned and kept by railroad companies have depended on how efficiently they were managed. Destroy the opportunity to increase profits under private management by increasing efficiency, and the superiority of private over government management will speedily disappear. This seems so obvious that it is hardly conceivable Congress will return the railroads to private operation under legislation which will prohibit each and every individual railroad, no matter how efficiently managed, from enjoying profits exceeding the so-called "fair return."

The Bituminous Coal Situation

NEARLY 100,000,000 tons less bituminous coal has been produced in the United States up to the end of August this year than was produced up to August 30, 1918. The production of bituminous coal in 1918 was extraordinarily large because of the unprecedented demand by war industries both in America and abroad. It was made possible by the economic measures adopted to encourage production and the emergency measures, such as the pooling of coal, the zone system of distribution, etc., which the Railroad Administration adopted.

There is a coal car shortage today, more severe in some parts of the country than in others, but a real shortage. Is the situation a dangerous one; is it not only possible, but probable, that there will be a serious shortage of bituminous coal for manufacturers this year; is the Railroad Administration falling down on its job in regard to taking care of the bituminous coal operators' needs?

First, as regards the danger of a coal shortage; bituminous coal needed by the country is an undetermined quantity. Dr. Garfield, when he was fuel administrator, made, or is supposed to have made, an estimate of the needs of the country, placing them at 500,000,000 tons per year. Up to August 30, 299,705,000 tons of bituminous coal had been produced, while in 1918 up to August 30, 396,074,000 tons had been produced. The production in the last week in August, 1919, was 10,197,000 tons, comparing with 12,691,000 tons produced in the corresponding week of 1918.

Almost immediately after the signing of the armistice there was a widespread cessation of manufacturing industry. Plants which had been working two shifts a day were reduced to one and in many cases the working week was cut down by one or two days. Furthermore, coal continued to be delivered to manufacturers on a basis of full and overtime working schedule and the coal storage facilities of manufacturers generally were taxed to their utmost. On December 31, 1918, there was an important and large carry-over of bituminous coal. On December 31, 1917, there was a minimum carry-over. The production, therefore, in 1918, as determined by the United States Geological Survey, from which the figures used above are taken, does not accurately correspond to the consumption in 1918.

The carry-over of coal was used by manufacturers in the early part of 1918 to supply their greatly diminished needs for as long a time as possible. The entire cessation of munitions' manufacture and the great reduction in many other lines of manufacture in the early part of 1918 slowed down the production and transportation of bituminous coal to such an extent that the Railroad Administration quite properly looked on the situation with considerable concern. Coal miners were urged to continue to produce coal despite the falling off in demand and manufacturers were urged to order coal in anticipation of future needs. This sound advice of the administration was not followed by either the coal operators or manufacturers, neither one desiring to tie up capital in stored coal even where storage facilities were available.

In the present controversy between the coal producers and the Railroad Administration—for the interchange of views on the coal situation has taken on the nature of a controversy—the coal producers brush aside as only natural, human and good business their own refusal to mine coal in anticipation of future needs, but are loud in their condemnation of the Railroad Administration's failure to repair coal cars during the period of depression—the first few months of 1919.

Dun's Review of business conditions on August 30 says "Neither in volume nor in value is new business as distinguished from activity on past orders what it was a month

ago in some important lines." But the general impression one gets from a week to week's study of Dun's and Bradstreet's reviews of trade is that of widespread, general business activity with the rate of production running high, although not as high as it would run if unhampered by strikes, threatened strikes and forced reduction of hours of work.

There is no agency at present which is making a systematic study of the needs of the country for coal. If an entirely candid opinion could be drawn from each of the larger coal producers, a fair guess could be made at the general situation, but with the coal producers we must remember that the wish is father to the thought in their estimate of the country's coal requirements. Congress has failed to make an appropriation permitting the Geological Survey or other agency to make a study of the country's coal requirements. A somewhat limited canvass of coal producers, railroad men closely in touch with the coal situation, and manufacturers in the east suggests that a coal shortage this year is a possibility but not a probability. The possibility, however, of such a calamity under present circumstances justifies forehanded measures to prevent its occurrence.

If railroad equipment were in thoroughly good repair it is safe to say that the coal car shortage would be very much reduced if not entirely eliminated. In the Operating Statistics Section's reports, freight cars are not classified, so that bad order cars include box, automobile, etc., as well as open-top cars. The administration greatly reduced its activities in repairing freight cars during the period of slack business in the first part of 1919. Its excuse was that it did not have the money. This is the same excuse which private owners have given in past years for pursuing a like, seemingly short-sighted policy. On some of the larger bituminous coal carriers, the bad order situation as regards coal cars is estimated to be about double that of normal times. That is, where a road would, under normal conditions, at this time of year, have only about 4½ to 5 per cent of its coal cars awaiting or under repair, there are now from 9 to 10 per cent in bad order. Furthermore, both the coal operators and corporation officers who are keeping closely in touch with the coal car situation claim that theee are a considerable proportion of coal cars in service which would, under ordinary conditions, be classified as bad order cars and would be placed in shops or on the heavy repair tracks.

In his testimony before the Senate committee investigating the coal situation, J. D. A. Morrow, president of the Coal Producers' Association, claimed that not only was there a shortage of cars but also a "transportation difficulty," meaning apparently a slow movement of coal cars.

The best sources that we have wherewith to judge of the coal situation in regard to production are the reports of the United States Geological Survey. The weekly reports include a table showing the percentage of capacity of bituminous production actually achieved during the week for the principal coal regions of the United States. For the week ended August 23, production ranged from about 44 per cent of total capacity in the western coal regions and 50 per cent in the Illinois regions to 87 per cent in the western Pennsylvania districts and to 85 per cent in the Westmoreland district. The rating of districts by the Geological Survey is on a theoretical, perfect production, so that probably 85 per cent production would be a normal, practical, full production. The causes of failure to attain 100 per cent production, which are based on data furnished by the producer, are classified by the Geological Survey as between car shortage, labor shortage, strikes, etc. Car shortage is by far the largest factor in the loss of production of nearly all of the coal districts and varies in the week ended August 23 from a loss, due to this cause, of 49 per cent in the western district and 36 per cent in the high volatile district of southwestern Virginia to 4 per cent in the central district and 9 per cent in the western Pennsylvania district.

The following table shows the percentage of cars placed to the total number of cars ordered on 12 of the largest bituminous coal carriers. The roads are numbered rather than given by name because the figures are for one particular week, August 23, and it might be misleading to show one road low or high in a table such as this because conditions as between different roads vary from week to week, but the comparison of all the roads in 1919 with the corresponding week for 1918 is accurate and significant.

	1919	1918		1919	1918
1	97	79	7	101	105
2	80	107	8	103	72
3	79	84	9	86	84
4	98	99	10	98	63
5	104	99	11	75	92
6	79	99	12	100	107

The total number of coal cars required by the coal operators for the whole country in the week of August 23, 1919, was 164,000. The total number placed was 155,000. In 1918, in the corresponding week, 173,000 cars were required and 149,000 were placed. In other words, this year the Railroad Administration met 94 per cent of the coal operators' requirements while in 1918 at this time the Railroad Administration was meeting only 86 per cent of the operators' requirements.

While the war-time measures such as pooling of certain grades of coal and the limitation of the distribution of coal to zones are no longer in effect, the common use of all companies' cars by the administration is effective and the car pool formed by the railroads voluntarily at Pittsburgh, prior to the taking over of the roads by the government, is at present in full operation. A good measure of conditions both at the mines and of the handling of coal cars by the railroads is shown by the coal car loadings. The following table shows the bituminous coal cars loaded in the week ended August 23, 1919, compared with the corresponding week of 1918:

	Number Cars Coal Loaded		Decrease	
	1919	1918	Cars	Per Cent
Eastern region	28,642	36,227	7,585	20.9
Allegheny region	67,087	67,091	4	...
Pocahontas region	25,855	26,147	292	1.1
Total pool lines	121,584	129,465	7,881	6.8
All other regions	57,696	76,708	19,012	24.6
All regions	179,280	206,173	26,893	13.4

The falling off as compared with 1918 is, therefore, considerable. On the other hand, the loading in the Eastern, Allegheny and Pocahontas regions was 10.8 per cent greater for the week of August 23, 1919, than in the corresponding week of 1917.

One factor that must be kept in mind in comparing 1919 and 1918 is that with war restrictions off and with the almost universal acceptance of a higher standard of "living" in business as well as in personal and social matters, there is a large demand for higher grades of coal. The poorer grades of coal of some of the central western and western districts are passed over in favor of considerably more expensive eastern coal with the result that this added strain of a longer average haul is put on the transportation facilities of the country.

There is another factor, local but important. Coal is moving all-rail into New England in much larger proportion than it would under normal conditions. Coastwise water rates are so high that the all-rail routes compete successfully with the water route. This also increases the strain on railroad facilities.

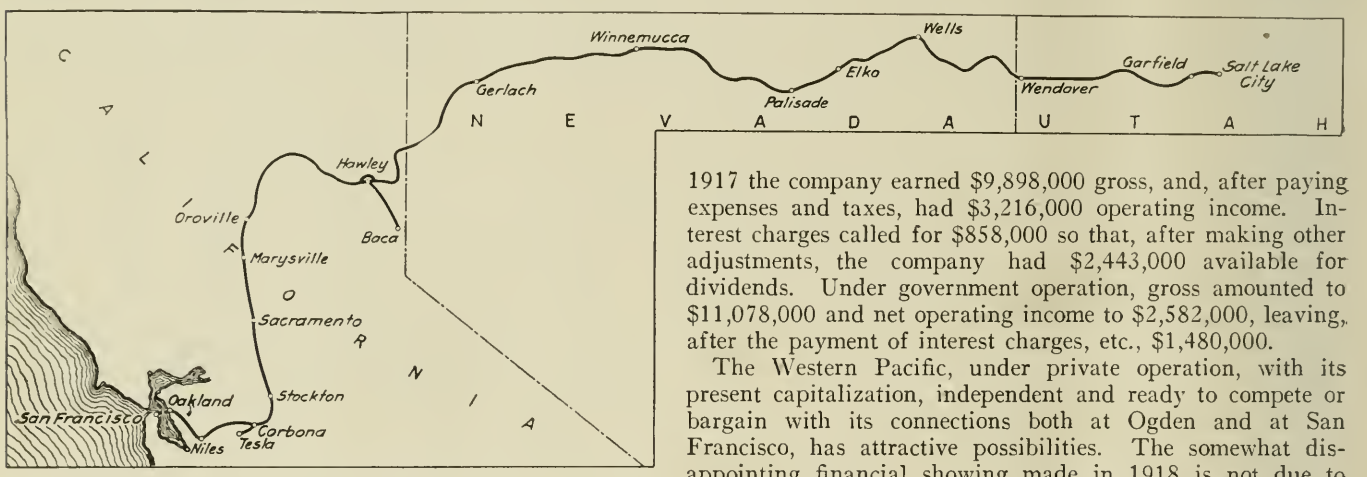
To sum up: there is a coal car shortage of varying intensity with a possibility, but not a probability, of serious bituminous coal shortage this winter. We are without adequate means of determining the coal needs of the country

and either the Railroad Administration, itself, or some specially authorized body ought immediately to undertake a careful study of manufacturers' needs. If the possibility of a coal shortage appears in the light of the results of this study to be slight, present methods of car distribution and coal distribution can fairly safely be continued. If in the light of this study the possibilities of a severe coal shortage are serious, both the Railroad Administration and the coal operators ought to submit to such measures as were put into effect last year—preferential movement of coal, the zone system and pooling of certain grades of coal.

Since the present agitation in regard to coal car shortage was begun, transportation conditions have improved and to this extent the agitation has been beneficial to the country. It should not, however, be allowed to be used as an argument for higher coal prices without, at least, a far more convincing showing of the imminence of a dangerous coal shortage than has been made hitherto.

Western Pacific

THE TOTAL MILEAGE operted by the Western Pacific in 1918 was 1,012, and the average haul of revenue freight was 514 miles. The Western Pacific was built to give the Gould system a share in the Pacific coast business. Operation of the road has demonstrated that to get a share of this business it was necessary to do something more than to have an entrance into San Francisco. Branches were begun to Reno, Loyalton, Tooele and San Jose via Niles. In 1918 both the Reno and the Tooele branches were in operation, but the director general ordered work stopped on the San Jose branch on the ground that the Southern Pacific already



The Western Pacific

had facilities at San Jose and a connection with the Western Pacific, so that since the two roads were to be operated jointly, shipments could be made "via the Western Pacific with the same facility as accorded shipments via the Southern Pacific."

The Western Pacific was a highly competitive enterprise from its inception. Under government operation the operating organization made a particularly good showing, but the financial results of operation were not so favorable. This, of course, did not affect the Western Pacific Railroad Company one way or the other since the government is to pay a fixed rental for the use of the property.

The total tonnage of revenue freight carried in 1918 was 2,689,000, comparing with 2,329,000 tons carried in 1917. The most noticeable difference in the business done in 1918 as compared with 1917 is in the increase in coal and the large increase in empty cars hauled by the Western Pacific. The total tonnage of bituminous coal carried in 1918 was 983,000 tons, an increase over 1917 of 520,000 tons. In other words, the increase in bituminous coal tonnage and of other products of mines more than offset the decreases in each one of all of the other general classes of traffic. Empty car miles totaled 22,379,000 in 1918 as against 18,266,000 in 1917. Loaded car mileage totaled 44,893,000 in 1918 as against 46,564,000 in 1917. The changes in the character of the freight which the Western Pacific was called upon to handle are probably reflected in the ton-mile rate received. Despite the increase in freight rates which the administration put into effect, which gave most other roads an increase of from 15 to 30 per cent in the average ton-mile rate received, the ton-mile rate on the Western Pacific was 6.6 mills in 1918 as against 6.7 mills in 1917.

Notwithstanding the large increase in empty car mileage, the average revenue train load was increased by over 60 tons, totaling in 1918 662 tons. This is a fine showing for a road like the Western Pacific. In 1917 there were 65 Consolidation locomotives of 43,300 pounds tractive power, and five Mallets of 80,000 pounds tractive power each in service. During 1918 five new heavy Mikados equipped with superheaters, of 60,200 pounds tractive power each, were received.

After the Goulds were compelled to give up their plan for a trans-continental railroad system, the Western Pacific went into receivership. The company was reorganized and with a conservative capitalization. In place of the $50,000,000 first mortgage bonds and $25,000,000 second mortgage bonds originally issued, there were $20,000,000 new first mortgage bonds issued. In addition there are outstanding $3,600,000 equipment notes. The company has $75,000,000 stock, divided $47,500,000 common and $27,500,000 preferred. In 1917 the company earned $9,898,000 gross, and, after paying expenses and taxes, had $3,216,000 operating income. Interest charges called for $858,000 so that, after making other adjustments, the company had $2,443,000 available for dividends. Under government operation, gross amounted to $11,078,000 and net operating income to $2,582,000, leaving, after the payment of interest charges, etc., $1,480,000.

The Western Pacific, under private operation, with its present capitalization, independent and ready to compete or bargain with its connections both at Ogden and at San Francisco, has attractive possibilities. The somewhat disappointing financial showing made in 1918 is not due to inherent difficulties under competitive conditions.

The following table shows the principal figures for operation of the property by the government in 1918 and by the company in 1917. This is not the corporation income account.

	1918	1917
Mileage operated	1,011	1,011
Freight revenue	$9,200,062	$7,968,721
Passenger revenue	1,373,496	1,473,538
Total operating revenues	11,078,497	9,898,484
Maintenance of way and structures	2,034,765	1,577,090
Maintenance of equipment	1,635,871	999,072
Traffic expenses	187,314	254,562
Transportation expenses	3,626,433	2,993,342
General expenses	254,493	274,312
Total operating expenses	7,893,879	6,190,055
Taxes	600,976	492,297
Operating income	2,581,796	3,215,936

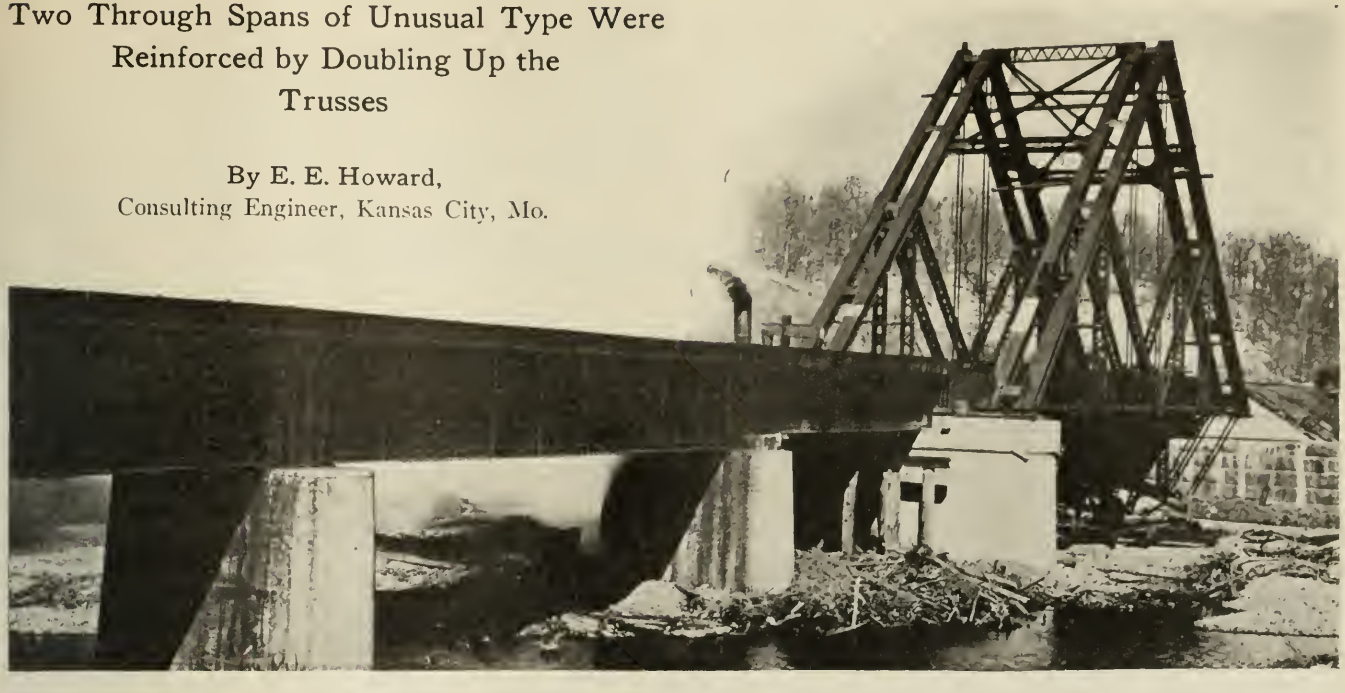
CORPORATE INCOME ACCOUNT

	1918
Compensation	$1,900,350
Gross income	2,397,270
Net income	792,281
Dividends	.....
Surplus	742,281

War-Time Economies in Strengthening Old Bridges

Two Through Spans of Unusual Type Were Reinforced by Doubling Up the Trusses

By E. E. Howard,
Consulting Engineer, Kansas City, Mo.

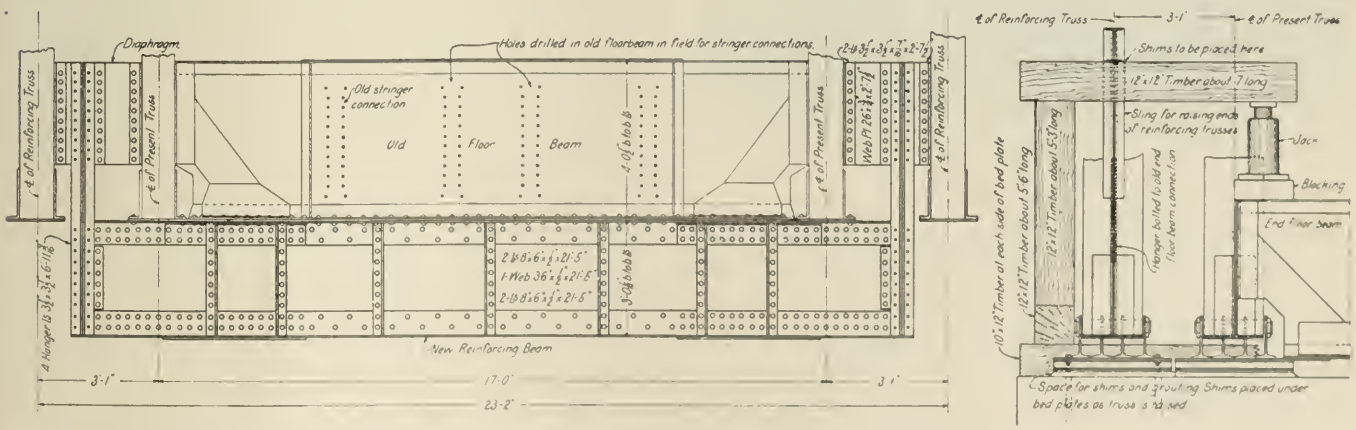


Construction View During Erection of the Reinforcing Trusses and New Floor Members

DURING THE LATTER PART of 1918 two 100-ft. single track railway spans on the Kansas City Southern were reinforced for modern standard loading by adding extra trusses and stringers from like spans which had previously been taken out of service. The spans recently reinforced are in two different bridges and had been continued in service for some years under traffic much in excess of the loads for which they were designed by maintaining slow orders. Formerly there were a number of spans of this type on the road, but all had been removed except these remaining two. They are through pin-connected spans, of the so-called A-truss type, with four 25-ft. panels.

It developed that several of the old spans were still stored in the yards and were available for use and that the metal of the old spans in position and that in storage was in good condition. Estimates were made for replacing one of the spans with two 50-ft. deck girders, building one new pier, and for replacing the span of the other bridge with a truss span designed for present loading. The scheme was also devised of strengthening the old spans by the use of the metal of the similar spans held in storage, and this was adopted.

The reinforced spans are ample for Class E-55 loading and the additional material was added without interruption to traffic. The required modification of the substructure was slight, no changes in the old spans were necessary except for the connection of new metal, and the total additional new metal required was only about 15 tons per span. This method was especially advantageous in view of the difficulty of securing new structural metal work in the summer of 1918, while the money outlay was considerably less than that required for all new material.



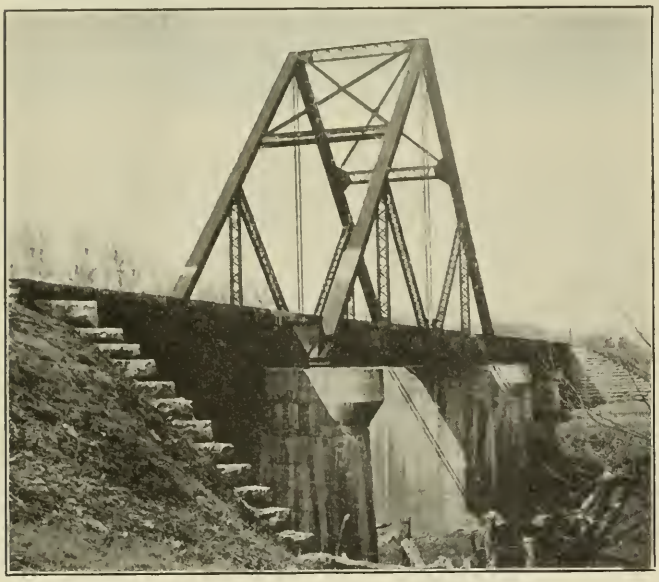
Manner of Reinforcing the Old Floor Beams with Beams Hung from Both New and Old Trusses and Method of Lifting the Ends of the New Trusses

The added trusses are set outside the existing trusses at 3 ft. 1 in. centers. Diaphragms connect the pairs of trusses at the three intermediate panel points and support the floor beams. The trusses are also connected by occasional batten

plates. A new floor beam was placed underneath each existing intermediate floor beam and riveted to its lower flange, forming a composite beam. The new beams extend out and hangers from their ends connect to the diaphragms joining the trusses. The stringers in the existing spans were eight feet center to center. Extra stringers two feet center to center were put in between them to divide the track loads.

The end floor beams were not reinforced, but the piers were built up, and special shoes provided to support the ends of the two middle springers. The lower lateral system was somewhat modified so that connection was made to the new stringers as well as the two original ones.

The erection was very simple and required no falsework. The piers were first cut down a distance of about five feet and built up in reinforced concrete, with the ends extended sufficiently to provide seats for the shoes of the new outside trusses. These reinforcing trusses were erected by suspending them from the existing span and the new floor beams were similarly swung in place and supported. After connections at the intermediate points had been made, the ends of the added trusses were jacked up, and suitable shim plates placed under the end shoes to subject the new trusses to enough deformation so that they would take their share of the load. Careful distortion measurements made after the



One of the Old Spans After the Piers Had Been Prepared to Receive the New Trusses Outside the Old Ones

reinforcing of the spans was completed show satisfactory, although not exact, distribution of live load stresses between the trusses at each side.

The work was carried out expeditiously and the completed structures, while somewhat unusual in appearance, are rigid, substantial and of ample strength. The estimates of the cost for the bridge where two 50-ft. girder spans and one new pier could have been used, was about $11,000 for new construction throughout, and about $8,000 for the reinforcing of the existing span. For the bridge where a 100-ft. opening had to be maintained, the cost of a new bridge throughout was about $19,000 and of the reconstruction with four trusses, about $7,500. These figures represent the cash outlay, without allowance for the amount the railroad charged itself for the old metal stored in the yards, nor for the salvage value of the old spans had they been removed. The total cash outlay, therefore, was cut down from $30,000 to about $15,000—a matter of some importance during the war-time conditions.

The two pictures are not of the same bridge, but one shows the unaltered span at one of the crossings after the piers had been lengthened to provide for the new trusses, and the other shows the reinforcing trusses in place on the other bridge and the superstructure work practically completed.

The scheme for the work was devised and the plans prepared by Harrington, Howard & Ash, consulting engineers, Kansas City. The work was carried out by the Kansas City Bridge Company, all under the direction of J. M. Weir, chief engineer, Kansas City Southern, Kansas City.

Senate Discusses Railroad Labor Question

THE RAILROAD LABOR SITUATION was the subject of a general discussion in the Senate on September 4 initiated by a speech by Senator Underwood of Alabama, who discussed the labor provisions of the Cummins bill and advocated the adjustment of wage disputes by the same tribunal that fixes the rates.

"Industrial wars between labor and capital must ultimately find a solution," he said, "that will stand for industrial peace without resort to force to settle the matters in dispute or we must admit that the advance of civilization has come to a halt. The great difficulty that confronts the country in the settlement of its labor disputes is the fact that up to the present time we have found no sound basis on which to rest the settlement. The avoidance of railway strikes and lockouts in the future is of far greater importance in the nation than the settlement of ordinary industrial disputes. In the latter case the issues involved are largely confined to two contending sides and the public at large, as a rule, has only a remote interest in the controversy, but in disputes between labor and capital engaged in transporting the commerce of the country, the public's interest is vastly greater than that of the owners of the property or of the wage earners in their employ.

"Having the power to act, the question confronts us as to whether the time has come when the Congress should exercise this power and appoint a commission to determine this grave and pressing question. The successful solution of the wage problem on the interstate railroads of the country is most essential to the Nation's economic life and of vital importance to every citizen of the land for it must be borne in mind that an increase of the rate of pay of the men employed in transportation is almost sure in the end to translate itself into increased freight and passenger rates that must be paid by the public and borne by the commerce of the country.

"There is but one way out, in my judgment, and that is to appoint a tribunal with the power to adjust these matters, which has the time to consider and the opportunity to know the facts. Such a tribunal must not only have the power and be prepared to do what is right and just by the labor employed on the railroads but must have authority and power to see that property is not confiscated by its decisions. For, should you confiscate the property of the transportation companies of America, you would break down the channels of transportation as effectively as you would break them down in a strike, with the resultant injury to the people of the United States. A tribunal of this kind must also have the authority and opportunity to consider the rights of the shippers and travelers of America, who in the last analysis will bear any increased burden that falls on the carriage of property or persons over the transportation lines. This tribunal must have authority and power to protect the rights of the whole people of the United States against the recurrence of lockouts and strikes.

"What body, then, is most capable of determining all these

questions and fairly adjusting them to the interests of all parties concerned? A board of arbitration to be appointed by the employers and employees of the railroad companies of the United States will only look to the matters in dispute between the contending parties, and will not have in mind the ultimate rights of the people. The general courts of the land are not equipped either with the knowledge or the power to obtain information in reference to the cardinal facts that must decide the controversy. If you want a final and just solution of such a controversy, you are practically driven to leaving the decision to a governmental commission that has full and ample opportunity to investigate the rates of wage, the earning power of the transportation companies, the cost of living, the burden that rests on the shipping public, and after a fair and full investigation, to determine what is a fair, just, and living wage for the men and to how great an extent a fair, just, and living wage may be increased to enable the toilers to secure the higher ideals of life and living; second, how far this charge can be placed on the capital of the corporation without breaking it down, destroying the value of its securities, bankrupting its property, and taking away from the investing public a fair return for capital invested; third, how far an increased charge for labor, interest, or supplies can be handed down to the public without doing injustice to the shipper and traveler and without becoming a menace to the development of the industry of the country.

"All of these questions must be determined by a court or an independent commission, but their findings, except so far as they may determine the rate for transportation that must be paid by the railroad companies and the rate of wage that must be received by the men if they continue their employment, will be academic, because they will have no power to operate on the side of the problem in which the general public is interested. The power to determine what are just and reasonable rates of transportation of persons and property over the interstate railroads of this country is fixed by law, and any increase or decrease of these rates must be made under the law of the land. Therefore it is essential that the board or commission that is given the power to adjust the wage scale of the men must also have the power to reflect its findings into the rates charged for the transportation of persons and property over the railroads. The board or commission that is created for the determination of these grave questions must determine whether the rates for transportation shall be increased and whether a charge made against the railroads for increased wages shall remain a charge on its capital, or whether in justice and fair dealing, it shall be handed on to the shipper and the traveling public.

"It is therefore clear to me that the same power that has the right to fix the rates of transportation should have the right to fix the rates of wage and the hours of labor on the great transportation companies of the United States, and that this power and this duty should be given irrevocably to a governmental commission or board in order that it may do justice between employer and employee. The granting to a governmental commission or board of the power to determine the hours of labor and the rate of wage will solve the problem for the future. Men will not strike against the just decisions of the government. After a fair determination of the controversy by an impartial tribunal, public opinion will force the contending parties to accept the verdict rendered as final. It must be done in the interest of the men involved, the industry of the people, and the peace of the Nation."

In reply to Senator Borah of Idaho, Senator Underwood said he was not advocating compulsory arbitration. He thought the policy of arbitration has failed, but that the time has come when the government should fix a just and fair wage and make strikes impossible. "A universal strike on the great interstate commerce carriers of America is unthinkable," he said, "and it should be prohibited by law just as you prohibit a man from burning his house for fear he may set fire to his neighbor's house."

Senator Borah wanted to know how he would compel the men to accept the wage fixed in case it was unsatisfactory. Senator Underwood said he would not attempt to do that. He would merely prohibit them from conspiring for the purpose of interfering with commerce, as proposed in the Cummins bill. Senator Robinson pointed out that the bill expressly prohibits the right of the employees to quit at will but it does penalize combinations or agreements among them to interfere with commerce. Senator Borah said he could conceive of large numbers of men quitting work because of dissatisfaction with their wages without the intent to interfere with interstate commerce and he thought it would be difficult to draw the line with sufficient accuracy to determine the intent. "Your law will be ineffective," he said, "because the men will say, 'we are not desirous of interfering with interstate commerce. We simply say that your wages are too low. We are going to seek work somewhere else.'" He said he was in favor of a government tribunal to adjust the question of wages and to call the employer and employee together and to avoid strikes and force just as often as possible, but he did not believe it is wise or that Congress has the power to go as far as to say that if the men are not satisfied with the judgment of that tribunal they shall be punished through the criminal processes of the law.

Senator Underwood said: "But I believe that the hour when the government establishes a fair and just tribunal where these men may have their day in court 90 per cent of them will be willing to accept the findings of the court and that will end all controversy, and if the other 10 per cent want to quit the opportunity will be given to them and other men will take their places."

Senator Williams of Mississippi said: "When a lot of men strike because their living conditions are intolerable or because their wages are not sufficient that is a thing with which we are approvingly acquainted, but we are beginning lately to learn a European habit and it is chiefly against that European habit that the provisions of the bill would operate. Men are no longer striking because they are not getting enough to give them a good standard of living. They are striking out of sympathy with one another, to enforce general propositions that have nothing to do with their individual conditions and to force the Congress of the United States to do things that they are afraid the Congress does not want to do. Quitting work is one thing. Attempting to coerce Congress and the public by closing up the avenues of interstate commerce and cynically suggesting 'starvation or surrender' is another thing and all wrong and intolerable."

Senator Thomas of Colorado suggested that in the passage of the Clayton law Congress exempted agriculturists and laborers from the operation of the law. Senator Williams said he had voted for it at the time under the idea that he was helping the under dog, "but," he said, "things had not then assumed the position they have now assumed of having men threaten us that unless we enacted certain legislation they would enact it by force."

Traffic Work Lectures.—The University of Cincinnati, in its College of Engineering and Commerce, will have a course in traffic management this year. Studies and lectures will be given evenings to accommodate those engaged in commercial affairs.

Lehigh Valley stockholders on June 15, 1919, numbered 15,689, with an average holding of 77 shares. In 1918 there were 12,613 shareholders, with an average holding of 96 shares, according to a statement by President E. E. Loomis. Nearly 37 per cent, or 5,765 shareholders, are women.

Executives Protest Against Limitation of Income

WASHINGTON, D. C.

THE ABILITY of the railroads to finance necessary improvements would be seriously impaired, in the judgment of railway executives, by the provision in the Cummins railroad bill, introduced in the Senate last week, which proposes to limit the amount which a railroad company may retain out of its earnings from rates prescribed or regulated by the government, according to a statement filed with the Senate Committee on Interstate Commerce on September 10 by Thomas De Witt Cuyler, chairman of the Association of Railway Executives, on behalf of the steering committee of the association. This feature of the bill, Mr. Cuyler says, by removing the reward of success, would effectually defeat the apparent desire of Congress and of railroad economists to so establish railroad credit as to make it possible to finance railroad improvements partially by the sale of stock rather than solely by bonds.

Mr. Cuyler's statement follows: "The responsibility for the improvement and development of railroad facilities, and of raising the money from time to time needed to finance the same, rests upon the boards of directors and the stockholders of the railroad companies, of whom the railway executives are the authorized representatives and for whom they are the authorized spokesmen.

"In view of this responsibility, the steering committee of the Association of Railway Executives, appointed especially for the purpose of seeing that the facts and the circumstances affecting the railroad problem are properly presented to your committee and to the corresponding committee of the House of Representatives, without undertaking at the moment to review in detail the provisions of Senate Bill 2906, presented by Senator Cummins, deems it an imperative duty to call special attention to one feature which, in its judgment, seriously endangers the transportation interests of the country and the constitutional protection of all property.

"While adopting the alternative of private ownership and operation, and relying upon private capital, rather than upon government ownership, to provide the transportation facilities which the country requires, this bill, for the first time in the history of our legislation, undertakes to limit the amount which a company, by good management, fortunate location, efficiency, and other lawful means, is able to save out of the rates which the government itself prescribes or regulates. The bill provides that, if any company shall receive from operation, during any year, more than a 'fair return,' to be determined by the Interstate Commerce Commission, on the value of its property, the excess above such 'fair return' shall be paid over to the government within the first four months of the succeeding year.

"It ought to be borne in mind that the earnings of the companies are to be made from rates fixed or authorized by the commission. Inasmuch as the Congress has no right to authorize the collection of unreasonably high rates from the shippers who happen to need the services of a particular road, or to make rates higher than is reasonable for the service, it must be presumed, as against the rate-making power, that the rates which it prescribes or authorizes are reasonable. It follows that any earnings which a company makes will be derived from reasonable rates. Otherwise, the shippers, or those on some roads, would be over-charged and grossly wronged.

There is no such thing as unreasonable earnings from reasonable rates, and, therefore, if the rates are not more than reasonable, as would be presumed if lawfully made, it is impossible to conceive of there being an excess of earnings over a fair return. Returns cannot be more than fair if provided by reasonable rates. The only use made in the law of the terms 'fair return,' is to establish a test below which the legislature may not without confiscation reduce earnings from rates. It is, we think manifest, that a company is entitled, as a property right, to all it can save from reasonable rates, and to deny it this right would be to deny it the right of constitutional protection for its property. The attempt to do this, no matter how high the purpose, would be the beginning of a fatal policy which would tend to the removal from all property of its constitutional protection.

"Moreover, to take from a company a part of its net earnings derived from reasonable rates, not only diminishes, and, in some cases removes, the incentive to competitive effort, efficiency and economy, but forecloses the hope of success as an attraction to capital. This limitation, together with the necessity of constantly expending substantial sums from the apparent net earnings in renewals and replacements incident to maintenance of roadway and equipment, would in our judgment, seriously impair the ability of the railroads, upon which the country is dependent for handling its business, to finance the necessary additions, betterments and equipment.

"Instead of attracting private capital and establishing the credit of the railroad companies, which all seem to agree to be necessary at this time, this provision, in our judgment, by denying constitutional protection to this class of property, by removing from it the reward of success, and by seriously complicating the question of keeping the property up, would repel capital and tend to impair the credit of the railroads generally. Investors will hesitate to go into a business in which, not merely the rates which may be charged are prescribed by law, but the amount saved by good management, thrift, economy and efficiency is to be taken and appropriated for the benefit of others, or for some governmental purpose, to such extent as a government body, in its unlimited discretion, shall deem fair;—a proceeding which, in the common judgment of mankind until now, has been regarded as plain confiscation.

"We have no hesitation in urging the above mentioned view, notwithstanding the apparent support of this provision by some business men and institutions who, we fear, approach the subject too much from the standpoint of bondholders. The problem must be considered from the standpoint of stockholders as well as of bondholders. Bond interest comes before dividends on stock, and a limitation of net earnings ample to provide interest, might still ruin the stockholders; whereas the stockholder cannot protect his holdings without, at the same time, protecting the interests of the bondholder. A limitation on earnings which a bondholder could perhaps regard with equanimity might be destructive of the interests of the stockholders. The limitations provided for in the bill would, in our judgment, effectually defeat the apparent desire of Congress and of railroad economists to finance railroad improvements partially by the sale of stock rather than solely by bonds, since it requires the stockholder to take all the risk of the business, while denying him the right to profits made from reasonable rates, thus making his return uncertain in bad years, and yet little, if any, greater than the return on bonds in good years."

The "Drouth" produced by the federal prohibitory law is given as the reason for an almost complete shrinkage of business at Taylorton, Glenscreek and Labrot, Kentucky, on the Lexington & Eastern branch of the Louisville & Nashville; and the road has asked the State Railroad Commission for authority to discontinue the agencies. The closing of distilleries has reduced business at these points to practically nothing. Objection was filed by E. H. Taylor, Jr., & Sons, who expect that large quantities of whiskey soon will be withdrawn for export.

Director General Hines Testifies on Coal Situation

Sees No Cause for Alarm in Shortage as Compared with Full Potential Capacity of Coal Production

WASHINGTON, D. C.

THE RAILROAD ADMINISTRATION expects to be able to transport all the coal that will be needed this year, but it believes the government should find out more accurately what the requirements will be before the failure of the railroads to furnish all the cars the coal operators would like to have is allowed to be taken as a pretext for increasing the price of coal, Director General Hines testified on September 4 before the Senate subcommittee that is investigating the coal situation. Mr. Hines and other representatives of the Railroad Administration also replied to some of the criticism made by representatives of the National Coal Association.

An abstract of Mr. Hines' statement follows:

"Broadly, as I understand the situation, the conditions in the first half of this year have been radically different from the conditions likely to prevail in the second half of the year. For the first six months of this year I don't understand there is any serious contention that a shortage of transportation interfered substantially with the production of coal. The fact was that during that period the car supply and all transportation facilities were, generally speaking, very much in excess of the coal that was produced. While at a specific mine or in a specific district at some period there may have been a transportation disability (and they are likely to arise, and at any time) which may have interfered temporarily with the production of that mine or in that district, I am satisfied it is a correct statement, broadly, that in the first six months of the year the transportation facilities were very much in excess of the coal production and any shortage in production was due to other causes, except in cases which, viewing the total situation, could be regarded as virtually negligible. I understand the principal reason for the smaller production of coal was that the public was not willing to buy the coal; in other words, it was a condition of no market and not a condition of transportation shortage.

"As to the second six months, the public is getting to the point of buying coal and that is bringing into operation to a much larger extent the matter of production disabilities and also transportation disabilities. They will play an important part in the second half of the year, but certainly the transportation disabilities did not play an important part in the first half of the year.

"As I understand it, the purpose of this committee's investigation is to promote the public interest with respect to coal and as I look at that interest it is that there shall be an adequate amount of coal produced and transported and that the public shall be able to get that coal without having to pay an excessive price for it.

"The one of these objects with respect to which I have responsibility is the object of transportation, and I want to explain that the Railroad Administration is doing everything in its power to meet a transportation situation of unusual difficulty. We are not standing on any preconceived notion of what remedies are necessary, but we are reviewing the matter constantly, from day to day, and adopting new methods as they appear desirable; in other words, we are not handling the matter in a routine way in any sense, but with the liveliest appreciation of the importance of the situation and with a constant purpose of utilizing every expedient that can be developed which will help to enable us to transport during the latter part of this year the coal which the public omitted to buy in the early part of the year and which it will want to buy. We welcome suggestions from every source. We have profited greatly by the comments that have been made in the course of this investigation, and are taking advantage of every practical suggestion. We are proceeding upon the idea which was made clear in my reply to the Senate resolution that it is going to be difficult to transport in the latter half of this year the coal the public will want to buy. We are not awaiting any additional information nor are we concerning ourselves with excuses. We have got a situation and we have got a possibility of a large amount of coal to be transported which will tax the railroad facilities, and we are dealing with it as a practical matter and endeavoring in every possible way to make that transportation come up to the maximum.

Car Movement Not Slowed Down

"There is one point I would like to emphasize. It is a point I find causes a great deal of confusion in other instances as well as this. The suggestion has been made that the Railroad Administration has been inefficient in the handling of coal because the number of miles per car per day made in the first half of this year was less than was made last year, and that that indicates the cars were not moved at sufficient speed. That factor is exceedingly misleading and I think it is rarely if ever a useful factor. It is obtained by taking the total number of cars on the railroad, multiplying it by the total number of days in the period, and dividing that into the total number of miles. The result is that when there is a reduced volume of transportation so that a great many cars are stored, and so that on account of the absence of congestion the traffic moves at an exceptionally good rate of speed, the average miles per car per day show less than normal, because there is figured into the average a great many cars which are not moved at all. In the first six months of this year traffic of all sorts, generally speaking, was below normal, coal traffic particularly was belong normal, and the result was that the number of cars actually being used and actually making miles at all was exceptionally small, and yet when you take into consideration all the cars not moving at all, not in service at all, that pulls down your average. Thus the inference drawn from that factor of average miles per car per day is wrong. As a matter of fact the movement of traffic in the first half of this year was very satisfactory, there was no congestion to interfere with it.

"My motive in this matter is two-fold: in the first place, I have the most lively sense of my obligation to do the very best I can to give the public an adequate service, and in the second place, I am exceedingly anxious to minimize as much as possible any transportation shortage with reference to coal because I am afraid such a shortage is in danger of being made a pretext for increasing the price of coal. From both these standpoints it is the desire of the Railroad Administration to meet this situation in every possible way.

"My reply of August 14 to the Senate resolution calling for certain facts with respect to coal emphasized two points, one of which was the prospect of transportation difficulties for the rest of the year. The reply pointed out that if the estimates of the amount of coal to be consumed in the rest of the year were approximately correct there would be very serious difficulty in transporting the amount of coal transported in the latter part of last year under war conditions

when there were in effect numerous provisions and restrictions which facilitated the transportation of coal and which were not in effect this year. Among these provisions were the zoning of coal which prevailed last year and which accomplished a substantial economy in the use of transportation. With the signing of the armistice that was terminated, being regarded as a war measure, and undoubtedly an important economy in the transportation of coal was necessarily lost, because now coal from practically any part of the country can go to any other part of the country where market conditions admit of its being transported, and the result is that much coal is transported a much longer distance than the corresponding quantity of coal was transported last year. This involves an additional use of all the transportation facilities: cars, locomotives, tracks and terminals, and makes a substantial difference in what can be done. Other important factors were that last year under the war conditions there was less detention of equipment at destination and, through the establishment of certain car pools, the number of cars of coal that had to be held at certain destinations was very much less than was the case in peace times, so that we have a situation where the amount of coal to be transported may come close to what was actually transported last year, and where we will not have the benefit of certain war arrangements which undoubtedly very greatly promoted the transportation of coal last year.

"I also emphasized the danger that these transportation difficulties might be used as a pretext for increasing the prices of coal.

"I want to reiterate both these propositions. My best judgment is, after constantly reviewing this matter, that we are going to be able to transport the necessary coal. We propose to adopt whatever expedients are necessary to accomplish that purpose.

Car Shortage Excuse for Higher Prices

"Now, we must all recognize that these transportation difficulties are going to be played up to their full value and probably beyond it. They always have been and I take it they always will be. Every transportation difficulty, either local or general, which will manifest itself between now and December 31, or between then and the end of the coal year next March, is going to be laid before the public, emphasized, exploited and perhaps expanded. Now, that is a practical condition that we have to meet. I mention that not because I object to it, for that is a part of the job of the director general to be made the target of complaints of shortages or defects in transportation wherever they occur in the country. It is a condition that we have to expect but I mention it because of the danger that these transportation difficulties, which are inevitable, will constantly recur throughout this year and will be so emphasized and stressed as to create a public state of mind of impending disaster which will furnish a favorable medium through which to increase the prices. I am apprehensive about that feature that transportation difficulties, which are inevitable, will be so stressed as to put the public in a state of mind where it will stand for increases in prices which it ought not to stand for. Now, that being the situation, the four specific suggestions I want to urge on this committee are these:

"I think it is highly desirable to get the most complete information possible as to the current production of coal, and as to the limitations on current production, either through transportation disabilities, or labor shortage, or absence of market or any other cause. My judgment is that the best way to obtain that is to give the Geological Survey ample funds to enable it to get this information in a complete form, and also to police and check the information in such a way as to be sure that it is accurate. My understanding is that at present the Geological Survey does not get reports from all the mines, although perhaps it does get reports from the mines producing the great bulk of the traffic. I understand that the Geological Survey has no way to verify the reports which the individual mines may make, or compare them with the reports made by the railroads. The information is available as reported to the railroads, but there is a very considerable amount of clerical work involved in making a comparison of the matter and I understand the Geological Survey is without the clerks and without the funds to make a thorough-going check of that information; so I believe that one thing which would be of very great value to the public, both now and permanently, is the adoption of a definite and permanent policy that some proper agency of the government —and I should think that the Geological Survey would be the best—shall have adequate funds to get complete information on this point from all of the mines and to check that information by comparing it with the information which the railroads have from their standpoint, and on the basis of that to make a report which will be both complete and accurate.

An Example of Human Nature

"We cannot get away from the fact that where a mine operator is in doubt as to the cause to which he can properly attribute any failure of his mine to produce the full amount of coal, it is human nature for him to attribute it to a cause for which he is not responsible. I think the tendency always will be that the operator, when the matter is left entirely to his own judgment, will resolve all doubts by charging that shortages of production are due to car shortages. I want to make it clear that I don't claim that any operator would deliberately misrepresent the facts, but where it is a matter involving elements of doubt, it is human nature, if a man is left to his own judgment, to resolve the doubt so as to shift the responsibility. If the Geological Survey had the necessary equipment to make the comparison between the coal operator and the report of the railroad as to what the car shortage amounts to, there would be an important improvement, in my opinion, in the accuracy of the reports, and that is said without any reflection on the honesty of the operators, but simply in recognition of one of the fundamental principles of human nature. I believe that the funds spent for that purpose will be returned manifold to the public in a saving in the price that it will have to pay for coal.

"While referring to a report of the Geological Survey, I would like to point out the fact that the report is on the basis of potential production by the mines. Comparing one week with another this is useful as it shows the trend from one week to another; but if it is to be assumed that the shortages in production indicated by that report correctly represents the actual loss in production, it is a very mistaken assumption.

"For example: These reports which the Geological Survey is making for, I think, about 2,500 operations, are based on a potential capacity which aggregates close to 16,000,000 tons per week. I understand the highest production that has ever been made in a week was only about 13,000,000 tons, and the highest that has been averaged for any considerable period of weeks is only something over 11,000,000 tons, so that this potential production of 16,000,000 tons per week is entirely misleading if we view it from the standpoint that any failure to realize that production in any week represents a loss to the public. If the mines had the facilities—labor, transportation and markets—to operate up to a capacity of 16,000,000 tons per week, that would supply the entire demand of the country for coal in a fraction of the year, and they couldn't run at all for the rest of the year, so that the showing is very misleading as indicating a corresponding real loss in the production of coal for any period stretching over several weeks.

Information as to Requirements Needed

"Now, the second point that I want to ask the committee to consider is the arranging through some proper governmental agency—and again I think the Geological Survey would be the best one for the purpose—to get an estimate as to what are the actual requirements for coal in the rest of this year, and also between the end of this calendar year and March 31, the end of the coal year. Necessarily the situation is involved in considerable confusion because the conditions have been abnormal in many important respects during this year. As I understand it, we started in with an abnormal amount of coal in storage, so, of course, that took the place of coal which would be produced in this year, to an important extent. We also started in this year with a suspension of activities on the part of a great many industries which were very active last year and which last year were consuming exceptional quantities of coal, so that in the early part of this year especially it seems reasonable to assume that the actual consumption of coal was considerably below normal in many important lines of business. We also had a situation where we had the mildest winter that has ever been known in the history of the country, and the preceding winter was the most severe that the country has ever known, so presumably the domestic consumption of coal in the early part of this year was very much less than the domestic consumption of coal in the early part of the preceding year, and in many part of the country bituminous is the only coal that is used for domestic as well as other purposes.

"Even now conditions are not normal. We are uncertain as to what the prospects are for the rest of the year as to coal consumption in this country, as to coal to be exported, so we have a situation in which it is peculiarly difficult to make a satisfactory estimate of the coal which must actually be produced in order to meet the requirements of the country. Now, so long as that is a very uncertain element, there is danger that the amount of coal which will be needed may be exaggerated, so that my second suggestion is that the committee arrange, through a proper governmental agency, to get an estimate—of course, as accurate as possible—as to what will be the actual total requirements for the rest of this year, taking into consideration, of course, the rather small production in the early part of the year and the amount of storage on hand. In that connection I want to call attention to a point in my reply to the Senate resolution. I stated that in the first six months of this calendar year the railroads had consumed 26,000,000 tons less of coal than they had in the corresponding six months of last year. I discovered a day or two ago that that 26,000,000 tons was an estimate applying for the 12 months, and the actual extent to which the consumption of railroad coal in the first six months of this year fell below the consumption by the railroads of coal in the first six months of last year was 13,764,000 tons instead of 26,000,000 which I gave, which was the estimated amount for the entire year.

"Now another point which I think would be very useful would be for the committee to get information as to the prices both at the mines and to the consumers. It seems to me that we haven't any very satisfactory light on that subject, and I should think it would be a very useful matter for the public to know the prices at the mines, the cost of distribution between the mines and the consumer, and what has been the progress of those prices and how they compare with the government maximum prices which prevailed last year. My understanding was that these government maximum prices were fixed on the theory that they ought to be high enough to encourage production by many of the high cost mines because the total to be produced during the year had to be an abnormally large figure, and it would be of interest to know how the prices actually charged this year have compared with these government maximum prices which, in my judgment, were fixed on a high basis for the avowed purpose of encouraging during the year an abnormal production of coal so as to enable the high cost mines to produce coal freely.

"The fourth point I have in mind is with reference to transportation difficulties. My judgment is that we will overcome them to the extent of transporting the coal which the country needs, but these difficulties will be manifesting themselves all during the year. There will be a most favorable opportunity for stressing those transportation difficulties, creating the impression that there is going to be a serious shortage of coal, and, therefore, that coal had better be bought at a higher price rather than take the chance of waiting. I think, therefore, that we are in danger of having a state of mind created in which prices may be substantially increased.

"A coal operator may have a contract at prices fixed early in the year and if this state of panic develops on the part of the public he might get bids for coal at a much higher price. There will be a very strong temptation on his part to fill the orders which he can get at the higher prices and omit filling the orders to which he is already committed on the lower prices. This will tend to complicate a difficult situation. My thought is there ought to be an extension of the powers which the government had during the war under the Lever act to deal with problems of this sort. I think it would be a perfectly just exercise of the war power passed by Congress. The very fact that the weapon existed would go far to make it unnecessary to use it, and the government ought to be fortified by having an adequate power to deal with it.

"Now, I want to refer to one other matter which has been touched upon here, and that is as to the policy of the Railroad Administration with reference to the purchase of its own coal. Last January, I think it was, the question was raised whether the Railroad Administration would not fix a uniform price for coal in the various districts and buy coal at that price, apportioning its purchases among the various mines which were able to furnish the proper quality of coal. The disposition of the Railroad Administration was to ask for bids for this coal. That was the settled policy of the government, to secure the benefit of competitive bids wherever it was possible. The government had practically always been committed to that policy, but it was suspended during the war period. The representatives of the National Coal Association urged very strongly that we adopt the other policy—the fixing of prices and apportioning the coal. I gave the matter very careful consideration, and I felt it would not be justified for the Railroad Administration to assume that responsibility. The moment the Railroad Administration assumed the responsibility for fixing the price for coal it would have been charged with any failure of that price to meet the expectations of the operators and the employees, it would have had to fix the price high enough to cover a good many high cost operations, and a price so high as to probably be a very excessive price to many operators with low cost of operation. I felt that I ought to resort to the settled government policy of asking for competitive bids for coal, so I took special precautions to avoid the difficulties which it would be pointed out would arise if competitive bids were asked for.

Purchasing Policy

"Therefore we adopted the rule that the purchasing agent of each railroad would buy his own coal, and not through a central agency of the government. Each purchasing agent asked for bids from mines in the part of the country supplying his railroad and dealt with the matter separately. We also adopted the rule that we would not accept any bid unless the operator certified that the price was sufficient to

maintain the present wage schedule or scale and we maintained that policy. In one instance an operator made a bid and stated that it was not sufficient for that purpose and the bid was rejected. We also adopted the policy of making our contracts public. It was urged that unless that was done some operators might make unreasonably low bids to get a status in furnishing railroad coal which would be injurious to the employees and injurious to their operators, so we made the contracts public. We endeavored to adopt the most considerate policy to offset the objections that were urged by the National Coal Association.

"Now, I would be very glad indeed to see an investigation on that point, how much profit the operators made last year and this year, and just how they arrived at it. I don't believe there is a single exception where any operator made the price to the Railroad Administration so low that it would serve as a plausible pretext to increase the price to anybody else. My own judgment is that what reductions were made in price were only such as it would be perfectly natural for a customer who was purchasing throughout the year.

"Prior to the war the railroad companies used as a consideration of their coal contracts the factor that they would guarantee 100 per cent car supply for the railroad coal, and, of course, that was a very important consideration, because the operator furnishing railroad coal could be assured that he could supply them coal even in times of acute car shortage.

"From the railroad standpoint there were valid reasons for that because, after all, the railroad had to run. It had to have this coal if nothing else could be transported; but after that was thoroughly reviewed last year the conclusion reached was that the railroads ought not to use that as a factor in their coal contracts so that guarantee was dropped out. As a result, it was arranged that the Fuel Administration would see that the railroads got all the coal that they needed to run the railroads. I believe reference has been made here to the fact that there was a 10 cent reduction in the price of coal on account of that arrangement, but it is also true on account of that arrangement that the railroads paid a considerably higher price for coal than they had been paying before.

"In many instances the railroads had quite a large stock of coal in storage at the beginning of the year and, of course, there was a natural temptation to use that coal, but it was strongly represented to us that the mine labor situation was very serious because there was such a sudden and serious cessation in the demands for coal that many mines had to remain closed so much of the time that the employees could not earn enough wages to live on, and in consideration of that fact we adopted a definite policy to not consume our storage coal as rapidly as we would normally have done, and we held that coal in storage to a greater extent than usual and therefore bought more coal than we would have bought if we had used up our storage coal, as the general public seemed to be using up their storage coal. I am advised by our Division of Purchases that on July 1 of this year we had about 12,500,000 tons of coal in storage, which is about 3,000,0000 tons more than we had in storage when the government took over the railroads on January 1, 1918.

"It is important to bear in mind the further consideration that the present plan is for the railroads to be returned to private control on December 31 next. If the Railroad Administration buys coal and keeps it in storage and turns back the coal to the railroads on December 31 in excess of the amount which the Railroad Administration got from the railroads at the beginning of federal control, the result will be that the government will be tying its money up in coal for the benefit of the railroad companies. The substance of our contracts is that we will turn back the same amount of materials that we received, but if we turn back an excess amount the result is that the government is tying up its money in this excess amount of material and this will mean that the government will simply carry the obligation of the railroad company to repay it. The financial situation of the Railroad Administration has been such that I am satisfied we cannot afford to tie up any money in railroad materials and supplies in excess of what the contracts call for because Congress has been reluctant to make appropriations necessary to meet the situation which exists and we certainly could not make that situation more difficult by tying up government money unnecessarily.

"In conclusion I want to emphasize again that as to the transportation aspect of this matter we are doing everything that we can to meet the situation which has been brought about. We welcome advice from all sources and we stand prepared to give the committee any facts that it thinks it may need, and aside from that I urge on the committee the adoption of the specific recommendations I have made so as to put the public in possession of the facts which will be a protection to the public, and so as to give the government the control which will enable it to protect the public if the need for that protection arises."

Gutheim Discusses Car Supply

A. G. Gutheim, assistant manager of the Car Service Section, and Frank McManamy, assistant director of the Division of Operation, of the Railroad Administration, also testified last week before the committee and replied to some of the statements made by representatives of the National Coal Association attributing the deficiency in coal production mainly to car shortage and failure to repair cars.

Mr. Gutheim expressed some doubt as to whether a production of 500,000,000 tons of bituminous will be required this year as stated by the coal association on an estimate made by Dr. Garfield. The production last year was 585,000,000, but in 1916, when the industries of the country were running full tilt, which they are not doing now, he said 500,000,000 tons was sufficient. However, Mr. Gutheim said, it is the job of the Railroad Administration to transport all the coal needed by the consumers, whatever that may be, but not necessarily all that the coal operators have orders for because in times of coal or car shortage it is a common practice to place orders with two or three operators for the same tonnage in the hope of getting part of it. On the basis of the reports of the Geological Survey showing percentage of output lost on account of car shortage the potential capacity of the mines is about 850,000,000 tons and it is not necessary for them to work anything like full time to get out the production required. There will always be time lost on account of car shortage, labor shortage, no market, mine disability and other disabilities, Mr. Gutheim said, and it will still be possible to get out all the coal the country needs.

Mr. Gutheim took the position, however, that the thing to do is to find out what the requirement will be and then do what is necessary to get it. He suggested that the Railroad Administration might be able to help in getting a rough estimate, but Congress had not allowed the appropriation asked by the Geological Survey for this purpose. "If we have got a war time job," he said, "we ought to appreciate that we will need war time methods, and if the railroads are to put in war time methods the coal operators should consider seriously if they can assist by putting in theirs." He referred to the emergency measures adopted last year which made it possible to get out a record production of coal, such as the preferential car supply, high demurrage rate, zone system to avoid cross-hauling, pooling of various grades of coal and regulation to see that one consumer did not get what ought to

ıave been distributed among others. If the railroads are to be asked to handle an unusually large tonnage in the last ›art of the year the coal people should consent to some of ıese emergency measures," he urged.

Senator Frelinghuysen, chairman of the investigating com-ıittee, asked if preference could not be given to coal for a me. Mr. Gutheim said it could but the result would be ıat the complaints now made by the coal operators would ıerely be superseded by complaints from others and that ıst year there was a special reason for giving preference to ›al.

John Callahan, traffic manager of the National Coal ssociation, had spoken of the large number of cars tied up ı the transportation of slag, a large part of which, he said, as allowed to stay in the cars all winter and freeze up. Mr. utheim said that it was absolutely necessary in a territory ke the Pittsburgh or Youngstown districts to transport ag, burnt molding sand and ashes in order to get them out the way, but he had no information as to the claim of ıusual delay in handling these cars.

McManamy Describes Bad Order Car Situation

Mr. McManamy discussed the bad order car situation, ying the number of such cars is high at present but that the tion which was taken by the Railroad Administration two onths ago and which is still being diligently followed will, his opinion, be sufficient to meet the demand for coal cars ıless it reaches abnormal proportions, in which event the fficulty will be due not so much to car shortage as to the rminal facilities.

In July, 1918, Mr. McManamy said, 14.9 per cent of the comotives were out of service for repairs and 798 were ›red in serviceable condition. In January, 1919, there ere 16.9 per cent out of service for repairs and 1,582 stored; April, 18.4 per cent were out of service and 4,604 stored; July, 17.9 per cent were out of service and 3,668 stored. ıerefore, he said, the general condition of the locomotives day is better than at any time during federal operation or ıring the three years before and there is no ground for prehension. There will be sufficient motive power to ndle all the business offered to the maximum capacity of e terminals.

With respect to freight cars, Mr. McManamy said, the uation is somewhat different. On July 1, 1918, there were 7,403 bad order cars, or 7.1 per cent. The force of shop-en was then at its maximum and was working 70 hours a ek. In December the number of bad order cars had been re-ced to 130,506, or 5.4 per cent. After the armistice the urs were reduced from 10 a day for 7 days a week to 9 urs and 6 days a week and on December 9 to 8 hours a y. This was fully justified, he said, by the prospective crease in business and was necessary both because of the ere strain under which the employees had been working d because of the importance of reducing maintenance costs reducing the amounts paid for punitive overtime. The crease in business was sufficient to make it possible to intain the low percentage of bad order cars up to March, which time it was 5.2 per cent, which for the country at ge, Mr. McManamy said, is an almost ideal condition. e necessity for further economy on account of expenditures maintenance of equipment as compared with the test ›iod made it seem advisable to make further reductions in department forces and this was done by furloughing men many points and by further reducing the car department ırs. As a result the number of bad order cars began to rease in April and until it reached 8.7 per cent in July, a ıl of 215,953.

With the increase in business the shop forces were in-ased, first by increasing the work on the box cars to meet the early grain movement, and before the grain movement became heavy sufficient cars were provided to handle it as promptly as elevator capacity and terminal facilities would permit. Meanwhile, Mr. McManamy said, the low coal shipments could not be charged to the Railroad Administration because they were due to no market. Anticipating an increase in production the Railroad Administration on June 19 issued instructions to increase car repair forces and this was followed on June 27 by instructions that wherever the demand for coal cars made it necessary cars requiring light repairs should be given preferential attention. This was followed on August 16 by instructions to increase the hours of the car department forces to nine a day on all roads where the number of bad order cars was sufficient to keep the men profitably employed or where work could be furnished from connecting lines without excessive empty mileage, also to give special attention to grain cars, coal cars and refrigerator cars in sections where they would be most needed.

This action was begun, Mr. McManamy said, at a time when the loss of coal capacity was 41.4 per cent, of which 26.2 was on account of no market and but 3 per cent on account of car shortage. The effect had already become apparent in a reduction of 8,414 in the number of bad order cars and of 5,741 in the number of bad order coal cars. The number of employees was increased about 8,000 and their hours to nine a day, making an increase of 12½ to 15 per cent in the number of hours worked.

"The increase in bad order cars," Mr. McManamy continued, "is not at all due to a slowing up of the repair program. It is to a substantial extent due to the fact that since the close of the war the railroads are endeavoring to get their cars in better condition and are therefore sending cars to the repair tracks which at any time in the past four years would have been continued in service without repairs. They are also holding cars for heavy repairs which at any time in the past four years would have been put in service with comparatively light repairs and which, if the demand for cars becomes sufficiently urgent, can again be returned to service with comparatively light repairs.

"The strike also interfered seriously with the car repair program, but I think we can reduce the number of bad order cars very substantially in the next two months unless we have some unforeseen labor troubles—and I do not look for them."

Mr. McManamy also testified that 68,598 of the 100,000 cars ordered by the Railroad Administration have been built, of which 51,428 are in service and 17,170 in storage waiting to be stencilled, which is being done at the rate of 700 a day. The balance of about 31,400 cars is being turned out at the rate of 220 per day and includes 10,658 double sheath box cars, 12,075 single sheath box cars, 3,562 50-ton gondolas, 949 hoppers, 1,826 low side gondolas and 2,332 70-ton hoppers.

C. E. Lesher, in charge of mineral fuel statistics of the Geological Survey, testified that at the present time the reason for the shortage of coal production is transportation disability but that if consumers had bought coal for next winter in the Spring, when the transportation was there, they would not now be facing that condition. "They are asking for it all in a bunch," he said. He also said that if there were always a full supply of cars and the labor worked five and one-half days a week, the country could not absorb the output of coal.

F. S. Peabody, formerly chairman of the committee on coal production of the Council of National Defense, denied that unduly high prices are being charged for coal and said that legislation calculated to affect the law of supply and demand would not remedy the coal problem. He said there is no probability of a coal shortage this winter unless deliveries are held up by a shortage of cars or by labor troubles.

Government Ownership and the Labor Situation on French Railroads

By a French Correspondent

As in all countries, the question of government ownership of railroads is one which is being much discussed in France at the present time. Most of the leaders of the various labor unions are using government ownership of railroads as one of the principal planks of their platform, but as a matter of fact there is great indifference with regard to this matter among the employees themselves. The latter are particularly interested in the application of the eight-hour law for their daily work, in being represented on the boards controlling disciplinary action, and in obtaining higher wages corresponding more nearly with the present high cost of living. If the employees gain these points they care little as to whether the railroads are owned by the government or by private companies. The following are the four main advantages which the advocates of government ownership believe will be obtained by applying this policy to all railroads in France: Uniform scale of wages; uniform scale of rates; abolition of territorial or zone limits between railroads with uniformity of equipment, and a uniform system of signals.

The questions are now being studied by all the railroads, and in a few months' time the first two will probably be settled. When these absolutely essential reforms have been adopted, the main advantages to be obtained by government ownership will already have been attained, and the strongest reasons for adopting that policy will no longer exist.

It must be said, however, that in a way this question will essentially settle itself some years hence. In France the different railroad companies were given "concessions" or grants for 99 years, and these all expire during the years 1958, 1959 and 1960. At that time the railroads will automatically be turned over to the government. It is very probable, however, that the government will take them over under very different conditions from those already established with regard to its administration of the French State Railway System. It is likely that the directors and personnel existing on the various railroads at that time will be kept, and that the directors will be given much greater freedom and power of initiative than is the case at the present time with the State Railways.

Fortunately the expiration of the grants for these railroads will not take place for 40 years. It would have been most unfortunate had this come about at the present time or even in the immediate future, on account of the very unsettled conditions in France resulting from the war. The whole organization of France is now so greatly upset by this tremendous upheaval, and there are so many disturbing labor questions being agitated, that it would have been almost impossible to have calmly and wisely studied the methods to be adopted by the government for operating the railroads under its ownership.

The case of the State Railways, owned and operated by the government, can be taken as an example of the actual effects of government ownership in France. It may be said that this experience has shown, so far, great disadvantages and no advantages. The managers of the railroad have had more difficulties to cope with in running the railroad and they have not obtained equivalent results as regards earnings when compared with the privately owned roads. The employees are not as well taken care of and have not the same opportunity for rapid advancement when they show ability as when the railroad was owned by a private company. A large number of these employees have become dissatisfied and have left the State Railways to take up other government positions. Men very rarely leave the privately owned French railroads.

Take the Paris-Lyons-Mediterranean for instance: Out of the 80,000 employees, not more than 2,000 or 3,000 leave yearly. Of these, the great majority are dropped from the rolls on account of death, sickness, or old age, and very few because they voluntarily wish to change their business. In this connection it is a rather interesting fact that as a rule railroad employees in France are married men. It is a great exception to find an unmarried man in the employ of the railroads at stations. The employees take up their work with the companies in a certain locality, bring their families, settle down and end up usually by spending their lives there. In France one does not find the thousands of employees, as in America, who try railroading for a time and then move on and try something else. Almost all the employees are, therefore, men who remain and who work year in and year out for the same railroad.

There is no idleness among the regular employees on account of changes in the volume of traffic at different periods of the year. This traffic, of course, varies according to the season. For instance in the autumn there is a big coal traffic. In the late winter there is a tremendous movement of fertilizers to different regions of the country. In the spring vast quantities of early vegetables have to be shipped; later come the fruit crops and then the wine. Of course, the passenger traffic of the different regions varies also with the seasons.

These changes in the volume of traffic are handled in the following way. In each region, when the traffic is at its maximum, two methods are employed: The first is to send employees, with their consent, from a part of the railroad where the traffic is light to the regions where it is heavy. The second is to employ temporary workmen, drawn from the region in which they are needed. These men are almost invariably farm laborers, and as France is a great agricultural country, they can always be readily obtained, except during the harvest season. These men are known to the station masters in the different localities, and the same ones are used from year to year. This method works out splendidly as it not only furnishes additional employees for the railroads during the periods of stress, but it also eliminates idleness among the farm hands at times when they otherwise would have no work.

All of the railroad companies in France have done a great deal to try to improve the living conditions of their employees. In order to permit the employees to obtain, at low rates, foodstuffs and the first necessities, such as shoes, co-operative stores and "économats" have been established. In the co-operative stores the employees themselves control the entire organization and direction, but the railroad companies try to facilitate their work in every way possible. In the case of the "économats", or company stores, the railroad companies control the organization and direction. This latter method is that employed on the Paris-Orleans. Canteens have also been established. Thanks to these stores and canteens, the employees are able to purchase foodstuffs and the first necessities at cost price.

The railroad companies have also built colonies of wooden houses for their married employees. The Paris-Lyons & Mediterranean, for example, has bought American army barracks to the value of 2,000,000 francs for this purpose. This also encourages the unmarried men to get married, for they often experience great difficulty in finding lodgings when they are single.

With regard to technical schools for railroad employees, France is far behind the United States. France has some of the finest first-class technical schools in the world, such as the School of Mines, and the School of Bridges and Highways, but she had not had good secondary technical schools. New workmen in the railroads are generally sons of present employees, and they work in small groups in the different

shops, learning their trade under an apprenticeship system. For this they are paid two or three francs a day. This lack of good secondary semi-technical schools for railroad apprentices is very unfortunate, and the more progressive managers of the railroads are planning to study American schools of this kind in order to institute a similar system in France.

The common objection of ignorant workmen to modern and up-to-date machinery exists to a great extent in France, but the managers of the railroads are disregarding this and are gradually installing modern machinery and methods everywhere. In cases where the number of men is reduced for this reason, these employees are not discharged, but are used elsewhere.

The above brief description will show the general methods of handling employees on the French railroads and the prevailing views concerning government ownership. Although conditions, in many ways, are not the same in France as in America with regard to railroad operation, much can be learned by the railroad men of each country by studying what is being done in the other country. The Americans who co-operated with the French during the war in railroad work realized that there was much to learn in France, and the Frenchmen through the contact with these Americans have become tremendously interested in modern American railroad methods, such as train despatching and block signaling.

A great many of the leading French railroad men are planning to visit America shortly—among others Monsieur Claveille, Minister of Public Works—and it is certain that American railroad men will take great pleasure in giving them every chance to study our railroads and their methods.

According to a report on traffic conditions for the week ended August 25, while the recent railroad labor disturbances have subsided in nearly all the regions throughout the country, the movement of commodities, with few exceptions, has not kept pace with the corresponding period of last year. In the Allegheny region, for the week ended August 25, revenue freight handled decreased 8,012 cars, compared to the same period last year. In the Pocahontas region, as compared with the week ended August 25, 1918, tidewater coal dumped decreased 22.7 per cent.; other coal decreased 8 per cent.; commercial freight decreased 12 per cent. and loads received from connections decreased 23 per cent. Figures from the Northwestern region show a decrease of approximately 41,000 car loadings for August 25, 1919, as against the corresponding period for 1918. In the Central Western region, some improvement was noted. For the week ended August 19, 1919, grain loadings increased 15 per cent., over the same week for 1918, live stock increased 22 per cent., and lumber increased 16 per cent.

Patriotism, local pride and just common selfishness all say: "Buy War Savings Stamps and Thrift Stamps."

E. B. Thomas

Eben Briggs Thomas, chairman of the board of directors of the Lehigh Valley, and one of the best known railroad men in America, died at his home in Morristown, N. J., on September 4, at the age of 80. Mr. Thomas had made his mark as an executive officer on four prominent railroads, and was as notable for his knowledge of operating details and his sympathetic interest in the men in the ranks as he was for his efficiency as a financier and his ability in the whole broad field; and yet, strictly speaking, he was not brought up as a railroader; he was a business man of ability and considerable experience before he entered the railroad field.

As a railroad officer he belonged to the old school; devoted with decided singleness of purpose to his immediate tasks and too busy and too modest to advertise himself; but he became prominent through his activities in the American Railroad Association, of which, in its earlier and stronger days, he was one of the leading spirits; and he became popular among railroad officers throughout the country in spite of his modesty; or rather because of his engaging personality, his freedom from all useless frills and the good judgment by which he habitually went to the heart of every question.

E. B. Thomas

He was born in Cleveland, Ohio, in 1839, the son of a clergyman. His early training was in the office of the Otis Steel Company, of which firm he became a member. In 1870 he was appointed receiver of the Lake Shore & Tuscarawas Valley, now a part of the Baltimore & Ohio, and in that position made so good a record that he was chosen general manager of the Cleveland, Columbus, Cincinnati & Indianapolis. Here he remained until 1885 and here he made his reputation as an operating officer. From 1885 to 1888 he was second vice-president and general manager of the Richmond & Danville, which was the nucleus of the present Southern Railway System. After three years in the south, he was called to the New York, Lake Erie & Western as second vice-president and after a few months was called to New York City as chief operating officer of all the lines of the company. On December 1, 1890, he was made first vice-president. He was promoted to the office of president in 1894 and when the receivership was ordered he was appointed one of the receivers. In November, 1895, when the company was reorganized he was made president of the new Erie Railroad Company. Six years later he was made chairman of the board of directors. In 1902 left the Erie to become president of the Lehigh Valley. This office he held for 14 years, and on February 21, 1917, was elected chairman of the board, being succeeded as president by E. E. Loomis.

Mr. Thomas' administration of the Lehigh Valley was marked by the development of the road from a condition near bankruptcy to that of a sound and prosperous concern.

The mileage of the road increased but little, but the gross receipts rose from $24,000,000 to $47,000,000, and the surplus available for dividends to a sum equal to more than twelve per cent on the common stock. A prominent feature of his administration was his intelligent adherence to high standards of engineering practice, both in roadway and equipment. He was not an engineer, but, like Mr. Carnegie, he exercised unerring judgment in availing himself of the work of other men.

Railroad Hearings Before House Committee

The House committee on interstate and foreign commerce expects to complete its hearings on railroad legislation by the first part of next week, after having held almost daily sessions since July 15. It has already heard most of the proposed plans for railroad regulation and this week has been hearing various witnesses who have proposed amendments to the Esch-Pomerene bill.

On September 5 a delegation of colored people representing the Colored American Council appeared before the committee, introduced by Representative Madden of Illinois urging legislation to require the railroads to furnish equal accommodations and service, regardless of race, in interstate traffic. The witnesses did not object so much to the separation of the races as provided by the "Jim Crow laws" of the southern states but based their argument principally on the inadequacy and unsanitary condition of the facilities provided for colored passengers to show that they are discriminated against in many ways. It was said to be almost impossible for a negro to obtain Pullman accommodations in the south and very difficult to get anything to eat while travelling because they are not allowed in the dining cars and many station eating houses have no provision for them. The Jim Crow car, it was testified, is usually only half a baggage car, in a very filthy condition and very much overcrowded. The witnesses presented elaborate and carefully prepared arguments in support of their claim of discrimination together with a large amount of data regarding the conditions of the facilities provided for colored passengers.

A number of representatives of water lines have been before the committee to oppose the provisions of the Esch-Pomerene bill giving the Interstate Commerce Commission jurisdiction over port-to-port rates. Among these have been W. P. Levis, freight traffic manager of the Clyde and Mallory lines, who said the steamship business would not lend itself to the regulation prescribed for rail carriers, as the conditions under which they operate are very much different. Thaddeus H. Swank, of counsel for the Merchants' & Miners' Transportation Company, submitted a statement by A. D. Stebbins, president and general manager of the company. Frank A. Law, of counsel for the Alaska Steamship Company, and John H. Bunch, general freight and passenger agent of the company, protested both against giving the commission jurisdiction over port-to-port rates and against including Alaska in the provisions of the bill.

F. B. McKinnon, president of the United States Independent Telephone Association, F. C. Stevens, counsel for the association, and N. C. Kingsbury, vice-president of the American Telephone & Telegraph Company, asked the elimination from the bill of the provisions which would bring the telephone and telegraph systems within the full regulatory powers of the Interstate Commerce Commission.

B. B. Cain, representing the American Short Line Railroad Association, asked a government guaranty of operating expenses to the short lines which have not been paid the standard return, for the period immediately following the expiration of federal control. He also offered a proposed amendment to protect existing rates during the period of readjustment. L. S. Cass, president of the Waterloo Cedar Falls & Northern, asked that the Interstate Commerce Commission have jurisdiction over the routing of traffic.

Earl H. Morton, president of the Order of Railroad Station Agents, which has a membership of about 6,500, told the committee that the Plumb plan is "the best plan ever devised to drive brains out of the railroad business." "The plan is so preposterous," he said, "that it would not merit serious discussion but for the fact that the so-called Plumb Plan League seems to be securing the support of large numbers of railroad employees who have not really informed themselves as to what the plan is and the way in which it would actually work. Its adoption would destroy efficient operation, cause tremendous rate increases or a deficit to be paid by the public, and wreck the rail systems physically and financially."

J. G. Luhrsen, president of the American Train Despatchers' Association, appeared before the committee on September 10, urging legislation to continue the effect of General Order No. 8, issued by Director General McAdoo last year, which prohibits discrimination against any employee because of membership or non-membership in a labor organization. He said the despatchers were already hearing threats that they would have to choose between their jobs and their organization after the roads are returned to private management. He said, however, that his organization had made little headway against the Railroad Administration as compared with the influence exerted by the larger organizations of employees, and mentioned a case where both the despatcher and the train crew had been discharged for allowing a train to run into a terminal 50 minutes ahead of schedule but the members of the crew had been reinstated through the influence of their organizations.

Senator Lenroot of Wisconsin appeared before the committee in support of the Amster plan, which has been incorporated in a bill which the Senator has introduced providing for unification of the roads into a single system, with minimum earnings guaranteed and privately owned but managed by a board representing shippers, farmers, security owners, employees and the public. He opposed various plans which seek to preserve competition and said the public is only interested in the most efficient operation and reasonable rates, which he argued cannot be obtained under separate managements some of which are likely to repeat the examples of financial manipulation which have furnished scandals in the case of the Rock Island and the New Haven. Senator Lenroot said that physical property should not be taken as the sole criterion of value and that a capitalization of earnings would not be justified because some roads "because of a lack of exercise of regulating power" are earning too much. His plan proposes a valuation based on the three elements of original investment, cost of reproduction and earning power. He suggested that while men cannot be required to work against their will it might be possible to provide that strikers shall not be taken back after a strike at a higher wage than that determined by a tribunal.

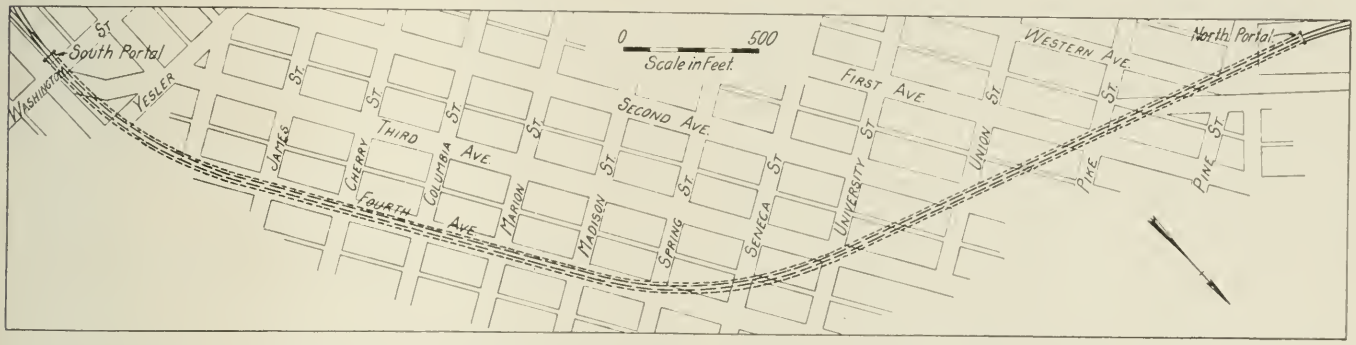
Representative Winslow asked several questions suggesting some kind of regulation of labor organizations to make them responsible. Under present conditions, he said, the committees of Congress do not hear from the great body of working men but only from their leaders and never know whether or not they are properly representing the views of the men. On his last trip home, he said, he had taken occasion to question as many railroad employees as possible regarding the various propositions brought to Washington in their name but had found them rather indifferent. A majority of those he had talked with said they knew very little about the Plumb plan and others said they wished the present agitation was over so they could settle down to work. Most of them seemed to have so much money that their principal grievance as to wages was because someone else was getting more.

Concrete Packing Stops Settlement Over Tunnel

Change in Sub-surface Drainage Conditions Causes Decay of Timber Lagging, Requiring Its Replacement

By E. E. Adams,
Assistant Engineer, Great Northern, Seattle Wash.

THE TRACKS OF THE GREAT NORTHERN and the Northern Pacific enter the Seattle terminals from the north through a double track, concrete-lined tunnel, 30 ft. between the side walls, 26.8 ft. high from the top of rail to the crown of the arch, and 5,141.5 ft. long. The south portal is located near the intersection of Fourth Avenue South and Washington street from which point the tunnel runs northerly until it becomes coincident with the center line of Fourth avenue just south of James street. From this point it follows the center line of Fourth avenue for a distance of 1,360 ft. to the north margin of Madison street, thence curving to the northwest, passing under the cross streets, Third avenue, Second avenue, First avenue and Pike Place, to the northerly portal, which is located about 180 ft. south of the south margin of Virginia street, just east of Railroad avenue, on the Seattle water front. The tunnel lies beneath the heart of the retail district of the city, as is shown in Fig. 1.



Location of the Great Northern Tunnel Under Seattle's Business District

Limited Amount of Moisture Present Originally

The topographical features of Seattle are most unusual, and in order to develop the railway terminals, a site was selected some years ago on the unfilled tide lands at the foot of Beacon Hill. In order to gain access to the terminal which was to be occupied jointly by the Great Northern and the Northern Pacific, it was decided to bore through the hill on which the city was situated and thus escape congestion in the rapidly growing water front district.

The excavation for the tunnel bore was started from the north and the south portals in May, 1905, and the advance drifts met on October 26, 1914. The excavation bore was approximately 40 ft. wide and 30 ft. high, and all excavation throughout the entire length was carried out by the old tunnel method of excavating for advance drifts, headings and side pockets with timber lagging.

The timber section of the tunnel followed the excavation and at points where overbreak occurred the void was packed solidly with slab wood and square timber recovered from the false work used during the excavation. The concrete lining was then constructed within the timber section proper as shown in Fig. 2.

The excavated material along the route of the tunnel consisted of deposits of glacial drift of irregular lenses of hard blue clay, sand, cemented gravel and hard pan. During the removal of the earth more or less water was encountered, but not serious enough to cause any particularly difficult or expensive work. The sandy materials as a rule were water bearing and sometimes the clay had cleavage planes which indicated water. The area influenced by the drainage along the tunnel route was more or less uncertain. It may have extended some distance from the tunnel bore and in unexpected directions. It was a fact that large quantities of water were not encountered, but it was known positively that moisture did exist and it seemed to be the opinion of the engineers that the heavy timbering in the section of the tunnel would be preserved and permanently maintained after being encased outside with the concrete lining.

The construction work on the tunnel progressed rapidly after the advance drifts had met in 1904 and in April, 1905, double tracks were laid through the tunnel and traffic was handled direct to the terminals at the south end of the city.

Re-grading and Street Improvements Change Drainage

From 1906 until 1909 the grades and elevations of the cross streets and thoroughfares along the route of the tunnel were greatly changed and modified for street traffic by an elaborate and expensive system of regrades that the city had undertaken, the principal street changes in the vicinity of the tunnel being along Third, Fourth, Fifth and Sixth avenues, with the cross streets lying between Yesler Way near the south portal of the tunnel, and Pike street near the north portal of the tunnel. The regrade of Fourth avenue was completed in 1909 and this thoroughfare and others crossing the tunnel were paved with material which greatly changed the drainage conditions.

In addition the city also laid extensive sewer systems and, together with the reconstruction of paved street car track areas, the heavy annual rain fall and surface waters were disposed of in an entirely different manner than before the regrades were undertaken. By bettering the drainage conditions to this extent, all of the surface waters and others which formerly penetrated into the soil and kept it in more or less of a moist condition, undoubtedly caused a drying out of the soil and contributed very largely to the decay and dis-

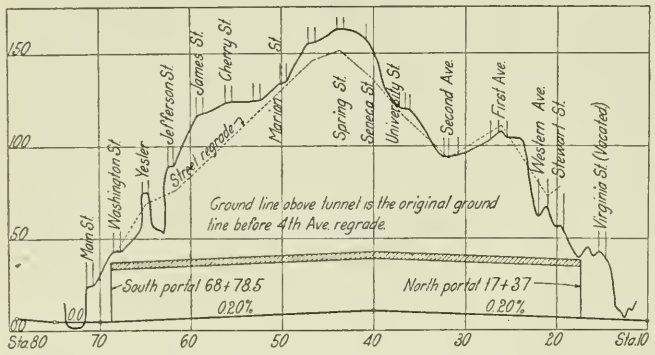
integration of the timber section of the tunnel and the packing over it.

Settlement Appears

In January, 1911, the street pavement and car tracks along Fourth avenue and above the tunnel showed signs of subsidence—not to any great extent—but the fact that slight settlement had occurred along the tunnel route, constituted such presumptive evidence, that after careful investigations and discussions, the railway company's engineers established an elaborate system of bench marks over the streets, buildings and structures from the north to the south portals of the tunnel zone. The greatest indication of subsidence was first noticed at the intersection of Fourth Avenue South and Prefontaine Place. This open street area is immediately above the tunnel and within 100 ft. of the south portal. Traffic conditions at this intersection were most severe and heavy, two street car lines forming a junction, and team and automobile traffic meeting at five corners. The settlement at this point was not heavy. The car tracks made slight, easy depressions and the drainage on the paved streets was not seriously interfered with, nor were there any unusual complaints in regard to the public utilities situated in the street proper.

Insomuch as there was such reasonable evidence of settlement, and regardless of the precise elements producing the subsidence and due to the principal fact that the tunnel angled directly under the zone of settlement, the railroad company took the initiative to ascertain the exact cause of the trouble.

The ground covering over the concrete lining at this location was not over 12 ft. deep, it was therefore not considered advisable to tap the arch of the tunnel and explore above the arch, but to sink a shaft and undermine the street area and thus maintain railway traffic through the tunnel and street traffic above it during the period of examination, which later developed into an extensive repair job. A shaft was sunk on a piece of vacant property and the undermining process was undertakin with a view to removing the timber



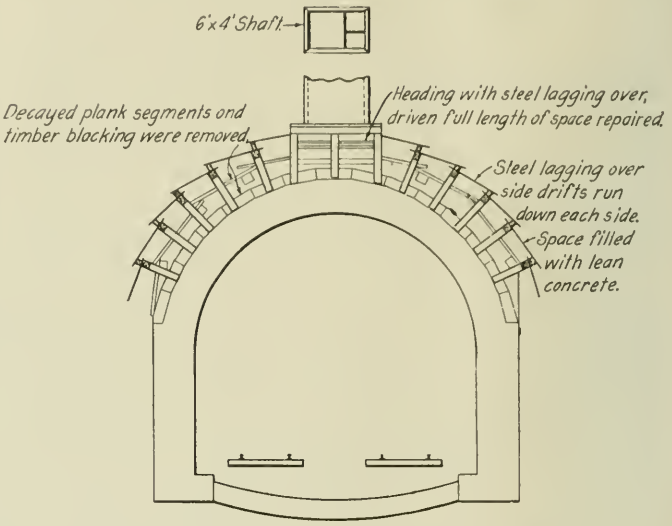
Profile Showing Relation of the Tunnel to the Street Grades

packing above the concrete arch and refilling the space with very lean concrete. This preliminary work was a complete success and the work of placing the concrete packing was carried out with no serious cave-in of the paved streets above or interruption to traffic.

In 1912 subsidence was further observed along Fourth avenue, which as stated above lies directly over the tunnel, and also in a ten-story brick building at the intersection of Third avenue and University street. At other points gas mains, water mains and other public utilities gave evidence of slight openings at some of the joints, at locations immediately over the tunnel. The results of all the uncertain elements of settlement, which was carefully checked by the railway company's engineers and the effects noticed and observed, finally resulted in a definite policy on the part of these engineers to adopt a program of making extensive repairs and improvements along the entire arch of the tunnel.

Method of Backfilling Tunnel

The method as finally adopted (Fig. 3) consisted in sinking shafts at convenient places either directly above the tunnel or located in whatever vacant space could be conveniently secured, or in sections of alleys or streets where traffic was light, and the underground work could be carried on with little or no interruptions. The shafts were usually 4 ft. by 6 ft. in size and were sunk to the level of the highest point on the tunnel arch, where advance drifts



Method of Conducting the Repair Work

were dug in either direction immediately along the center line of the tunnel proper. The advance drifts or headings were built 5 ft. high by 10 ft. wide and the steel lagging was supported by plumb posts and caps made of 8 in. by 8 in. square timber, spaced from 2 ft. to 4 ft. apart, depending on the overburden and the condition of the soil above the excavation. A center row of plumb posts divided the heading in two working vaults, one of which was utilized to remove the excavated material and the other to receive incoming materials, such as sand, gravel, timber, lagging, etc.

In following the excavation work of the headings and as soon as the first bents or forms were installed, the overburden of the soil was carried by supports consisting of steel lagging driven over the caps. This steel lagging was 3/8 in. thick by 6 in. wide and 6 ft. long, sharpened to a chisel end, which made the driving easy and contributed largely to the success of the whole underground operation. There was very little, if any, loss of the soil above the steel lagging and the workmen were cautioned to exercise extreme care in installing the steel lagging at the overhead part of the excavation. After the headings had advanced to a suitable distance in each direction from the shaft, side stopes 5 ft. wide were excavated at right angles from the advanced heading down along the extrodus of the arch to the spring line and to the old wall plate of the timber tunnel section. The old timbers and the broken down soil were then removed by pick and shovel, ax and cross cut saw, no other machinery being used throughout the process of the mining work.

The whole stope was then free to receive the back filling, which consisted of mine run sand and gravel mixed with a very small amount of Portland cement. The consistency of the lean concrete was determined more or less by the conditions above the tunnel; that is, where the excavation was under large buildings or extensive construction, the mixture

was made a little richer, but as an average, one cubic yard of packing when mixed and packed into the void or stope contained one-half barrel of Portland cement. The aggregate was mixed by hand and just enough water added to thoroughly moisten the mixture. This lean concrete was then rammed carefully into place in the side stopes and allowed to set for a few days before the steel lagging was pulled and the next section of the stope packed with a new batch of lean concrete. When the side stope was entirely filled and the lean concrete had set sufficiently to bind itself thoroughly together, the 5 ft. space next to the packed section was opened for another side stope. This allowed the workmen to spread the operation along the advanced headings and did not unnecessarily cramp the working conditions. The distance that mining operations were carried out from each shaft did not depend fully upon the cost of handling the material underground, but depended wholly on the space above the ground where shafts could be located conveniently. Sometimes the advanced headings were carried over 1,000 ft. apart from the shafts and work was thus carried on underground without any great evidence of the extent or character of the repairs that were being made immediately over the tunnel.

Electric power was used wholly in the hoisting apparatus in the shaft and for ventilating purposes in the underground working space. The mined area was well lighted and ventilation was provided through an ordinary 6 in. black iron stove pipe leading to an electric fan. More or less moisture was encountered but the water conditions were undoubtedly different than when the original tunnel was driven, confirming the assumptions the engineers had in their preliminary studies.

The excavated material consisted on an average throughout the entire length of the improvement of about 65 per cent timber and 35 per cent soil. After reviewing the entire work as carried out, it was found that approximately 25 per cent of the timber removed was affected quite badly by dry rot. In most cases no undue pressure from buildings or structures over the tunnel was noticed on the old timber packing, but in a few instances pressure developed on the caps and the plumb posts and the lagging drove and pulled hard in some sections. Under heavy buildings where the railway engineers anticipated settlement, it was deemed advisable not to pull the steel lagging, so as to eliminate as far as possible any voids whatever which might possibly be caused and conditions exaggerated if the steel lagging were pulled from its position after the concrete packing had been placed.

The work was distributed over a period of four years, being started in 1911 and completed in the early part of 1915. Since that time there has been no appreciable settlement to either buildings, streets, public utilities or other construction above ground, and the railway engineers feel confident that the concrete packing over the tunnel was a complete success insofar as subsidence to streets, buildings, etc., was concerned.

A Similar Problem at Everett

This concrete packing was placed for a distance of 4,835 lineal feet along the arch of the tunnel at a cost of approximately $375,000, including some of the miscellaneous repairs to street pavements, street car tracks and public utilities, including water mains along the streets, alleys and public thoroughfares above the tunnel proper. On an average the cost of all of the work, including excavation, backfill, labor charges, material, etc., figured $78 per lineal foot of concrete packing placed, which was approximately 39 per cent of the original cost of the tunnel. The tunnel proper, including the concrete lining and invert completed, ready to receive the track, cost $198 per lineal foot at the time of original construction.

About the time that the work on the Seattle tunnel was completed, more or less complaints were received concerning the subsidence of buildings and streets over the Great Northern single track tunnel constructed under the heart of the city of Everett. This tunnel bore joins tide water with the main line of the Great Northern and its industry and yard tracks in the easterly part of the city of Everett. The Everett tunnel was driven in 1900 by the old tunnel mining method, similar to the method adopted for the Seattle tunnel. As near as can be ascertained, considerable trouble was encountered during the original construction of the Everett tunnel in holding the super-imposed earth which was of a sandy character for the greater distance and flowed very quickly if not properly supported by lagging and posts. The original lining of the Everett tunnel was the Great Northern standard timber tunnel section, made sufficiently wide and high to allow the permanent concrete lining to be placed within the timber section.

When the timber lining was placed in the tunnel bore proper, all voids at the sides of the tunnel and overhead were packed with slab wood, which at places measured several feet in thickness, all timbers were exposed to the air currents of the tunnel until 1909, when the timbers began to decay and the strength of the arch was greatly impaired. In 1911 the concrete lining was placed within the tunnel and in 1914 and 1915 serious settlement was noticed in the buildings, streets and public utilities above the tunnel proper. Insomuch as this trouble was experienced about the time that the concrete packing was placed over the Seattle tunnel, the railway's engineers decided to adopt the same method of placing concrete packing over the Everett tunnel. This was done and the work was completed in 1919. It has also proved to be a complete success, no further subsidence or settlement having been noticed since the underground work was completed.

The work on both the Seattle and Everett tunnels was carried out under the direction of the engineering department of the Great Northern, of which A. H. Hogeland is chief engineer at St. Paul, and O. S. Bowen principal assistant engineer at Seattle. W. J. Coventry was general foreman in the field, and the writer was assistant engineer during all of this work.

Locomotive Exports from a British Point of View

THAT THE PINCH of American competition in locomotive building is not now being felt in Great Britain owing to the great worldwide demands for locomotives; but that British prices are likely to prove a barrier when conditions again become normal, are among the points brought out in an instructive article entitled British Locomotive Building which appeared in the July 19 issue of the Statist, London.

The article follows:

The locomotive industry is peculiarly British, as we were the pioneers in railway building. The construction of the home network first claimed our attention, and when that was nearing completion we undertook the development on a large scale of railway communications in other countries, particularly within the Empire and South America. For this purpose an immense amount of British capital was subscribed, and expended mainly in the United Kingdom on the manufacture of rails and rolling stock, locomotives, carriages and trucks. An important export trade was built up, and the industry continued to expand as the amount of British capital invested in railway development abroad became greater. Long before the War, however, a severe measure of competition was

being experienced from Germany, the United States, and Switzerland, especially in the manufacture of locomotives. The great railway expansion in the two former countries alone made such competition possible, though German capital interests, particularly in the railways of the Near and Far East, furnished, as in our own case, an avenue of entry for the products of their engineering shops.

Locomotives from Germany, and also from the United States, were found in South America and in various African markets, such as Egypt and the Uganda, and even in India. Railway mileage was, of course, rapidly extending everywhere, and our growing output found a sale despite the pressure of competition. The volume of business was sufficient to keep all countries remuneratively employed, and, even if there were irregular spells of depression, conditions in the locomotive engineering industry were, on the whole, good up to the outbreak of hostilities. The war strangled the German export trade, curtailed the British, and promoted the American. In this country the centres affected were Glasgow, Manchester and Leeds, the principal seats of our locomotive industry. They turned to the manufacture of shells and ordnance, and such locomotives as they built were mostly requisitioned for use at home or abroad. The normal foreign trade was almost entirely cut off, especially in the last three years of the war. The revival anticipated at the time of the armistice has not yet set in, because home requirements still remain to be filled, and to these a natural priority must be accorded. As our exports for war purposes have also fallen, recent figures show a decline even when compared with the period of restriction.

The following table indicates the value of rail locomotives exported in each year since 1913 and in the first five months of 1918 and 1919:—

Rail Locomotives Exported from the United Kingdom

	1913	1914	1915	1916	1917	1918
	Tons	Tons	Tons	Tons	Tons	Tons
To foreign countries	18,747	16,603	9,170	13,126	16,604	.....
To British possessions	28,374	44,879	32,219	7,795	6,160	.....
Total	47,121	61,482	41,389	20,921	22,764	15,272

	1918	1919
Five months (value)	£691,813	£365,496

Communications are a necessity of civilized life, and a continuous demand for locomotives is assured as railway mileage and railroad traffic develop. Further, war losses on the continent must be made good, and neutral countries, which were denied their normal supplies in recent years, are eager to place orders if delivery within a reasonable time can be guaranteed. The result of this general shortage of rolling stock is that the locomotive manufacturers in this country are booked well ahead. They are helped by the dislocation of the Germany industry, which before the war had become a formidable factor in the export market, its products being sent even to England. The adjoining table, taken from German sources, shows the extent of the output prior to the war:—

Year	For use at home and in German colonies, tons	For foreign export, tons	Total output, tons	Number of locomotives
1912	153,100	43,000	196,100	4,052
1913	118,800	40,200	159,000	3,782
1914 (7 months)	86,100	26,000	112,100	2,392

In South America the Germans were particularly active. We had not felt the United States competition too severely owing to the unpopularity of their designs, but the Germans cut into the trade with a European model at a lower price than the American, and secured a large share of business. It was our second most important market, and during the war, it has been to some extent overrun from North America. It is doubtful even still if American-built locomotives are regarded with the same favor as European. It is very difficult to compare the two models, as natural exigencies have in each case necessitated a development in design and construction along very different lines. Long hauls predominate on the other side of the Atlantic, and short hauls on this side. Accordingly, America has witnessed a greater development of the tender as opposed to the tank engine. Much of our traffic is suburban, and a tank engine, carrying supplies of fuel and water on the same vehicle, and able to run backwards and forwards with equal facility, is better adapted to this class of work. The long haul has further been responsible for the attention paid to compound locomotives on the American railways, while the British have favored single-expansion engines. The weight, size and power of individual engines have thus increased in the United States to a greater extent than here, and before the war there was an incessant struggle for supremacy between the two types. Strict comparisons, even between those of the same class, are difficult, as the American products have not the finish, either generally or in detail, that ours possess. Fine fits are not a feature in American engineering, and the result is shown in the increased running life and decreased maintenance expenses of the British models. Our locomotives are built to last, and are more suited to well-laid lines, while the American are at times surprisingly efficient where the permanent way shows unmistakable defects.

Locomotive building in the United States has increased considerably during the war, and special attention has been paid to the construction of standardized types. Under the War Industries Board the various plants concentrated on special types, and merely by specialization, without any increase in existing facilities, the rate of production was almost doubled. The American industry has become more strongly differentiated from the British, not only by the larger size of the unit engines, but also by the greater multiplicity of standard models and the more marked originality in design. In respect of finish they are still inferior; but in America the preference continues for mass production on native models, an undertaking which the size of the home market enables them to carry through with complete success. Even before the war they could undersell us in certain export lines, but the superiority of the British-built locomotive in regard to life and running expenses more than made up for its heavier initial cost. It is obvious, however, that the price margin against us cannot be indefinitely increased. A point may be reached at which the cheaper American engine is also more economical, despite its finish. The question may be asked if this point is not already reached. In British shops there has been a general reduction in working hours from 53 to 47, and so far the result has been a decreased production per man per hour. Demands for a 44-hour week have been made, and if conceded, with the rate of wages unchanged, and a further decline in output, on the analogy of the preceding reduction, the price of British-built locomotives must be again raised, and the chances of successfully competing in foreign markets will be lessened. It is not at all easy to explain why individual output should be higher in the United States. Many hold that we still possess a superior craftsman, but as against this the horse-power per operative in the American industry is greater. The leading position of the Americans, if not due to better labor or greater mechanical power, may be brought about by superior machinery or more highly developed factory organization, consequent on specialization and mass production. The pinch of their competition is not very severely felt at the moment. Many urgent requirements in India, the Crown Colonies, and the Dominions, as well as in foreign countries, remain to be filled, and orders have been placed here irrespective of costs. When these orders are completed, and the demand becomes again normal, our prices are likely to prove a barrier to sales, unless present unhealthy tendencies in the British engineering trades are speedily checked.

Doings of the United States Railroad Administration

Shop Employees' Committee to Accept Director General's Offer. Maintenance Men Defer Demands

WASHINGTON, D. C.

THE RAILROAD SHOP EMPLOYEES affiliated with the American Federation of Labor have voted 325,000 to 25,000 to authorize their officers to call a strike to enforce their original demands for a general increase in wages from 68 to 85 cents an hour rather than to accept the offer recently made to them by the President and Director General Hines of increases of from 4 to 7 cents an hour by way of readjustment. The vote places full authority in the hands of the officers, however and they apparently decided to take what they can get while waiting for a reduction in the cost of living or an opportunity to renew their demands. Although they had once rejected the offer the officers entered into conferences with Director General Hines and his assistants in the Railroad Administration on September 5, prepared to accept the offer and to negotiate for the national agreement covering rules and working conditions which Mr. Hines had promised them before the negotiations were broken off on August 1 by the unauthorized strikes. Mr. Hines attended the conferences on Friday and Saturday and they were continued this week by his assistants after Mr. Hines had left for a vacation of about two weeks.

Director General Hines on September 4 addressed an ultimatum, similar to that issued in the case of the striking trainmen in California, regarding the local and unauthorized shop strikes on the New York Central at Depew, N. Y., on the Baltimore & Ohio at Cumberland, Md., and on the Chicago, Burlington & Quincy at Havelock, Neb., saying that unless the men returned to work not later than their regular reporting time on Saturday, September 6, they would be considered as having permanently left the service, their places would be filled and if they returned to the service later it would be only as new employees. This notice was conveyed in telegrams sent to the regional directors, stating that the chief executives of the shopmen's organizations had definitely instructed their men to return to work, directing that the federal managers post the telegrams conspicuously on bulletin boards and consider them as their instructions to proceed accordingly.

Maintenance of Way Employees Defer Demand for General Wage Advance

The United Brotherhood of Maintenance of Way Employees and Railway Shop Laborers was given a hearing last week before the Board of Railroad Wages and Working Conditions and, although its members had taken a strike vote to enforce general demands recently filed with the Railroad Administration, after considering Director General Hines' instructions to the wage board, not to consider requests for general advances, the brotherhood announced its intention of adhering to the advice of the President and holding its general demands in abeyance until the government has had an opportunity to reduce the cost of living. The original demand was left with the board and in its place the representatives of the brotherhood filed a statement asking for the adjustment of what they termed inequalities in the present wage rates. This amounted to so much of an advance, however, that the representatives of the regional directors filed a statement opposing it on the ground that it constituted a general increase and recommending that any adjustment be treated as a local matter to be determined in the light of local conditions.

L. I. Kennedy, representing the brotherhood, said he wanted to go on record as demanding that in the event the cost of living is not reduced within a reasonable time the brotherhood be given an opportunity to present its claims for the general advance, and he called attention to the strike vote. In presenting the request for a readjustment Mr. Kennedy asked that the basic rate of track laborers be placed at 40 cents an hour, to which would be added an increase of 10 cents, making a minimum rate of 50 cents, and that the basic rate of mechanics be placed at 58 cents, to which would be added 10 cents, making the minimum rate 68 cents.

He said that trackmen now receive 28 to 40 cents an hour and track foremen $100 to $122.50 a month and that in many large terminals track foremen and other employees performing the same work receive different rates of pay. Also on many large systems adjoining divisions pay different rates and there are differences between main and branch lines. Shop laborers, he said, receive various rates for the same work, many of them varying between 34 and 43 cents an hour, while mechanics in the bridge and building department receive 53 to 68 cents, whereas in other departments mechanics receive uniform rates for all classes of work. In many instances, he said, mechanics on the same operation receive different rates, part of the difference being that some are paid under Supplement 4, dealing with shop men, and others under Supplement 7, which deals with maintenance of way employees. Signal foremen, Mr. Kennedy said, receive the rates of Supplement 8 while men under them are paid according to Supplement 4. He asked the higher basic rates in order to bring about uniformity.

G. L. Moore, engineer maintenance of way of the Lehigh Valley, chairman of the committee representing the regional directors, said that under the director general's instructions no general increase could be considered at this time and that the present rates do not represent discrimination, except where some roads may not have given the proper rate to section foremen, because the differentials were not disturbed by General Order No. 27 and its supplements except as lower paid men were given the larger percentage of increase. Any adjustments that should be made should be dealt with locally.

Director General on Vacation

Director General Hines is taking his first vacation since he became connected with the Railroad Administration at the time the railroads were taken over by the government. He expects to be away from Washington for about two weeks.

Cost of Freight Train and Locomotive Service

The total cost of freight train service, including locomotive service, continues to show a steady decrease each month as compared with preceding months, although increases as compared with last year, according to the monthly report of the Operating Statistics Section. For the month of June it was 101.8 cents per 1,000 gross ton miles, as compared with 103.9 in May, 112.7 in April, 119.5 in March, and 120.5 in February. No comparison of this figure with last year is given. The cost of freight locomotive service per locomotive mile in June was 107.1 cents, as compared with 97.4 cents in June, 1918, an increase of 10 per cent, and as compared with 110.3 cents in May of this year. The cost of freight train service per train mile was 154.7 cents, as compared with 142.8 cents in June, 1918, an increase of 8.3 per cent, and

as compared with 156.8 cents in May. All items of cost continue to show increases as compared with last year. The combined averages for all regions and the comparative figures for last year and for preceding months of this year are as follows:

	June 1919	June 1918
Cost of locomotive service per locomotive mile	107.1	97.4
Locomotive repairs	36.1	31.1
Enginehouse expenses	8.8	6.8
Train enginemen	19.6	18.5
Locomotive fuel	39.1	38.1
Other locomotive supplies	3.5	2.9
Cost of train service per train mile	154.7	142.8
Gross ton miles	119.5	126.5
Enginehouse expenses / Locomotive repairs	51.1	43.7
Locomotive fuel	44.6	43.9
Other locomotive supplies	4.0	3.4
Train enginemen	22.3	21.3
Trainmen	25.6	25.3
Train supplies and expenses	7.1	5.2

	June, 1919	May, 1919	April, 1919	March, 1919	Feb'y, 1919
Cost of train service per 1,000					
Locomotive repairs / Enginehouse expenses	33.7	35.4	38.6	40.8	43.1
Locomotive fuel	29.3	30.6	34.3	37.5	40.3
Other locomotive supplies	2.6	2.6	2.9	3.1	3.4
Enginemen and trainmen	31.5	31.1	32.4	33.5	34.8
Train supplies and expenses	4.7	4.2	4.4	4.6	4.8

Administration to Order Rails

The Railroad Administration was expected to place orders this week for 200,000 tons of rail, to be divided among the different steel companies in proportion to their ability to make prompt deliveries, but final action was postponed. The price bid by the steel companies is understood to have been the same as that for the original order of 200,000 tons placed by the Railroad Administration in May, $47 a ton.

Report on Collision of Atlantic City Trains

Immediately following the collision on the Pennsylvania Railroad at Elwood, N. J., on Sunday, August 24, involving the ninth and tenth sections of an excursion train from Washington, D. C., to Atlantic City, N. J., an investigation was begun by the Railroad Administration, cooperating with the Interstate Commerce Commission, the local authorities, and the Board of Public Utilities Commission of New Jersey. The management of the Pennsylvania Railroad, acting under the direction of the regional director of the Allegheny region, C. H. Markham, has reached a determination as to responsibility, and disciplinary action has been ordered.

Aside from the responsibility for the wreck itself, claims having been made with regard to the general conduct of the excursion trains in question, C. S. Lake, assistant director of the Division of Operation of the Railroad Administration, was sent immediately to the scene by the Railroad Administration to make a thoroughgoing inquiry into such supplemental circumstances. Mr. Lake has now made a full report, covering the entire situation, particularly with reference to the claim (1) that wooden coaches were used on the excursion trains in question, (2) that the trains were not adequately lighted, (3) that the trains were not adequately watered, and (4) that passengers were not properly treated following the wreck.

Mr. Lake's report as given out by the Railroad Administration is summarized herewith:

Investigation discloses the accident to have been directly attributable to the failure of Engineman Ralph J. Townsend to observe or regard caution indication of automatic signal, and stop indication of automatic signal as required by rule and as was entirely feasible, and to failure of Flagman W. E. Duvall and Brakeman E. F. Quinn, who was also on rear by instructions of conductor, to afford proper protection to train as required by rules, and to failure of Conductor J. E. Price to see personally that protection was afforded as required, which was also entirely feasible.

Engineman Townsend of the tenth section has testified that he did not see signal (stop indication), located 2264 feet from point of accident, until he was within 6 feet of it, and that his vision was obscured by fog, which admittedly prevailed on the morning of the accident, and by escaping steam from the right piston of his engine. Engineman C. W. Disney, who ran this engine from Washington to West Philadelphia, and Road Foreman of Engines Joseph J. Cook, who especially tested the engine in order to determine whether escaping steam was such as to obscure the vision, testify that leaks obtained, but that steam did not escape sufficiently to obscure the vision. If the conditions were as described by Townsend, it was his duty to have exercised such precaution as would have insured safety. Although he is qualified on and thoroughly familiar with the physical characteristics of the division upon which the accident occurred, his testimony clearly indicates that he did not know of his whereabouts at the time the accident occurred; that he failed to discern signal No. 349 altogether, and thought that the accident occurred at Magnolia instead of near Elwood.

Between the hours of 9:00 p. m. Saturday, August 23, and 12:50 a. m., Sunday, August 24, the Pennsylvania Railroad moved 10 excursion trains, 119 coaches, 6,261 passengers, from Washington, and 6 excursion trains, 67 coaches, 3,576 passengers from Baltimore destined for Atlantic City, at which point the first section of these various trains was due to arrive at 4:00 a. m., Sunday, it being deemed inadvisable and contrary to the usual practice to discharge excursionists there earlier than that hour on account of accommodations being inaccessible.

Records indicate that the 16 trains from Washington and Baltimore consisted almost entirely of wooden equipment, part of which was owned by the Pullman Company. The equipment was in condition for safe operation and its use was allowable under legal regulations. Sixty-six per cent of the total equipment operated by railroads under government control is of wooden construction, 7.4 per cent wooden bodies with steel underframes, and only 26.6 per cent of steel construction, which situation necessitates the use of wooden equipment in excursion traffic if accommodations are to be afforded. If wooden equipment were not used it would be impossible to run these excursion trains.

The Pennsylvania Lines East own 2,340 coaches, or 8.5 per cent of the total coach equipment operated by lines under federal control, including 1,411 steel coaches, but the travel requirements of that line this year are approximately 250 coaches per day in excess of equipment owned; and to accommodate daily and especially week-end seashore requirements, it has been necessary for them to make requisition from the Troop Movement Section of the Railroad Administration for equipment, without which excursion service, which has been insistently demanded, could not be furnished.

It did not develop until Friday, August 22, two days prior to the excursion, that it would be necessary to use about 80 tourist sleepers which were obtained from the Troop Movement Section. The Washington Terminal people and Pullman Car Lines co-operated to endeavor to get this equipment in the best possible condition. The cars were thoroughly cleaned, equipped with lights and water, but two P. R. R. steel coaches used in local suburban service were not equipped with water coolers. These cars were placed in the fourth section out of Washington and not in either of the trains concerned in the accident. To insure adequate gas supply the number of burners for service in tourist cars, used in troop movement, had been reduced to two or three, and these were lighted leaving Washington. Tourist cars lighted by electricity had such equipment removed and were lighted by from four to seven ordinary hand oil lanterns, attached to specially designed holders on ceilings and walls of the cars. The reports show that several of the lights were put out by passengers on leaving Washington so they could sleep. Con-

ductor Price stated to the coroner's jury at Atlantic City that he had reported bad lighting to station officers at Washington but a careful check shows he made no such report. Every effort, therefore, was made to condition these coaches to handle the very unusual traffic.

Physicians at Elwood were immediately summoned, and, as soon as means of communication could be effected, physicians from Hammonton (6 miles distant) were ordered, and the accident was reported to the division officials at Camden, who were erroneously informed that both tracks were blocked. The injured persons were transferred to the undamaged coaches and held at point of accident to enable physicians who arrived from Hammonton to render first aid. The train then proceeded accompanied by physicians to Atlantic City.

As to action taken as a result of the wreck: Proper disciplinary action has been ordered against the men found to be directly responsible; the erroneous information concerning the blocking of both tracks, which led to delays and inconvenience to passengers, was due to the fact that first attention naturally was given to the injured. Orders have been issued that cars used in excursion trains must be suitably lighted and provision made for an adequate supply of drinking water on trains.

Committee on Health and Medical Relief to Submit Report

The Committee on Health and Medical Relief, Dr. D. Z. Dunott chairman, which was instructed to make a complete survey of health, surgical and medical problems and to make recommendations to the Railroad Administration, is expected to submit shortly the result of its researches, together with recommendations upon subjects that it has investigated up to the present time.

The committee's chief interest will be found:

First: In the development of a uniform set of sanitary rules and regulations for stations, shops, trains, office buildings, camps, rest-houses, Y. M. C. A.'s, etc.

As a result of its work the man on a small railroad line will receive the benefit of the country's highest skilled surgeons and doctors just as the employee on the larger system has heretofore been so benefited, and the whole body of employees and patrons will benefit through rules and regulations covering all phases of railroad sanitation—the first complete set ever formulated—which is a great step forward.

Second: The study of the latest and most approved methods of treating injured persons, with the view to establishing at strategic geographical locations, in conjunction with city, state or other hospitals, functional clinics and vocational training schools. Thereby an opportunity will be given to injured employees and others injured on railroad property to receive the most advanced and scientific treatment, in order that wherever possible such injured employees and others may be rehabilitated and restored to their former occupations, and, where this is impossible, establishing them as nearly as may be to their former earning capacity.

The committee has given most careful consideration to the question of first aid and is ready to submit a first aid packet containing dressings and a full set of instructions, which will permit the layman to apply intelligently first aid dressings. It is also giving consideration to the establishment of first aid teams on such railroads as do not at the present time have them.

Railroads in some parts of the South, co-operating with state and public health officials, have already conducted a successful campaign in combating malaria and hookworm, and the committee is urging that this campaign be extended to other localities infected with these disabling diseases.

In making its surveys the committee has not only consulted surgical departments of the railroads but has also consulted many prominent professional men outside of railroad service, state boards of health and the United States Public Health Service, with the sole idea of giving to the employees and patrons the best possible protection and care.

Passenger Traffic in June

The number of passengers carried one mile by the railroads under federal control in June amounted to 4,145,379,862, an increase of 5.6 per cent as compared with June, 1918, according to the monthly report of the Operating Statistics Section. The Ohio-Indiana district and the Southern region showed decreases. For the six months ending June 30 the number of passenger miles was 21,320,651,049, an increase of 4.6 per cent. In this case also the Ohio-Indiana district and the Southern region showed decreases, while the other regions and districts showed increases ranging from .2 per cent for the Southwestern region to 18 per cent for the Pocahontas region.

Additional Appropriation for the Alaska Railroad

An authorization of an additional appropriation of $17,000,000 to complete the construction of the government's Alaska railroad between Seward and Fairbanks was voted by the House of Representatives on September 6. The original appropriation for this work was $35,000,000 but because of the increased prices of materials and the increases in wages this was found insufficient. The original appropriation has been practically exhausted and it was stated to the House that unless the additional funds are provided the work would have to be stopped this fall.

If the bill becames a law the appropriation will have to be passed upon by the committee on appropriations. The road is now completed for a distance of approximately 227 miles on one end and 100 miles on the other end with a gap between.

In reporting the bill from the Committee on Territories, Representative Curry of California submitted a report in part as follows:

"Hearings having been held on July 23, 24, 25, and 31, 1919, the report of the Alaskan Engineering Commission having been submitted and the testimony of officers of the Alaskan Engineering Commission having been fully considered, the committee finds:

"That the construction of the Alaska Railroad by the Alaskan Engineering Commission has been prosecuted under most adverse conditions, due in large part to the war, and the work has been done at the lowest cost consistent with the permanent character of the work performed. The railroad will cost on completion approximately 31 per cent more than the amount originally estimated and the entire project, including terminals, rolling stock, and physical property, and maintenance and operation charges in excess of revenue during the entire period of construction less than 50 per cent more than the amount originally authorized to be expended. Since the commencement of the construction of the road, wages of employees increased 59 per cent; the prices of materials and supplies as much as 161 per cent, and transportation costs 147 per cent. The result of accomplishing this construction at an increase of no more than 50 per cent under such circumstances is due in large part to the system of station contracts by which the original estimates of excavation costs were very closely approximated.

"That though engineering mistakes have occurred, due to flood and other unforseen conditions, they have not been a

material factor in the increased cost of the work and probably no greater than would be encountered on any project of such magnitude in a country of unusual climatic conditions.

"That the development of town sites along the line of the railroad and the assistance rendered to home seekers have been of notable value in the settlement and development of the adjacent regions. The providing of ample sanitary housing facilities for employees was wise and was necessary for retaining ample working forces, the maintenance of a proper morale amongst the workers employed on the enterprise and necessary to the preservation of the health, and the maintenance of order in the new communities. The work accomplished has been of a substantial character, at a cost that compares most favorably with the cost of other railroads in Alaska and in the western states, and especially so when consideration is had of the increased costs and abnormal conditions prevailing during the period of construction.

"That the completion of the Alaskan railroad would have been accomplished within the amount originally authorized and at a much earlier date than is now possible but for the heavily increased cost of labor, material, and supplies, and there would have been a considerable saving both in cost and in time of construction, had the entire amount been appropriated so as to be continuously available; whereas by the system of annual appropriations the construction forces have been impeded and delayed in the prosecution of the work, and it has been impossible to take advantage of the full open working season in Alaska, from May to October, inclusive, by reason of such limitations. That in order to complete the railroad from Seward to Fairbanks by December 31, 1922, the sum of $17,000,000 additional to the $35,000,000 originally authorized will be required and this sum should be appropriated at the earliest possible date to be immediately and continuously available until expended. Delay in making such appropriation would have the effect of increasing the ultimate cost of the project and injuriously affect and postpone the development of Alaskan resources. The loss to the Nation by such delay would, through the discouragement of Alaskan industrial enterprises and the prevention of the creation of new wealth from her abundant resources, minimize and neutralize any apparent gain through temporary saving of funds to the Treasury.

"That the importance of utilizing Alaska's coal deposits in providing fuel supplies for the Pacific coast and for the trans-Pacific merchant marine is second only to the fuel demands of the Pacific fleet of the United States Navy. The activities of the Alaskan Engineering Commission have demonstrated the practicable, profitable character of coal mining in Alaska. Much of the Alaska coal is a coking coal and could be used to smelt iron ore and for other manufacturing purposes.

"That failure to complete the Alaskan railroad after having made an investment of $35,000,000 therein would result in the loss of a very considerable portion of the investment, because with the operation of so much of the line as it is possible to complete for that sum, it would be impossible to earn a sufficient revenue to maintain the completed portions; and the consequent depreciation and deterioration would be great. The necessity for appropriating the $17,000,000 additional is evident for the protection of the funds previously invested.

"When the sum of $35,000,000 has been expended, there will be two uncompleted sections of the railroad separated by a gap of 100 miles, on which no work has been done. The south section, consisting of approximately 227 miles of main line and 32 miles of branch line, which is now in operation, but which will require construction of snowsheds, riprapping embankments, etc., to be complete, will serve the coast ports of Anchorage and Seward, the interior settlements at Matannuska, Wasilla, and Talkeetna, and the coal mines of the Matanuska field. The north section, consisting of 106 miles of main line and 37 miles of branch, will be practically complete except for the construction of bridges over the Nenana and Tanana Rivers. This section will serve the terminal city of Fairbanks and the mines of the Fairbanks field, the town of Nenana, and the coal mines of the Nenana fields, effectively only with the construction of the bridges which will not be possible under the appropriation of $35,000,000. The revenue of these two widely separated and independently operated parts, when completed, would be confined to the earnings from such meager traffic as could be locally developed. This would be negligible as compared to the possible earnings resulting from through traffic from the Alaskan seaboard to the navigable waterways of the interior of Alaska. The operation of these fragmentary parts, each independent of the other, can only be accomplished at a considerable loss, whereas traffic requirements of the interior promise to the completed road a much larger volume of business.

"The economic development, however, of the vast Alaska interior is dependent upon the completion of the railroad to the navigable waters of the interior, and the development of agriculture in the region through which the railroad passes is dependent upon the creation of a market for the product, and this market can only be provided by the development of the mining and kindred industries adjacent to the railroad, and the development of the mineral resources is dependent upon proper provision of economical transportation for men, machinery, and supplies, and this is not possible with the railroad left in an uncompleted stage.

"Of the $35,000,000 authorized in the original act there remains but $2,038,029 available, and that amount was appropriated in the last sundry civil act. This amount, however, will only be sufficient to continue the construction work on the railroad with the present inadequate force of about 2,460 men until the middle of October, and provide for operation and maintenance to the end of this fiscal year. The disorganization of the construction force before the commissipletion of the project would entail a material loss in time and money.

"That the length of the main line (standard gage) from Seward to Fairbanks will be 471 miles; with branches, 545 miles; including branches and spurs, 549 miles. The total length of the railroad, including main line, branches, spurs, and sidings, when completed, will be 601 miles. Of this 371 miles have track in place and are in operation, and 34.5 miles of sidings are in place. All of the remaining portions of the line, with the exception of the 100-mile gap between miles 265 and 365 north of Steward, are in various stages of completion. The government purchased the Alaska Northern Railroad of 71 miles running out of Seward, and paid for it the sum of $1,157,839.49. The Alaska Northern Railroad has cost the private owners $5,250,000. The reconstruction of the Alaska Northern has cost to date $1,801,155.08, and it is estimated that it will cost to complete $1,718,182.64 more, or a total of $3,518,337.72.

"The government also purchased the Tanana Valley Railroad for $300,000. This road is narrow gage, 44 miles long, and the purchase price included the shops and terminals at Fairbanks. Its rehabilitation to date cost $46,407, and there will be a further expenditure of $84,300 on this line. It is stated that this railroad cost the original owners about $800,000.

"It is estimated by the engineers and the Alaskan Engineering Commission that on its completion the cost of the Alaska railroad, on the basis only of mileage of main line and Matanuska branch, totaling 508.4 miles, will be about $73,200 per mile, while the cost of the entire project on the same basis will be $99,200 per mile. Including estimated maintenance and operation expenditures in excess of revenue to and including the year 1922, not included in the foregoing, the cost will be about $102,300 per mile. The latter estimate includes all equipment, rolling stock, terminal facilities, including harbor improvements at Anchorage, dock and wharf facilities

at Seward, Anchorage, and Nenana, physical property, purchase and rehabilitation of the Alaska Northern and Tanana Railroads and all expenses of every kind and character connected with the construction of the road, and its activities, including operation expenses in excess of revenue during the construction of the road from 1915 to 1922 inclusive, which is estimated at about $5,987,000.

"The only other government built railroad, that across Panama, cost $221,052 per mile.

"The cost of construction of the Copper River & Northwestern Railway, 194.98 miles in length, extending from Cordova to Kennicott, Alaska, is given in the hearings on the Alaska case before the Interstate Commerce Commission at about $83,000 per mile. The book value of this railway in its return to the Interstate Commerce Commission for the year 1917 is given as $146,090.39 per mile. The grades for the last 65 miles on this road are 4 per cent. This road is not equipped as completely, even proportionately to its length, as the government railroad in terminals, rolling stock construction, operating and marine equipment, machinery, and physical property.

"The Pacific & Arctic Railway & Navigation Co., owning the White Pass & Yukon Railway from Skagway to the international boundary at the summit of White Pass, a distance of 20.4 miles, shows in its return to the Interstate Commerce Commission for the year 1917 a book value of $115,343.68 per mile. This road is narrow gage with 4 per cent grades.

"That all possible inducements, with proper safeguards against monopoly, should be extended to pioneer endeavor in the utilization of Alaska's resources, to encourage and to bring about the intensive private development essential to a stable citizenry. Such a policy will create traffic for the railroad and in time make the enterprise profitable.

"The region tributary to this railroad has produced in mineral wealth over $111,000,000, of which the Fairbanks section at the interior terminus of the road has produced in excess of $71,000,000, practically all of which has been from placer gold. Throughout the Alaskan interior only the very richest and most profitable mining is possible under the uneconomic conditions now prevailing. The completion of this railroad will make profitable the mining of large bodies of low grade ore, the development and working of which is not now practicable.

"The known mineral resources of that part of Alaska that will be served by the railroad are gold, silver, copper, coal, lead, tin, iron, antimony, tungsten, and platinum."

Railroad Problem Discussed at National Conference

"Our Country First" Meeting at Chicago Considers Possible Solutions of the Present Industrial Unrest

FRANK DISCUSSION of the causes of the present national unrest and industrial conflict characterized the national "Our Country First Conference" held under the auspices of the Illinois Manufacturers' Association at the Congress Hotel, Chicago, on September 8 and 9. The conference was largely attended and included representatives of agricultural, manufacturing, mercantile, banking and transportation interests from 36 states. The work accomplished by the conference as a whole, the subject matter of practically all of the addresses delivered, and the prevailing topic at the round-table discussion followed practically without deviation the thought outlined in the call to the conference, a portion of which said: "Several distinct groups are endeavoring to create public sentiment by the presentation of ex-parte views. Congress, to arrive at a just conclusion, needs the facts as well as the views of all classes of citizenship. A clear and fearless expression of opinion should be formulated and proper committees appointed to present the conclusions reached to Congress and others concerned in order that fair and honest legislation may be enacted, a square deal given to all and a nation freed of the agitators who are trying to overthrow the very foundations of our government." There was a "clear and fearless expression of opinion" and the work of the resolutions committee shaped the consensus of the delegates' opinion into effective form so as to best reach members of Congress and others directly interested in the solution of reconstruction problems.

The conference opened on Monday, September 8, at 10:30 a. m. with an address of welcome by Dorr E. Felt, president of the Illinois Manufacturers' Association. S. M. Hastings, former president of the Illinois Manufacturers' Association, delivered the opening address in which he sounded the keynote of the conference and briefly outlined the results which it is hoped will follow. Harry H. Merrick, president of the Mississippi Valley Association, the Chicago Association of Commerce and the Great Lakes Trust Company, closed the first session of the conference with an appeal for vigorous action to combat the unwarranted positions taken by certain branches of organized labor and the efforts of bolshevistic agitators in the labor organizations.

The Monday afternoon session was addressed by S. T. Bledsoe, general counsel of the Atchison, Topeka & Santa Fe, Roland B. Mahany, assistant to the Secretary of Labor, J. F. Zoller, general counsel of the National Conference of State Manufacturers' Associations and Samuel R. McKelvie, governor of Nebraska. The afternoon session touched upon the absurdity and socialistic principles of the Plumb plan for government ownership of the railways and their operation by employees. However, it remained for Mr. Bledsoe adequately to present the present railroad situation, its causes and possible solution and the utter impracticability of the Plumb plan.

Mr. Bledsoe stated that the railroad problem is one of adequate revenue, adequate facilities, efficient and continuous transportation and reasonable and nondiscriminatory rates, (the reasonableness of rates having due regard for the cost of the service). He advocated the placing of supreme rate making authority in one national tribunal with regional commissions well distributed so as to be available for the protection of local interests, the exclusive regulation of the issuance and disposition of all securities of all common carriers engaged in interstate commerce by the national government, a policy of mergers and consolidations with governmental sanction arranged so as to preserve as fully as possible helpful competition and to relieve the maintenance of unnecessary and wasteful competition, the creation by Congress of a board for the settlement of all controversies relating to wages and working conditions, and the prohibition of concerted action in leaving railway service. After presenting a resume of the comparative increases in wages, the number of railway employees, operating revenues and income during the period from 1900 to 1919 and the moral involved, Mr. Bledsoe exposed the fallacies of the plan of the railway brotherhoods for government ownership of

railroads and their operation by employees, presented before the House of Representatives in the Sims bill. The dangers lying behind the adoption of such a bill by Congress were fully explained by Mr. Bledsoe, as were the bolshevistic characteristics of this move on the part of organized labor, backed by what Mr. Bledsoe termed as "the most insidious in character of any propaganda ever conducted in this country."

On Tuesday evening an open forum was held which was presided over by W. H. Manss, former director of the War Service Committees of the War Industries Board. Numerous short addresses were made by representatives of various branches of industry, all deprecating any tendency toward radicalism now being manifested by certain classes of organized labor. The most important address on Tuesday was by Charles Piez, president of the Link Belt Company, who made a vigorous attack upon the Plumb plan.

The resolutions committee was headed by Mr. Piez, who until recently was vice-president of the Emergency Fleet Corporation, and its membership included representatives of the agricultural, the manufacturing, and various other business interests of the country. Alba B. Johnson, president of the Railway Business Association, was vice chairman.

The resolutions throughout express the opposition of the conference to all socialistic and bolshevistic tendencies. They demand maintenance and protection of the right of private property, and that the government's activities affecting business shall be reduced to the smallest scope at the earliest moment. They oppose any further appropriation by Congress to maintain the United States Employment Service.

The resolution regarding railroad regulation is as follows: "We commend the zeal with which committees of Congress are seeking a solution of the transportation problem. The increasing demand for food supplies necessitates the opening up of new areas of agricultural production by the extension of transportation systems. Discontinuance of terminal and other railway development has had an important effect upon the general cost of living. Resumption of railway development will tend to stabilize employment of labor, especially if the country should be afflicted with depression, for experience demonstrates that railway buying always stimulates and sustains employment and general prosperity. We hail with satisfaction the evident purpose of Congress to reject government ownership of railroads or their management under domination by employees, and to enact instead a law for the prompt reestablishment of private operation. We favor transportation development as a government policy and urge a law prescribing that rates shall be such as to yield income sufficient to encourage such development."

The resolutions declare that every attempt by governments to fix prices has been a failure and that experience shows this is a dangerous field for the government to enter.

They advocate freedom on the part of farmers to organize to buy, sell and bargain collectively concerning their own products.

They declare that adequate and efficient production is the basis of social well being and progress for the individual and the community, and that it is the duty of the wage payer, the wage earner, and the community to exert every reasonable effort for improving and increasing the quantity and quality of production.

They set forth that while the individual worker and his employer should be free to cease the individual employment relation, provided no contractual obligation is violated, "nevertheless employee and employer in government and public utility services where the public service is paramount, should be restrained by law from instituting by concerted action a strike or lockout, and instead effective machinery should be established in such services for prompt and fair hearing of any requests, differences or disputes touching upon the employment relation, and for adequate redress of any grievances proven to be justified."

After mentioning the cause of the high cost of living the resolutions set forth that employees and employers individually and by their duly instituted organizations should pledge themselves to exert every reasonable effort for the elimination of disturbances tending to interrupt production, and for a speedy return of all industry to a normal basis.

They urge a reduction of federal taxation as rapidly as possible and the adoption of the budget system by the national government as a means of controlling and reducing its expenditures. The resolutions will be presented to Congress, and steps will be taken to form some kind of organization to give effect to them.

Orders of the Regional Directors

DISPOSITION OF OLD TIES.—The Northwestern regional director, file 113-1-1, quotes Western Region Circular 138 issued June 28, 1918, containing suggestions for the disposition of old ties and suggests that the instructions contained in this circular be carried out wherever practicable. The circular quoted states that old ties may be used for lighting fires in engines, may be given to section men, section foremen or other employees, or to farmers in exchange for plowing fire guards or performing other work for the maintenance for the right of way or they may be disposed of to the public at a reasonable price.

Eastern Car Pool Gondolas.—Supplement 5 to Freight Car Distribution Notice 8 of the Northwestern regional director states that although attention has been repeatedly called to the necessity of the prompt return of Eastern car pool gondolas, including hopper cars, the results obtained have been far from satisfactory and suggests:

1. The conditions now required are that the release, movement and handling of this equipment be followed personally, making such systematic check as will indicate that these cars are being handled strictly according to instructions.
2. Cars in inter-mountain and Puget Sound territory will be given eastbound loading to the fullest extent into eastern territory, and such loading provided with the least possible delay.
3. All pool cars located elsewhere must be moved home empty unless immediate loading is available to or in the direction of the junction point with a pool road.
4. Cars must not be loaded contrary to homeward direction unless specifically authorized, and such authority will only be given in connection with drop-end, low-side gondolas (mill type) when concurred in by the Car Service section.
5. These instructions are not intended to interfere with the backhaul movement of these cars from Missouri river points into Puget Sound territory which has already been authorized.

Yard Operations.—Circular 16 of the Northwestern regional director states that complaints from shippers respecting delays to cars indicate a necessity for careful consideration of the yard operation methods in force and the rearrangement of this work in order that they may be operated more efficiently. The circular outlines the principal causes of complaints concerning yard operation and means whereby the cause of these complaints may be eliminated and suggests that all officers responsible for terminal and yard operation be directed to give these matters their closest attention and that experienced men be especially detailed to check up the operation of yards and terminals.

Fuel Situation.—The Northwestern regional director, file 28-1-33, states that the commercial fuel situation is becoming acute and that the demands on the transportation facilities for the movement of fuel during the next three or four months will be extremely heavy. The circular quotes existing instructions for the handling of this class of equipment and outlines means by which these existing instructions may be made effective on the lines in this region.

A Pulverized Fuel Equipment for Locomotives

A Compact Unit, Easily Installed on the Tender; Variable Speed, Four-Screw Feed and Dual Control

A PULVERIZED FUEL equipment for locomotives has been developed by the Fuller Engineering Company, Allentown, Pa., and has been applied to a Lehigh Valley locomotive. This equipment consists of a fuel tank on the tender, the fuel feeding apparatus, a special arrangement of combustion chamber, slag or ash pans and smokebox. The device is mounted on the tender deck and is operated by a reciprocating steam engine and a steam turbine driven fan.

The standard brick arch supported on four 3½-in. arch tubes is applied in this locomotive as in hand fired practice, except that the arch is run within two feet of the back sheet and within about 12 in. of the crown sheet in the center, while the side bricks are not carried up so far.

The exhaust nozzles in this locomotive, of which there were two, were removed thus giving a free exhaust and eliminating all back pressure in the cylinders due to this cause. A sleeve has been secured to the end of the open exhaust stand and extended several inches up into the petticoat pipe. The petticoat pipe itself has been lowered 18 in. so that its lower end is now practically on a line with the center line of the boiler proper. This was done to reduce the draft in the front end, and thereby in the firebox, in order that the air and coal may enter the firebox at a velocity low enough to permit the coal to be completely consumed before being drawn over the arch, thus preventing the accumulation of slag on the flue sheet.

The pulverized coal tank is divided so that pulverized anthracite sludge may be carried in one side and bituminous coal in the other side. Very poor grades of coal can be burned in combination with soft coal by so manipulating the feed screws as to supply the proper proportions of soft coal and anthracite sludge necessary to maintain a proper temperature.

The apparatus for conveying coal from the tender to the locomotive consists of four 4-in. feed screws working in pairs and driven by a variable speed inclosed marine type two-cylinder double-acting reciprocating engine. The fan for blowing the coal into the locomotive firebox is driven by a steam turbine. The turbine fan supplies approximately 15 to 20 per cent of the air required for combustion, the rest being drawn in by the action of the exhaust through the openings in the firebox and in the burner proper.

The four feeders operating in pairs prevent the fuel from arching over and feeding unevenly due to the tendency of the coal to become tightly packed in the tender by the constant vibration while the engine is running.

The reciprocating engine, which drives the feeders by means of a steel pinion and gears, is controlled by a wide range variable speed governor connected to the crank shaft by a Morse chain drive. A flexible shaft, controlling this governor, enables the fireman to obtain a variation of 346 per cent in the speed of the reciprocating engine, and thereby of the coal which is fed to the locomotive, without leaving his seat in the cab.

As it is carried forward from the tank the coal is pushed over two small shelves in the enlarged end of the feeding casing, where it is spilled off in two cascades, which are in turn caught between three currents of air from the turbine fan mounted directly above. This arrangement causes the coal to thoroughly mix with the air before it is blown to the burner, where it is further diffused and more air added to it.

Lehigh Valley Locomotive Equipped with Pulverized Fuel Burning Apparatus

The turbine fan is driven at constant speed while in operation, the determining factor being that the pressure through the hose and in the burner shall distribute the flame evenly beneath the arch without causing it to impinge on the flash wall and thereby cause undue deterioration of the fire brick.

With the governor control and the two clutches a variation in coal feed of about 800 per cent between the minimum and maximum is obtainable with this apparatus, and the minimum can be reduced still further by throttling the steam in addition to the action of the governor control.

Should either pair of the feeders become inoperative through some foreign matter being caught in them, the governor can be thrown out of operation and a single pair of screws can be driven at double the speed and thus supply sufficient fuel to operate the locomotive without failure. This wide range of speed is permissible as the ordinary maximum

speed at which the reciprocating engine is run is less than half the speed of which it is capable, and this variation is also obtainable with the turbine fan without exceeding its rated capacity.

The maximum direct draft air pressure carried on the Fuller equipment is approximately three inches to four inches in the manifold beneath the fan or about 1¾ oz. to 2 oz., and this pressure is immediately reduced in the burner. A feature of the burner is that the flame spreads out and evenly fills the firebox beneath the arch no matter whether one pair or two pairs of feeders are in operation.

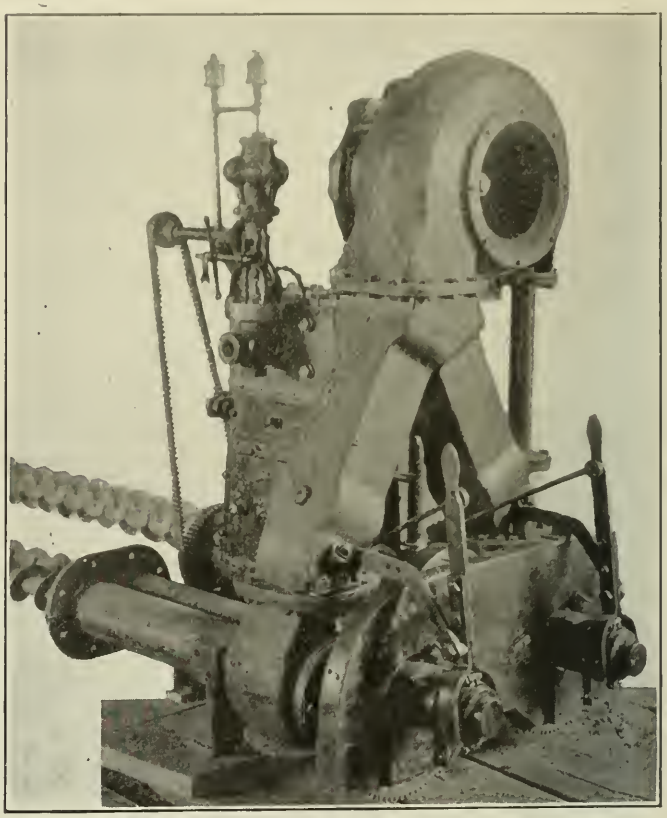
A notable feature is that practically all of the air which enters the firebox, either through the burner or otherwise, is under the control of the fireman at all times, thus eliminating an excess of air and enabling the locomotive to be worked at maximum capacity without drawing in any more air than is necessary for complete combustion. At the same time this permits the velocity of the air entering the firebox through the different openings to be kept at a minimum. This is a desirable feature as it is chiefly the high velocity, accompanied by the abrasive action of the pulverized coal flame, and the high temperatures attendant thereto, which causes a rapid deterioration of the brick arch and the refractories in the firebox, while if these are properly controlled the life of the fire brick will be greatly prolonged.

To aid in preventing and controlling excessive and destructive temperatures a pyrometer is supplied with all pulverized fuel equipment furnished by the Fuller Engineering Company. The thermo-couple of this unit projects into the firebox beneath the brick arch about midway between the front and back sheets, and an indicating unit registering directly in deg. F., in plain view of the fireman, so that by manipulating the dampers and coal feeding mechanism the temperature can be kept at the desired point.

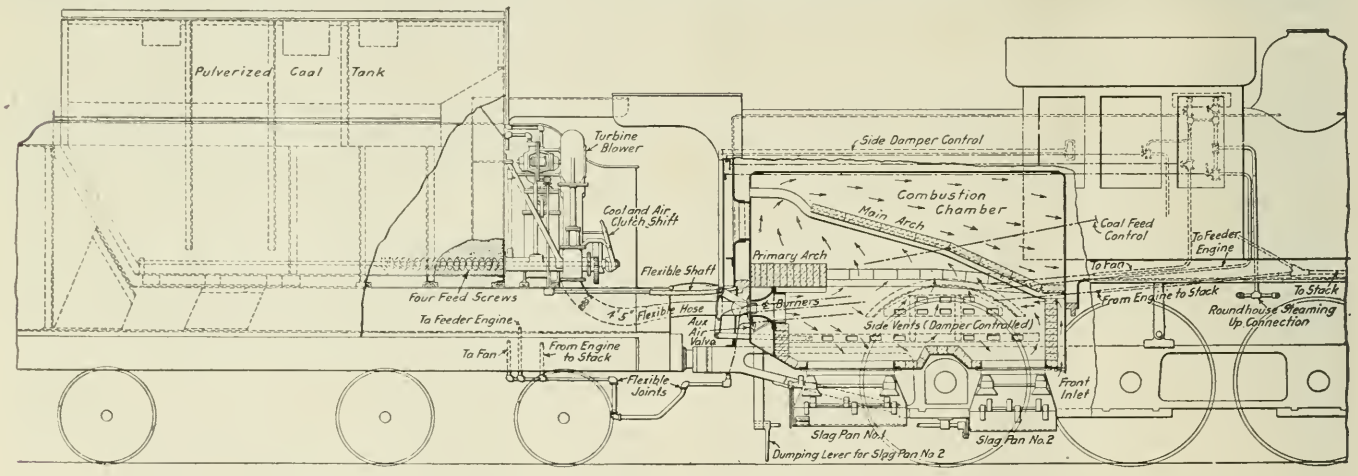
As this is a double cab engine with a Wootten type firebox dual control is provided so that the fireman can control the apparatus either from the tender deck or from his seat in the cab. A pyrometer indicating unit, a revolution counter showing the rate of coal feed and steam gages, indicating the pressure on the turbine fan and the boiler pressure, are located in the cab.

This apparatus as installed on the Lehigh Valley locomotive is designed to feed a maximum of approximately 4,600 lb. to 4,800 lb. of coal per hour, but this amount can be varied within considerable limits by simply changing the sprocket ratio between the governor and the feeder engine, or can still further be varied by changing the ratio between the pinion and gears driving the screws. This is a highly desirable feature as in this manner the same standard equipment can be used to feed a quantity of coal as low as 1,000 lb. or as high as 10,000 lb. an hour if desired, the only change necessary on the locomotive end being that different size burners and hose be employed for conducting the coal and air from the feeder to the burner.

The entire apparatus is assembled in one unit and can be secured to the pulverized coal tank with 18 bolts. It can be removed at any time without in any way disturbing the alinement of the gears, pinions, feed screws or any other part of the apparatus. As will be seen in the illustrations the whole apparatus is above the deck of the tender, where it is in plain view and easily accessible should any repairs or adjustments be necessary, and this feature also enables it to be applied to existing locomotives without cutting into the front water legs of the tender or without cutting below the tender deck to install it.



The Apparatus as Installed on the Tender



Sectional View Showing the Application of the Pulverized Fuel Equipment

General Foremen Convene to Discuss Shop Problems

Papers on Accident Prevention in Shops and Enginehouses, Draft Gears and Welding of Cylinders

THE FIFTEENTH CONVENTION of the International Railway General Foremen's Association was held at the Hotel Sherman, Chicago, on Sept. 2-5 with a large attendance representing all sections of the country. During the four day's sessions papers dealing with some of the important technical problems in connection with the repairing of locomotives and cars were presented and in addition labor conditions were discussed informally. The convention was opened with an invocation by Bishop Nicholson. The report of the secretary-treasurer was then read which showed the total membership to be 221, and the balance in the treasury $752.

Regional Director Aishton Speaks

R. H. Aishton, regional director of the Northwestern region, spoke on the present railroad situation. He emphasized the importance of securing increased production in all industries and quoted a letter from Walker D. Hines in which the director-general stated that in his opinion less progress had been made in securing increased efficiency in maintenance of equipment than in any other department. The higher railroad officers, Mr. Aishton said, come in contact with the actual operation of the roads only through statistics and because of that fact it is important that the foreman should be competent and progressive in determining the policies in his own department. He endorsed the proposal to put an end to wage controversies and restore more nearly normal conditions, characterizing this policy as necessary from a patriotic standpoint to keep America from falling behind in the contest for world trade.

Address of President North

Following Mr. Aishton's talk L. A. North, superintendent of the Burnside shops of the Illinois Central, and president of the association, delivered an address. He spoke in part as follows: The greater the demand upon the transportation system of the United States, the greater is the responsibility of those charged with its maintenance. This association must be made one of the potent forces in the progress of transportation. During the war period many appeals were made to us to further the common cause of our country. In my opinion, the present crisis of the nation is just as acute. Let us, therefore, rise to the issue and meet it in a loyal and determined spirit and go home from this convention with a high resolve to do our utmost toward strengthening our nation's facilities.

At the conclusion of President North's address W. W. Scott made a short response in which he dwelt on the difficulties which supervising officers experience under present conditions. He stated that in his opinion the efficiency of shops and roundhouses had decreased 50 per cent in the past five years.

The Wednesday session of the convention was devoted to a discussion of methods of preventing injuries. R. C. Richards, claim agent of the Chicago & North Western, made an address in which he reviewed the results of the safety work conducted during the past nine years on the Chicago & North Western. Several papers outlining methods adopted in safety work were read, some of which are abstracted in the following:

Safety First in Shop and Enginehouse Service

By W. T. Gale

General Foreman, Chicago & Northwestern, Chicago

The results of the safety movement on the Chicago & Northwestern have been highly gratifying. The shop committees hold semi-monthly meetings, after making inspection of the various departments. At these meetings reports are made of the unsafe condition of tools, machinery, etc., with recommendations. These local committees have acomplished most excellent results in shops and roundhouse service; all machines with gears or other working parts exposed and considered a menace to the safety of the operator have received attention and the danger, if any, averted. Line shaft couplings have sheet iron covers, the dangerous setscrew has been abolished, men have been protected from falling belts. Glass windows have been placed in all communicating doors between the various shops, in order that employes who are carrying dangerous implements in their hand, or on their shoulders can see and thus avoid injuries. Emery grinders have sheet iron guards around the wheels, and an adjustable frame with glass in it is attached to wheel guard which allows operators to grind tools without getting the flying particles of emery in their eyes; a round smooth iron cup is placed over the end of the emery wheel mandrel nut, preventing employees' working jackets from being caught upon the end of the revolving shaft. Danger sign posts are placed in proper positions in shops when repairs are being made overhead; employees' working tools, such as hammers, chisels, driving mandrels, etc., are examined by the foreman and the safety committee for cracks or breaks, and sharp splintered edges, and when found are replaced by new or repaired ones. Broken and rotted floors are repaired, automatic bells and gongs are placed on all transfer tables and moving cranes, air warning whistles for overhead cranes are a feature, the man who oils overhead machinery is supplied with a strong metal warning whistle in order that the operators of machines below will not start up machinery while he is oiling.

Floor motors in shops have 1 in. pipe guard rails placed around them, open fuses have been replaced by N. E. C. cartridge fuses, all open switches have been enclosed in steel cabinets with spring hinged doors, the replacing of all fuses is done by an electrician only, motors and generator frames have been permanently grounded to avoid accidents by shorts, open wiring has been replaced by conduit and lead cables, all line shaft motors have been equipped with safety stop control buttons, all drop light cords over machines are being removed, and replaced by individual cords, vapor proof lamps have been installed in oil houses and acetylene store houses. Electricians remove main line fuses when going above to do repair work on cranes, especially automatic floor operated cranes. Crane men are not allowed to keep anything on the crane floor with the exception of grease and waste, safety ropes are attached to cranes for descending in emergency. All employees are required to use and are furnished glass goggles for dangerous work. A large wooden platform fitting over the top of the boiler for grinding in stand pipes is a safe contrivance for men doing this work.

Hoisting chains and wire cable are regularly examined for flaws, lights have been put in dark places and roofs ventilated when necessary. Strong iron cans are used to hold scrap

paper and waste during the day, the same being taken out of the shop at night. There are local fire alarm boxes in every shop, water hose pipes and hydrants in and out of the shops, an efficient fire fighting company, a doctor upon the shop grounds with able assistants to care for emergency cases.

In engine house service, firing-up wood is not put into the cab until it is time to fire up the engine on account of men working in the cab and danger from nails in wood. Men have been instructed in the use of the blow-down pipe to see that it is laid flat upon the floor, and that connections are properly made so that there will be no danger of the pipe blowing off under pressure, etc., all of which shows that safety first is not a question of dollars and cents, but a question of saving human life, the most valuable thing in the world.

Safety First

By B. F. Harris

General Foreman, Southern Pacific, Oakland, Cal.

To generate and maintain a living interest in the movement to protect life and preserve the body from injury, we must face a difficulty that may be relieved by one or more of the following measures: (1) Imposing penalties for gross negligence; (2) awarding premiums for creditable records; (3) publishing the names of persons injured; (4) publishing an honor roll of those who have been uninjured during the month.

Negligence may be generally divided into two classes: Neglect of the injured and neglect contributed by one or more who created the condition causing the accident, or who had guilty knowledge that such conditions existed. As any penalty, however mild, may cause resentment and produce an interest that might detract from, rather than contribute to, the effectiveness of safety first, the most convincing evidence should be required before inflicting a penalty on any party. It should then be tempered with due moderation, should it be imposed on the injured person. Mathematically stated: The punishment suffered from the accident should be subtracted from the penalty that would be due to an uninjured, or second party, who had caused it. This is a period of broken precedents; it follows that a proposal to award premiums to encourage creditable caution, productive of records free from accounts of accidents, will not be met with surprise, but may be thought possible.

Many simple rewards may be given, among them the following: (1) Cancellation of discredit for former accidents; (2) creation of new credits; (3) issuance of an annual pass for the best record in each department on every division (a full year's record included); (4) a vacation on pay. The suggestions of four classes of awards should be sufficient to start this phase of safety first growing.

When a person's name is published as the principal in an accident, there is a condition of mind produced among large bodies of men to discourage all forms of negligence and foolhardiness. Every person of good health and average understanding has enough self pride to avoid public exposure of their identity with accidents. The interest excited by exposure is not pleasant but results are usually forthcoming.

Appreciation is one of the natural cravings of every human mind. The most effective application of the principle is to publicly acknowledge the caution of employees, at each division point, shop, or yard, by posting an honor roll, each month, of all persons who have passed through the preceding month without being a party to an injury. Although it should not be expected that there will be a marked rivalry to keep one's own name on an honor roll we may well know that the acknowledgment of continued caution on the part of workmen will prevent resentment from those who are sensitive when their efforts are not recognized.

Eliminating Eye Injuries

By L. A. North

Superintendent of Shops, Illinois Central, Burnside, Ill.

One of our greatest obstacles in the safety first movement has been in getting the employees to wear the goggles which the company has furnished to properly protect their eyes. Comment was received at the start as to the fear of eye infection. This was overcome by constructing a sterilizer so that when the goggles were returned to the tool-room, being given out to the employee on a check, they were thrown in a bath of wood alcohol, and allowed to remain for a stated length of time, after which they are removed and thoroughly dried. This in a great measure overcame any objections from this source. Then again, complaint was made that the goggles were too heavy and clouded up during the extreme warm weather. This has been overcome by securing a lighter goggle, and a better ventilated one, so that now we do not experience a great deal of trouble in getting the employee to wear the goggle and carry out the instructions that have been issued in regard to eye protection. As the eye injuries were numerous throughout the entire plant, this was one matter that required a strenuous campaign to decrease personal injury.

Papers dealing with the safety movement were also presented by C. Coleman (C. & N. W.); J. B. Wright (H. V.); J. W. Womble, W. L. Shaffer and J. Powell.

Welding of Locomotive Cylinders

By L. A. North

The welding of locomotive cylinders and other parts has been made possible and very successful by the introduction of oxy-acetylene and electric welding. It has been possible to weld locomotive cylinders which formerly would have been scrapped or repaired with either a brass patch or a dove-tailed insert of some other metal, the weld in the majority of cases making a substantial and satisfactory job provided the expansion and contraction had been properly taken care of.

We do not feel that we have reached the highest point of efficiency in the welding of cast metals, nor are we discouraged by the few failures that we have met with in the course of the experimental stage through which we are passing. Experience has taught us that in order properly to weld a locomotive cylinder, or a casting of any make or design, it is necessary thoroughly to pre-heat to insure a uniform temperature in order properly to take care of the contraction and expansion and avoid cracking after the weld has been made and the metal has been allowed to cool off. The success of any weld of this kind depends largely on the care used in the pre-heating and the judgment of the operator making the weld. In the selection of the operator for this class of work, we cannot be too particular in securing the highest class mechanic possible, in order to avoid a failure which may cause a valuable piece of material to be thrown into scrap.

Some difficult welds have come to my observation, one in particular, where the entire upper portion of the cylinder at the port area had been totally destroyed. This was repaired by having a grey iron patch cast in the foundry, fastened to the cylinder by means of clamps and welded in place. The cylinder was preheated to a uniform temperature to take care of the expansion and contraction. After the weld had been made and the cylinder had cooled down a reinforcement was added to this weld by drilling through between the stud holes and securing the additional support by tap bolts which were tapped and screwed into the main barrel of the cylinder.

It is possible to weld broken bridges in slide valve cylinders sucessfully. Recently, this was done and effected a saving of two cylinders in place of the one, which was cracked, as the cylinder which was repaired was an obsolete pattern

and had we not been able to make this weld, the application of an entire pair of cylinders to the engine would have been necessary. As the engine was one that in a few years will be retired, I am satisfied that the weld will outwear the present cylinders.

Not having experience with the electric welding on cast iron, I am not prepared to enter into a discussion of this method to any great extent, but I have examined a number of castings which have been repaired with the electric welding process and careful examination failed to disclose any flaw or fault in the weld.

However, I would suggest that careful examination be made and good judgment used in selecting the welds to be made with either the oxy-acetylene process or the electrical process. Too often the practice becomes too general with the result that either a piece of defective work is allowed to be turned out of the shop, or a bad weld is made, resulting later on in an accident which gives the entire process a bad name, causing the loss of the benefit that might have been derived from the new device if good judgment and proper care were exercised in selecting the operations to be performed.

Autogenous Welding of Cylinders and Other Parts

By J. T. Leach

General Foreman, Pennsylvania Lines, Wellsville, O.

The welding of cylinders and other castings by the carbo-hydrogen, oxy-acetylene or electric process has made great progress in the last few years. Hardly any discovery or invention has meant so much to the railroads and casting manufacturers as the various methods of welding broken or defective castings.

There was a time when it was necessary to inspect all cylinders on locomotives before they were taken into the shop for classified repairs, in order to know that no new cylinders were required, as the stock of cylinders carried by the stores department was limited, and if a broken cylinder could not be patched and the storekeeper had no casting, the locomotive had to be held awaiting repairs until such time as the material could be procured. This was an expensive arrangement at the best, especially in the last few years when power was so badly needed. With the different methods of welding cast iron, a cylinder may be cracked or broken quite badly yet it can be repaired successfully. The question arises as to the cost compared with a new cylinder, except in case of a new design where patterns have not been provided by the railroad or a foreign type of locomotive for which it would require several months to get a cylinder.

In making electric welds, in case the cylinder is only cracked, it is first necessary to pull the cylinder back in place, as nearly as possible, by the use of a rod and clamp. If this will not do the rod should be heated and the cylinder pulled up in that manner. The entire surface should be cut out V-shaped at an angle of from 45 to 55 deg. and then drilled and tapped on both sides of the crack for ⅝ in. to ¾ in. studs. These studs should be staggered; that is, one row drilled down on the bend and the other staggered in the flat portion of the cylinder. The studs should be screwed in the cylinder ⅝ in. or ¾ in. and then cut off about ¼ in. from the casting. All dirt should be cleaned from the portion to be welded before starting the welding. This welding should be done at a slow rate of speed in order to keep the cast iron cylinder from becoming heated.

In welding the cylinder the ordinary grade of Swiss welding rods of ⅜ in. or 5/32 in. diameter should be used. It is not necessary to remove the bushing or do any pre-heating to get a satisfactory weld, although if this is done a much better weld would be the result.

The cost of an acetylene weld is from $50 to $175 for an ordinary weld. This is an average figure, for the jobs vary so much in size and time that it is hard to arrive at a true average; however, the saving in any case amounts to several hundred dollars.

The method of welding by the oxy-acetylene process is as follows: The cracked portion should be cut out V-shaped at an angle of about 60 deg. If the broken or cracked portion is bulged out, a rod and clamp should be used to pull it up as nearly to the original position as possible. The dirt should be cleaned from the area to be welded. Then a furnace of brick should be built around the cylinder and by means of a charcoal fire or blow torch the cylinder should be heated to a cherry red. In some places an acetylene torch is used for pre-heating the cylinder, but that is an expensive method. After the cylinder has been pre-heated to the required heat welding should be begun, always maintaining the charcoal fire so the cylinder will have a uniform heat. In welding special silicon cast iron sticks are used and if this is not available a good grade of air pump rings will answer. The welding of the cylinder should be continuous and if it is a large break, one operator should relieve the other. This keeps the casting at a uniform heat. If the casting is allowed to cool, the weld will crack. The charcoal or blow torch fire should be kept up for several hours after the weld has been completed and then allowed to die out. This will insure a good weld.

Acetylene welds cost considerably more than welds made by the electric process, but this is often due in part to the lack of experience of the operator and also to the method followed. The experience I have had with the carbo-hydrogen has been limited mostly to cutting, but it is possible to get the same result from it in welding cast iron.

Other papers on the subject of autogenous welding were also prepared by W. Gale (C. & N. W.), B. F. Harris (Sou. Pac.), J. H. Frizell (A. T. & S. F.), J. W. Womble and J. Powell.

Discussion

C. D. Walker (Great Northern) advocated banding and bushing cracked cylinders on the ground that the cost of doing the work by that method was lower than when autogenous welding processes were used. Several other members concurred in this opinion, although the majority preferred to weld longitudinal cracks even though the defect could be corrected by the use of clamps or bands. J. M. Horne (M. & St. L.) stated that good results had been secured by using brass wire for cylinder welding, but this method was not generally favored due to the high cost of the wire. M. H. Westbrook (Gd. Trunk) described methods used for burning out bushings by the use of a carbon electrode. He also stated that by using sulphur on the weld the added metal was made soft so that it could be machined readily. Mr. Westbrook gave average figures for the cost of welding as fellows: oxy-acetylene process, $3.00 per hour; electric welding process, 90 cents per hour.

Draft Gears

By J. W. Womble

There is a great diversity of opinion as to what constitutes a satisfactory friction draft gear, but in general we might say that an ideal draft gear should have not only a suitable friction capacity and travel, but it should also be positive in its nature, simple in design, of few parts, readily applied and removed from the car, and applicable to the standard pocket space. It should be so constructed that a buffing shock greater than sufficient to close the gear will not be apt to injure it in any way.

The design of the gear should be such that the frictional load is not dependent upon the speed at which the gear is closed nor should it be dependent on the internal parts of the

gear being carefully machined or requiring considerable care in fitting them together. It should be so made that it could be applied and removed from the car and the repair parts substituted, if necessary, by ordinary labor. It ought also to have sufficient area of friction faces to bring the pressure per square inch to a figure that will insure it having a satisfactory life in service.

The term friction draft gear is somewhat of a misnomer as it is both draft and buffing gear, the latter being undoubtedly its most important function. If the draft and buffing features could be divided and considered separately, no doubt better results could be obtained. Unfortunately this is not feasible and the well designed draft gear must necessarily take both of these requirements into consideration.

On this account it is advisable that a draft gear have a low capacity at the start of its movement in order to get the best results in pulling service. This only utilizes a small part of the capacity of the gear and the capacity at that part of the travel should make it possible easily to start the train. The capacity should then rise quite rapidly, but uniformly, to its ultimate load in order to absorb a large part of the buffing blow without causing too much shock to the draft sills.

Committee Report on Draft Gears

The committee recommended that a large proportion of gears installed be stencilled with date applied and notice to employees to report conditions and all facts whenever they are removed, this information to be used in connection with actual service tests. That draft gears be inspected and maintained at intervals depending on the kind of service. That poor gears be gradually eliminated and good gears be confined to as few as possible. That the General Foremen's Association expresses its willingness to aid the supply men in developing the best possible protection to the car against shock. That so far as possible the length, width and height of gears be brought to a standard so as to eliminate the different sizes of coupler yokes now required without sacrificing the gear efficiency.

The report is signed by W. W. Scott, (B. R. & P.) and C. F. Bauman (C. & N. W.)

Maintaining Draft Gears

By L. A. North

In discussing the subject of draft gears it is with the object of bringing to the attention of the general foreman, particularly the general foreman of the locomotive department, the necessity of spending more time in the car department to obtain such knowledge of car department matters as will be of benefit to them when they are advanced to the next stop in the ranks, that of master mechanic.

They should thoroughly familiarize themselves with all matters pertaining to the repairs to cars, particularly the draft rigging. From observation the logical place to examine the draft gear and the results derived from the application of the different designs of draft gears, is the repair track and the scrap pile. The damage caused from shock and rebound, due to defective draft gear, runs into millions of dollars every year. No matter what make of gear is applied to a car, unless the gear is maintained in working order, it will not properly function nor perform the duties that the designer or builder claim for it. There are a number of different friction draft gears on the market today which under test will demonstrate to the observer that the gear will perform just what the manufacturer claims for it, viz: absorb the shock and decrease the rebound, but as stated before, unless sufficient attention is paid to the maintenance and upkeep of this gear, the money expended is money thrown away.

A visit to the repair track will show end sills and draft arms broken and bent, center sills buckled up and car underrigging in a general dilapidated condition. In looking for the cause as the usual thing we find the draft gear worn out, inoperative and parts missing, so that the casual observer's first opinion would be that the draft gear did not perform the duties that it was intended for or designed for.

Some railroads have made it a practice to drop the draft gear when the car is placed on the repair track and make a thorough examination of the different parts of the gears to determine what parts need renewing or repairing with the result that the gear has a chance to function properly and perform the work that it was originally intended and designed for.

With the introduction of the heavy capacity cars, it has become more necessary than ever to pay particular attention to the draft rigging. Hump service is much harder on draft gear than ordinary switching service and has made it necessary to fit cars engaged in this service with substantial draft rigging and draft gear that will properly take care of and absorb the shock and rebound which comes from this service. A visit to any of the hump yards will verify this statement.

Discussion

The advantage of draft gears of high capacity was generally recognized by the members. M. H. Westbrook (Grand Trunk) described the decrease in the ultimate strength of the draft members which is brought about by locating the center line of the buffing and pulling stresses off the center line of the sills. With the usual construction if the center line of the gear is offset 2 in. from the center line of the draft members, the strength is decreased 40 per cent.

Other Business

During the convention the question of admitting supervising officers of the car department to the association was considered and the by-laws were amended to make general foremen of the car department eligible for membership.

On Thursday V. R. Hawthorne, secretary of the Mechanical Section of the American Railroad Association, outlined the organization under which it was proposed to have the General Foremen's Association affiliate with the American Railroad Association as a division of the Mechanical Section. A committee was appointed to consider and report upon this matter.

The following officers were elected: President, W. T. Gale, machine foreman, Chicago & North Western; first vice-president, J. B. Wright, general foreman, Hocking Valley; second vice-president, G. H. Logan, general foreman, Chicago & North Western; third vice-president, H. E. Warner, superintendent shop, New York Central; fourth vice-president, T. J. Mullin, general foreman shop, Lake Erie & Western; secretary-treasurer, W. Hall, erecting foreman, Chicago & North Western; chairman, executive committee, C. A. Barnes, general foreman, Belt Railway of Chicago.

J. B. Evans, tax agent of the Oregon Short Line stated at a recent hearing before the Idaho State Board of Equalization, that, whereas the Interstate Commerce Commission had for a number of years employed the best scientific and engineering talent available which is still working in an endeavor to ascertain the value of the Oregon Short Line and, by reason of differences of opinion in regard to fundamental principles, had so far arrived at no conclusions, three agents of the State Board of Equalization had, after a brief investigation, been able to determine the precise value of the entire property and the relative value of every individual branch line of this system. The Board's agents recommended a radical advance in the value of the road's property. The Board of Equalization later acceded to Mr. Evans' protest, making no material increase as compared with the recommended increase of about $16,000,000.

General News Department

The Association of Railway Electrical Engineers will hold its eleventh annual meeting at the Morrison hotel, Chicago, on October 28 to 31 inclusive.

The coal pier of the Western Maryland, at South Baltimore, Md., was destroyed by fire on September 5; estimated loss, including coal, and number of cars, $900,000. The pier was about 1,000 ft. long and 90 ft. high.

A delegation representing the Marine Workers' Affiliation of the Port of New York called on the Railroad Administration on Tuesday to ask that their wage adjustment be made retroactive to September, 1918, instead of March 1, 1919.

Frederic C. Howe, long an advocate of government ownership, has resigned as commissioner of the port of New York to become executive director of the conference on "democratic railroad control," organized by the Plumb Plan League, which is to hold a meeting in Washington on October 6.

A fire of unknown origin destroyed four frame buildings of the General American Tank Car Corp., at the East Chicago, Ind., plant on September 9. The buildings destroyed included the brass foundry and special construction plants. The fire will not interfere with the tank car building. The loss is estimated at approximately $200,000.

Delegates from the southeastern and southwestern federations of railway clerks convened in a joint session at New Orleans, La., on August 23. One hundred and fifty delegates representing about 90,000 railway clerks and affiliated employees throughout the southern states were present. The convention lasted three days.

Dr. J. A. Waddell, consulting engineer, Kansas City, Mo., will present two papers before the Western Society of Engineers, Chicago, on Monday evening, September 15, entitled "The Comparative Economics of Cantilever and Suspension Bridges" and "Economic Span Lengths for Simple Truss Bridges on Various Types of Foundations."

The automatic train stop of D. H. Schweyer, of Easton, Pa., was inspected on September 5 by members of the Automatic Train Control Committee of the United States Railroad Administration. This apparatus is installed on one train, and at a number of stations, on the Colebrookdale branch of the Philadelphia & Reading, between Pottstown, Pa., and Barto.

Freight traffic on the lines entering Los Angeles, San Francisco and other central and southern California points recently disturbed by an unauthorized strike of trainmen, yardmen and shopmen is rapidly being restored to normal. The terminal yards at these points are seriously congested. It is stated that traffic will be entirely normal by the end of this week.

The American Association of Engineers will hold a meeting at the City Club, Chicago, on September 12, to discuss its work among railroad engineers. A report of the railroad engineers' salary-increase movement will be made, the activities of the railroad sections of the organization discussed and the reasons for the organization of the railroad sections will be outlined.

The Mechanical Section of the American Railroad Association has changed the effective date of sections G and K of Rule 3 of the 1918 Code of the Rules of Interchange from September 1, 1919, to March 1, 1920. This action has been taken in view of the fact that the Interstate Commerce Commission on August 29, granted an extension of six months within which to make freight cars conform to certain of the equipment standards prescribed by the Commission. A correction has also been made in Supplement No. 1 to the loading rules. In figures 42 and 46, accompanying this supplement, half-inch bolts are shown passing vertically through the ends of the clamping pieces to prevent splitting. These bolts should be applied horizontally instead of vertically.

The American Association of Engineers is taking a ballot within its membership on the soundness of the Plumb Plan as a solution for the present railroad problem. A copy of the bill is being mailed to each member without comment and he is requested to make his own decision after reading the bill and vote "yes" or "no" on the propriety of favorable action on the bill by Congress.

Conspiracy to defraud the United States Government (through the operations of the New York, New Haven & Hartford Railroad) was charged in indictments on which a foreman employed by that road at its reclamation yard in South Braintree, Mass., and a junk dealer from New York City, were arrested at Boston, Mass., on September 5. The foreman, John D. Birmingham, was held in $10,000 bail and the other man, William Natt, in $3,000. It is charged that steel rails were wrongfully sold as low-grade scrap.

The Veteran Employees' Association of the Chicago, Milwaukee & St. Paul held its annual convention at Minneapolis on August 27 and 28. The association, which has a membership of approximately 3,000 members, is open to any employee of the Chicago, Milwaukee & St. Paul who has been in the service of that road for 25 years or longer. The officers elected at the meeting are as follows: C. W. Mitchell, president; W. B. Harter, locomotive engineer, vice-president; Grant Williams, assistant general freight agent, Chicago, secretary and treasurer. The executive board elected includes, in addition to the officers, E. W. Grant, locomotive engineer; Charles Wood, foreman, and Joseph E. Roberts, locomotive engineer, all with headquarters at Milwaukee, and L. C. Boyle, agent at Viroqua, Wis.

New York Railroad Club Meeting

H. B. Spencer, director of the Division of Purchases, United States Railroad Administration, will address the New York Railroad Club on Friday evening, September 19, Engineering Society's Building, New York City, on "Purchasing and Stores Organizations."

Loss and Damage Claims in Northwestern Region

The loss and damage freight claim situation in the Northwestern region is being improved rapidly because of the intensive efforts of the railroads in that region to settle and eliminate old and unsettled claims. This is evidenced by the following statement showing claims received and on hand over four months old from April 1 to July inclusive:

	Unsettled		
April 1, 1919	May 1, 1919	June 1, 1919	July 1, 1919
141,204	129,617	118,247	104,518
	Over Four Months Old		
April 1, 1919	May 1, 1919	June 1, 1919	July 1, 1919
65,676	53,874	52,368	47,600

Coal Production

The production of bituminous coal during the week ended August 30 showed a slight decrease, the output being estimated at 10,197,000 net tons as compared with 10,662,000 tons during the preceding week, according to the Geological Survey report. The week's performance, however, has been exceeded but two other times during the year, in January and in early July. The total output during the first eight months of 1919 is about 96,000,000 tons less than during the same

period of 1918, a decrease of about 25 per cent. For the week ending August 23 the percentage of full time output lost on account of car shortage was 16.2 as compared with 26.6 the week before.

Senate Committee to Hold Hearings

At an executive session of the Senate committee on interstate commerce on Tuesday it was decided to hold some brief hearings, to begin probably next week, on various provisions of the Cummins bill. The committee has been holding executive sessions this week but considerable pressure has been brought to bear on it by representatives of some of the principal interests affected and it was decided to give an opportunity to those who wish to offer suggestions as to particular points in the bill but the hearings will be limited in order to expedite final consideration of the bill. The railroad labor organizations are particularly anxious to protest against the labor provisions of the bill, the railway executives had already filed an argument against the proposed limitation of earnings and several others interested have asked to be heard.

Decrease in Accidents on Western Lines

Substantial progress is being made in the prevention of accidents on the Southern Pacific, the Western Pacific, the Tidewater Southern and the Deep Creek, according to reports made by R. J. Clancy, assistant to the general manager, in general charge of this phase of operation on these roads.

During the first six months of 1919 the total of all accidents regardless of time disability was 3,487, compared with 4,481 for the first six months of 1918, a decrease of 994 or 22.2 per cent. Total accidents reportable to the Interstate Commerce Commission for the first six months of 1919 were 1,249, compared with 1,570 for the first six months of 1918, a decrease of 321, or 20.4 per cent. Accidents per million locomotive miles on the Southern Pacific were 59.81 for the first six months of 1919, compared with 68.99 for the corresponding period in 1918, a decrease of 9.18 or 13.3 per cent, and industrial accidents per million man-hours were 20.91, compared with 24.60 for corresponding period in 1918, a decrease of 3.69 or 15 per cent.

Similar comparison of accidents with the corresponding period in 1917 shows a reduction of accidents in 1919 of 11.7 per million locomotive miles and of 31.3 per cent per million man-hours.

Sixty Per Cent Efficient

The Wall Street Journal, commenting on the strength in the market of shares of stock of car building companies, and looking for reasons for this strength, remarks on the low condition of both cars and locomotives at the present time, and quotes Brigadier-General W. W. Atterbury, vice-president of the Pennsylvania Railroad, in a recent address to the employees in one of the shops of that company, as follows:

"Prior to our entrance into the war you were on a piecework basis; as well as working on a 10-hour day. When the Government took over our railroad piecework was stopped. The output per man per hour fell 25 per cent. The shops were put on an 8-hour basis. This cut the output an additional 15 per cent, so that the output per man per day in our shops is but 60 per cent of what it was before we entered the war. In other words, it takes ten men today to do what six men did before the war. The condition of the power is getting worse and worse, bad order cars are increasing and the roadbed all over the system is suffering from lack of the ordinary maintenance and the introduction of sufficient new rails and ties."

President's Labor Conference to Be Held October 6

The conference called by President Wilson to consider the relations between employees and the employers is to be held at the White House, Washington, on October 6, and will be attended by five persons selected by the United States Chamber of Commerce, five by the National Industrial Conference Board, fifteen by the American Federation of Labor, three by farming organizations, three by investment bankers, and fifteen representatives of the public selected by President Wilson. During the President's absence the arrangements for the conference will be in charge of Secretary Wilson of the Department of Labor. The conference, according to the letter of invitation, is "for the purpose of reaching, if possible, some common ground of agreement and action with regard to the future conduct of industry" and for the purpose "of consulting together on the great and vital questions affecting our industrial life and their consequent effect upon all our people, to discuss such methods as have already been tried out of bringing capital and labor into close co-operation, and to canvass every relevant feature of the present industrial situation, for the purpose of enabling us to work out, if possible, in a genuine spirit of co-operation, a practicable method of association, based upon a real community of interest which will redound to the welfare of all our people."

Heavier Loading of Cars

In a recent circular to Northwestern roads, R. H. Aishton, regional director of the Northwestern region said:

"At the present time there is a very serious box car shortage in every part of the territory in the Northwestern region. The lines in this region as a total, have 97 per cent of their ownership in box cars, which is slightly less than the number of cars they had on hand at this time last year, but the box car loading within the last ten days has increased at the rate of 3,000 to 5,000 cars per day.

"Record of a typical line in this region shows that there has been a very decided decrease in the tons loaded per car for the first seven months of 1919, as compared with the year 1918, as indicated below:

Commodity	Average loading per car		
	1918. Tons	1919. Tons	Dec. Tons
Wheat	40	37	3
Grain products (including flour)	35	30	5
Coal (hard and soft)	43	39	4
Lumber	29	26	3
Steel products	33	30	3

The average decrease in loading has been 4 tons or 12 per cent.

"If the loading at the present time was as heavy per car as last year, the car shortage would be almost entirely eliminated. Particular attention is directed to the very decided decrease in tons per car of grain products, including flour.

"It is very important that traffic officers be instructed to conduct a very intensive campaign with all shippers on the heavier loading per car. There is no way in which they can be of greater service to the shippers and the Railroad Administration today than by securing heavier loading of equipment. In addition to this, it should be the duty of all operating officers to also take action in this direction. It is only in this way, together with the prompt loading and unloading of equipment, that we can expect to meet the demands for equipment.

"Rule 9 of the Food Administration regulations, prescribes the minimum weights for various classes of commodities. This was cancelled shortly after the signing of the armistice, and loading these same quantities at the present time can only be brought about by appeals to shippers. We believe if this information is given to shippers in detail, and that specific cases of underloading, with car numbers, is called to the attention of shippers, they will see the necessity for immediately increasing the loading per car. If the same tonnage per car had been loaded this year as last year, it is estimated that 460,000 less cars would have been required during the past seven months than were actually used."

Signal Division—A. R. A.

The annual meeting of the Signal Division of the American Railroad Association, will be held at Congress Hotel and Annex, Chicago, on September 17, 18 and 19, as heretofore announced. The business to be considered on the first day will be the reports of committees numbers 16, 2, 3 and 11. Committee 16 will report on standard clauses and sections of specifications. Committee No. 2 will present a specification for mechanical interlocking machine with improved Saxby & Farmer locking, and a new chart for use in regulating the compensation of pipe lines for temperature; also a specification for the arrangement of locking in machines to establish uniformity and sequence. Committee No. 3 will present

specifications for universal first and second range voltage electric locks for hand operated switches; for electric locks for interlocking machine, and for a switch operating and locking mechanism. Committee No. 11 will present a specification for primary battery jars.

On the second day reports will be received from committees numbers 10, 4, 8, 9 and 15. Committee No. 10 presents, as information, the requisites for design and construction of automatic train control devices adopted on February 4, last, by the committee of the United States Railroad Administration. Committee No. 4 presents a specification for direct-current motor-operated signal mechanism, and a brief report on the use of zinc-treated ties in track circuits. Committee No. 8 reports on details of numerous specifications which have been approved at previous meetings but which were referred back to the committee for a few changes, or were revised by the committee on standard clauses and sections.

Committee No. 9 presents a specification for wire joints, with five drawings illustrating proposed standards, and a specification for friction tape. Committee No. 15 will report briefly on the studies which it has made in connection with valuation; dealing with the work which has been done in connection with the government Bureau of Valuation.

The reports to be considered on the third day are those of committees numbers 17, 13, 6 and 5. Committee No. 17 presents a specification for lubricating oil for signal mechanisms; and a historical sketch. Committee No. 13 presents a specification for portable direct-current volt-meters.

Committee No. 6 presents proposed standard drawings for pipe compensator (No. 1.014) revised; for a staff tip adapter, for a switch lamp and for a switch lamp base socket; also drawings, which are submitted as information and for discussion, for a switch lamp, a train marker lamp, and for engine signal lamps.

Committee No. 5 presents a code of instructions for installation and handling of caustic soda batteries.

Railway Earnings and Expenses for July

The Interstate Commerce Commission's monthly compilation of railway revenues and expenses, covering 185 Class I roads and 17 switching and terminal roads for July and the seven months ending July 31, is shown in the table.

National Association of Railroad Commissioners

The National Association of Railway and Utilities Commissioners will hold its thirty-first annual convention at the Claypool Hotel, Indianapolis, Ind., on Tuesday, October 14, and continuing probably through the week. It is expected that the opening address will be delivered by Clyde B. Aitchison, chairman of the Interstate Commerce Commission.

This association now has 52 members; the railroad or public service commission of each state—except Delaware, which has no commission—and the five following: Interstate Commerce Commission; Public Utilities Commission of the District of Columbia; Public Utilities Commission of Hawaii; the Board of Gas and Electric Light Commissioners of Massachusetts, and a second commission for New York, this state being divided into two districts.

The president of the association is Charles E. Elmquist, of Minnesota, and the secretary is James B. Walker, 49 Lafayette street, New York City.

Exhibition at General Foremen's Convention

The following is a list of the railway supply companies which exhibited at the fifteenth annual convention of the International Railway General Foremen's Association, which was held at Chicago, September 2-5:

Ahlberg Bearing Company, Chicago.—Bearings. Represented by E. C. Lewis.

American Arch Company, New York City.—Security brick arch. Represented by A. W. Clokey.

American Flexible Bolt Company, Pittsburgh, Pa.—American flexible bolt, American reduced body staybolt, American marine hollow bolt, American hollow staybolt iron and American rivet. Represented by R. W. Benson, W. F. Heacock, L. W. Widmeier, W. W. McAllister and C. A. Seley.

American Steel Foundries, Chicago.—Passenger truck model descriptive of the Simplex clasp brake, models describing Simplex couplers, Simplex shelf coupler pocket, Eclipse coupler yoke, Economy draft arm. Represented by W. G. Wallace, H. J. Melchert and W. C. Walsh.

American Steel Treaters' Society, Chicago.—Represented by W. H. Eisenman.

Anchor Packing Company, Philadelphia, Pa.—Packings. Represented by J. P. Landreth.

Armstrong Brothers Tool Company, Chicago.—Tools, wrenches, etc. Represented by H. Armstrong.

Ashton Valve Company, The, Boston, Mass.—Gages, etc. Represented by J. W. Motherwell and J. F. Gettrust.

Atlantic Hand Brake Corporation, The, Buffalo, N. Y.—Hand brake. Represented by Charles E. B. Smith and J. H. Weidemiller.

Baldwin Locomotive Works, The, Philadelphia, Pa.—Represented by Charles H. Gaskill.

	July				Seven months			
	Amount		Per mile of road operated		Amount		Per mile of road operated	
	1919	1918	1919	1918	1919	1918	1919	1918
1. Average number miles operated	233,814.79	234,319.89	.....	.....	233,591.65	234,229.24	.....	.....
Revenues:								
2. Freight	$306,642,089	$328,414,138	$1,311	$1,401	$1,920,007,554	$1,767,115,486	$8,220	$7,544
3. Passenger	113,534,987	104,676,569	486	447	656,344,813	553,260,453	2,810	2,362
4. Mail	4,164,279	4,440,811	18	19	29,954,728	31,598,317	128	135
5. Express	7,614,389	8,580,828	32	37	60,429,575	65,403,969	258	279
6. All other transportation	11,858,772	12,376,813	51	53	69,857,333	69,468,060	299	297
7. Incidental	11,195,963	11,546,073	48	49	72,827,449	69,150,848	312	295
8. Joint facility—Cr.	566,182	524,011	2	2	3,833,549	3,281,052	16	14
9. Joint facility—Dr.	212,252	173,709	1	1	1,205,252	1,007,683	5	4
10. Railway operating revenues	455,364,409	470,385,534	1,947	2,007	2,812,049,739	2,558,270,502	12,038	10,922
Expenses:								
11. Maintenance of way and structures	66,900,678	54,194,787	286	231	437,724,004	342,695,470	1,874	1,463
12. Maintenance of equipment	96,529,277	83,267,697	413	355	669,480,647	546,138,187	2,866	2,332
13. Traffic	4,307,471	3,829,842	18	16	26,754,761	31,618,321	114	135
14. Transportation	177,227,893	164,852,178	758	704	1,220,438,584	1,135,655,658	5,225	4,848
15. Miscellaneous operations	4,214,109	3,349,936	18	14	26,926,142	22,082,086	115	94
16. General	10,367,509	9,134,411	44	39	71,795,353	64,977,291	307	278
17. Transportation for investment—Cr.	529,997	475,037	2	2	3,556,287	3,320,896	15	14
18. Railway operating expenses	359,016,940	318,153,814	1,535	1,357	2,449,563,214	2,139,846,111	10,486	9,136
19. Net revenue from railway operations	96,347,469	152,231,720	412	650	362,486,525	418,424,391	1,552	1,786
20. Railway tax accruals (excluding "War Taxes")	16,015,911	15,924,070	69	68	107,679,425	108,331,040	461	463
21. Uncollectible railway revenues	51,393	64,178	.....	.....	420,414	374,900	2	1
22. Railway operating income	80,280,165	136,243,472	343	582	254,386,686	309,668,451	1,089	1,322
23. Equipment rents (Dr. Bal.)	2,006,679	*3,568,367	8	*14	11,507,532	10,186,468	49	43
24. Joint facility rents (Dr. Bal.)	1,096,553	1,288,120	5	5	8,254,054	7,883,298	35	34
25. Net of items 22, 23 and 24	77,176,933	138,523,719	330	591	234,625,100	291,598,685	1,005	1,245
26. Ratio of operating expenses to operating revs., %	78.84	67.64	.....	.....	87.11	83.64	.....	.....

*Credit item.

Note—The average railway operating income corresponding to item 22 above for the month of July in the three years 1914, 1915 and 1916, included in the test period of three years ended June 30, 1917, was $344 per mile of line for the United States.

Barco Manufacturing Company, Chicago.—Engine tender connections, car steam heat connections, roundhouse blower connections, coach yard steam heat connections, air reservoir joints, Barco crosshead and shoe. Represented by F. N. Bard, C. L. Mellor and Charles Thomas.

Bowden Company, The, Warren, Ohio.—Beaver die stocks and pipe cutters. Represented by C. A. Green and W. A. Phillis.

Boss Nut Company, Chicago.—Lock nuts. Represented by W. G. Wilkonson.

Broschart Threadless Pipe Coupling Company, Trenton, Mo.—Couplings and accessories. Represented by J. L. Broschart.

Brown & Sharpe, Providence, R. I.—Tools, instruments and milling cutters. Represented by P. A. Topel and H. J. Johnson.

Buckeye Steel Castings Company, The, Chicago.—M. C. B. Standard "D" coupler. Represented by F. J. Cooledge.

Camel Company, Chicago.—Represented by H. E. Creer.

Carborundum Company, Niagara Falls, N. Y.—Carborundum devices. Represented by H. P. Frost, J. W. Frazer, W. E. Knott and E. P. Ritzma.

Chicago Pneumatic Tool Company, Chicago.—Pneumatic tools and appliances. Represented by L. C. Sprague, A. C. Anderson, C. W. Cross and H. J. Smith.

Clark Equipment Company, Buchanan, Mich.—Twist drills, reamers, chucks, counter sinks, tool bit holders, tool bits, flue cutters and sockets. Represented by F. H. Woodward.

Cleveland Twist Drill Company of Cleveland, Cleveland, Ohio.—Twist drills, reamers, screw extractors. Represented by H. O. White and C. J. Kirchofer.

Coilis Company, The, Clinton, Ohio.—Drill sleeves and sockets, quick change chucks and special tools. Represented by C. M. Weaks

Crucible Steel Company of America, Pittsburgh, Pa.—Alloy tool steels, high speed steels and railroad springs. Represented by W. M. Stevenson, F. Baskerfield, R. D. Fletcher and F. A. Lawler.

D & M Cleaning Process, Chicago.—Process for cleaning locomotives. Represented by D. J. Lewis and F. M. Hilgerink.

Dearborn Chemical Company, Chicago.—Literature on scientific water treatment for locomotive boilers. Represented by G. R. Carr, J. D. Purcell, W. S. Reid, I. L. Beebe and H. Rehmeier.

Detroit Twist Drill Company, Detroit, Mich.—Drills and reamers. Represented by M. F. Crawmer.

Dixon Crucible Company, Joseph, Jersey City, N. J.—Dixon's pipe joint compound. Dixon's locomotive front end finish, locomotive hub liner lubricant, Dixon's solid belt dressing, Dixon's center plate grease and Dixon's brake cylinder grease. Represented by H. L. Hewson and F. W. Brandon.

Duff Manufacturing Company, Pittsburgh, Pa.—Jacks. Represented by C. N. Thulin.

Duntley-Dayton Company, Chicago.—Pneumatic tools. Represented by H. Arnold, P. D. Bates and A. C. Duntley.

Edna Brass Manufacturing Company, The, Cincinnati, Ohio.—Lubricators and injectors, coal sprinklers, water gages and boiler appliances. Represented by E. O. Corey and H. A. Glenn.

Flannery Bolt Company, Pittsburgh, Pa.

Ford & Co., J. B., Wyandotte, Mich.—Wyandotte metal cleaner, Wyandotte alkali special, Wyandotte cleaner and cleanser and Wyandotte detergent. Represented by G. J. Lawrence, A. J. Ratz and H. J. Willwerth.

Forrester Paint & Manufacturing Company, Winona, Minn.—Paints. Represented by Helen J. Caswell.

Franclare Company, Chicago.—Hand-fired stokers. Represented by C. H. Buck.

Franklin Railway Supply Company, New York City.—Represented by J. L. Randolph.

Galena Signal Oil Company, Franklin, Pa.—Represented by W. H. Foster, J. A. Graham, Bloss P. Corey and W. L. Trout.

Garlock Packing Company, Palmyra, N. Y.—Packings. Represented by C. W. Sullivan and W. H. Cook.

Gold Car Heating & Lighting Company, New York City.—Represented by Allen Sheldon.

Grip Nut Company, Chicago.—Grip nuts. Represented by B. G. Forsyth.

Hardy & Co., F. A., Chicago.—Safety goggles and devices. Represented by C. A. Kingsbury.

Hunt Spiller Manufacturing Company, Boston, Mass.—Piston valve bushings, piston valve packing, piston valve bull rings, cylinder packing, crosshead shoe, driving box shoes and wedges, knuckle pin bushings and side rod bushings. Represented by V. W. Ellet and E. J. Fuller.

Hutchins Car Roofing Company, Detroit, Mich.—Models of dry lading, all steel roofs, Hutchins flexible all steel roofs and Hutchins improved plastic roof. Represented by A. R. Wilson and W. D. Thompson.

Independent Pneumatic Tool Company, Chicago.—Pneumatic and electric tools, hose couplings, etc. Represented by F. J. Passino, V. W. Robinson, R. S. Cooper, J. D. Hurley, W. A. Nugent, J. G. Cowell and E. F. Bertrand.

Ingersoll Rand Company, Chicago.—Pneumatic tools. Represented by L. W. Schnitzer, Walter Johnson and R. S. McCreadie.

Iron City Products Company, Pittsburgh, Pa.—Jacks. Represented by C. A. Conklin, V. T. Salter, E. C. Arnold and H. K. Johnson.

Jenkins Brothers, New York City.—Valves and injectors. Represented by B. J. Neely.

Johns-Manville, H. W., New York City.—Packings, including air pump, industrial and brake cylinder packing sets and insulations for pipes, boilers and locomotive lagging. Represented by J. C. Younglove, F. C. Jacobs, P. R. Austin, E. H. Willard, D. H. Jennings, L. S. Wilbur and H. M. Butters.

Kelley Pneumatic Tool Company, Chicago.—Pneumatic tools. Represented by George McCabe and J. Osgood.

Leslie Company, The, Lyndhurst, N. J.—Pressure regulators and removable coupling nuts. Represented by S. I. Leslie and J. J. Cizek.

Liberty Steel Products Company, Chicago.—Brake beams. Represented by A. W. Preikschat, J. J. Borrowdale and S. W. Midgley.

Liberty Tool Company.—Rivet furnace and heating torch, portable drilling presses, holding on dolly bar and heading. Represented by E. O. Grimnes, E. T. Astin, A. B. Moore and M. C. Perrill.

Locomotive Fire Box Company, Chicago.—Nicholson Thermic Syphons as applied to locomotive fireboxes. Represented by John L. Nicholson and Stuart Hawley

Locomotive Lubricator Company, Chicago.—Represented by W. J. Schlacks.

Locomotive Superheater Company, New York City.—Literature on locomotive superheaters. Represented by R. R. Porterfield, R. M. Osterman and G. Fogg.

Lovejoy Tool Works, Chicago.—Jacks. Represented by W. H. Dangel.

Mahr Manufacturing Company, Minneapolis, Minn.—No. 2 oil burning torch and large wheel rivet forges (oil burning). Represented by H. H. Warner and A. E. Stenzel.

Manning, Maxwell & Moore, New York City.—Railroad shop tools. Represented by R. R. Cuthbertson, R. S. Dean and C. L. Brown.

McCord & Co., Chicago.—Journal boxes. Represented by J. A. Lamon.

Miner, W. H., Chicago.—Models of friction draft gear, hand brakes, side bearings and other appliances for cars and locomotives. Represented by A. L. Canavan and J. R. Mitchell.

Nathan Manufacturing Company, New York City.—Injectors, lubricators, boiler checks, gage cocks and coal sprinklers. Represented by F. C. Daven, J. Arn, Richard Welsh, W. R. Walsh, Ed. S. Toothe and J. F. Farrell.

National Boiler Washing Company, Chicago.—National hot water locomotive boiler washing system. Represented by D. Anderson.

National Malleable Castings Company, Cleveland, Ohio.—Adjustable brake beam and wrecking hooks. Represented by L. S. Wright.

National Railway Devices Company, Chicago.—Shoemaker vertical firedoors. Represented by Jay G. Robinson and E. J. Gunnison.

Ohio Injector Company, The, Chicago.—Chicago lubricator, Chicago flange oiler, Chicago non-lifting injector, Chicago U. S standard special B injector, Ohio water glass protector, Ohio lifting injector and Chicago automatic dritting valve. Represented by A. C. Beckwith.

Okadee Company, The, Chicago.—Okadee front end hinge, locomotive blow-off valves, tender hose couplers, Okadee water gage glass and roundhouse wash-out valves. Represented by A. G. Hollingshed, G. S. Turner and W. H. Heckman.

O'Malley-Beare Valve Company, The, Chicago.—Multiple valves, perfection gage cocks, water glass drains and locomotive special valves. Represented by Thomas O'Malley, Ed. O'Malley, J. E. Brown, J. N. Gallagher, James Pigott, Frank Hitesman and Walter Morris.

Oxweld Railway Service Company, Chicago.—Welding torches. Represented by W. Leighton, F. C. Hasse and W. A. Hogan.

Paxton-Mitchell Company, The, Omaha, Neb.—Model of Paxton-Mitchell piston rod packing and Leighton balance and lubricator cylinder packing rings. Represented by J. L. Paxton and R. C. Fielding.

Pocket List of Railroad Officials, The, New York City.—The Pocket List. Represented by C. L. Dinsmore.

Racine Tool & Machine Company, Racine, Wis.—Machine saws. Represented by F. J. Kidd and D. B. Maxwell.

Railway Review, Chicago.

Rich Tool Company, Chicago.—Twist drills, reamers, milling cutters, counter bores, chucks and small tools. Represented by J. L. Crowley.

Rivet Cutting Gun Company, Cincinnati, Ohio.—Rivet cutting gun and Cincinnati rivet hand catcher. Represented by J. M. Crowe, H. G. Dorn and F. L. McCune.

Roberts Automatic Steam & Air Connector, Sarnia, Ont.—Represented by R. E. Allen and J. W. Roberts.

Sargent & Co., Chicago.—"Renu" gage cock, Martin grease plugs, E. S. E. water glass cocks, Loedige blower valve and water glass protectors. Represented by George S. Garren and K. C. Robbins.

Schroeder Headlight & Generator Company, Evansville, Ind.—Headlight with switcher lens, special lens for diffusing light on yard and switch engines, same as furnished on Government standard locomotives. Represented by J. H. Schroeder, A. H. Varney, Chicago district sales manager, E. B. Norris and C. E. Kinnaw.

Scully-Jones & Co., Chicago.—Chucks, spacing collars and vises. Represented by R. Beaulieu.

Street & Co., R. R., Inc., Chicago.—Tools, chucks, pulleys, hangers, roller bearings and wrenches. Represented by C. J. Butterfuss.

Torchweld Equipment Company, Chicago.—Oxy-acetylene welding and cutting torches. Represented by W. A. Slack and A. F. Dillon.

U. S. Metallic Packing Company, The, Philadelphia, Pa.—Single and tandem piston packing (King type) and King type air pump packing. Represented by Harry E. Hyslop and L. B. Miller.

Vissering Company, Henry, Chicago.—Crescent metallic piston rod and valve stem packing for saturated and superheat locomotives, sanders, duplex sander valves, bell ringers and Viloco steam compressed governors. Represented by G. S. Turner, J. M. Monroe and W. H. Heckman.

Wells, R. W., Chicago.—Power saws, grinders and sheet metal cutters. Represented by R. W. Wells.

Western Tool Manufacturing Company, Springfield, Ohio.—Expanding mandrels, tool holders, shop furniture, vises, emery wheel dressers and safety lathe dogs Represented by J. Z. Wells.

Exhibitors at Tool Foremen's Convention

In last week's issue the following name was omitted from the list of exhibitors of the American Railway Tool Foremen's Association, held at the Hotel Sherman, Chicago, August 27-29:

Duntley-Dayton Company, Chicago. Specialized display of new Duntley air drills and Duntley saphil grinder. Represented by W. O. Duntley, C. A. Duntley, P. D. Bates, Charles Booth and Henry Arnold.

REVENUES AND EXPENSES OF RAILWAYS

SIX MONTHS OF CALENDAR YEAR, 1919

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses						Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
					Maintenance of										
		Freight.	Passenger.	Total (inc. misc.)	Way and structures.	Equipment.	Traffic.	Transportation.	General.	Total.					
Pitts. & W. Va.	66	$503,397	$57,794	$642,191	$370,925	$239,169	$7,365	$304,093	$31,415	$1,004,377	156.39	—$362,186	$70,562	—$432,851	—$406,679
Phila., Bethlehem & N. E.	71	.....	.....	413,490	47,369	77,522	1,839	252,163	6,976	385,868	93.31	27,622	8,433	19,188	—84,460
Pitts. & Shawmut	103	501,666	25,640	535,974	181,012	254,335	9,961	211,471	18,441	675,160	125.96	—139,186	5,820	—145,006	—159,247
Pitts., Cinc., Chic. & St. Louis	2,383	28,885,853	10,311,366	43,643,414	5,581,553	13,367,246	506,617	20,374,446	1,027,083	41,257,531	94.53	2,385,883	1,428,883	955,983	767,396
Pitts., Shawmut & Northern	204	435,357	35,953	485,117	136,793	285,924	5,868	213,377	42,090	684,072	141.01	—191,954	11,002	—206,975	22,112
Port Reading	21	757,744	.....	1,259,590	102,259	91,548	92	590,662	7,444	791,943	62.87	467,647	54,000	413,647	270,716
Rich., Fred. & Pot.	81	1,970,061	1,701,863	3,989,784	346,630	516,709	5,738	1,308,384	75,913	2,341,491	58.68	1,648,293	75,665	1,572,554	549,816
Quincy, Omaha & Kansas City	255	324,709	148,117	504,023	193,738	88,744	1,599	260,772	8,159	551,506	109.42	—47,484	18,225	—65,773	19,758
Rutland	415	1,226,178	593,941	2,201,432	388,299	574,033	43,253	1,086,890	67,375	2,162,581	98.23	38,851	113,518	—74,702	12,305
St. Joseph & Grand Island	258	1,065,537	258,082	1,396,789	290,985	187,859	11,103	799,341	68,709	1,365,051	97.72	31,738	52,865	—21,190	—62,181
St. L., Brownsville & Mex.	548	1,597,791	718,644	2,460,168	402,760	434,914	29,293	765,153	92,888	1,726,008	70.11	735,160	60,000	674,794	335,552
St. L. Merchants Bridge Term.	9	.....	3,911	1,299,336	339,430	274,896	4,514	1,075,772	36,286	1,730,898	133.21	—431,561	48,000	—479,561	421,910
St. L.-San Francisco	4,761	23,564,450	10,047,138	35,480,668	5,797,266	7,493,495	287,408	14,188,246	1,064,345	28,704,628	80.90	6,776,039	1,452,899	5,309,116	2,070,388
St. L., San Fran. & Tex.	134	539,396	74,591	657,350	131,315	116,908	9,047	390,256	35,289	682,815	103.87	—25,465	9,012	—34,542	—192,767
St. L. Southwestern	939	4,962,872	976,973	6,128,746	1,113,272	1,409,876	100,492	1,962,180	231,454	4,857,231	79.25	1,271,515	245,147	1,027,673	—927,694
St. L. Southwestern of Texas	814	2,078,443	654,551	2,925,294	805,735	1,070,289	45,556	1,550,654	141,542	3,605,863	123.26	—680,569	126,000	—807,352	—636,335
San Ant. & Aransas Pass Ry.	732	1,304,255	504,823	1,940,859	578,852	640,211	35,093	1,143,147	106,183	2,501,640	128.89	—560,781	90,000	—651,264	—422,490
Seaboard Air Line	3,563	12,451,292	6,210,703	20,449,364	2,956,803	4,429,260	360,935	9,968,439	630,955	18,568,867	90.51	1,940,498	810,000	1,127,282	—958,993
St. L. Transfer	6	.....	.....	471,398	72,027	78,224	1,199	247,567	12,771	411,788	87.35	59,610	600	59,010	25,952
South Buffalo	11	210,447	.....	554,526	28,186	96,631	1,774	311,416	9,727	447,734	80.74	106,792	22,500	84,292	—125,211
Southern	6,982	36,681,500	17,699,375	59,052,113	10,592,328	14,002,156	721,521	26,958,641	1,568,411	54,298,170	91.94	4,753,944	1,947,487	2,766,470	—9,291,902
Southern Ry. in Mississippi	278	490,454	269,295	818,040	222,635	124,392	13,935	471,170	24,797	856,926	104.75	—38,886	54,000	—93,037	—68,078
Southern Pacific	7,049	50,591,756	19,740,890	76,001,928	13,931,387	15,653,009	681,951	29,767,087	1,371,099	62,857,373	82.71	13,144,555	3,702,287	9,423,821	—228,333
Spokane Int.	156	361,183	90,598	465,129	93,072	45,026	9,687	168,896	25,920	341,046	73.32	124,084	27,994	96,090	—33,293
Southern Pacific Steamship Lines	.....	4,599,161	286,392	5,151,585	55,249	952,238	67,473	3,868,191	152,112	5,095,263	98.91	56,322	67,583	—11,261	—115,460
Spokane, Portland & Seattle	554	2,381,852	748,040	3,373,203	659,210	546,294	35,530	1,214,453	115,041	2,581,966	76.53	796,238	355,200	440,796	—791,123
Staten Island Rapid Transit	23	490,223	438,626	1,073,280	153,154	158,907	5,922	584,541	53,874	956,397	89.10	116,882	70,000	46,840	46,917
Tennessee Central	293	891,775	272,368	1,241,960	471,153	328,097	17,576	604,464	39,847	1,460,110	117.56	—218,150	36,810	—249,101	—346,417
Terminal R. R. Ass'n of St. Louis	31	.....	19,924	1,768,520	452,336	364,504	4,770	849,933	35,818	1,727,556	97.68	40,965	157,455	—116,491	—175,459
Texarkana & Ft. Smith	87	567,088	97,695	670,884	119,299	115,664	6,868	292,110	19,584	549,097	81.84	121,788	40,060	81,684	—31,054
Texas & New Orleans	469	2,476,558	977,752	3,740,161	717,610	1,095,169	28,931	1,424,112	84,693	3,485,439	93.18	254,722	128,722	123,161	—913,205
Texas & Pacific	1,946	11,209,627	4,329,214	16,344,972	2,452,434	3,449,984	145,704	7,914,274	426,029	14,511,405	88.78	1,833,566	509,823	1,321,299	—338,011
Toledo & Ohio Central	435	3,408,158	373,879	3,970,458	729,993	1,243,525	57,211	1,775,714	89,882	3,990,493	98.23	69,964	190,771	—120,839	86,572
Toledo, Peoria & Western	247	456,693	288,336	785,564	178,930	222,379	13,339	409,845	34,023	856,075	108.97	—70,510	51,006	—121,510	—18,618
Toledo, St. L. & Western	454	3,094,519	198,331	3,452,878	630,429	768,897	33,150	1,506,132	71,156	2,998,153	86.83	454,725	156,100	298,621	—200,960
Trinity & Brazos Valley	368	848,132	110,985	587,565	222,966	160,695	10,143	551,105	43,437	888,342	151.19	—300,777	34,287	—335,133	171,831
Ulster & Delaware	121	290,843	59,656	461,718	73,416	111,119	7,769	371,824	26,635	593,819	128.61	—132,101	28,800	—160,954	—86,529
Union R. R. of Penna.	40	.....	.....	3,757,637	471,574	1,048,164	1,604	2,017,099	46,064	3,583,451	95.36	174,186	42,568	131,618	512,274
Union Pacific	3,614	35,588,023	10,257,531	49,452,256	7,589,890	9,223,091	265,616	14,559,019	1,381,636	34,180,826	69.11	15,271,430	1,353,131	13,934,169	2,422,736
Vicks., Shreve. & Pacific	171	978,211	443,981	1,532,702	280,241	346,013	15,779	598,617	48,251	1,301,363	84.90	231,339	56,151	174,937	—32,886
Virginian Ry.	521	4,276,589	318,130	5,109,859	867,322	1,306,049	28,769	2,030,610	96,645	4,319,715	84.53	790,144	218,300	511,837	334,012
Wabash	2,503	16,578,492	4,696,872	22,730,851	3,371,551	4,275,348	512,186	12,005,764	676,134	20,767,793	91.36	1,963,059	644,806	1,314,832	92,784
Washington Southern	35	794,941	1,184,259	2,386,529	213,599	240,958	15,454	719,296	38,609	1,258,085	52.71	1,128,444	39,603	1,088,804	432,507
West Jersey & Seashore	361	1,623,200	2,962,753	4,947,150	1,221,130	1,046,247	46,630	2,734,290	127,800	5,206,269	104.24	—259,119	271,568	—531,161	83,765
Wichita Falls & N. W.	328	673,537	205,372	926,514	263,669	150,785	6,565	515,671	41,587	977,577	105.50	—51,064	55,635	—106,813	94,216
Western Md.	707	5,735,298	479,351	6,763,163	1,335,521	2,256,236	107,284	2,565,369	2,551,126	6,886,067	101.81	—122,904	259,200	—382,104	—63,453
Western Pacific	1,011	4,369,043	779,729	5,358,386	1,458,907	1,098,321	71,659	1,851,987	138,040	4,718,542	88.05	639,843	278,903	360,371	—782,789
Western Ry of Alabama	133	716,585	495,103	1,302,075	160,619	261,276	17,306	498,586	37,745	1,000,662	76.85	301,414	45,000	256,413	—10,144
Wheeling & Lake Erie	511	4,686,671	300,275	5,686,278	1,144,164	1,353,347	36,428	2,391,408	151,775	5,091,813	89.54	594,465	327,900	265,738	—50,620
Yazoo & Miss.	1,382	8,663,440	2,479,158	11,035,258	1,883,224	2,437,551	92,489	4,425,288	243,624	8,997,372	81.53	2,037,886	333,802	1,702,702	255,130

Traffic News

What is believed to be the first motor-express route tariff sheet to be compiled and put into effect has been promulgated by the Highway Transport Committee of Douglas county, Neb., and adopted by the Nebraska State Public Utilities Commission.

The St. Louis (Mo.) Eastern District Freight Traffic Committee, on a petition filed by the Baltimore & Ohio, will hold a hearing on September 16, on the cancellation of over 100 rates which have become obsolete due to the cessation of traffic in various commodities.

At a meeting of good roads advocates and representatives of highway commissioners from five southern states held at Memphis, resolutions were adopted on September 6 urging that all the southern states join in an appeal to the Railroad Administration for relief from a shortage of transportation facilities for the movement of roadbuilding material, which, it was said, is seriously hampering highway construction in the south.

Travel for the month of July in Yellowstone National Park broke all previous records. July 16 was the biggest day in the history of the park, almost a thousand people having entered that day. A total of 24,090 tourists visited the park during the month, of which 16,784 persons came in 4,457 private automobiles. While the season ends September 15, the roads leading to the park are now excellent and prevailing weather conditions are ideal.

An improved less-than-carload rail-and-Mississippi river merchandise service was inaugurated from Chicago to New Orleans, La., on August 1. On that date the Chicago & Alton commenced the operation of a through daily merchandise service from Chicago to the East St. Louis wharf of the Mississippi barge line, operated under the direction of the Division of Inland Waterways of the Railroad Administration. A comparison between the all-rail class rates and the rail-and-river rates show that the latter will produce substantial savings in the shipment of all classes of commodities.

During the month of August the roads comprising the Central Western region loaded 67,398 cars of grain as compared with 63,715 cars during the corresponding month last year, or an increase of 5.8 per cent. During the same period 48,713 cars of livestock were loaded as compared with 47,312 cars during the corresponding month last year, making an increase of 3 per cent. The loading of coal cars in this region during this period shows a decided decrease from the records for the same period last year. A total of 82,490 cars of coal were loaded during August as compared with 116,125 cars during August of last year, a decrease of 29 per cent.

Conflicting reports of the size of the Western Canadian grain crop have been somewhat cleared by the receipt of a detailed telegraphic crop report at the main offices of Canadian National Railways from the road's agents along more than 6,000 miles of line in Manitoba, Saskatchewan and Alberta. The lines of the Canadian National system in the west lie between Winnipeg and Edmonton. In these vast areas the threshing returns show yields in wheat from 6 to 30 bu. per acre in Manitoba, oats 20 to 60 bu. and barley 10 to 35 bu. In Saskatchewan wheat ranges from 3 to 25 bu. per acre, oats from 12 to 50 bu. and barley 25 to 30 bu. In Alberta the yield in wheat is from 2 to 50 bu. per acre and oats from 20 to 75 bu.

The Railroad Commission of California has granted the petition of the Oakland, Antioch & Eastern for an increase in passenger fares over the lines of that road. The new rates will put the fares of the Oakland, Antioch & Eastern on a parity with those of the federal controlled lines operating in the same district insofar as they apply to the one way rate. This road, however, provides a week end round trip tariff much lower than that maintained by its competitor, the Southern Pacific. It is expected that the new fares will yield about $22,100 additional revenue. It was shown at the hearing on the case that the company's payroll since 1916 had increased 72.97 per cent and that the cost of materials had increased 57.7 per cent during the same period.

A total of 6,443 cars of commercial export freight was received at North Atlantic ports during the week ended on August 27, compared with 1,248 cars for the same week of 1918. This shows an increase of 5,195 cars, or 416 per cent. Deliveries to ships during the period mentioned increased 4,490 cars, or 382 per cent, compared with the corresponding period in 1918. On August 27, 1919, there were 12,827,842 bushels of grain in elevators at North Atlantic ports. There were received during the week 6,493,916 bushels, while 6,212,053 bushels were cleared. At South Atlantic and Gulf ports there were 9,293 cars of export freight on hand as of August 26, 1919, compared with 9,894 cars on August 19 of the same month, a decrease of 691 cars. There were 8,973,336 bushels of grain stored in elevators at these ports as of August 26, representing 74.5 per cent of the total elevator capacity.

Loading reports for roads comprising the Northwestern region for the month of August show substantial decreases in the number of cars loaded on the lines of that region. The total number of revenue freight cars loaded during August, 1918, was 719,566, whereas the total number of cars loaded during August, 1919, totaled but 594,465. The commodities classified under this head show that there have been slight increases in the number of grain and grain product, livestock and lumber and forest products cars loaded, and that these increases have been more than counterbalanced by the substantial decreases in the number of cars of coal, coke and ore loaded. The total number of revenue freight cars received from connections during August, 1918, was 318,878 as compared with 321,762 cars during August, 1919.

After some controversy the traffic department of the Cincinnati (Ohio) Chamber of Commerce has secured a favorable ruling from the Railroad Administration on the proposition to continue in force the sale commutation tickets between Cincinnati, Lawrenceburg, Ohio, and Aurora. Some time ago the Baltimore & Ohio made application for authority to discontinue the sale of ten-ride commuter tickets between Cincinnati and Lawrenceburg and Cincinnati and Aurora. This move was taken because of the charge that Cincinnati salesmen were using the reduced rate ten-ride tickets to effect a cheaper through rate to such points as Connersville and Indianapolis. The Cincinnati Chamber of Commerce accordingly made a canvass of the traffic and, finding no evidence that salesmen were making such a practice, took the matter up with Railroad Administration officers at Washington with the result that no change will be made in the sale of commuter tickets at the present time.

At the direction of the Western Freight Traffic Committee the Kansas City (Mo.) District Freight Traffic Committee will hold a hearing on September 19 to establish uniform rules, regulations and charges for the fabrication in transit of iron and steel articles to, from and between points in western territory. Under the present arrangement these rules are provided for in individual lines and various committee issues. The Chicago Eastern District Freight Traffic Committee will also consider the same subject with a view to providing uniform rules, regulations and charges on all lines which will definitely describe the inbound articles of iron and steel from the rolling mills on which the privilege will be accorded, as well as the processes that will be permitted under the privilege; to determining the circumstances and conditions under which the tariff rate in effect from point of origin of the unfabricated material to destination of the fabricated material will be applied, together with a charge for the privilege which will be sufficient to reflect the value and cost of the service adequately; to providing proper and reasonable rules and regulations to enable the carriers to police the privilege which will require all fabricating plants to keep suitable records of inbound and outbound material received and forwarded from the plant as well as the tonnage received and disposed of locally.

Commission and Court News

Interstate Commerce Commission

The Commission began a hearing on Monday in connection with its general investigation, undertaken at the request of the director general of railroads, of the relationships between rates on grain and grain products from northwestern producing points to eastern destinations. The National Association of Railway and Utilities Commissioners, representing the state commissions, has asked that the commission postpone its investigation in view of the prospective early return of the railroads to private management, but the commission declined the petition.

State Commissions

The Kentucky Railroad Commission has directed the Chesapeake & Ohio and the Louisville & Nashville railroads to erect a new passenger station at Covington, Ky., not later than June 1, 1920.

The Public Service Commission of New York, Second district, acting under a recent law regulating highway crossings, has ordered the erection of cautionary signals (disks, marked "RR," on posts about 5 ft. high) at all grade crossings of highways and railroads throughout the commission's jurisdiction. The posts are to be furnished by the railroads, but they are to be put up by the town or state, and must stand, as near as may be, 300 ft. from the crossing.

Personnel of Commissions

Hon. F. B. Carvell, hitherto Minister of Public Works has been appointed chairman of the Canadian Board of Railway Commissioners, with office at Ottawa, Ont., succeeding Sir Henry Drayton, who has been appointed Minister of Finance.

Court News

The Western Retail Lumbermen's Association, a co-operative association composed of Washington lumber corporations, has brought suit in the federal court at Spokane, Wash., against Walker D. Hines, director general of railroads, and against 23 railroads for the recovery of losses sustained in the shipment of merchandise. A list of more than 300 claims by 53 individuals and companies accompanies the complaint, which was filed by A. L. Porter, secretary of the Association. The Association has contended for some time that the proper measure of loss and damage is the market value of the goods at the time of delivery or when they should have arrived at destination and that technically the carriers have forced the members of the Association to violate the Act to Regulate commerce by accepting payment of claims for less than what they actually should have been paid. The Association also states that the carriers have repeatedly refused to pay loss and damage claims upon the basis of the market value at destination and the suit filed in the Federal court is the result of this action. The court has been asked for an injunction to prevent the carriers from paying claims on any other basis than market value at destination and also for an accounting on claim said to be paid on an improper basis.

Men Needed for Railway Construction.—Press despatches from Swift Current, Saskatchewan, Canada state that contractors on the several lines of railway that are building in that territory, also contractors on government highway work are experiencing no little difficulty in securing sufficient labor for grading operations.

Foreign Railway News

A railroad collision between two trains near Toulouse, France, on the morning of September 5 is reported in press despatches to have caused the deaths of 13 persons and injury to 40.

Increased Tariffs on the Antofagasta (Chili) and Bolivia Railway.—Cable advices from the company's manager quoted in the Railway Gazette (London) announce that the Chilian Government has authorized an increase of 15 per cent on the company's tariffs to come into force 60 days after the customary publication, but the increase on nitrate will not rule until January 1 next, and the fares on second-class passenger traffic will be increased by only 5 per cent also to date from January 1 next.

New Railway in South Australia

The London Times states that Messrs. Timms & Kedman, railway contractors, of Adelaide, Australia, have offered to build, within three years, a railway from Adelaide to Port Darwin, to cost £8,000,000, payable in Government bonds, and provide work for 5,000 men.

Swiss Rolling Stock for Czecho-Slovakia

London.

A news item published in the Economic Review of the Foreign Press states that the Czecho-Slovak government has ordered 20 locomotives from a Swiss firm since France cannot for the present export any locomotives.

Railway Concessions in Brazil

London.

An extract from the South American Express states the Government will renew its concessions to the railways only on condition that large quantities of supplies and materials, including rails and rolling stock, are immediately imported. —*London Post.*

German Locomotives in France

London.

Supplementing a news item giving the disposition of German locomotives delivered to France, under the terms of the Armistice, it has been reported that the 500 locomotives operated by the American military forces have been disposed of as follows: Poland, 100 locomotives, Roumania, 50 locomotives, Czecho-Slovakia, 92 locomotives, French railways, including Alsace-Lorraine, 250 locomotives, Oriental countries, 8 locomotives.

Railway Traffic Reorganization

London.

An extract published in the Economic Review of the Foreign Press from Weltwirtschaftszeitung states that the Traffic Ministry of Jugo-Slavia intends to entirely reorganize the railway traffic. Locomotives and wagons will be provided, normal gage lines will be built. French and American engineers and traffic experts will be employed in addition to home experts. Marine and river shipping to provide means of transport will also be resumed.

Machine Tools in France

London.

Before the war the majority of machines imported into France came from Germany. In 1913, France imported 28,000 machine tools at a value of 52,000,000 francs, 50 per cent of which came from Germany. During the same year 11,000 machine tools, valued at 16,000,000 francs, were exported from France. Machine tools to the value of 65,000,000 francs were produced in France in 1913. It is planned that the French aeroplane factories will be converted into plants for the manufacture of machine tools.—*Le Génie Civil.*

Railway Rolling Stock in France

LONDON.

During 1913 France produced 700 locomotives, 2,000 passenger cars and 18,000 freight cars. Before the war it was necessary to import rolling stock, but today it is expected that, after the equipment plants in the North are reconstructed, France will be able to export both cars and locomotives after the present requirements of 1,000 locomotives, 2,600 passenger cars and 24,000 freight cars are provided. In 1913, France imported railway rolling stock to the value of 23,000,000 francs and exported to the value of 7,000,000 francs.—*Le Génie Civil.*

Railway Extensions in the Federated Malay States

LONDON.

The Times Trade Supplement says that Government of the Federated Malay States is planning the expenditure of large sums to cover railway extensions, the purchase of new rolling stock, the erection of railway stations and the construction of new bridges. Fourteen locomotives have been ordered from the United States, owing to the impossibility of obtaining them from the United Kingdom, and some of these are now on the way. There is a great demand for steel for constructional purposes, especially in connection with the erection of new railway bridges.

Brazilian Coal

According to the British Chamber of Commerce in Brazil, it is reported that experiments have recently been made by the Central Railway with briquettes composed of national coal from the Caçapava mines and American fuel. The experiments, which were carried out under strict technical requirements, gave excellent results and fully satisfied the experts who were present. It is believed, says the Chamber of Commerce, that the tests made with the Caçapava coal, from mines in the State of Sao Paulo situated close to the Central Railway, with which it will shortly be linked up by a branch line of 12 km., may eventually lead to a decrease of over 50 per cent in the imports of American coal, this leading to a very appreciable economy.

Italy's Electric Power

LONDON.

The Financier reports that the Italian Minister of Public Works is proposing a law for the application and development of hydro-electric power for the construction of electric railways and power stations for agricultural purposes. For a period of 15 years a subvention of 40 lire per h. p. generated will be granted and freedom of taxes on house property is to be granted for the same period to all buildings, housing, generating and transformation plants. The bill provides for an annual expenditure of 80,000,000 lire, which should make it possible to obtain an increase in the power production amounting to 8,000,000,000 kilowatts, or a yearly saving of 8,000,000 tons of coal.

Railway Developments in Norway

LONDON.

An extra from the Stavanger Aftenblad by the Economic Review of the Foreign Press states that the difficulties connected with the railway budget of Norway have been overcome. The Railway Committee insists upon an increase of Kr. 13,800,000, which is to be distributed in the following manner: Kr. 3,550,000 for the Dovre line, Kr. 3,550,000 for the Sorland line, Kr. 2,150,000 for the Rauma line, Kr. 1,600,000 for the Sunnan Grong line, Kr. 1,000,000 for the Storen line, Kr. 780,000 for alterations at Trondhjem station, and Kr. 1,170,000 for the East line railway station at Christiania. The work is planned so as to hasten the completion of those lines and a considerable amount of the money will be expended on rolling stock, rails, sleepers, bridges, etc.

Transport Difficulties in Roumania

LONDON.

The Times Trade Supplement states that the transport system of Roumania has suffered more than any other country during the war, for that country has only 200 locomotives remaining out of the 1,200 before the war. The government has made contracts for the supply of 100 locomotives from America, delivery to be at the rate of 10 per month, with France for 100 locomotives, two-thirds of which will be German locomotives taken over by France under the terms of the Armistice, and Canadian firms are negotiating for the supply of 800 locomotives at the rate of 10 a month. Railway trucks are very scarce, but the government is having a considerable number repaired, but many more are urgently needed.

New South American Trans-Continental

Press despatches to the Sun (New York) from Buenos Ayres, report the arrival at Tupiza, Bolivia, of the first train over the new extension running from La Quiaca, Argentina, to Tupiza. It is now possible to go by rail from Buenos Aires to La Paz, the capital of Bolivia, but the journey still necessitates a week and a half's travel.

The La Quiaca-Tupiza section of this transcontinental line was started before the outbreak of the European war, but on account of difficulties the work was held up.

Its completion is to be noted with interest, says the despatch, for by means of it railroad transportation from the east to the west coast is assured throughout the year and will no longer be closed during the winter months when snow blocks the transandine route from Buenos Ayres to Santiago.

Coal Resources of the World

LONDON.

A report in the Financier of August 23 states that according to a report submitted to the International Geological Congress at Toronto in August, 1913, the world's reserves of solid mineral fuel are 7,397,553 million tons of more or less easy extraction and all at a workable depth. This figure comprised bituminous or dry coal, lignite, anthracite, and anthracite coal, and was divided as follows: 3,902,944 mill. tons dry coal, 2,997,763 million tons lignite, 496,846 million tons anthracite. The distribution is shown below in million tons:

	Lignite	Coal	Anthracite	Total
America	2,811,906	2,271,080	22,542	5,105,528
Asia	111,851	760,098	407 637	1,279,586
Europe	36,682	693,162	54,346	784,190
Oceania	36,270	113,481	659	170,410
Africa	1,054	45,123	11,662	57,839
Totals	2,997,763	3,902,944	496,846	7,397,553

Railroad Service and Fares in the Netherlands

During the war the Dutch railway train service was greatly reduced in comparison with peace times, chiefly on account of scarcity of coal for the locomotives, writes Consul Frank W. Mahin from Amsterdam. A new train schedule that went into effect July 9 increased the number of passenger trains 30 per cent, restored fast trains, and brought back the service to nearly pre-war conditions.

Fares, however, will continue high. During the war they were advanced 50 per cent in the summer, when travel was the greatest, this being ostensibly to reduce travel, as the railroads could not operate extra trains. But during all of last year the increased fares were retained, and are now to be continued under the new schedule. First class fare is 5 Dutch cents per kilometer, second class 3¾, and the third class 2½. In American equivalents, these fares are about 3 cents a mile first class, 2¼ second class, and 1½ third class. Only hand baggage is free in the Netherlands. The charge for trunks averages about $0.40 per 100 pounds per 100 miles.

International Train Services in Europe

International train representatives of the British, French, Belgian and Central European railways have been in conference in Paris for three weeks with the object of establishing a new service of international trains. Subject to confirmation at a final meeting of all the delegates, it has been decided to run the Orient Express via the Simplon Tunnel, with through carriages between Paris and Bucharest and between Paris and Belgrade. A portion will go on to Athens.

In connection with this express there will be a train from Ostend to Milan and vice versa via Brussels. Another inter-

national express is to run between Paris, Prague and Warsaw by way of Strassburg and Nuremberg, in place of the former Nord Express.

The timetable for this train through the German countries concerned remains to be settled, and this is to be done at Strassburg in time for the final meeting in Paris. It is expected that this train will begin on September 15.

The delegates have also debated a Paris convention to take the place of the former Berne convention, dealing with waybill, tariff and other international traffic questions.

Chinese Railways

London.

Mr. Wih Kung-Cho, adviser to the President of the Republic of China, Dr. Chin-Chun Wang, Administrative of the Director of the Chinese State Railways, have been visiting Great Britain and other European countries investigating their technical and commercial resources. An interview published in the London Times Trade Supplement of August 16, 1919, states that the gross receipts of the Chinese railways for 1918 showed an increase of 25 to 30 per cent over the profits of the previous year. The increase in the cost of operation due to the war conditions has been relatively small, and the prosperity of Chinese railways is a marked contrast to conditions of railways in many European countries. Reports of brigandism have been greatly exaggerated, and there has been only one attempt at a "hold-up" for the last two years—"a record of which the United States might well be proud." A policy of uniform standardization is to be introduced on Chinese railways, which will affect locomotives, cars, trucks, etc.

American Trade in Malaya

London.

The Singapore correspondent of the London Times Trade Supplement says that a question often asked in Singapore is "Will United States business houses keep the hold on local markets they secured during the war?" and states further that the answer is that it is doubtful. There are several reasons why the Malaya importers will be quite ready to replace the materials brought into their country during the war with British goods as soon as the opportunity occurs. The chief reason is perhaps that the United States firms demand credit before shipment. A common complaint is that the goods often arrive badly packed, as a result of which losses are unduly high. Another grievance is that orders are often duplicated, merchants in America taking it upon themselves to double the order, drawing credit up to the value of the original order asked for and forwarding the rest at sight draft. Another was the practice of selling goods ordered by one man to another at a higher rate during transit.

The correspondent goes on to say that the importer in Malaya knows that as a general rule he can rely on British quality and British merchants' methods of doing business, so that the British merchants may be assured that their goods will be welcomed. He closes with the general opinion that Malaya is likely to enjoy a period of unexampled prosperity.

Hydro-Electric Power in Norway

London.

The London Times Engineering Supplement for August states that Norway's wealth of water power is at present attracting much attention, as according to official statistics the country boasts an aggregate of 15,000,000 hp. of water power throughout the year, a figure which, in comparison with other countries where the figures generally apply to only nine months of the year, is more imposing. Nor does this figure exhaust the total power, because several waterfalls of some importance are excluded, as are also a series with but limited fall, although some of them are quite suitable for exploitation. The extent and power of Norway's water power has greatly increased, and the country has earned such vast sums during the war it is now able to finance undertakings which would formerly have been beyond its powers.

An adequate supply of electric energy for the ordinary requirements of the population naturally claims the first place. If, taking into account the prospective increase in the population, 5,000,000 hp. are allowed for this, 10,000,000 hp. would remain for industrial purposes. The Norwegian Hydro-Electric Company has in ten years exploited 300,000 hp. Electric iron smelting and steel production are among the industries which should need electric energy, and in the production of which Norway has rather lagged behind. Export of electric current to Denmark and Sweden is also likely to require a considerable amount of current, the estimated figure being from 200,000 to 500,000 hp.

The Alsace-Lorraine Railways

A new organization has been set up for the railways of Alsace-Lorraine. According to the terms of a decree by the commissary-general of the Republic at Strasburg the system is to be operated on behalf of the State by an administrative body with headquarters at Strasburg, under the authority of the commissary-general. The administrative body will consist of a *directeur*, or manager, and a council of 21 members, including representatives of Chambers of Commerce and industrial and agricultural associations in the territories traversed by the railways. M. Lebert, assistant operating manager of the state railways, has been appointed *directeur*, and the other principal officers have been selected from among high officers on the Est, P.L.M., Orleans and State railways. The railways of Alsace-Lorraine were from 1871 until the end of the war in the unique position of being the only "Imperial" railways in the German Empire, the other State railways being vested in individual states forming component parts of the Empire The existing system consists in part of lines originally built and owned by the Est and ceded to the German Empire under the terms of the Treaty of Versailles and now restored to France, and in part of extensions built by Germany since 1871. Ever since the Franco-Prussian War Germany has regarded the Alsace-Lorraine railways chiefly from the standpoint of strategical lines, although their commercial value has never been overlooked and tracks, stations and sidings have been laid out and loading and unloading accommodation provided in accordance with military requirements in the event of a European war.

Railway Construction in Poland

According to the Przegloud Wieczorny (Warsaw), the Ministry of Railways has decided to commence the construction of 350 km. of railway lines annually for the next two years and a half, making a total, for that period, of about 875 km. (543 miles) It has been agreed that the most important and most urgent of the proposed constructions are the following:

(1) The creation of direct communication between Warsaw and Poznan (Posen) by the construction of a new line from Kutno to Strzalkowo. This is to be a first-class double track line, and the sum of 800,000 marks per km. has been allotted to it in the estimates. In view of the easy "terrain," it is considered that this sum should be ample for the purpose.

(2) The connection Lodz-Kutno-Plock-Sierpce.

(3) The reconstruction of the narrow gage railway Sierpce-Nasiesk as a line of normal gage.

(4) The creation of better communication between Lwow (Lemberg) and Warsaw by the construction of a line from Zawada to Lublin to take the place of the present connection Rawa Ruska-Rejowiec-Lublin. The Ministry is also in possession of a complete scheme for a line from Rzeszow to Nisko, in Galicia. Some of the Galician members of the Sejur (Parliament) are making energetic efforts to secure the speedy construction of this line.

The solution of the problem of Warsaw's railway connections has also been considered. It is proposed to build a station for passenger traffic on either side of the Vistula, and to connect them by a line running underground along the Jerusalem avenue and crossing the river obliquely by a new bridge. In addition separate stations for goods traffic are proposed on both sides of the Vistula. It is estimated that the completion of the Warsaw scheme will require 10 years, and that the cost (which has not yet been ascertained) will be not less than 100,000,000 marks. The reconstruction and

restoration of stations, stores and similar buildings destroyed or fallen into disrepair in consequence of the war is expected to absorb 120,000,000 marks.

Enginemen Receive Increases in Great Britain

LONDON.

The locomotive drivers, firemen and cleaners after several months of negotiations (since December, 1918) have agreed with the English Board of Trade on a standard daily wage, which is a real standard when compared to the variated scale of wages followed by the railways in the United States. This new rate is based entirely on the time of service of the men and represents an increase of approximately 100 per cent of the prewar wage. Last year these men, who number in the neighborhood of 65,000, were granted a war bonus of 33 shillings per week to cover the increased cost of living, the expectation being that as the cost of living diminished it would be removed. Since the signing of the armistice, there having been no indication of a reduction in the cost of living the men have been seeking to have the 33 shilling bonus included in their regular wage, and although they agreed last April that the existing wages plus the war bonus was to remain in effect during the present year, they made further demands which were used as the basis for settlement. The demands were first placed before the Railway Executive Committee of Great Britain, which made counter proposals as indicated in the table attached which were refused by the men. The matter was then taken up by the English Board of Trade which after some negotiations finally agreed with the men on the schedule which is also shown in the table. The wages shown in the table refer to a daily wage for an eight-hour day, except where otherwise noted, and it includes 33 shillings per week war bonus.

	Railway Executive Committee's award	Railway men's demands	Board of Trade's first award	Board of Trade's second award, which was accepted
Locomotive engineers and motormen—				
First and second years	7s. 6d. to	12s.	11s.	12s.
Third and fourth years	12s. in the	14s.	13s.	13s.
Fifth, sixth and seventh years	eleventh	16s.	14s.	14s.
Eighth year and onwards	year	16s.	14s.	15s.
Locomotive firemen and assistant motormen—				
First and second years	5s. 6d. to	9s. 6d.	8s.	9s. 6d.
Third and fourth years	6s.	10s. 6d.	9s.	10s. 6d.
Fifth year and onwards		11s. 6d.	10s.	11s.
Cleaners—				
Sixteen years old and under	28s. to 41s.	8s.	4s.	4s.
Seventeen years old	per	8s.	5s.	5s.
Eighteen and 19 years old	week	8s.	6s.	6s.
Twenty years old and over		8s. 6d.	7s.	7s.

Shillings (approx. 24 cents). Fence (approx. 2 cents).

Britain's Ministry of Transport Act

The Ministry of Transport Act has at length received the Royal Assent and, apart from the merits, it is interesting to note, says the Railway Gazette, London, how long and severe has been the examination and criticism which it has received from both Houses of Parliament. Not since the days before the war of highly contentious measures of a party political kind has there been such a long contested bill. Party politics did not much enter into the matter, but their place was taken by suspicion of bureaucracy, important vested interests and economic industrial and financial considerations.

Introduced in the House of Commons as long ago as February 26 last, the second reading debate lasted for two days —March 17 and 18. The committee stage began on April 1, and a standing committee labored at it, generally for about four hours a day, for 18 days spread over the time till May 28. The report stage in the House did not begin till July 1, and it continued for four days ending on July 8. The third reading was disposed of in one day—July 10.

The first reading in the House of Lords was formal, but the second reading debate occupied two days—July 21 and 23. On the movement that the bill be considered in committee, Lord Salisbury moved that there be an instruction that they could consider the bill in two parts, taking the part relating to railways and light railways and what he termed certain urgent matters at once, and leaving all the other proposed powers for future consideration. If adopted, this proposal would have involved the House of Lords in one of the most momentous decisions it has taken in the last few years, and would have precipitated a conflict with the House of Commons, but wiser counsels prevailed and the bill was referred to committee. The committee stage began on July 29 and ended on August 6, after occupying parts of five days. The report stage was disposed of on August 11, and the third reading on the following day.

The adjustment of amendments between the two Houses was carried out on August 12 and 13, and on the latter day the Royal Assent was given.

The measure was thus before the two Houses on no fewer than 38 days, spread over a period of about five and a half months.

Railroad Developments Needed in Venezuela

LONDON.

In commenting on the mission of a special commissioner sent to Great Britain by the government of Venezuela for the purpose of obtaining co-operation in developing that country, the London Times Trade Supplement published some interesting facts regarding the need of improved transportation facilities. It indicates on a map, which is reproduced herewith, the railways that are already in operation, those under construction, and those contemplated. Venezuela is primarily an agricultural country, but there are great opportunities for development in petroleum and coal. Having an area of 364,000 square miles, the country has less than 700 miles of railways, and these are all located on the northern coast. They start from the Caribbean seaboard and run inland at different regions. About half of the railways were constructed by the British, the most flourishing line connecting the seaport of La Guaira with the capital, Caracas. The Venezuelan Central, a British railway, operates between the capital and Sta. Teresa, and extends to Ocumare.

Railways of Venezuela Showing the Lines Open, Those Under Construction and New Lines Under Consideration

In the Maracaibo Lake region there is at Tucacas the sea terminus of another British line, the Bolivar Railway Company, with about 170 miles of track; the first strip was built to serve the British-owned copper mines of Aroa, extensions afterwards running to Barquisimeto and from Palmasola to San Felipe. The Puerto Cabello and Valencia line is also British, connecting with the German-built Gran Ferrocarril de Venezuela running from Caracas to Valencia.

Local railway lines have also been built by British interests within the last few years in the Maracaibo region to serve the special needs of sugar, coal and oil companies. Of other lines, that from Guanta to Barcelona and Naricual serves a series of coal fields; the Encontrados line, some day to be extended to the Colombian frontier, is a coffee carrier; the Sta. Barbara-El Vejia line serves sugar regions, but needs rebuilding; that from La Ceiba to Trujillo and Valera also

serves agricultural regions, while the little La Vea-Coro line connects the two sides of Paraguana peninsula. The Carenero line is another example of a short strip giving access to a port, while a section is under construction from the Perija coal fields to Castilletes, above the Maracaibo bar.

Venezuela's most pressing need is for roads and railroads to permit the movement of trade with the interior plains, where large herds of cattle and extensive agricultural areas exist. One of the most important railway projects is that connecting San Fernando de Apuré, the greatest cattle center, with the Valencia line, by way of Calabozo, Ciudad de Cura, Victoria and Maracay. At present herds are sent on the hoof by poor roads to Puerto Cabello, the journey taking several weeks. Another extension projected runs from Valencia in a southerly direction, again for the purpose of penetrating rich pastoral country, passing through Guanare to Barinas. A third plan is to put the Orinoco river in rail communication with the Caribbean coast by an extension of the Barcelona line, by way of Maturin, to Ciudad Bolivar. The Barcelona line serving coal fields would then extend to great gold mining, petroleum and asphalt belts. Altogether, 800 miles of new line are badly needed.

Rolling Stock and Working Conditions in France

London, Eng.

The 50,000 freight cars lost by the French railways in August, 1914, during the first period of invasion, represented, says Le Génie Civil, more than one-tenth of the stock used on the French railways; the density of the traffic soon crippled those which remained, and the lack of repair-shops and construction works (many of which were in invaded regions), together with the scarcity of labor, prevented the upkeep and renewal from being carried out normally. This bad condition of the rolling stock gave rise to many derailments and collisions due to the breaking of couplings, with the result that the shortage of rolling stock was further increased. However, in April, 1918, at the time of the German advance on Amiens, the Northern Railway was able to arrange for 170 trains per day for the transport of troops alone, making a total of 20,000 loaded wagons; in August, 1918, the figure rose to 25,000 wagons.

After the armistice, owing to the sudden advance of the armies as far as Alsace and Lorraine, the distances to be covered for the transport of supplies and the service in the liberated regions, were all at once considerably lengthened, so that the same rolling stock had to cover much more ground, which is equivalent to a proportional decrease in the material available. Other causes further accentuated the crisis. The German stock, delivered in accordance with the stipulations of the armistice, but with much delay, only slightly relieved this state of affairs at the outset. The scarcity of lubricating materials and the formidable distances covered between the Franco-Italian front and the Russian or Balkan fronts, had reduced engines and freight cars to such a condition that many had to be rejected, while the others left still much to be desired. The use of this rolling stock (4,300 engines and 130,000 freight cars) made it necessary to employ, in addition, German drivers and stokers, who showed little zeal and were even suspected of wilful negligence which was eliminated as quickly as possible; then, again, spare parts could only be found in German depots or works.

The following table, taken from an official document, shows the differences occurring between 1914 and the beginning of 1919 in French rolling stock:

	Existing stock		Stock laying idle owing to damage	
	1914	1919	1914	1919
Locomotive engines ..	13,000	14,574	1,729 (13.2%)	2,834 (19.5%)
Freight cars	376,000	368,000	14,840 (4.0%)	38,520 (10.5%)
Passenger cars	49,380	43,956	4,474 (9.1%)	7,817 (18.0%)

As regards the French employees, their number has decreased by nearly 20 per cent between August 1, 1914, and January 1, 1919 (332,700 men against 280,660) The smaller efficiency of women workers (used even in the laborious work of handling luggage), the ravages of the influenza epidemic made in the ranks of a much overworked staff, especially in the army, and lastly the demobilization of a large number of employees mobilized for the working of railways, will explain the difficult position in which the great companies have found themselves during the last few months in this connection as in others. (*Le Génie Civil.*)

English Railway Stockholders Association

London, August 6, 1919.

The English Railway Stockholders' Protection Association, Ltd., which, as noted recently in these columns, has been formed by an influential group of stockholders, results from the anxiety as to the future of the English and Welch railways. An executive committee, representing very large holdings in English railway stocks, has been appointed, and the association has been registered under the Companies Act, with limited liability.

The sole object of the association is to safeguard the interests of all stockholders of the English and Welsh railway companies in the final settlement of the questions arising out of the government control of the railways. The main problems that have to be dealt with are (1) the depreciation of permanent way and rolling stock; (2) the greatly increased cost of operation due to the payment of higher wages to employees and higher prices for materials; and (3) the difficulties attending the issue of new capital or of loans for the development of the railways.

The association is neither for nor against nationalization. It is not political. It stands for no policy other than the policy of fair play for all, whatever the decision of Parliament as to the future of English and Welsh railways.

The appeal of the association is to a large portion of the general public, both directly as individual stockholders, and indirectly through their interest in banks, insurance companies, charitable, educational and religious institutions, friendly societies, trade unions and limited companies, the majority of which have a portion of their funds invested in English railway securities.

The total holdings in stocks of the railways of the United Kingdom represent a face value of no less than £1,350,-000,000. The number of stockholders is probably not less than one and a half millions.

In Scotland there is a similar association, with a membership of over 30,000, which has already performed valuable service on behalf of the Scottish railway shareholders.

The association has a definite plan of campaign. It will give the legislature, royal commissions or committees dealing with the affairs of the railways, facilities for ascertaining the views of the stockholders, and will demonstrate the real merits of their claims. It will watch over all legislation affecting the stockholders, it will place their case adequately before the press, it will hold meetings and establish branches in England and Wales, it will collect and publish all necessary information, and generally give all possible assistance to its members. It is assured beforehand of the sympathy of the boards of management of many of the railways and the support of influential institutions.

A single subscription only is required from a stockholder or bondholder to become a member of the association, the sum to be not more than 42s. and not less than 2s. 6d. Any subscription between these two limits may be sent; it is left to the subscriber to decide the amount, having regard to his interests in English railways. Beyond this, there will be no liability except a contingent contribution not exceeding one shilling (if required) towards the cost of winding up the association.

The secretary is A. W. Burchell, 5 The Sanctuary, Westminster, London.

The Nationalized Railways of Italy

London.

The London Times Trade Supplement of August 16 publishes a review of a book which has just been written by Signor Pietro Lanino,* whose reputation as a railway authority is undisputed. The purpose of the book is to outline a series of suggestions as to the best means by which the Italian State railways can be developed and their deficiencies remedied, and the criticisms of nationalization which it contains are merely incidental to the main subject. In spite of this, or rather because of it, Signor Lanino's remarks on the beginnings, progress, and effects of public ownership are extremely valuable, for they have all the weight of testimony

* "Per le Sviluppo e l'Organizazione dei nostri Transporti Ferroviari." By Pietro Lanino. Published by Nicola Zanichelli, Bologna.

given by an independent witness who is nowhere concerned to make out a case for or against nationalization.

The state-owned Italian lines have a length of 8,700 miles, and are the most extensive railway system in Europe under one management. They were built by a number of private companies, and in the year 1905 were taken over by the government in consequence of a general strike of railway workers which broke out that year and was of an alarming political character.

The private companies paid a tax of 27.5 per cent of their revenue to the government, averaging an amount of £2,560,000 annually. The first year after nationalization the sum had dropped to £1,920,000, and in 1913-14 to £1,120,000, while the year 1915 showed a deficit. The total investment aggregates about £280,000,000.

Lack of Enterprise

Double-tracking was initiated under private management, but progress has been slow since the state entered the field, and today only 23 per cent of the system has double tracks.

Italy's mountain railways are only one-seventh of her lines, but they absorb 40 per cent of the total consumption of coal. Electrification is therefore a pressing necessity from the point of view of economy, and we find that the private companies had electrified 84 miles of most difficult road between the years 1899 and 1902. During the first 12 years of government administration less than 154 miles were electrified, and at the present rate of progress it would take 100 years to electrify the 2,175 miles which it would be profitable to change.

From 1885 to 1905 the private companies actively developed local traffic resources, especially along the Adriatic, organized the export of Italian agricultural and industrial products to England and Central Europe, and started the express service of the country by inaugurating a fast train from Milan to Rome.

Since 1905 no measures have been taken by the state to encourage production and exports. The railway no longer seeks the customers. It is the customer who bows down to the bureaucrat in the railway office.

Unceasing Friction

According to Signor Lanino, the private companies built their extensions in a careful, solid way, making money for their shareholders, and satisfying the state's legitimate requirements. Under public ownership construction has proceeded slowly, the original plans of 1905 have not yet been carried out, and the expense is so much greater than was anticipated that an original estimate of £17,280,000 has had to be altered to £25,560,000. The timidity which caused the government to conceal the sum necessary for the reorganization of the railways in 1905 still persists. Conflicting local interests hinder the completion of new projects. There is unceasing friction between the officials of the departments of Railway Administration and Public Works, and in the end nothing is accomplished.

But the great and all-absorbing question of the Italian state railways is, and always has been, labor. As Signor Lanino truthfully remarks, the employees are not considered as such, but as electors. The state has been unable to attract a high class of workers, or to increase the efficiency of those whom it has succeeded in obtaining. Discipline cannot be maintained, for any official who attempts to enforce it finds himself subjected to political pressure. The payroll amounts to £20,000,000, an increase of £8,000,000 since the beginning of the war. Operating expenses have risen from 68.8 per cent under private management to 82 per cent, of which increase labor represents six per cent. The total number of workers had increased 47 per cent and the wage-bill 53 per cent by 1914, and even in 1907, or two years after nationalization took place, the office force numbered 13,000 persons, as against 8,000 in 1905. On certain of the secondary lines the average number of passengers carried daily is barely equal to the number of employees. From 1911 to 1914 it was necessary to add £840,000 to passenger fares and £480,000 to freights, in order to meet labor's demands for increased pay. In the higher positions the bureaucrat, backed by his powerful political friends, is slowly but surely replacing the trained official, to the further deterioration of the service.

Equipment and Supplies

Locomotive Deliveries Week Ended August 23

New locomotives were shipped during the week ended August 23, as follows:

Works	Road	Number	Type
American	A. C. L.	6	USRA Pacific
		6	
Baldwin	S. A. L.	6	USRA Santa Fe
	P. L. W.	2	Santa Fe
	A. T. & S. F.	2	Santa Fe
	C. & O.	1	USRA Mallet
	P. L. W.	4	USRA Santa Fe
	T. & P.	1	USRA Mikado
	N. & W.	1	Mallet
		17	
Total		23	

Freight Cars

The Baltimore & Ohio is inquiring for 8 50-ton steel hopper cars.

M. C. Fairchild & Co., New York, are inquiring for 50 20-ton gondola cars for export.

The Eastman Kodak Company, Rochester, N. Y., is inquiring for one special 40-ft. 30-ton flat car.

The United States Coal & Coke Company, Pittsburgh, Pa., is inquiring for one motor-driven car.

Cosden & Co., Tulsa, Okla., has ordered one 50-ton 10,000-gal. insulated tank car from the American Car & Foundry Company.

The Madeira Hill, Clark Coal Company, Philadelphia, Pa., has ordered 75 wooden mine cars from the American Car & Foundry Company.

The Warner Sugar Refining Company, New York, has ordered four 40-ton 8,000-gal. tank cars from the American Car & Foundry Company for export.

The Petroleum Refining Company, Cincinnati, Ohio, has ordered 16 8,050-gal. and 2 6,500-gal. tank cars from the Pennsylvania Tank Car Company.

Signaling

The Pennsylvania, Western Lines, has ordered a 28-lever Saxby & Farmer interlocking machine from the Union Switch & Signal Company, Swissvale, Pa., for use at Newburg, Ohio. Another machine of the same type with a 36-lever frame, furnished by the same company is being installed by railroad forces at Brady Lake, Ohio.

Miscellaneous

The Home Oil Refining Company of Texas has been awarded a contract for the furnishing of oil to the St. Louis-San Francisco for five years. Neither the quantity of oil to be supplied nor the price to be paid has been announced. The oil will be delivered to the road at Oklahoma City, Okla., Fort Worth, Tex., and Monette, Mo.

"No Accident Day" was successfully observed on the Tyrone division of the Pennsylvania Railroad on Tuesday, August 26, the day passing without a single accident of any description. J. K. Johnston, superintendent of the Tyrone division, said that "No Accident Day" would be observed at intervals on his division.

Pennsylvania Railroad stockholders on August 1 numbered 112,216, an increase of 618, compared with July 1, and 8,033 compared with August 1, 1918. The average holding on August 1 was 88.95 shares. In two years the average has been reduced from 105.95. About 30 per cent of the $500,000,000 capital stock is held by women.

Supply Trade News

Richard Pintsch, inventor of the Pintsch gas lighting system, is reported dead at Berlin, Germany, at the age of 80.

The Hutchins Car Roofing Company, Chicago, has opened an office in the Railway Exchange building, St. Louis, Mo., in charge of **Charles F. Pace** as district sales manager.

George W. Bender, district manager in charge of the New York office of **Mudge & Co.,** Chicago, has been promoted to manager of sales and service with headquarters in Chicago. Mr. Bender was born at Pittsburgh, Pa., on August 20, 1884. At the age of 17, he entered the engineering department of the Pressed Steel Car Company of that city. In 1906, he accepted a position with the American Locomotive Company where he had charge of the extra work order department. In 1910, he became associated with Mudge & Co. as chief draftsman and subsequently was given charge of the mechanical department. Later he was made assistant to the vice-president, a position he held until his appointment in April, 1918, as eastern manager in the New England and Atlantic Coast states in which capacity he served until his recent promotion.

G. W. Bender

The Chicago Pneumatic Tool Company, Chicago, announces the appointment of **Fred Gehbauer,** as special Navy Yard representative, with headquarters at the Philadelphia office, 1740 Market street.

H. W. Johns-Manville Company, New York, has commenced excavating for a large plant at Waukegan, Ill. No contracts have been let for the building itself as the type of construction and the specifications have not been fully decided upon.

William H. Bruce, sales manager of the **Mark Manufacturing Company,** Chicago, with office at Minneapolis, Minn., has been appointed southern sales manager for this firm and also for the Steel & Tube Company of America with headquarters at New Orleans, La.

Paul Sutcliffe, advertising manager of the Edison Storage Battery Company, Orange, N. J., has been appointed manager of the industrial truck and tractor department of the same company. Mr. Sutcliffe has been with the Edison Storage Battery Company for the past five years.

The Bucyrus Company, South Milwaukee, Wis., announces that it has opened a Cleveland office at 808 American Trust building in charge of **E. G. Lewis,** formerly with the New York office of the Bucyrus Company and more recently president of the New Jersey Slag Products Company, Dover, N. J.

The Locomotive Crane Company of America, Chicago, has been chartered by Charles and Robert Vergan with a capitalization of $300,000. The new company is manufacturing a small locomotive-type road crane with a capacity of four tons which will handle a ¾ yd. clam shell bucket and which can be used with block attachment. The company is at present negotiating a contract for a large manufacturing plant to be constructed at Clearing, Ill., upon which operations will commence within the next 90 days.

W. C. Epstein, formerly in the operating department of the American Brake Shoe & Foundry Company, Chicago, and more recently in charge of the production engineering division of the Bureau of Aircraft Production at New York, has been appointed general superintendent of the **Duff Manufacturing Company,** Pittsburgh, Pa., with office in that city.

Doheny, Quinlan & Robertson, Ltd., Montreal, Que., has been incorporated under the Dominion Companies Act with an authorized capital of $2,000,000 to conduct a general and railway contracting business, and act as engineer and builder of allied work. The directors are: **H. Doheny, H. Quinlan, A. W. Robertson, G. A. Campbell** and **J. Karry.** Mr. Doheny has been engaged in the railway contracting business for some years and H. Quinlan and A. W. Robertson have been associated in government construction work.

The Fastfeed Drill & Tool Corporation, recently incorporated under the laws of the state of New York with an authorized capital of $500,000, has purchased the factory, together with the business and good will, of the **McCarthy Drill & Tool Corp.,** Toledo, Ohio. **John D. McGrath,** formerly treasurer of the McCarthy Drill & Tool Corp., is managing director of the new organization which will continue to operate the plant in Toledo. Additions to the present equipment are planned for the near future.

John Kelly, who for a number of years was New York district manager of the **Edison Storage Battery Company,** has been appointed general sales manager of the company, with headquarters at Orange, N. J. This promotion for Mr. Kelly follows closely upon his promotion, on July 1 of this year, to the position of assistant general sales manager. Mr. Kelly brings to his new position the experience of a long and varied career in the storage battery, electric vehicle and accessory business. For nine and one-half years he was district manager of the New York office of the Edison Storage Battery Company. Before that he had been a salesman for the Westinghouse Storage Battery Company for two years, for the Swinehart Tire & Rubber Company for three years, for the Firestone Tire & Rubber Company for two years, and for the New York Edison Company for nearly four years.

John Kelly

Harry W. Benkart, manufacturers' agent at Buffalo, N. Y., has been appointed representative of the Lakewood Engineering Company at Buffalo, with offices in the Ellicott Square building. Mr. Benkart has had about ten years' experience in the construction business, the greater portion of which was spent with the Dravo Construction Company in the position of superintendent of construction. For the past five years he has been an agent for contractors' equipment including the Lakewood line. In joining the Lakewood organization, he now discontinues all other lines.

A. A. Schneider, formerly with the raw materials department of the Midvale Steel & Ordnance Company and the Cambria Steel Company, has been appointed manager of the newly created raw materials division of the **American Steel Export Company.** Prior to entering military service in 1917 as a lieutenant of field artillery, Mr. Schneider had, for several years, been assistant to H. F. Black of the Midvale and

Cambria companies of Pittsburgh. In his new field, Mr. Schneider will handle imports, exports and domestic sales of pig iron, manganese, chrome and low phosphorus, iron ores, ferro-alloys, coal and coke.

American Locomotive Company Has Record Year

The annual report of the American Locomotive Company for the fiscal year ended June 30, 1919, shows that that year was the most successful in the history of the company. During the year the company, working entirely on locomotive business, had the gross earnings of $108,923,524 as compared with $80,588,071 in the year ended June 30, 1918, or with $82,213,845 in 1917. The profits for the year, after the deduction of interest, etc., and $4,922,789 for income and war profits taxes, amounted to $12,012,567 as compared with $5,911,137 in the previous year. The same dividends were paid as in the preceding year, namely, 7 per cent on the preferred and 5 per cent on the common stock, leaving a surplus of $9,012,567 as compared with $2,911,137 in 1918. From this amount $5,000,000 was set aside as a reserve for additions and betterments, leaving a net credit to profit and loss of $4,012,567. In the fiscal year ended June 30, 1918, only $1,000,000 was set aside for reserves for additions and betterments and the credit to profit and loss was only $1,911,137.

President Andrew Fletcher in his report to the stockholders, says that in arriving at the net profits for the year, there has been included under the heading of manufacturing expenses and deducted from earnings the sum of $1,155,556 for depreciation and $548,491 for new drawings and patterns. He also says that there was expended for permanent additions and betterments to the plants $1,704,854, all of which has been charged against the reserve for such expenditures.

Mr. Fletcher also says in his report: "To offset the effect of the shorter working day and the increased cost of labor of all kinds, the management of the company, continuing the past policy of improving the physical conditions and facilities of the plants and increasing their efficiency, has set aside out of the profits of the year a reserve of $5,000,000 for further additions and betterments. The advisability of making these improvements was demonstrated during the war, and while the plants were working to their full capacity, but they were deferred until they could be made without serious interference with the output. The improvements are now in progress and are principally to the Schenectady, Brooks and Montreal plants and for the extension of the company's steel casting plant at Chester, Pa.

"The tonnage produced in the year ended June 30, 1919, was about 23 per cent greater than the production of the preceding year. This was due to the new high records of production obtained at the larger plants of the company in the forepart of the year, and to the increased tonnage of the Montreal and Richmond plants, which during part of the preceding year were being converted from munitions to locomotive manufacturing.

"The amount of unfilled orders on the books on June 30, 1919, was $16,034,678, compared with $74,736,543 on June 30, 1918, and $54,517,373 on December 31, 1918. Since the armistice was signed in November, 1918, the volume of sales has been very low. There was, however, a considerable amount of unfilled orders on hand when the war ended, and with new business booked subsequently, all plants except Pittsburgh were enabled to operate for the remaining months of the fiscal year at a slightly reduced rate of production. The Pittsburgh plant was closed at the completion of its schedule in March, 1919, and the reduced volume of business concentrated at the larger and more efficient plants of the company. There has been $2,135,352 of new locomotive orders taken since July 1, 1919.

"The excess of current assets over current liabilities on June 30, 1919, was $35,508,422.53.

"The amount of inventories of materials and supplies on hand and work in progress on June 30, 1919, was $11,018,309, as compared with $25,411,834 on June 30, 1918.

"During the year the company completed the order of 800 standardized locomotives for the United States Railroad Administration, which were contracted for on April 30, 1918. The company also completed 381 standardized locomotives for the Railroad Administration, applying on a contract of 500, dated November 1, 1918. Because of the omission of Congress to provide funds prior to its adjournment in March last, the Railroad Administration was unable to meet its obligations in cash for locomotives delivered. To meet this situation the Director General of the Railroad Administration issued Certificates of Indebtedness bearing interest at five per cent for all unpaid bills due this company, and on June 30, 1919, the company had received from the Administration $25,324,424.05, of such Certificates of Indebtedness.

"On July 15, 1919, the Railroad Administration, having obtained an appropriation from Congress, paid the Certificates of Indebtedness then held by our company, amounting to $26,102,218.50. As this amount of cash added to other accumulations since July 1, 1919, is far in excess of immediate needs of the company because of the small amount of business on hand, the company has liquidated all of its loans payable, amounting to $7,535,000, and purchased $23,500,000 of U. S. Treasury 4½ per cent Certificates.

"The contract with the U. S. War Department for 190 trench locomotives, amounting to $1,873,400, which was cancelled shortly after the signing of the armistice, has been adjusted without loss to the company.

"The immediate prospect of orders for domestic locomotives is not bright and undoubtedly this condition will continue until the ultimate disposition and financing of the railroads of the country, now under control of the United States Railroad Administration as a war measure, has been determined.

"While the company has been receiving orders for foreign service, a greater volume of foreign business could be obtained but for the problems of finance and credit, many of the inquiries requiring long terms of payment extending from five to ten years. Unquestionably a broad gage policy of credits to the foreign countries will have to be granted them in rebuilding their railroad facilities, so vitally necessary to their industrial growth and prosperity. One solution of this problem, in our opinion, would be obtained by forming a combination of railroad equipment companies and allied industries of this country together with banking interests, under the form of a Foreign Railway Equipment Finance Corporation, rather than by individual action by any railroad equipment company. Such combination would be permissible under the Clayton and Webb-Pomerene laws, and thereby afford an imperative relief to the foreign countries requiring our help in rehabilitating their transportation systems. The long delay in the settlement of peace is in a measure preventing the formulation of definite plans and action tending toward the re-establishment of normal business relations with European and other foreign countries.

The consolidated income account and general balance sheet follow:

CONSOLIDATED GENERAL BALANCE SHEET

American Locomotive Company and the Montreal Locomotive Works, Ltd., June 30, 1919

ASSETS

Cost of property (less depreciation reserves)		$43,154,192
Sundry securities owned		641,704
Current assets—		
Cash on hand and in banks	$3,339,485	
U. S. R. A. Certificates of Indebtedness	*25,324,424	
Accounts and bills receivable	8,048,367	
U. S. Liberty Loan Bonds	4,043,100	
Canadian Victory Loan Bonds	542,900	
Employees' subscriptions for U. S. Liberty Loan Bonds (less instalment payments)	919,286	
Employees' subscriptions for Canadian Victory Loan Bonds (less instalment payments)	41,580	
Accrued interest	229,617	
Materials and supplies	$7,046,931	
Contract work in process	3,813,552	
		10,860,483
Locomotives and parts in stock		157,826
		$53,507,069
Sundry deferred charges		174,267
		$97,477,232

*The U. S. R. A. Certificates were paid on July 15, 1919.

LIABILITIES

Capital stock—	
Preferred	$25,000,000
Common	25,000,000
Bonded debt of constituent companies	1,957,000

Current liabilities—		
Accounts payable		$2,384,621
Dividend on preferred stock payable July 22, 1919		437,500
Dividend on common stock payable July 3, 1919		312,500
Unclaimed interest and dividends		2,771
Loans payable—		
Purchase of Liberty Bonds	$5,035,000	
Other loans payable	2,500,000	
		*7,535,000
Accruals for United States and Canadian income and war taxes		6,843,399
Sundry accrued expenses		482,855
		$17,998,646
Reserves for accident indemnity and miscellaneous items		794,017
Reserves for additions and betterments		4,886,494
Profit and loss—		
Balance June 30, 1918		$17,828,507
Add—Surplus as shown in condensed income account		4,012,567
		$21,841,074
		$97,477,232

*Loans payable were paid during July, 1919.

CONDENSED INCOME ACCOUNT

Of the American Locomotive Company and Montreal Locomotive Works, Limited, for the fiscal year ended June 30, 1919, as compared with the fiscal year ended June 30, 1918.

	1918-19	1917-18	Increase
Gross earnings	$108,923,524	$80,588,071	$28,335,453
Manufacturing, maintenance, and administrative expenses and depreciation	91,569,915	70,358,566	21,211,350
Manufacturing profit	$17,353,609	$10,229,505	$7,124,104
Interest, etc., on bonds of constituent companies, loans payable, etc.	418,252	299,417	118,836
	$16,935,356	$9,930,088	$7,005,268
Deduct for United States and Canadian income and war profits taxes	4,922,789	4,018,951	903,838
Available profit	$12,012,567	$5,911,137	$6,101,430
Dividends on preferred stock at 7 per cent	1,750,000	1,750,000	.....
Dividends on common stock at 5 per cent	1,250,000	1,250,000	.....
Surplus	$9,012,567	$2,911,137	$6,101,430
Reserve for additions and betterments	5,000,000	1,000,000	4,000,000
Net credit to profit and loss	$4,012,567	$1,911,137	$2,101,430

Trade Publications

MAST HOIST BUCKET.—A plant for handling concrete on small jobs by means of a hoist, bucket and chute is described and illustrated in a folder issued by the Insley Manufacturing Company, Indianapolis, Ind This equipment is less elaborate than that covered by the tower and spouting system in that the tower is replaced by a mast.

ELECTRIC TRAVELING CRANES.—A new catalogue of Chesapeake cranes has been compiled by the Chesapeake Iron Works, Baltimore, Md. The book contains 28 pages, 9 in. by 11½ in. The first half is devoted to descriptions and illustrations of the various parts of the cranes, while the last half contains full page illustrations of installations.

COLOR CHART FOR HEATING STEEL.—The Onondaga Steel Company, Syracuse, N. Y., has prepared a graphic color chart containing directions for cutting on high speed steel for tool lengths, for forging and hardening forged tools, milling cutters and finished tools, and for tempering and annealing, with the temperatures for the different operations shown in color.

CURTAIN ROLLER.—The Curtain Supply Company, New York, is revising its catalogue, which will hereafter be issued in the form of bulletins describing and illustrating their various products. The first of these, R-2, covers the Rex all-metal curtain roller and consists of eight pages, describing the construction of the roller and illustrating the detail parts.

HYDRAULIC MACHINERY.—A catalogue of 63 pages, embracing all kinds of hydraulic machinery, has been prepared by William H. Wood, hydraulic engineer, Media, Pa. These machines include flanging, riveting, punching and shearing machines, cranes, hammers, valves, pumps, accumulators, etc. Several drawings are also shown of the Wood's flexible corrugated locomotive firebox, flanged on a sectional flanging press, and a summary of the results of comparative tests, made some years ago on the New York Central, of a Wood's firebox with arch tubes and a standard firebox without arch tubes.

Financial and Construction

Railway Financial News

CHICAGO, ROCK ISLAND & PACIFIC.—This company has applied to the Public Utilities Commission of Illinois for authority to issue its general mortgage gold bonds in the aggregate amount of $1,000,000 and of its first and refunding mortgage gold bonds in the amount of $7,999,000.

OAKLAND, ANTIOCH & EASTERN.—Authority to issue notes in renewal of notes issued to the Union Switch & Signal Company, Pope & Talbot Company, Charles Nelson & Company, J. A. Roebling's Sons Company, and the California National Bank of Sacramento, Cal., has been given to the Oakland, Antioch & Eastern by the Railroad Commission of the State of California. The notes, ranging in amount from $2,374 to $40,000, were issued originally to cover the cost of material and supplies used in road construction.

WESTERN PACIFIC.—See editorial elsewhere in this issue.

Railway Construction

SIKESTON & SOUTHEASTERN.—The directors of this road, at a meeting held in Charleston, Mo., decided to proceed with their plans for constructing a railroad to the Mississippi river, opposite Hickman, Ky., crossing Mississippi county near East Prairie. Residents of Sikeston are backing this project as a means of securing better freight rates through the use of the Mississippi river.

SOUTHERN RAILROAD LINES.—The contract for the steel work on the new bridge of the Cincinnati, New Orleans & Texas Pacific over the Tennessee River near Chattanooga, Tenn., has been awarded to the American Bridge Company.

THE NORTHERN PACIFIC.—Contracts have been let to J. L. Shiely & Co., St. Paul, Minn., for the excavating work, and to the J. & W. A. Elliott Company, Minneapolis, Minn., for the construction of a hospital for the Northern Pacific Beneficial Association at St. Paul, Minn. The building will be of reinforced concrete, stone and brick construction, 42 ft. by 280 ft. with a wing 42 ft. by 60 ft. and will cost approximately $500,000, including a garage and power plant. All excavation and concrete footings have been completed and it is expected that the hospital will be ready for occupancy by the first of the year. Following the completion of the hospital proper, a nurses' home and two residences for the head physicians will be constructed. The new hospital will accommodate 150 patients.

UNION PACIFIC.—The new terminal at Council Bluffs, Iowa, is nearing completion and will be ready for service about September 15. The new terminal is composed of a modern 40-stall roundhouse, a new machine shop, 72 ft. by 209 ft., a modern power plant and a 650-ton coaling station. The new roundhouse of steel, brick and concrete is nearly completed with the exception of painting, the installation of a washout system and the building of a turntable foundation. In adjoining buildings of the same construction are located the tool rooms, the office of the roundhouse foreman and washrooms for the engineers and roundhouse workmen. A new sand house and sand bin have also been erected, the former being of brick and the latter having a capacity of 50 cars of sand.

The membership in the American Society for Testing Materials has passed the 2,500 mark, the present membership being 2,538. While the growth of the society has been steady it has never been as rapid as during the present year, during the first eight months of which 313 new members were enrolled.

Railway Officers

Railroad Administration

Operating

R. K. Rochester, formerly superintendent of the Cleveland and Pittsburgh division of the Pennsylvania, Lines West, Northwest system, with office at Cleveland, Ohio, and more recently a major in the army has received his discharge from military service and has resumed his duties as superintendent, succeeding **G. LeBoutillier**, who has been transferred.

F. W. Boardman has been appointed fuel supervisor of the Texas & Pacific, the Trans-Mississippi Terminal Railroad, the Weatherford, Mineral Wells & Northwestern, the Gulf, Texas & Western, the Denison & Pacific Suburban Railroad, and the Fort Worth Belt Railroad, with headquarters at Dallas, Texas, succeeding **W. L. McMurray**, assigned to other duties.

Engineering and Rolling Stock

C. A. Plumly has been appointed valuation engineer of the Maine Central with office at Portland, Maine.

A. W. Macpherson, chief engineer of the San Francisco-Oakland Terminal for the past five years, has resigned to engage in other business. He will also organize a general contracting firm with headquarters at Woodland, Cal.

J. J. Maginn, formerly master mechanic of the Cincinnati Northern at Van Wert, Ohio, has been appointed superintendent of motive power of the Lake Erie & Western, with headquarters at Lima, Ohio, vice **George J. Duffey**, deceased.

L. L. Sparrow has been appointed principal assistant engineer of the Atlantic Coast Line with office at Wilmington, N. C., succeeding **T. L. Morton**, deceased. **George G. Thomas, Jr.**, has been appointed office engineer, succeeding Mr. Sparrow.

L. R. Wink has been appointed assistant superintendent of the car department of the Chicago & Northwestern with offices at Chicago. **C. J. Nelson** has been appointed general foreman of the car department in charge of the Galena and Wisconsin divisions and Chicago Terminals, succeeding Mr. Wink.

Captains John Maher, George B. Farlow, Joseph M. Lewis, Paul W. Elmore and **Lieutenants W. B. Maurer, J. W. Purdy** and **J. D. Stemm** have been discharged from military service and have resumed their duties as assistant engineers on the Baltimore & Ohio, Western Lines, with headquarters at Cincinnati, Ohio.

Otis Weeks, who has been discharged from military service, has been reappointed division engineer of the Salt Lake division of the Southern Pacific, with headquarters at Ogden, Utah, in place of **W. F. Turner**, assigned to other duties. **F. W. Bordwell** has been appointed division engineer of the San Joaquin division, with headquarters at Bakersfield, Cal., in place of **P. T. Robinson**, assigned to other duties.

Lieut. Leigh Budwell has resumed his duties as mechanical engineer of the Richmond, Fredericksburg & Potomac and the Washington Southern, with headquarters at Richmond, Va., having just returned from 12 months' service in the Transportation Corps in France, where he served as master mechanic in the 16th Grand Division. **B. J. Coffman**, who has been acting mechanical engineer during the absence of Lieutenant Budwell, has been assigned to other duties in the mechanical department.

Corporate

Executive, Financial, Legal and Accounting

S. S. Senne, assistant to the receiver of the Louisiana & North West has resigned to become vice-president and general manager of the Westfield Motor Railway Company with headquarters at Westfield, Ill.

Engineering and Rolling Stock

G. P. MacLaren has been appointed district engineer of the Ontario district of the Canadian National with headquarters at Toronto, Ont.

A. H. Kendall has been appointed master mechanic of the Quebec district of the Canadian Pacific with office at Montreal, Canada, succeeding **C. A. Wheeler**, transferred.

Theodore C. Fischer, whose appointment as corporate engineer of the Central Railroad of New Jersey with headquarters at New York, was recently announced in these columns, was born on August 14, 1879, at Philadelphia, Pa. He was educated at Rutgers College, graduating with the class of 1899. In June, 1899, he entered the service of the Central Railroad of New Jersey as rodman in the engineering department. He was made transitman in December, 1902, and assistant engineer in January, 1906. On January 1, 1917, he was promoted to office engineer, which position he held at the time of his recent appointment as noted above.

Traffic

M. Frank Tompkins, who has been appointed general freight agent on the Canadian National Railways, with headquarters at Moncton, N. B., as has already been announced in these columns, was born on December 6, 1878, at Margaree, N. S., and was educated in the public schools at Truro. He began railway work on November 23, 1896, with the Intercolonial Railway, now a part of the Canadian National Railways, as a telegraph operator, and served at various places until February, 1900. He was then, until May of the same year, freight clerk at Truro and subsequently to September, 1902, served in a similar position at Sydney. On September 1, 1902, he was appointed accountant in the superintendent's office at New Glasgow, and from July, 1903, for one year was telegraph operator at the same place. He then served as relieving agent at different places until January, 1911, when he became chief clerk in the division freight agent's office at Halifax. On November 30, 1914, he was appointed division freight agent at the same place and, since June, 1917, was assistant general freight agent at Moncton, N. B., until his promotion to general freight agent as above noted.

M. F. Tompkins

Obituary

Thomas L. Morton, principal assistant engineer of the Atlantic Coast Line, died at the hospital of the University of Virginia on August 27, 1919, after an illness of about three months. Mr. Morton was born at Petersburg, Va., on May 31, 1854, and was educated at McCates School, Richmond, Va., and Oxford University, England. He entered the service of the Plant System in 1883 as engineer in charge of location and construction of the line from Tampa, Fla., to Kissimmee, Fla., and continued after the completion of that work with the Plant System in charge of the location and construction of many of the Florida lines of that company. When the Plant System was purchased by the Atlantic Coast Line in 1902, Mr. Morton remained with the railroad, holding various positions in the engineering department until he was promoted to that of principal assistant engineer.

EDITORIAL

Railway Age

EDITORIAL

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The Shantung Situation

China is looked upon as a large potential market for railway material and supplies and American capital hopes to be able to build no small share of the great additions that must be made to China's present inadequate railway mileage. Thus far, we have not had much success. It has been the practice in the main for railway supplies to be bought in the countries owning the concessions for the railways, and the United States has not been one of them. Readers of the *Railway Age* are also familiar through our special correspondence from Peking with the difficulties American railway builders have encountered in being told that lines surveyed by American parties are already covered by some prior concession or that such lines enter a sphere of influence already spoken for. The difficulty has been that America, unlike its competitors—for such they are in a matter of this kind—has not presented a firm front or a settled policy diplomatically in the Far East. This is now being emphasized as the discussion at the Peace Conference is brought to light. It appears that England and France, although they were closer to the United States than to Japan during the war, and despite their great interests in China, tended in the conference towards Japan rather than towards the United States in matters affecting China. The explanation given is that they did so principally because Japan has a definite policy whereas we have not. American railway supply men who are expecting so much from the proposed American railway building in China, as well as those directly interested in this railway building, cannot feel satisfied with this condition. America has the friendship of China as no other country has, but the American doing business in China would prefer to be in a position to use that friendship in a business way. He does not like merely to see America friendly; he also wants to be able to deal with China on the same basis as his business competitors. At present, as is shown by the experiences undergone by the railroad builders above mentioned, such is not the case. It will not be the case until the United States adopts a firmer policy towards the Far East and maintains a policy which protects and stands back of American citizens to the same extent as the policies of other countries stand back of their citizens in China.

How to Use Charts

The article printed elsewhere, discussing the advantages of the logarithmic chart over the chart plotted on an arithmetical scale, suggests but does not clearly bring out the limitations of graphic charts. Whether a column of figures is plotted out on a graphic chart and studied in this form or whether the figures, themselves, are studied, a real analysis is possible only when the student has in his own mind the related facts which give either the chart or the figures significance. Plot cumulative monthly earnings and expenses of a particular railroad on but a horizontal scale of two inches to the month and a vertical scale of $1,000 to the inch; then plot the same figures with the same vertical scale with a horizontal scale of a half inch to a month, and see how very much steeper are the curves. The two charts, however, represent the same set of facts, yet the apparent trend is quite different. But one of the advantages which is claimed for charts as compared with columns of figures is that the charts will show at a glance the trend. A chart does not show anything significant at a glance; it has to be studied just as a column of figures has to be studied. The column of figures, however, has its limitations just as has the chart. Even if a student of a column of figures, mentally or otherwise, translates changes into percentages, he still fails to make a significant analysis unless he knows many facts not shown by the figures alone. For instance, what for a particular month would be a large gross increase in expenses on one road and also a large percentage of increase might be an insignificant increase on another road. A decrease of 40 tons or 10 per cent in train loading in December as compared with November on the Florida East Coast would be a large decrease. A decrease of 60 tons or 10 per cent in train loading on the Northern Pacific in December might not be at all abnormal. Charts, whether logarithmic or arithmetical, may be useful. Certainly, plotting a chart serves to fix the figures firmly in the mind of the man who does the plotting; but charts will be a hindrance, not a help, if they fool the student into believing that he can make an analysis of a situation "at a glance."

The Fatal Defect of the Cummins Bill

One of the most extraordinary features of the present railroad situation is that many people who are in favor of returning the railroads to private operation because they believe private management is more efficient than government management, are at the same time opposed to doing what is necessary to enable the railways to be efficiently and successfully operated under private management. The members of the Senate subcommittee on Interstate Commerce which drafted the Cummins bill are all in favor of a private ownership and management. They are opposed to government management because they believe private management is more efficient. Therefore, they provide for the return of the railroads to private management. But apparently they have overlooked the main thing that always has made private more efficient than government management. This has been the opportunity which has been afforded to increase profits by increasing efficiency. The Cummins bill proposes to destroy this opportunity. While it provides for the return of the railroads to private management, it also provides that if any railroad shall earn more in any year than the Interstate Commerce Commission shall deem to be a "fair return upon a fair value" the entire surplus earned shall be taken from the railway company earning it. This means that once a railroad began to earn a "fair return" it would never be able to increase its profits by increasing the efficiency of its management. Not only would the Cummins bill destroy all incentive to increase efficiency on many railroads, but it would do it in a most unfair way. It provides that the Interstate Commerce Commission shall so fix rates that each group of railroads shall earn a fair return upon the fair value of their combined property, and, also as we have seen, that if any road in any year earns more than a fair return all its surplus earnings shall be taken from it. Suppose, however,

that the Interstate Commerce Commission should so fix rates that in a given year a railroad or a group of railroads failed to earn a fair return. Under the provisions of the Cummins bill the railroad or group of railroads, in this case, would have no recourse. In other words, in any year when a railroad or group of railroads failed to earn a fair return it or they would lose the difference between what was actually earned and what would have been a fair return, but in any year when a railroad or group of railroads earned more than a "fair return" it or they would have the entire surplus taken away. There is still another important point to be considered. The Interstate Commerce Commission under this bill is to determine what is "fair value" and also what is "a fair return." In view of the past regulation of the railways by the Commission no railway manager or financier would feel any confidence that under these provisions the rates would be made high enough to enable the railroads to pay a reasonable return upon the existing investment or upon new capital. The *Railway Age* has been strongly opposed to government ownership and management. It has been in favor of a return of the railroads to private operation at the earliest practicable date. But this paper would rather see a return to private operation indefinitely postponed than to see the railroads returned to private operation under provisions such as those in the Cummins bill which we have mentioned. Government operation is not popular. It is not likely to become popular, and therefore its continuance for some time longer might not result in government ownership. But if the railroads should be returned to private management under legislation such as the Cummins bill, it is certain that their operation would not be efficient, and that they would not be able to raise sufficient capital adequately to develop their facilities. If under private control their operation was inefficient and they did not adequately develop their facilities, the result probably would be the growth of an irresistible agitation for government ownership. Therefore, in our opinion, the surest way to bring about permanent government ownership in the United States would be to enact just such provisions as those of the Cummins bill. It is astounding that men can oppose government ownership, can believe in the superior efficiency and desirability of private management, and yet can draft and support legislation which is unjust in itself, and the certain effect of which would be to prevent private operation from being efficient and to make government ownership inevitable.

The Freight Car Situation

PRACTICAL CAR MEN are decidedly of the opinion that the physical condition of freight cars generally is bad—extremely bad—and far worse than it was when the government took over control of the railroads about 21 months ago. Frank McManamy, assistant director of the Mechanical Department, Division of Operation, outlined the bad order car situation in his testimony before the Senate subcommittee which is investigating the coal situation; this was reported in the *Railway Age* of September 12, page 505. Mr. McManamy indicated that the administration is doing everything it can at this time to get the cars into good condition. He stated, however, that after the armistice a reduction was made in the working hours each week because of the falling off of traffic and in order to reduce the amounts paid for punitive overtime. Further reductions were made in March because of the necessity for further economy on account of expenditures for maintenance of equipment as compared with the test period.

The expenditures for the maintenance of equipment during the three-year test period were subnormal for two reasons; during the earlier part of the period traffic was light and the financial condition of the railroads was such that it was necessary to keep the maintenance charges at a minimum; during the latter part traffic was extremely heavy and the congestion was so great that the cars were only given sufficient repairs to keep them in a running condition. The latter situation continued to exist during the time the railroads were under government control up to the armistice.

It was apparently the intention of Congress to have the government hand the railroads back to their owners in practically as good condition as when they were taken over. The Railroad Administration in trying to accomplish this introduced a clause into the contract with the railroads to the effect that the government would expend for maintenance of equipment each year a sum based upon the expenditures made by the roads themselves during the three-year test period, equated, however, to allow for the difference in the cost for material and wages. There seems to be no question but what this method will be unfair to the owners of the railroads so far as freight cars are concerned and that if it is followed through to a conclusion and the government expends no more money on the equipment than is allowable on this basis, the condition of freight cars will be deplorable when the roads are turned back to their owners at the end of the year.

There are three reasons why it will be unfair to the railroads to measure the condition of freight car equipment on a basis of the expenditures made for maintenance, even assuming that the three-year test period is a fair one for comparison.

In the first place, while the wages have been greatly increased there has been a considerable falling off in the efficiency of labor. There are several causes for this. Large numbers of experienced men were taken from the car department into war service; then too, many of the better classes of mechanics were attracted into the manufacture of munitions and war supplies because of the exorbitant wages that were paid by these industries. The abolishing of piece work was a great blow to efficiency and production. Added to all of this is the spirit of industrial unrest which has been more or less general and which has resulted in a very considerable restriction of production.

Secondly, under former conditions the M. C. B. rules were such that cars were returned more or less promptly to their owners, most of whom took a real pride in the upkeep of their equipment and were able to carry out carefully developed plans for the betterment and modernization of the freight car equipment. Now that the cars are pooled only an extremely small proportion of any one road's equipment is on its lines at any one time and a large part of it may never get near the owning line. The roads do not take the same interest in foreign equipment that they do in their own. The cost of making repairs to foreign equipment is much heavier than it should be because of the difference in standards and types of construction. These things, added to the heavy traffic conditions which existed during the greater part of 1918, have resulted in the general practice of making temporary repairs where in many cases the cars should have been given heavy repairs or have been rebuilt. This is an expensive practice and the effect of the "patch and run" policy is quite evident by an inspection of freight cars in any large yard or repair shop.

In the third place, the steady introduction of more powerful locomotives and the general tendency to introduce economies in operation by increasing the train loads made it necessary a number of years ago for nearly all of the important roads to give special attention to the physical condition of their freight cars and to adopt extensive programs for the steady retirement of the older and more or less obsolete

cars, and the rebuilding or modernization of cars which with a reasonable expenditure would give good service under the new conditions. In most cases it has been found necessary almost entirely to disregard these programs during the last three years and this has added greatly to the average cost of upkeep of the individual cars.

Because of these reasons it would seem that the Railroad Administration should recognize the necessity for adopting a more liberal policy in its freight car repair program, realizing that in order to return the equipment to the roads in as good condition as when it was taken over, a far greater expenditure for maintenance will be justified than is indicated by a literal interpretation of the clause in the contract which relates to the maintenance of equipment.

Reasons for Improved Financial Results

As was pointed out in last week's *Railway Age*, the railways, under government control, in July—for the first time since September, 1918—earned the entire return guaranteed by the government to the companies. The financial rsults gained show a great improvement over those of the early months of the year. It is worth while to study the statistics of earnings and expenses to find out, if possible, how this improvement has been secured.

The low water mark of this year, in the matter of financial return, was touched in March. In that month the ratio of operating expenses to earnings was over 92 per cent and the net operating income was only 16 per cent of the government's guarantees to the companies. In July the ratio of expenses to earnings had been reduced to less than 79 per cent, and net operating income was $343 per mile, as compared with $344 per mile in July of the three test years. Investigation of the tendencies shown between March and July by total earnings, and by the larger items of expense—cost of transportation, of maintenance of equipment and of maintenance of way—will throw light on how the improvement in financial results was obtained. Additional light will be afforded by comparison of the tendencies of earnings and the larger items of operating expenses between March and July, 1916, and 1917, the last years of private operation, with their tendencies between March and July this year.

The following table shows in percentages the changes in operating revenues, total operating expenses, and the cost of maintenance of equipment, of maintenance of way and of conducting transportation which occurred between March and July, 1916, 1917, and 1919:

Percentage of increase (or decrease) March to July, 1916, 1917 and 1919:

	1917	1919	1916
Operating revenues	9.9	23.	4.4
Operating expenses	3.9	3.3	*
Maintenance of equipment	1.4	*	*
Maintenance of way	12.	12.5	14.
Conducting transportation	1.5	1.6	5. d

* Less than 1 per cent change.
d Decrease.

This table shows that there was a very large increase in total earnings between March and July, 1919. The increase amounted to 23 per cent, while between March and July, 1917, the increase in total earnings was less than 10 per cent. This indicates that railway traffic was at a very low ebb last March and was getting back to normal in July. With an increase of 23 per cent in total earnings, which reflected a corresponding increase in the amount of traffic handled, there was an increase between March and July, 1919, of only 1.6 per cent in transportation expenses. These figures indicate a great increase in operating efficiency. Between March and July, 1917, while the increase in earnings was less than 10 per cent, the increase in transportation expenses was 1.5 per cent. While transportation expenses are held down while total earnings are increasing, there is a real increase of economy and of profits, because anything which is once saved in the cost of conducting transportation is permanently saved. The Railroad Administration and the operating officers and train service employees of the railways deserve the greatest credit for the manifest increase in efficiency in conducting transportation which occurred between March and July.

While a reduction of transportation expenses is always a real saving, the same thing cannot be said regarding a reduction of maintenance of expenses. A reduction of maintenance expenses may reflect either an increase in efficiency of management or deterioration of the physical properties of the railroads. The table shows that while between March and July, 1919, there was an increase of 23 per cent in the amount of business handled, there was no increase at all in the expenditures for maintenance of equipment, and an increase of only 12.5 per cent in expenditures for maintenance of way. On the other hand, between March and July, 1917, while the increase in business and earnings was less than 10 per cent, there was an increase of 1.4 per cent in expenditures for maintenance of equipment, and of 12 per cent in expenditures for maintenance of way. An increase in the amount of business handled should ordinarily be accompanied by an increase in expenditures for maintenance and equipment. Furthermore, under normal conditions, there should always be a relatively large increase in expenditures for maintenance of way between March and July. During the winter months it is impossible in most of the United States to carry on much maintenance of way work, and after the frost goes out of the ground in the spring, maintenance of way work should be rapidly pushed and should reach its maximum about July.

The statistics indicate that the management of the railways was stringently holding down expenditures for maintenance in July, 1919. If we compare 1919 with 1916, the impression that this was the case will be deepened. In 1916, between March and July, the increase in total operating revenues was only 4 per cent, and while there was no increase in expenditures for maintenance of equipment, there was an increase of 14 per cent in expenditures for maintenance of way.

The conclusion which these statistics would suggest is that within recent months the efficiency with which transportation has been handled has been greatly increased, but that there has not been a normal increase in expenditures for either maintenance of equipment or maintenance of way and that the physical properties are being allowed to deteriorate. This conclusion as to the deterioration of the physical properties can be supported by other evidence. Freight cars undoubtedly have been allowed to run down, although recently efforts have been made to put them in better shape. Furthermore, much evidence could be cited to show that recently, and especially in July, the expenditures for maintenance of way have not been as large as they normally have been and should be.

To sum up, the greater part of the improvement in financial results shown, has been gained by an increase in the efficiency with which transportation has been conducted. On the other hand, a substantial part has been obtained by a too stringent exercise of control over expenditures for maintenance. The showing made is creditable, on the whole, but the net income is larger than it should be if the railroads are to be returned to their owners in as good condition as they were when the owners turned them over to the government. Of course, an analysis of the changes occurring between two months of a year is not conclusive, but most of those who know what have been the policies of the Railroad Administration, will agree that the results shown in these two months are what would naturally be expected to be produced by the policies being followed.

A Plan for Employees' Ownership and Management

THE RAILWAY AGE is opposed to the Plumb plan. We are opposed to it because it would involve government ownership and employees' management of railroads. We have not heard any good reason why the people of the United States should buy the railroads, turn them over to the employees to manage, pay the interest on the railroad debt and also pay from taxes all losses which the employees' management incurred. We should not, however, be opposed to employees' management if it were based upon employees' ownership.

It may be thought that employees' ownership would be difficult to bring about, but it would be very easy to bring about. The employees are now being paid approximately $3,000,000,000 a year in wages. The cost of living in the United States, according to the most reliable estimates, has increased only about 75 per cent within the last five years, while the average railway wage has increased about 90 per cent. The employees, therefore, on the average could now save approximately one-fifth of their annual wages, and at the same time live about as well as they were able to five years ago. If they should save one-fifth of their wages the total annual saving would be $600,000,000.

The amount of railroad stock outstanding in the hands of the public on June 30, 1916, was $6,315,000,000, and it is not much more now. The average dividend paid was 5½ per cent. Presumably, if the railways are returned to private operation they will be so regulated as to enable them to continue to pay an average dividend of 5½ per cent. If the employees should save $600,000,000 a year from their wages, should invest it each year in railroad stocks and should also invest in railroad stocks the dividends they received from their stocks, they would in five years own $3,350,000,000 in stock, or a majority of all the stock outstanding. This would give them control of the ownership and management of the railroads of the United States. If they should continue to save in the same way, at the end of nine years they would have saved in wages and dividends $6,671,000,000,

With this they could purchase all the stock now outstanding, and also a few hundreds of millions dollars' worth of bonds.

These calculations are based upon the assumption that, on the average, they would have to pay par for their stock. But there are many more railroad stocks selling below par now than above it. Therefore, the employees, if they bought stock at anything like the present market prices, could acquire ownership of the railroads for much less than we have estimated. We have not extended the calculations to bonds, but it would be an easy matter for the present generation of railroad employees, by the practice of merely reasonable thrift, to acquire all the railroad stocks and bonds in existence and leave them as a heritage to their children.

Of course, if the employees owned even a majority of the stock they could elect all the directors, and through them manage all the railroads. This plan would have great advantages over the Plumb plan from the standpoint of both the public and the employees. Its adoption would necessitate the practice by railway employees of the same thrift which the farmer or the small storekeeper practices in order to acquire his property. Since the employees could so easily acquire the railroads by the practice of reasonable thrift, why should the public tax itself to buy the roads for the employees, and at the same time, leave the farmer, for example, burdened with the necessity of saving the money which he must raise to buy any farm he may want to manage?

Under the Plumb plan, if any surplus earnings were made by the railroads, the public would get half of them and the railroad employees half, while under our plan of employees' ownership the railroad employees would get in dividends all of any increase in profits. On the other hand, if under the Plumb plan any losses were incurred the public would have to pay them, while under the plan we have outlined any losses incurred would all have to be borne by the employees. From one standpoint, therefore, this plan would be better and from one standpoint worse for the employees than the Plumb plan. If, however, the employees knew that every increase in the efficiency of the management was going to redound greatly to their benefit while every reduction of efficiency was going to result in loss to them, the incentive they would have to exert themselves for efficient operation of the railroads would be much more powerful than it would be under the Plumb plan.

The effects of this incentive to promote efficiency would be seen in every direction. Under the Plumb plan the employees would have very little incentive to entrust the management of the railroads to railroad officers of the greatest ability, but if the employees were the actual owners of the railroads they would have the same incentive as the present stockholders to put in charge of the management the ablest men that could be obtained and to give them a free hand in order that they might get the best results. Furthermore, under employees' ownership the employees would be much more competent to select the best men for managers than they would be under the Plumb plan. The practice of enough thrift to enable them to buy the railroads, and their ownership of large amounts of property would give them the experience and the vision of business men and would enable them to judge much better than they can now of the qualities which a good railroad manager should possess, of the things he ought to do and of how he ought to do them.

We have not the slightest notion that the plan for employees' ownership and management of the railroads we have outlined will be adopted; but when this plan is placed beside the Plumb plan it brings out strikingly the absurdities and iniquities of the latter. When it can be shown that the railroad employees could so easily and in so short a time become the managers of the railroads by the simple process of becoming their owners, the question naturally arises as to why they should be carrying on an enormous propaganda to get the other people of the country to buy the railroads for them? It may be replied that investment in railroad stocks would not be a safe one for the savings of railroad employees. Would it, then, be safe for the savings of the American people? If it would not be a good investment for railroad employees, what are we to think of all the stories which the spokesmen of the employees tell of the vast profits which other people make by investing in railroad stocks? The advocates of the Plumb plan say that if the roads were turned over to the management of the employees they would effect vast savings which would greatly increase net earnings. If the employees are sure that they could effect vast economies, why don't they back their confidence with their own money, and thereby reap all the vast profits to be made, instead of asking the public to take all the risks of ownership for the possibility of getting half the profits?

While we do not believe that the plan for employees' ownership we have outlined will be adopted, we do believe that if the solution of the railroad problem is to be furthered by giving employees larger voice in the management, the increase of their influence in the management must also be accompanied by an increase of their investment in the enterprise.

The main trouble with part of the plans for future ownership and management of the railroads which have been put forward is that they contemplate giving employees more power in the management without giving them any responsibility for the results of the exercise of their power. Good results are never obtained by giving increased power unaccompanied by increased responsibility.

Railroads Propose Amendments to Cummins Bill

An Abstract of the Memorandum Filed by Alfred P. Thom, General Counsel for the Railway Executives

WASHINGTON, D. C.

ALFRED P. THOM, general counsel for the Association of Railway Executives, has filed with the Senate Committee on Interstate Commerce a memorandum of suggestions for the amendment of the Cummins bill, drafted by a sub-committee, which is now under consideration by the full committee. Some of his comments on various sections of the bill are in part as follows:

Section 2.—It is suggested that the word "five" in line 12 be changed to "ten," so that there will be a funding for ten years instead of five. The objections to having indebtedness other than that incurred for additions and betterments evidenced by demand notes, are forcibly set out in a letter by E. G. Buckland, president of the New Haven road, from which I make the following extract:

My first suggestion is that the provisions for funding the indebtedness of the railroads to the government will not leave them in a condition where they can thereafter finance themselves. I feel that all of the indebtedness should be funded by taking bonds for not less than ten years at a rate of interest not exceeding 5 per cent. The distinction between advances for additions and betterments and advances made to meet maturing loans does not warrant the difference. The inability of the railroads to refund their own loans maturing during the war was not so much their fault as the fact that the government was in the market for all and more than all of the money available for investment. If the provisions of section 2 are enacted the indebtedness of this company to the government at the end of federal control will be financed as follows: $17,000,000 having been incurred for additions and betterments would be evidenced by first mortgage bonds and $43,964,000, having been loaned to meet maturing obligations would be evidenced by notes payable upon demand at the rate of 6 per cent per annum. This last mentioned loan of $43,964,000 is more than twice what the company requested of the Railroad Administration. In April, 1918, when this company's outstanding notes aggregating $43,964,000 matured the company had authority to issue its preferred stock for $45,000,000, bearing 7 per cent cumulative dividends. One-half of this stock at that time was underwritten by the bankers who held or by their customers who were interested in the maturing notes and there was good promise of a considerable portion of the remainder of the stock being subscribed for at par. All that this company asked the Railroad Administration to do was to loan the company so much as it could not raise by the preferred stock issue. The company stated at the time that with this new money its credit would be rehabilitated and it would not ask the administration for any further assistance. Instead of adopting this suggestion the Railroad Administration insisted upon taking all of the company's securities as collateral and loaning it the entire amount of $43,964,000, the effect of which was to deprive the company of the credit which this collateral would have given it and force it to rely upon the government for all future financing.

"Now, it is obviously unfair to put the company in the position at the end of federal control of having a demand note indebtedness of $44,000,000 hanging over it and giving it only five years in which to refund the $17,000,000 advanced for additions and betterments. Obviously any proper financing should give the company at least ten years at a reasonable rate of interest and evidence its indebtedness by bonds secured by a first mortgage or a first lien upon its property.

As to this whole section, we desire to renew our suggestion that the indebtedness incurred during federal control for additions and betterments should be funded without security. The railroads, upon return to their owners, will be confronted by a task (which presents extraordinary difficulties) of obtaining, under market conditions that will then exist and under the conditions surrounding this special industry, the necessary money to perform their public duties; and it is not wise to deprive them of, or to seriously impair, their existing capacity to borrow by an effort to obtain security for the government. The risk that the government will take under these conditions will not be large, as all of the obligations of the companies usually classed as strong may reasonably be relied on as good.

Section 5.—This section relates to the transition period, and provides a method for readjusting the rates of the carriers with the view of establishing a proper relationship between their revenues and expenses. It contains, during such period of readjustment, a guaranty of the standard return for a period of time limited not to exceed five months.

It will be noted that this provision provides no method to insure an adjustment of state rates to the alarming conditions of increased costs. The period of five months is altogether too short to make the adjustment of interstate rates. It is manifestly much too short to secure an adjustment of state rates, with no power contained in the act to bring that about, yet the state traffic should bear a part of the increased burden growing out of the increased cost of labor and materials, unless it be the policy of Congress to impose that entire burden on interstate commerce. There has been an increase of approximately a billion dollars a year in wages during federal control and increases in prices of all railroad materials and supplies in keeping with the high cost of living generally. It would hardly seem fair or wise to impose this entire increase of burden on interstate commerce.

Instead of providing an affirmative method of securing this change, the bill apparently imposes no limitation upon the power of the various state commissions to reduce existing rates on both passengers and freight in their respective states to the full extent allowed by the various state laws, and certainly leaves such state commissions free to prevent any increases which may be found necessary in order to make the requisite readjustment between revenues and expenses.

In our opinion, the power of Congress is, under the commerce clause, adequate to fix all rates of interstate carriers, state as well as interstate, and the policy to do so should be continued as a permanent policy. But if the policy of the bill to allow state commissions to make state rates in the first instance is adhered to, that power ought not come into existence until at least the effects of the war upon the transportation system have been reasonably removed and until the Interstate Commerce Commission is of the opinion that the safety of the railroads during the transitional period following the war has been provided for in a rate structure which shall include both state and interstate rates.

This might be accomplished by a provision requiring the Interstate Commerce Commission, as soon as practicable after the passage of the act, to readjust both state and interstate rates, and that no change shall thereafter be made in the state rates without the approval, after conference with the state commission, of the Interstate Commerce Commission; but when any state rate has thus been changed with the approval of the Interstate Commerce Commission, that then

the provisions of the bill as contained in section 43 shall thereafter control.

We have heretofore urged, and now respectfully urge again, that the entire duty of readjusting rates so as to produce a proper relation between the revenues and expenses of the carriers should be assumed by the government itself. The government's action has disturbed the relation between revenues and expenses, and in fairness it should take the burden of restoring that relationship so as to redeem the assurance of the President that investors in railroad securities might rest assured that their rights and interests would be as scrupulously looked after by the government as they could be by the directors of the several railway systems. If, instead of properly maintaining the relation between the revenues and expenses, it turns out that the railroads, loaded up, during federal control and by governmental authority, with a scale of expenditure hitherto unknown, and the government does not make a corresponding readjustment of their rates, the roads would be ruined, instead of being "scrupulously looked after" by the government. We, therefore, insist that it is the government's duty to restore, on its own initiative, the proper relationship between the revenues and expenses.

Section 6.—We suggest that after the word "provided" a semi-colon be inserted, followed by the following: "and, if no other valuation is at the time available, the commission shall proceed in a summary and expeditious way to determine such value for the purposes hereof." It is manifest, we think, that the fixing of rates under this provision should not require the commission to wait for the result of the valuations under the federal valuation act, but should be required to take action on the basis of the best values the commission can arrive at, subject, of course, to be readjusted when the complete valuation is available.

Section 6.—We respectfully request that these provisions, which relate to the taking of a part of a company's earnings from lawful rates, be omitted.

Congress is now engaged in the effort to establish an adequate system of transportation for the commerce of the country. The problem of Congress may be said to be one of credit almost entirely. To insist on taking a part of what a carrier can save from its earnings on lawful rates through industry, economy, good management, and fortunate location would undoubtedly seriously discourage investment in this class of property, and would in that way defeat the very object which Congress is trying to accomplish of creating a condition of adequate credit for the carriers. Who will care to invest in railroad enterprises which, at best, are subject to great uncertainty as to the extent of governmental control that may at any moment be asserted if a power is claimed to deprive the investor of a part of his earnings at lawful rates, and thus of all hope of legitimate reward for good management, economy, and valuable location? If this Congress can set one measure of such taking, another Congress may go still further until the line of clear confiscation is reached, and investors will inevitably be deterred from entering a field of investment as to which such a power is asserted—and yet the very purpose of legislation is to attract and insure such investment. It would certainly amount to a leveling down of railroad efficiency, rather than to a leveling up. We respectfully submit that it can not be justified from any standpoint of wise public policy.

Section 7.—We suggest that the words "approved by the commission" be stricken out, and in place of them be inserted the words "fixed by the board," or "fixed by the board with the approval of the President." The object of this is to prevent the placing on the board of this unnecessary mark of subordination to the commission as would be the result if the employees of the board must have their compensation approved by the commission.

Section 10.—We suggest that at the end of line 11 these words be inserted: "and other carrier property, parts of existing systems." In this paragraph it is manifestly the purpose to have a consolidation of all the carrier's property, not simply of the railway property. Boat lines which are part of a system should be included in the consolidation, and we assume that it is the purpose to do this.

Section 11.—The provision here referred to gives the board power as to traffic not routed by the shipper, to direct its movement after its arrival at a transfer point, "whenever a fair distribution of traffic and the public interests may require." This would presumably be regarded by the board as a direction to control the routing of traffic. Where traffic is now left unrouted by the shipper it is presumably upon the theory that the carrier may, by its own routing, provide the most expeditious and efficient transportation of the property with proper regard for practical operating conditions. The provision is objectionable for the following reasons,

(a) The initial carrier under the Carmack amendment is responsible for damage occurring on any line through to ultimate destination and should therefore, to protect itself, be permitted to choose the lines over which it shall pass.

(b) The initial carrier in connection with unrouted traffic is bound, under the decisions of the commission, to select the route over which the lowest rate applies, and a determination of the relation between the amount of such traffic to be so routed and the remaining traffic to be apportioned under any order of the board, would present complications in the waybilling of all traffic at all initial points.

(c) Traffic susceptible of division among several lines at any given junction point is the accumulation of a multitude of shipments received at a multitude of stations on the route of the carrier bringing such traffic into the junction point, and also on the route of a large number of connecting lines. In order to expedite the movement of traffic and to permit tracing en route for the shipper it should be, and customarily is, waybilled through from point of origin by the agent at such point. In actual practice distribution of traffic at junction points is therefore not made after its arrival at such points, but at initial points on such line and its connections. It would be difficult, if not impossible, to conform waybilling at such multitude of initial points to such distribution of traffic as might be required by the board at the junction point.

(d) Less than carload traffic is handled in many instances in through merchandise cars passing over several lines. Any requirement for the distribution of such traffic at junction points would require either breaking of bulk or the running of an unnecessary number of through merchandise cars, and would prevent consolidation of loads so as to utilize cars to full capacity, and thereby involve additional expense and delay.

(e) Any rule which would prevent carriers from making arrangements for the forwarding of traffic in the most expeditious and economical way would increase the aggregate expenses in any given rate-making group on the basis of which rates from such groups as a whole are predicated.

Section 12.—The provisions of sub-paragraph (c) of section 12 will constitute a very great impediment in the way of voluntary consolidations, which it is the policy of the bill to encourage. If a railroad proposing to consolidate with other lines must submit to a readjustment of its capitalization, there will be manifest reluctance on part of many lines to undertake consolidation. It is, we think, true that any road that would be approved by the commission, or by the board, or both, as proper to make such consolidation, would be a road not over-capitalized. Most of the important roads are not subject to that charge, even in popular understanding. A provision much more likely to bring about consolidation would be one which would confine the capitalization of the property after the acquisition of one road by the other, to the outstanding stocks and bonds, at par, of

the corporation making the acquisition, plus the value of the property acquired by it, as determined by the commission. Under paragraph (d), page 21, the approval of the commission and board to any proposed consolidation is required, and the question of whether or not a road in undertaking such consolidation is itself over-capitalized is safeguarded.

Section 12.—It being uncertain as to when the result of the valuation of the railroads will be available, it is suggested that the following be added after the word "consolidation," in line 14, in order to prevent delay in making the consolidations which are approved: "provided, however, that in cases where the commission finds that, to await such valuation, would unduly delay any such consolidation, and, from evidence of a general nature, shall be of the opinion that the capitalization proposed to carry out such acquisition or consolidation will not exceed the value as ultimately found of the said aggregate properties, the commission may enter an order to that effect, and may permit such acquisition or consolidation without awaiting the completion of the formal valuation."

Section 13.—It is respectfully suggested that a power should be here inserted to enable a corporation which had begun a consolidation during the permissive period, in accordance with the plan prescribed by the board of transportation, to complete the consolidation by the compulsory method of condemnation after the period of voluntary consolidation shall have terminated. This power should be conferred in terms direct and specific enough to enable the carrier having begun this consolidation, to condemn the property of the carriers in the group already devoted to the service of transportation. Doubt is entertained as to whether a general power of condemnation would be construed as authority for the condemnation of properties already devoted to a public use.

Section 18.—Without discussing at this time the desirability of representatives of the classified employees and of the public being on the board, we desire to call attention to the fact that there are a great many cases in which, if as many as two of the directors from each of these classes be required, the four thus chosen would constitute a majority of the board. There are a great many companies which have only five directors, some which have six, and many have only nine. The laws of Texas limit the number of railroad directors to nine. Four out of nine would seem to be a too large proportion to give to interests having no financial investment in the property. Certainly four out of five or six would be too large a proportion.

Section 21.—There seems to be no power here to create a new federal corporation to build new lines of railroads. While the construction of new lines or systems, independent of existing systems, may be a remote prospect, manifestly there should be a power to build such lines, and it is respectfully suggested that this be provided for in the bill.

Section 21.—We would suggest that after the word "railways" in line 15 the following be inserted: "and other carrier property." This is not only proper in itself, but is in harmony with the provision on page 34, lines 14 to 20. It is necessary in order to permit the continuance of existing water service in connection with the rail service.

Section 21.—It is suggested that fuller powers be conferred upon corporations organized under the act, than are contained in the six specifications of power contained in the bill.

Section 24.—By this provision, as it stands, the Interstate Commerce Commission is made the judge of whether any purpose for which a carrier may desire to issue securities is "compatible with the public interest." The commission is thus empowered to judge whether it is incompatible with the public interest for a company to provide for maturing obligations by a new issue of securities, or to make any capital expenditure whatever to be provided for by new issue. In other words, the provision, as it stands, makes the commission the financial manager of the railroads, substituting its discretion for the discretion of the board of directors, and giving it power to prevent any capital expenditures which it may see fit. This makes the commission the real manager of the carriers and seems to us too great a power to lodge in it.

There are some things which ought, by the law itself, to be recognized as compatible with the public interest. This enumeration in the law prevents abuses by the carriers. There should be, in our judgment, a general power to do other things "compatible" with the public interests, and, as to these, the propriety of securing the approval of the commission is admitted.

Again, the draft, as it stands, prevents any securities being issued except for a purpose "within the company's corporate powers." This raises the question as to whether it is within the company's corporate powers to issue securities contrary to a statute of the state of its own creation, such as a statute requiring it to obtain the authority of a state authority before issuing the securities. If this be a proper interpretation, it will destroy the whole purpose of the enactment proposed in the contemplated bill. To prevent this, the first two lines might be made to read, "unless it be for a lawful object within its corporate purposes, etc."

Section 24.—The provisions here referred to relate to the service of notice on the state authorities. It may be that such notice will become jurisdictional and a bad service might vitiate the issue of securities. It is impossible to define in the statute what "the appropriate state authority" may be, as these differ so much with different states. To get rid of this difficulty, it is suggested that the notice in all cases should be served on the governor of the state.

Section 23, Page 40, Lines 9-11.—These lines confine the notes that may be made without antecedent permission, to five per cent of the par value of the securities of the carrier then outstanding. This limitation, by many of our most important people, is considered too small and would seriously embarrass financing by short-term notes.

Section 23, Page 40, Lines 24-25.—These lines make the issue of securities contrary to the provisions of the section void. Inasmuch as the failure to comply with the section may be technical, and the taker of the securities would have no power to ascertain whether all the provisions of the statute had been complied with, it is suggested that it would greatly interfere with the taking of railroad securities if the investor may find that he, perfectly innocently, is in possession of a void security. We suggest that this provision be eliminated, and that the enforcement of compliance with the act be provided for by penalties against the officers who knowingly violate the requirements of law.

Section 23, Page 41, Line 20.—The provisions here referred to make it unlawful for any person to hold the position of officer or director with more than one company without the authority of the commission. We do not think that this should apply where one of the carriers is a substantial stockholder in another carrier, and we believe that after the word "unlawful," in line 20, the following should be inserted: "except in cases where one company owns a stock interest in the other company of not less than 25 per cent." A stock interest of 25 per cent or more ought certainly to entitle a company to be represented on the board of directors of another company by one of its officers or directors.

Section 25.—The duty of the Committee of Wages and Working Conditions to consider complaints should be confined here, as it is in the first few lines of the section, to unadjusted controversies; and the complaints should be made to relate only to issues between the carrier and the employees interested in the special controversy. Matters of general management of the company should be left to the board of directors, and should not be made a matter, on complaint of

employees, to be settled by the Committee of Wages and Working Conditions. We, therefore, suggest that after the word "complaints" in line 23 there be inserted, "as to controversies not adjusted between the parties as to wages, hours or service, working conditions, or other matters in which the complainant has a direct interest"; and before the word "employees," there be inserted the words "the interested."

Section 31.—Would it not be wise to extend the terms of the members of the Interstate Commerce Commission, as well as to increase their compensation?

Section 32.—We assume that it is incompetent for Congress to require a company to extend its line beyond what it is required to do by its charter. To do so would be to commit the stockholders to an undertaking which they did not contemplate in their contract of subscription, and would be taking their property without due process of law. We think, therefore, the words "to extend its line or lines" in lines 13 and 14, on page 56, should be eliminated, or should be so modified as to require such extension only in cases where extension is necessary to comply with the charter obligations of the company.

Section 35.—Without undertaking at this time to re-argue the question of a rigid long-and-short-haul clause, attention is called to the elaborate hearings before this committee in which it was shown that great injury would be done to commerce if the clause were made rigid, and we suggest the reconsideration of this provision.

Section 35.—By this provision it is made impossible to increase rates which have been reduced in competition with a water route unless the commission shall find that such proposed increase rests upon changed conditions other than the elimination of water competition. It is manifest that the public interest might require the increase of these rates for other reasons, such, for example, as to bear their proportionate part of the transportation burden; and, therefore, we suggest that after the word "competition," in line 2, the following words shall be added after a comma, "or shall be required by the public interest."

Section 33.—We submit that in this same connection agreements as to rates and practices between carriers should, if approved by the commission, be made lawful.

Section 43.—It is impossible under the present law for a carrier to complain to the Interstate Commerce Commission of a state rate. This has proved a great obstacle in securing relief under the doctrine of the Shreveport case. We would therefore, suggest that in line 19, on page 66, after the word "act," the following words be inserted, "either upon the complaint of any carrier or other person interested, or upon the initiative of the commission itself."

Section 43.—We suggest that in line 16, on page 67, after the word "unreasonable" there should be inserted the word "inequality"; in line 17, after the word "localities" there should be inserted "commodities or other traffic"; and in line 2, page 68, before the word "advantage" there should be inserted the word "inequality." The purpose is to bring under the jurisdiction of the commission, not only the question of discrimination, but also the question of inequality of the burden, between state and interstate traffic, as to maintaining the instrument of interstate commerce which both are using.

Section 44.—We are convinced that 60 days is long enough to deprive a carrier of rates which are subsequently declared to be reasonable, for a carrier cannot be compensated for the loss of reasonable rates during this period, whereas it is possible to compensate a shipper for an overcharge. Consequently we urge upon Congress to make the period of suspension not longer than 60 days, with a provision to take care of shippers in the event of overcharge. Accordingly, in lines 12 and 13, on page 72, we think that "60" should be inserted instead of "120," and, in any event, we urge that there should not be a right of suspension, as contemplated by lines 21 and 22, for an additional period of 30 days.

The National Association of Owners of Railroad Securities has also filed a number of suggestions for changes in the bill.

Lenroot Criticises Cummins and Sims Bills

THE SIMS BILL, which incorporates the Plumb Plan, should be denominated "a bill to further increase the cost of living," according to Senator Lenroot of Wisconsin in a statement made public by the Citizens' National Railroads League. Senator Lenroot also criticises the Cummins bill as impractical and harmful in its provisions to security owners. He asserts that the bill might be denominated a bill to shelve temporarily, but to further increase the troubles of the railroads.

"One of the absolutely essential provisions in any legislation calculated to solve the railroad problem permanently must be encouragement of efficiency in operation," the statement continues. "In my opinion, the Cummins bill fails to do this. The Cummins plan is to have the government take away everything in excess of what the ratemaking authority determines is a fair return, and thus there is no incentive to efficiency after a fair return is made.

"Moreover, the Cummins bill provides that 50 per cent of the excess is to be used for the benefit of employees. Only a small part, if any, of this will be paid to employees and they would not, under such an arrangement, have the same incentive as if their share was paid directly to them.

The statement asserts that necessary and essential credit cannot be secured by the roads unless there is a government guarantee, with reasonable rates. Congress never will consent to a guarantee while the management remains in the control of the old form of management. Therefore a government guarantee of income cannot and should not be added to the Cummins bill, but, without it, I do not believe that the bill can solve the problem or save the railroad business from disaster. The bill I have introduced does not purport to take care of the immediate situation, but offers a permanent solution which would take some time to put in full operation. Our bill is supplemental in a way to the Esch-Pomerene measure. I believe that the roads should be turned back to their owners under government aid, for two or three years until a plan like the one embodied in my bill can be made operative. Something must be done to keep the roads from bankruptcy until we can finally dispose of the problem."

Food Supplies for Roumania

Master Car and Locomotive Painters' Convention

Chemical Tests of Paint and Varnish Not Satisfactory; Substitutes for Linseed Oil Discussed

THE FORTY-EIGHTH CONVENTION of the Master Car & Locomotive Painters' Association was held at the Hotel La Salle, Chicago, September 9-11. The first session was opened with prayer following which an address of welcome was delivered by a representative of the Chicago Association of Commerce. J. F. Gearhart, president of the association, then delivered an address in which he reviewed the organization's activities during the past three years and outlined the proposed amalgamation with the American Railroad Association. The convention then proceeded to a consideration of the topics selected for discussion. Abstracts of the principal papers are given below.

The Selection and Purchase of Paint

By S. E. Breese
Foreman Painter, New York Central, Collinwood, O.

Previous to the advent of the United States Railroad Administration the master painter of the railroad was the sole authority as regards paint and varnish both as to materials used and methods of application, and was responsible to his immediate superior for the results obtained. By virtue of this authority and through his experience and ability he secured certain desired results acceptable to the road which employed him. He accepted full responsibility as to results obtained and viewed with pride the results of his work. This pride was justified by the condition and appearance of the equipment coming under his jurisdiction. By an interchange of ideas, the foreman painter was constantly striving for progressive methods, economy, labor saving systems and durability in his work. He chose his tools, his men and his materials and through the proper co-ordination of all three secured results. The questions which I believe are of paramount importance are, whether the above conditions still exist and whether we are still responsible for results and have authority as to what tools to use, methods to employ, or materials to apply.

At the present time the purchasing department chooses and gives us our tools and material and asks for results. Are we allowing our responsibility to be shifted, our authority to be questioned and our methods attacked and submitting to it all without a protest? We were employed for a specific purpose, namely, to maintain equipment in good shape, secure economy as to methods, costs and time factors and yet are unable to choose our methods or materials. If this has come about what is the cause and what is the remedy?

Master Painters Should Choose Materials

A successful organization is one in which the authority vested in each department is absolute and co-ordinated and results are obtained only by a complete assumption of responsibility by the head of each department. In this way a chain of organization is forged, which is strong, well co-ordinated and successful only when each department has this full authority. Are we allowing our department to become the weak link of the railroad shop organization by a question of divided authority or a shifting of responsibility? It is essential that we become cognizant of the real danger of shifting our responsibility, accepting divided authority and lowering our standard methods and materials.

I believe the greatest trouble has been with material rather than with methods of application. This is primarily in the hands of the purchasing department and there has been some little friction over the materials bought for use. Due to the very nature of each department's position, there must necessarily be some friction, as the office of the purchasing department is the securing of materials designed to accomplish certain specified purposes at as cheap a price as possible with due regard for the quality and durability of the articles purchased. The purchasing department must, because of its lack of knowledge concerning the materials used, be absolutely dependent as to the question of durability and quality on information secured from the mechanical department, which in turn secures this information by co-operation with the master painter. This information is obtained by a consideration of a number of essential points including practical equipment tests and weather tests, chemical tests, information secured through the sales representatives of paint and varnish concerns, regarding the tests made by them of the material in question, and the knowledge and experience of the master painter due to his specialization on varnish and paint problems.

Chemical Testing of Paint

The chemical testing of varnish or paint materials has up to date been of little value as a reliable source of information, especially as regards durability. In fact, up to date, except in the case of raw materials, a chemical test is of no use to the painting department. The experienced painter by a few practical tests, such as elasticity, working and drying, can usually determine and foretell through his experience the possible durability of the article in question. General Atterbury has stated "In my experience the only materials which we were unable to purchase by specification were paint, varnish and rubber. In the purchase of the above materials, I was absolutely dependent for information on the man in closest touch with the materials, who by his specialization and experience usually could be called upon to adopt the material best suited for the purpose." This statement still holds true.

The purchasing department backed in many cases by the arguments advanced by sales representatives have succeeded in selling the mechanical department materials against the judgment of the master painter, who accepts these materials rather than get into a controversy. This has brought about changes in materials and standards all tending towards less efficiency and lessened durability, which means higher cost of maintenance in the end. This false economy is now being felt by the equipment upon which it was used. Goods of every description and standards are pouring into the shop; changes are being made from month to month on nearly all materials. Our only duty seems to be to apply them.

Inferior Material Now Being Used

As the price of raw materials advances, the price of paint and varnish declines, a queer economic anomaly which is only explained by a reduction in quality. The purchasing department notwithstanding the above, continues to buy at still lower prices, without consideration of durability or the standards of the road. This is a direct infringement on the authority of the man who, by his experience and specialization, has been placed in the position of the final judge of paint efficiency and durability. It is part of our job to make decisions regarding durability and efficiency. We have all

seen certain materials installed as a standard for painting, whose false economy, is now becoming apparent, and which was apparent to us in the beginning. What is the remedy of this situation? A sales representative told me that any justifiable complaint made to the person in direct charge was always seriously considered by the purchasing department in placing orders, but as the complaints are not made, the purchasing department establishes a precedent for the purchase of still cheaper material. Have we been afraid to complain, have we refused to use materials for the purpose intended? The refusal of these materials would also establish a precedent for the discontinuance of the purchase of such materials. Let us not close our eyes to apparent faults without attempting by honest argument and frank discussion to remedy the situation. Let us carry this to a successful conclusion and put our association back of the fight for efficiency, economy, and durability of all forms of painting equipment, and retain full and undivided authority as to methods employed and standards adopted.

Discussion

The members as a whole agreed that much poor material was submitted and accepted where paint was bought on specifications only. Several stated that material received under present specifications was not satisfactory. Although experience indicated that the paint would not give good service, it met the tests prescribed and for that reason there was no alternative but to accept it. J. W. Gibbons (A. T. & S. F.) emphasized the fact that the efficiency of painting should be judged not by the number of cars painted for a given expenditure, nor the speed with which the work was completed, but rather by the length of the intervals between painting.

Substitute for Linseed Oil

By A. H. F. Phillips
Master Painter, New York, Ontario & Western, Middletown, N. Y.

There have been great demands for linseed oil, and some specialists predict that the call for seed to fill the large contracts will become so urgent that higher prices will eventually be realized. If such is the case, it will mean almost a prohibitive price for use in a railway paint shop. We can safely say that the demand is great and persistent. There has been a general shortage in flax seed, which still continues. The Canadian and American supply continues light, and Argentine conditions are not changed particularly. Prices and freight are high, and cargo space at a premium. American buyers have been credited with considerable stocks in warehouses but receipts and available supplies are somewhat limited.

Under the present conditions of the market, the demand for linseed oil is in excess of the supply, and there is no question that there is a genuine shortage of oil. Perhaps, at some future time when the market becomes more normal the supply may possibly equal the demand and prices may not be so high as to almost prohibit its use as a paint making oil.

Properties of Vegetable Paint Oils

For some time past the railway paint shops have been receiving many paint oils as substitutes for linseed oil. I believe there is none, as yet, equal to linseed oil as paint making oil. A paint oil as a substitute for linseed oil for use in the railway paint shop can be made, and is being made and sold by many companies, on a linseed oil base, and of the same gravity. This dries with a good gloss, as it contains enough of volatile oils as conveyers to assist materially in the application of the paint and when evaporated in drying, leaves a thoroughly elastic and highly protective oil film in combination with the pigment. This paint oil can be used in thinning out paints of any character, oxide, carbon, lead or zinc, where oil is desired as a thinner without danger of any chemical action. Such oil would probably be called a combination oil. I am not prepared to assert what oils make up such a paint oil.

Vegetable oils are used by many in making up their paint oils, namely, cotton seed oil, soya bean oil, hempseed oil, corn oil, peanut oil, cocoanut oil, etc. These vegetable oils being largely food oils and used extensively in paint making oils as substitutes for linseed have found an increasing market. Mineral oils are also used in the paint oils to some extent, but I do not think it advisable to be too free in the use of paraffin oils. Owing to the great demands for linseed oil and the scarcity of the supply, also prices soaring up almost to a prohibitive figure for general use in the paint shop, substitute oils have found a place in making paint oils for use in the railway paint shop.

Oils Other Than Linseed Used in Paint

There are quite a number of these, drying, semi-drying and non-drying and not a few have their special uses in paint. The most important of the drying variety is China wood oil or tung oil. Poppyseed oil is prominent for grinding the finer grades of zinc white and artists' colors, and must be classed among the drying paint oils for the reason that when pressed from ripe seed it dries very nearly as rapidly as raw linseed oil. The reason for the use of poppyseed in colors or paints is due to the non-darkening of this oil and its free spreading. Bombay nut oil was at one time largely offered at a price somewhat lower than poppyseed oil. It was very clear, almost water white, and its drying property fully equal to that of bleached linseed oil. However, this oil has not been heard from in the market for some time.

Sunflower seed oil is also classed among the drying oils, but it has not found its way into general commerce and therefore nothing more is known about it than has been ascertained in an experimental way. Hempseed oil also belongs to the class of vegetable drying oils, but this seed being raised principally in Russia and a few other localities in Europe, is used mostly there as a paint oil; and if any is brought to this country it comes as an admixture with linseed oil.

Another vegetable drying oil that has been largely imported for some time into this country and Europe, under the name of candle nut oil by soapmakers and known to science as Kukui oil, is now being tested by progressive varnish and paint manufacturers. It bids fair to be a strong competitor of linseed oil when its characteristics become better known to the trade and it is prepared in a more scientific manner than it is now. Other drying vegetable oils, as nigerseed oil, tobacco seed oil, Scotch firseed oil, etc., that are not readily obtainable in commerce, are not at all interesting to the paint maker and color grinder.

Fish Oil Has Limited Use

Another oil, which is of animal origin, is the fish oil known as Menhaden oil. This is barred out, however, from use in many paint materials, especially in interior paints, because of its offensive odor, and is made use of only in special outside paints as in roof paints and stack paints, and by some manufacturers in other specialities.

Among the substitutes for linseed oil that interest paint manufacturers most should be classed soya bean oil, corn oil, and cottonseed oil. Soya bean oil requires fully ten days to dry to a film and then the film will not be as firm as raw linseed oil which requires six days to dry to a film. Since linseed oil is extraordinarily high priced there is quite a demand for bean oil and it is quite a task for paint makers to

discover methods to make their products dry in the ordinary way. The usual practice was to use equal portions of soya bean oil and boiled linseed oil, or when this would not work out well in some paints the bean oil portion was increased and also the driers.

Corn or maize oil has been in use in paints for many years, but is made use of only when the linseed oil is high in price. This oil has very little, if any, drying properties, and will harden to a brittle, rather mealy film in from twenty to thirty days. Cottonseed oil has no drying properties, but is a good lubricant, and previous to its rise in price when it came to be used as a cooking and table oil, it was used to adulterate linseed oil. Rosin oils are not only used in printing-ink making, but were largely employed in making paint for rough surfaces, though since their price has advanced to twice, even three times their former cost, they have been replaced by mineral paint oils to a great extent in paint. Rosin oils are practically non-drying, and while they harden in time will soften again under the influence of sun heat and make the paint film part, or alligator. Pine oil and tar oil are products from the distillation of wood spirit and of rosin, and are used in the manufacture of marine paints, especially paints for ships bottoms. These oils are semi-drying and water resisting to a degree.

Mineral Oil Will Not Resist Moisture

Mineral paint or paint and putty oil, so called among the trade, is refined petroleum or neutral oil, so named because debloomed. These oils cannot be used without being mixed in certain percentages with boiled linseed oil, as they lack binder and are apt to wash off the surface in case of driving rains. Even when used in large portions in a liquid paint for rough surfaces such paints have been known to wash off when they were supposed to have dried hard a month or two before.

Petroleum products of this class will sweat, causing softening of the film and consequent damage by water.

Cheap paints for use on rough lumber or other rough surfaces can be made by grinding the base in linseed oil (usually boiled) thinning with a mixture of about 35 gallons of gloss oil (rosin and benzine mixture), 10 gallons of raw linseed oil and 5 gallons of liquid drier. Or if it must be still cheaper, a thinner can be made of 30 gallons of gloss oil, 15 gallons of debloomed neutral paraffin oil and 5 gallons of lead and manganese drier. In any case, however, the pigment to be used as the base for the paint should be ground in linseed oil.

So far linseed oil has not found an equal in paint making, although the subject has been one of deep study, and while other fixed oils have been discovered that for certain purposes have been expected to take its place, it has yet to be demonstrated that such is really the case in long practice. China wood or tung oil, while superior to linseed oil in certain directions, especially in its resisting power to water, has not shown itself adapted to replace linseed oil in making oil paints as we know and desire them.

When linseed oil is placed on a strip of glass that has been painted jet black and shows a bloom, or iridescence, it is adulterated with mineral oil or rosin oil. Admixtures of linseed oil and corn oil or linseed oil and cottonseed oil can be detected by placing some of the oil between the palms of the hands, rubbing briskly and noting the odor thus emitted. The presence of soya bean oil, however, cannot well be ascertained by simple tests, and a chemical analysis is necessary though even that is sometimes misleading.

Discussion

Papers on this subject were also presented by P. J. Hoffman, (H. V.) and F. B. Davenport, (Penn. Lines). Mr. Hoffman brought out the fact that substitutes for linseed oil are suitable for certain purposes only. While it is desirable to make use of these oils, the stocks would be increased due to the limited field of application of the substitute and this would result in increased expense.

J. W. Gibbons (A. T. & S. F.) stated that mineral oil should not be used with putty as it evaporates and leaves a powder that soon flakes off affording no protection for the glass. Good putty effects a saving of glass and labor many times greater than the increased cost of the material. Mr. Gibbons stated that linseed oil is not necessary in paint that is not exposed to the weather.

What Standardization of Painting Railway Equipment Is Necessary

By W. O. Quest

Master Car and Locomotive Painter, Pittsburgh & Lake Erie, McKee's Rocks, Pa.

At the present hour, the most necessary and essential paint shop standardization would be some practical method of satisfying labor on the matter of wages in the painting of equipment. Will it be possible to standardize the labor operations of the railway car paint shops now under government control? As something of an optimist, strong in the faith that the American workman will soon realize that to bring order out of a threatened social upheaval, he must turn back to the old-time ideas of soberness and thrift, I do believe that it can be, will be, and must be done. But how such desired standardization is to be brought about, is open for the suggestive powers of just such an assembly as this. I believe that it can be happily brought about, if an amicable live and let live arrangement is made in the spirit of fair dealing between the railway employers and employees.

Piece Work System Advocated

The labor of painting cars and locomotives, etc., could be standardized by the adoption of a universal piece price system, the wage paying system that we firmly believe in as the most equitable to employ any kind of labor, the most equitable for all interests, notwithstanding the facts that modern labor federations in recent years have been instrumental in entirely abolishing this method of employing labor in the American railway shop systems. In my opinion, a fair scheduled piece price system is the only method whereby labor can give a fair equivalent for wages paid. Such proposed piece price schedule, to be standardized, should be job named and not numbered. The unit or fixed prices should be open to shop inspection at all times and never officially juggled in the event of the more skilled labor earning more pay when called upon to help out in a shop rushed for output. If a piece price labor standardization can be put into action, the prices should be so scheduled that the earnings of a first class skilled worker in a railway car paint shop would equal the earning rate of the outside general trade skilled worker. The original schedule of prices should be carefully figured out and classified, each job continuously named regardless of name repetition in the several classifications. The original job prices as scheduled should never be price changed, as we have found it to be no easy matter for the men to follow up such changes and it was sure to create dissatisfaction. When found necessary to advance or lower the wage scale, an up and down percentage method should be used.

Standardization of Materials

Next to the labor problem, the most important issue would be that of specifying the standardization of paint supplies, as there cannot be any fixed material standardization without manufacturing, purchasing, chemical and application specifications. The paint and varnish maker will be called upon

to furnish certain standards of car shop specialty material on fixed paint making formulas, that must be lived up to. Something represented as just as good or better at a lower price, unless first tested by some prescribed authority, cannot be consistently introduced without upsetting the primary law that demands standardized materials. Possibly in many instances this material is theoretically or authoritatively formulated from raw paint stock listed on the open market, which is often unsuitable or perhaps ruinously mixed by people who are trying to meet competition in the paint business, but do not materially know the special requirements of the railway paint shop.

There are no suggestions that will safely promote a material standardization in the railway paint shop, if the purchasing departments continue to buy paint stock on price regardless of known quality or the paint-making reputation of the selling concerns. Companies have in the past and still will in the future break into the railway paint field, without knowing that such paint is a specialty and is especially applied.

If any such suggested railway paint standardization ever becomes a law, the activities of the railway chemical laboratories will be quite strenuous and especially active when they come to the matter of settling the many disputes sure to arise.

Method of Application Important

It is in the application of the paint stock that the master car painter must receive his full recognition. He will have to be put on the standardizing committees with full power to act, as he and he only knows what is necessary to make a good job. If what is termed necessary standardization of certain or all classes of job paint work is adopted, he will as usual be held responsible for the labor and material costs.

I will here offer a list of work items that in my opinion could be readily standardized, if it is found necessary to try the standardization scheme out. If adaptable, locomotive painting should be standardized. The quality of the protective paint and varnish should be the best weather, smoke, acid, or grease resisting paint stock that can be found on the market at any price. Every inch of the painted metal surface should be sandblast cleaned. All castings to be painted should be chipped off smooth and freed of live rust, etc., with the sandblast, as it is a sure waste of time and money to paint over crusted unremoved grease, mill flash, or live rust of any kind. If the work is standardized, the paint specifications demand should call for hard, tough, elastic paint stock, as it is a great mistake to apply soft oil paint where it is to come in direct contact with solvent cutting greases and acids, which when deposited on the locomotive's painted surface, can only be removed by heavy erosive cleaning.

The painting of passenger, mail, baggage and similar cars could be classified as to labor and material. Owing to the sameness of the work the jobs could be readily standardized. When material classifications are being standardized, the many examples of the best paint and varnishing finishing systems which have been successfully used for many years in the railway paint shop should not be forgotten in the standardization arrangements, and the interests of worthy manufacturers should be protected owing to the fact that their specialty products have helped to make car painting history.

Uniform Stenciling for Freight Cars

Based on the past work of this association's efforts to establish standards in freight car painting, especially to standardize the stencil markings, which undoubtedly has been and still is one of the most pronounced wasters of time, labor and material that the railway officials are confronted with, we heartily endorse the idea of standardizing every detail that covers the painting and stencil marking of the railway freight car. In the standardization scheme, the stencil lettering and numbering should be made in the same style and sizes and sent out from a designated manufacturing base in pounce pattern form. If made by skilled stencil makers from established drawings, the stenciled railway freight car would present a neat lettered appearance. The paint repair costs of the future would be light, owing to the undisputed fact that such a railway freight car stenciling standardization scheme would save thousands of dollars in stencil-making costs for every railway company that will endorse and adopt such standardization.

Discussion

W. A. Buchanan (D. L. & W.) also presented a paper on this subject in which he outlined the methods of painting which he considered best for locomotives and freight cars. He advocated standardization of stenciling on freight cars as a means of reducing the cost of painting.

H. M. Butts (N. Y. C.) proposed that the association issue a pamphlet of approved practices for painting railway equipment. There was some difference of opinion regarding the relative merit of carbon and lead paint. J. W. Gibbons (A. T. & S. F.) stated that for steel underframes he considered red lead and carbon black better than two coats of carbon black. W. A. Buchanan told of steel freight cars painted with carbon paint which were in good condition after 17 years' service.

The Advantage of Using Pure Paints and More Time in Painting Steel Equipment

By W. Bailey
Boston & Maine, Concord, N. H.

Paint should be applied to freight cars with a brush and with as much care as on any other surface. Any well known pigment mixed with linseed oil is the only commercial article worthy of the name of pure paint. Unsatisfactory painting can easily be traced to the use of poor paint and unskilled painting, such as the spraying process.

Most of the commercial paint used today is a poor article compared with good linseed oil paint. Paint mixed with japan and a thinner when applied dries by evaporation and is consequently non-elastic and almost worthless for durability. On the other hand a paint the vehicle of which is linseed oil, dries by the absorption of oxygen and is much thicker when dry due to the amount of oxygen taken up in drying. It is elastic a long time and will resist atmospheric exposures longer than any other vehicle and consequently wear longer than any paint mixed with driers and thinners. Japan, or thinners, should not be used in any paint for outside surfaces and exposure. Nothing but boiled linseed oil should be used for a drier. I am a firm believer in the necessity of the sand-blast process for removing rust and scale, as the smoother the surface the longer the paint will wear.

One thing I am in doubt about and that is, what is the best primer for steel: is lampblack, graphite, white or red lead? I do not believe a paint containing a large percentage of oxide of iron should be used as a primer.

Painting Should Not Be Rushed

A new car should have at least three coats of paint and ten days' time for painting, if one wants an economical job of painting. When cars are turned out with two coats of commercial paint in a few months 10 to 50 per cent of the surface is a mass of rust and scale. The car is seldom returned to the shops except for repairs and then the same process is repeated. This is expensive. On the other hand if a good, economical job is desired, the car should be given a coat of lead primer and finished with two coats of paint.

If freight equipment could be shopped as regularly as passenger cars, and I think it just as essential, it would be a great saving to the railroads. As it is they are seldom sent to the shop until something needs repairs, and then the rush comes when in the hands of the painter. Passenger cars are shopped every year, principally for appearance sake, and if freight equipment could be shopped as regularly for protection it would be a great saving.

I think it is a right a painter owes to his own reputation as well as a duty he owes to his company, to say all the good things he can of good paint and condemn poor paints. To get good paint you must mix it yourself. Twenty years ago mineral was used without grinding and gave better results than the present commercial prepared paints. Mineral, lampblack and graphite can all be used without grinding. Too much cannot be said in favor of linseed oil as a vehicle for paint. It is one of the few vegetable, fatty oils that dries by absorption of oxygen.

To conclude, it should be said that whenever railroads will take time enough to paint steel equipment with the right materials, and in a way that it should be done, then the work will stand, and in the long run economy will be the sure result. The steel coal cars one sees on every hand today are horrible examples of the poor judgment and haste that has been practiced in the painting of this equipment where it has been turned out of the car manufactories. There is no cure for it now but to sand-blast it off and paint it as it should be with right materials and practices. A stitch in time would have saved nine when the cars were built but the nine stitches should be taken now to save the equipment before it rusts out completely, for there is nothing that deteriorates faster than steel unprotected with a suitable coating.

Other Papers

F. B. Davenport (Penn. Lines) told of the results secured with a special heat resisting paint developed for use on car roofs. The best quality and size of sand for sand blasting was discussed in papers by J. W. Gibbons (A. T. & S. F.) and G. M. Oates (Pressed Steel Car Company). Methods of preserving the roofs on passenger cars were described by J. J. McNamara (B. & O.) and H. H. Morgan (C. of Ga.). C. E. Copp (B. & M.) presented a paper on the record of the Master Painters' Association.

General Business

The proposal to amalgamate with the American Railroad Association as a division of the Mechanical Section had been considered by the officers and was brought up at the convention. After considerable discussion, it was unanimously voted to become a part of the new organization and rules of order were adopted. The secretary-treasurer reported a total membership of 328 and a satisfactory balance in the treasury.

The following officers were elected, chairman, J. W. Gibbons, (A. T. & S. F.); first vice-chairman, E. L. Younger, (Mo. Pac.); second vice-chairman, J. G. Keil, (N. Y. C.); secretary-treasurer, A. P. Dane, (B. & M.).

Boston was chosen as the place of the next meeting, which will mark the fiftieth anniversary of the founding of the association.

Prosecutions for violation of the federal safety laws, begun in the United States District Court at Pittsburgh, Pa., on September 5, name officers of the railroad (instead of the company itself or the Railroad Administration) as defendants. The offense was the working of train men more than 16 hours on the Pittsburgh, Cincinnati, Chicago & St. Louis. Six men were named: R. E. McCarty, general manager; I. W. Geer, general superintendent; J. C. McCullough, superintendent, and three others.

Labor Leaders Object to Anti-Strike Legislation

A STATEMENT issued by the Plumb Plan League, signed by the executives of fourteen railroad labor organizations, but not by Samuel Gompers as honorary president, criticises the provisions of the Cummins bill designed to prevent strikes, on the ground that "the right to strike as the last resort is ingrained in the nature of the American workingman." "To attempt to put such a prohibitive law into operation," the statement declares, "would be madness. No leadership in the world could restrain the rank and file of American labor under such an imposition; the human factors called forth would be beyond control."

"This provision," the statement says, "not only would make it illegal to strike with *intent* to hinder interstate commerce, but also would make it illegal to enter into any combination or agreement which *does* hinder interstate commerce. Intent would not have to be proved in the courts. Thus the provision is iron-clad; for any strike on the railroads, of however small proportions, would unquestionably hinder interstate commerce. The provision is carefully written to remove from railway labor the right to strike under any possible circumstances. If this provision were enacted into law, it would impose upon railway labor two insupportable conditions, namely, compulsory arbitration and economic servitude. Such a serious and fundamental proposal opens up the whole question of the relations of labor to the state and to the employer, and precipitates every issue in the industrial situation. To advance it in Congress at this time, in the face of an economic crisis, and when Congress is refusing the legitimate requests of railway labor for a full consideration of its own proposals, is a step calculated only further to increase the difficulties that confront the nation.

"What would be left a workingman, under the provisions of the Cummins bill, above quoted? The final clause of the provision is an empty promise. If two or more men quit work under any excuse, it could be held that they were interfering with interstate commerce. The provision simply means that under it men in the railroad employ would no longer be free to quit their jobs; they would work in economic serfdom, subject to the conditions imposed by the adjustment boards; or, if two or more of them did quit, they would be criminals, and the police and the troops, the courts and the jails, can be used against them.

"A law such as this would spell the end of labor organizations in America. Is this the intent of the provision? Does Congress, at the behest of the alarmed business system, propose to try to break up the organizations of labor throughout the country? Is it decided that the time has come to make this final fight? These are questions which demand an answer. Every workingman in the land is asking them as he reads the newspapers. In his heart he knows that to enact this law would spell more than the death of trade unionism. It would spell the birth of revolution.

"This is not a threat, but merely a statement of obvious fact. The real threat comes from the other side—against labor, to remove from its hands the only weapon by means of which it has built up and maintained its organizations, and against the public, to throw the country into a state of confusion and violence. Labor alone, in this railroad crisis, has been thinking of the public; it is only labor's plan which holds the public interest to be primary. All other plans and proposals have been dictated by selfish motives. This final proposal is cynically disregardful of the public welfare.

"As representatives of the fourteen organizations comprising the organized railway employees of America, we beg Congress most earnestly to consider this situation on the basis of its true values."

Railway Business Association on the Cummins Bill

Suggestions for Making the Object Which the Bill Admirably States Effective in Actual Practice in the Future

Alba B. Johnson, president of the Railway Business Association, has written Senator Cummins a letter in part as follows:

Vital as are the subjoined recommendations for amendments to Senate Bill 2906, I felt constrained to telegraph you on Friday and now reiterate congratulations on the progress toward a solution of the railroad problem which this measure embodies. It has a merit which distinguishes it sharply from most of the other "plans" which are being urged—it is not a stockholders' bill or an employees' bill or a railway supply men's bill, but a bill for the users of transportation.

To you personally it cannot be otherwise than an occasion for gratification and pride that after three years of inquiry and interchange of ideas upon the major stumbling block involved in your question "What shall we do with the weak roads?" this is on its way to an answer through your proposal of consolidation; and your confidence rests not alone upon the apparent willingness of Congress to give your plan the sanction of law but also upon the apparent readiness of railway owners and managers to carry through without compulsion a large part if not all of the program. Once measurably rid of the strong-and-weak-road dilemma you will have just reason to hope for a clear way to a disposition of the revenue and credit aspects.

Objects rather than means concern the industries for which I speak. With all the most important of these objects the sub-committee bill deals.

Good Tendency of Mere Proclamation

In our judgment the mere proclamation of these objects as indicating the purpose and policy of the government would strongly tend to bring into line with such declaration the practice of the administrative branches and substantially increase the confidence of those whose capital is needed for better railroads and more railroads.

Neither Congress nor the country, however, we feel sure, will be content merely to adopt declarations the results of which are expected to come through the sentimental influence of the declarations themselves upon the regulatory agencies. Congress and the country are ready for legislation which will put restoration of railway development beyond a peradventure if a statute can do it. The present juncture affords a rare opportunity, which may never be presented again, for a legislative achievement that will take transportation out of politics and out of controversy.

We offer you our friendly co-operation in your difficult task of appraising this tentative bill and strengthening it where needed.

We are convinced that in the bill as it stands the provisions for making policy effective are in need of modification.

Why Not "Shall"?

The bill does not prescribe that revenue shall be adequate for the objects which it names. It says that those objects shall be "taken into consideration."

In the Interstate Commerce Act as it stands Congress, desiring to enunciate the purpose that rates should be reasonable, did not say that in regulating rates the commission shall take into consideration their reasonableness; it said that rates "shall" be reasonable.

A new element of policy is now to be introduced. It is the purpose of Congress that rates and the revenue to be yielded by rates shall be adequate (for objects specified). What reason is there for evading the straight phrase of the earlier enactment?

We believe the accomplishment of your purpose requires that you say, not that the objects specified shall be taken into consideration, but that revenue shall be adequate for those objects.

Delusion About a "Fair Return"

We have urged that income should be made adequate to afford the basis for credit.

This is included in the bill as one of the objects which are to be taken into consideration in determining the revenue needs; but there is in the bill as bearing on this point phraseology which we fear will return to plague you. The enumeration of things to be considered embraces this language: "a fair return upon the value of the property," "requirements for additional capital," and "the conditions under which the same may be secured."

Is it intended by these words to indicate that a fair return and conditions upon which additional capital may be secured are two distinct things? It would be dangerous to give even an impression that Congress had sanctioned that fallacy, because it has taken a firm hold on a large part of the public mind. People's eyes are focused upon the holder of existing securities as such and the return which he is to have. They use the tell-tale word "entitled"—to what return the security holder is "entitled"—and they imagine that it is somehow the business of the legislative branch or of the Commission through which it applies its policy to determine what the security holder is "entitled" to and to see that he gets this and nothing more.

Your success or failure in dislodging this delusion from the public thought may determine whether we in America can or cannot preserve individual initiative in transportation and hence probably the institution of individual possession in every field. The legislation upon which you are engaged can be made a potent vehicle for the enunciation of the actual facts.

Basic Propositions

Some elemental propositions which could advantageously be made clear by what your statute says and by what it omits would be these:

(a) Protection to the stock or bond owner is not the business of Congress at all but of an entirely different and independent branch of the government—the judiciary.

(b) A "fair return" to which the owner is "entitled" is and can be nothing else but the return below which a Commission cannot constitutionally depress rates.

(c) The concern of Congress is not primarily with the holder of existing securities but with the possessor of savings whose future investment is desired, who will buy or refuse to buy solely in accord with his expectation of a return and whose mind is made up as to future returns by past and current returns upon existing securities.

(d) Congress, being charged with the duty of assuring adequate facilities to the public, is therefore concerned solely with the question what return upon existing securities will make a market for new securities. Congress operates in the

zone of income above what the courts would enforce as a "fair" return.

I have above referred to Senate Bill 2906 as a measure distinctively for the users of transportation. This impression will be strengthened if having said that revenue shall be adequate the bill states the credit problem by eliminating altogether the word "fair" and simply authorizing a return designed to attract what the bill already defines—"additional capital in order to enable the carriers to adequately perform their duties to the public."

We have urged that the certificate of the Transportation Board as to necessary revenue be met by the rates. The bill does not so prescribe. It merely provides that in any hearing before it the Interstate Commerce Commission shall accept the certificate as prima facie evidence. This in our judgment would be a mistake pregnant with the most serious consequences.

The certificate or certificates (to quote the language of the measure) are to be "prima facie evidence in any hearing upon the matter or matters to which such certificate or certificates respectively relate."

The commission can for reasons satisfactory to itself reject even a certificate having the statutory sanctity of being prima facie evidence.

The commission, then, is to pass upon the judgment of the board after a proceeding. The board presumably is to come before the commission as a petitioner. The members of the board through such procedure are to ascertain whether the Interstate Commerce Commission regards their judgment as sound on matters of business; and in all the praise which citizens, including your present memorialist, have justly bestowed on the commission we have never heard or seen it suggested that that body is specially qualified for the business function of estimating future needs and their cost and of exercising courage in making provision in advance.

Will Competent Men Accept?

Obviously if the Board is to have the duty of ascertaining the transportation needs of the country and the amount of revenue required, men of business capacity and experience will be desired and if possible will be obtained for service upon it.

Have you any confidence that men of that caliber will accept or long retain office in the board if in matters of business their judgment is to be reviewed by such a body as the Interstate Commerce Commission?

In testimony presented before the House committee August 25 and 26, of which a condensed print is herewith attached, I endeavored to maintain that to give the commission a voice in deciding the amount of revenue will destroy its incalculable value as an agency for abatement of discriminations and that even if Congress were willing to sacrifice the commission as an instrumentality for the prevention of injustices, the transformation of it into a body of men of action would take years and probably the protracted process would be interrupted by government ownership.

Some members of your committee are business men. They appoint subordinates with defined jurisdiction. Within such jurisdiction the subordinate is supreme. His position resembles what used to be said of the Russian throne—it was despotism tempered by assassination. If the president of the company loses confidence in the subordinate, off with his head; but so long as he is retained in the position his judgment within the designated scope is final. When the question of organizing the production and procurement bureaus of our government was under discussion during the war it was reported that a high official inquired of a business friend: "Do you mean to say that every business is organized like that?" "No," was the reply; "about 95 per cent isn't, and this is the principal reason why 95 per cent of businesses fail." A business need not couple power with responsibility if it so prefers, but it must do it to succeed.

We submit that so must Congress in this matter of railroad regulation. In business to give a man a job and then have another man of similar rank to pass upon his judgment is intolerable. Yet this bill sets up a body equal in salaries to the Interstate Commerce Commission and of longer tenure and subjects its judgment to review by the other tribunal. There is here no element of the judiciary holding an agency of the legislative within constitutional limitations. It is never questions of judgment that are reviewed by a court.

The Interstate Commerce Commission itself affords a perfect illustration. The law having prescribed that rates shall be reasonable and non-discriminatory and Congress having established the commission as an agency to administer that rule, the Supreme Court has again and again declined to pass upon the judgment of that agency. If the commission says a rate is lawful that makes it lawful and no power can reverse that dictum except on the ground that it takes away the owner's right to the use of his property—that is to say, of a fair return upon it.

If a question of jurisdiction is involved—if it is contended that the commission has exceeded the power delegated to it by Congress or that Congress has undertaken to delegate power which it does not itself possess there is a review by the court; but in refusing to annul rates sanctioned by the commission where the question is whether they are reasonable and non-discriminatory the court always says not that it approves the judgment but that it has no jurisdiction to approve or disapprove and washes its hands of the whole matter.

Security Issues and Consolidations

Pursuing the same line of action, the bill empowers the Transportation Board to require that carriers construct new facilities, but it leaves the board, as previously stated, without power to require the revenue necessary for a credit basis upon which to finance the improvement. Again, consolidations are to be dealt with by the board through recommendations which to become effective would require the approval of the commission. Both capital improvements and consolidations are inseparably bound up in the issuance of securities. Yet by this bill the duty of regulating security issues is imposed not upon the board but upon the commission.

Similarly in the field of relations with employees, the bill empowers the Transportation Board to sanction increases in the labor costs without imposing upon the Commission any responsibility in the matter—a responsibility from which the Commission has for several years prayed Congress to deliver it—and yet leaves the Board with nothing but a recommendatory function as to revenue with which to defray such increased labor cost, the final decision as to revenue resting with the commission.

Financial vs. Physical

Although it is not so stated in the bill or in your published abstract, analysis of the measure seems to indicate the theory upon which, whether consciously or unconsciously, the subcommittee classified the several functions for assignment to the board and to the commission respectively. That theory seems to be that the commission will have for its province financial matters and the board physical and other aspects not obviously financial. There are exceptions but the rule runs generally through the bill and is illustrated in a minor clause which places the board in the position of organizing and maintaining a staff and having to get from the commission approval of the salaries.

We believe you can make a sounder classification of functions as between the board and the commission than that of matters which involve finance and matters which do not.

We urge upon your serious consideration whether the problems are not fundamentally those of promotion on the one hand and restriction on the other. We are confident that you will come to regard the assignment of responsibilities chiefly if not altogether with a view to the type of men that each requires for its most effective performance.

We are to have two bodies. Each should be homogeneous in its makeup. The bill admirably points to the two types when it makes the commission the regulator of rates and gives the board the ascertainment of the public need for facilities and the railroads' need for income. If the board is to require a railroad to participate with a carrier by water in the construction of a joint terminal, every step necessary to the consummation of that mandatory requirement should be within the scope of the board—it should decide what is to be done, it should regulate the security issues, it should determine irrevocably the amount of revenue which the railroad will need. If the board is regarded by Congress as a fitter body than the commission to ascertain what consolidations there should be and on what terms, then the board and not the commission is the fitter body to make the final decision.

Full Power with Responsibility

One reason for opposition to a Transportation Board is the misgiving by some that decisions would hang fire between the two bodies. We believe this is a well-founded apprehension. The one way to avoid it and hence to restore railway development is to give full power with each responsibility and review over none except by the courts.

We have been unable to see how the Interstate Commerce Commission could be better employed than in continuing as in the past to prevent injustices. The enlargement of federal jurisdiction over rates which the bill proposes will require an extensive increase in the rate-regulating organization of the commission. Populations hitherto resorting to State bodies for relief must be dealt with reasonably near their homes and by federal officers whose familiarity with local conditions will at all times be supplemented by intimacy with the nation-wide standards which the commission exists both to crystallize and to develop. Nine men may well stagger under such a task of supervision. They may well be spared other burdens.

This would assign the new policy of encouragement for improvement and construction as well as the physical aspects of existing regulations to the Transportation Board, which will be conceived and manned in that light and clothed with independent powers corresponding to its responsibility.

Summary of Proposed Changes

Your sub-committee has adopted as its purpose the objects which the public interest requires. If by amendment it is made more nearly certain that those objects will be accomplished the task will have been achieved and well achieved. Let me summarize for convenience the changes which the Railway Business Association proposes:

(1.) Drop the phrase "take into consideration" and prescribe that rates "shall" be adequate to yield revenue sufficient for the objects which you enumerate.

(2.) Drop the phrase "fair return" and prescribe as an object for which revenue is to be adequate a return designed to attract "additional capital in order to enable the carriers to perform their duties to the public."

(3.) Drop the review of the board's certificate as to needed facilities and income, making it mandatory upon the commission to accept it and sanction rate structures calculated to yield the income certified.

(4.) Drop the requirement that consolidations shall have the approval of the commission, making final the sanction of the board. (5.) Give the board and not the commission regulation of security issues, without review.

War Risk Insurance Held By Railroad Men

THE BUREAU OF WAR RISK INSURANCE of the Treasury Department, in conducting its campaign for the retaining of government war risk insurance by discharged soldiers, sailors and marines, has issued an interesting report concerning the insurance carried by railroad workers in the Transportation Service of the Engineer Corps. This report says in part:

"Locomotive engineers, firemen and trainmen taken from active service on railroads in America and transferred to France as soldiers of the United States, performed notable work in the greatest war of all times. Figures compiled by the Actuarial Department of the Bureau of War Risk Insurance in Washington, show that more than $107,758,200 of government insurance was carried by railroad men engaged in the Transportation Service of the Engineer Corps, American Expeditionary Forces, and upon railroads in the United States. There were thousands of enginemen and trainmen in all branches of the service, but in the compilation of these figures, only these men actively engaged in the Transportation Service of the Engineer Corps are included.

"The conservation of this insurance of the railroad men has been undertaken by the Bureau of War Risk Insurance which is organizing a volunteer field force with the purpose of reaching every discharged service man to encourage him to maintain his insurance.

"A total of $40,000,000,000, approximately, of insurance was carried by the nearly 5,000,000 soldiers, sailors, marines, army and navy nurses. Of this amount, $22,881,000 was carried by locomotive engineers in the Transportation Service of the Engineers Corps.

"There were 500 gasoline locomotive engineers in the Corps. These men carried $4,350,000 insurance. There were 2,520 locomotive firemen in the Engineer Corps of the American Expeditionary Forces, and 110 in railroad work in the United States. Of this number, 450 were engaged in light railroad work in France and 50 in America. In all they carried a total of $22,881,000 of War Risk Insurance.

"Brakemen, trainmen, flagmen in the American Expeditionary Forces numbered 5,460, while 95 were engaged in this work in America, making a total of 5,555. Of this number, 860 were employed on light railroads in France, and 95 on light railroads in the United States. These men carried $48,328,500 insurance. In addition to these trainmen there were 319 engine watchmen carrying $2,775,300 insurance, and of these men, 282 were overseas. There were in addition 46 enginehouse firemen, carrying $400,200 of war risk insurance.

"There were 706 locomotive inspectors, 630 of whom were in France, carrying $6,142,200 of war risk insurance.

"The Engineer Corps suffered in battle, deaths numbering 59 officers and 1,207 enlisted men. The wounded totaled 216 officers and 6,739 enlisted men. An officer and 153 enlisted men were taken prisoners."

"Clean air week" which began in Chicago on Monday, September 15, as a campaign against smoke and as a preventative against a return of the influenza epidemic, is to be marked by daily conferences between the City Health Commissioner and various organizations to devise means of ridding the city of the smoke nuisance. On Friday, September 19, a conference of this nature will be held between the Health Commissioner and the general managers and federal managers of railroads in Chicago, the superintendents of motive power and master mechanics and representatives of the enginemen's and firemen's brotherhoods.

Opportunities for American Signaling in Far East*

American Firms Must Recognize Differences in Operating Methods to Compete Successfully

By Frank Rhea

THE GOVERNMENT of train movements on the Chinese government railways is usually by block control. Some kind of staff is generally in use on single-track lines and a very large percentage of all the mileage is single track. All stations where trains may meet or pass are provided with "station loops" which are really very short stretches of double track. Separate station platforms are provided for the passenger traffic in each direction. At the more important stations, particularly at junction stations, the main-track switches are interlocked; at other stations interlocking of various degrees of completeness is provided; while at some stations—in fact, in a large number of instances—only hand-thrown switches, locks, and signals are provided.

In all cases the direction of the handling of this apparatus is under the jurisdiction of the station master. The method of signaling is usually in accordance with the practice of the country that has provided the loan funds for building the line, but in the main, the general practice can be said to conform approximately to the British Board of Trade practice. In view of the experience in Australia, it would seem, if the Chinese government railways should be able to make their practice uniform in the next few years, that it would be wise for them to adopt the American three-position, three-speed system of signaling. It is also probable that the arrangement of selective telephones with central control, as installed on the New South Wales railways, could be adopted with much advantage on some of the lines, such as portions of the Peking-Mukden line, where the traffic is growing to such an extent as to require increased capacity of the present single track.

The signaling practice, as already stated, conforms to the practice of the country furnishing the loan funds, but the signaling as a rule is very simple, and approaches closely the British Board of Trade practice. Two signal arms are placed horizontally on separate dolls instead of vertically on one mast, as is the American practice. The signal arms point to the left because all the roads in China run left handed. The block working apparatus is largely of British manufacture. It would be of most decided advantage if all the Chinese railways were to adopt at once the American practice instead of doing so later (as they probably will) at a considerable cost.

Operating Methods

The system of train-movement control is the "station-master method" of operation, as the writer termed the arrangement employed on Australian railways. The practice of putting in the hands of the station master the responsibility for the movement of all traffic is even more pronounced in China than in Australia. It may be said to represent the adaptation of the British and Continental methods to the situation in China, where there are many factors in labor and class conditions that justify such an arrangement. In fact, it would probably be impossible to use successfully the American despatching methods with the train crews carrying out such orders without other direction.

All employees of the Chinese government railways are Chinese, except for a few salaried official positions that are filled by foreigners, usually serving under definite contracts. Educated Chinese are employed to fill many of the salaried official positions, but the less important employees in station, train staff, and similar service, have been recruited from the less-educated classes, and they require education and training to make them capable railway servants. Therefore the "station-master method" of operation seems without question to be the most desirable practice for railways in the Far East, and it is the method in general use. There is no doubt that this method requires more men and is less expeditious than the methods in vogue in the United States, particularly in the running of passenger trains, but this is not a serious handicap.

Imperial Government Railways of Japan

The parliamentary head of the Japanese government railways is the prime minister. The administrative and operating head is the president, who has under his direction a complete organization, consisting of a general staff and a director with a complete division staff in charge of each of the five grand divisions into which the entire system is divided.

The system of operation is the departmental or branch method, but there is superimposed the added feature of what might be termed a semi-military organization. By this it is meant that each official is given a rank and grade, with the result that in every contingency there is a ranking official who will have authority to take action. The general administration, in charge of the president, has a vice-president and a general staff divided into six departments, or bureaus, as follows: Secretariat, general administration, traffic, finance, engineering, and machinery and rolling stock.

The duties of the several bureaus are indicated by the titles, except the general administration bureau, which may be regarded as a commission for the control and regulation of the light railways, private railways, and tramways. This bureau consists of three members, one of whom is the director, one the secretary and one an engineer. They supervise in every sense the actions and operations of all the above classes of railways, even to the extent of the specifications for materials and equipment to be bought.

The method of train operation is the typical "station-master method" in all details, and with the conditions present and the help available this is admittedly the eminently safe and proper arrangement. Outside of the Tokyo electrified district the signaling is all in accordance with British Board of Trade practice, but the lines as a rule are inadequately signaled. In the Tokyo electrified zone some automatic signals are installed, but these are somewhat out of date and include several kinds of signals. With the amount of traffic on the Japanese government railways and the small amount of signaling at present, there is every reason why the most modern method of signaling should be adopted for future work. It is important that these lines be adequately signaled as the traffic grows, and they will ultimately require very intensive signaling.

Another feature would be the extensive use of selective telephone apparatus for establishing central control—by this

*From a report prepared by Frank Rhea on the Market for Railway Supplies in the Far East and issued by the Department of Commerce. Mr. Rhea spent the larger part of two years in China and other countries of the Orient as a special agent for the Department of Commerce, investigating the opportunities for the introduction of American railway materials there.

means retaining all the safeguarding features of the station-master method of train operation and still getting the permissible expedition of despatching methods.

Korean Government Railways

The organization is of the typical branch or bureau type, being very similar to that of the Shantung railway which has five bureaus established in the railway department of the Department of Civil Administration in the Tsingtau army headquarters with a chief appointed for each bureau. The bureaus are as follows: General affairs, traffic control, operations, engineering and finance. The bureau of operation has charge of the operation of trains, correspondence relating to operation, signaling and the conduct of the railway. The bureau of engineering has charge of new construction and repairs, railway, and buildings; operation of electric power houses for railway purposes, and control of lands and buildings in railway use. The method of train operation is the typical station-master workings with very little signaling and interlocking, all of which conforms, in general, to the practice on the Japanese railways.

South Manchuria Railways

The method of train running conforms strictly to the station-master system already referred to in connection with the Japanese railways. All signaling is along the lines of the British Board of Trade practice and is all very limited, both for signals and interlocking. The same remarks concerning modern methods of signaling and selective telephone apparatus for central control apply here as in connection with the Imperial Government Railways of Japan.

Manchuria and Eastern Siberia

The organization is of the typically bureaucratic type in all features. Methods of operation and train running conform to the station-master method in all its purity. There are buffet stations, averaging about 25 miles apart, where ample time is allowed for refreshment. One memorable feature of Russian train operation, particularly in yard switching, is the constant use of a large resonant whistle to sound a code of signals to switchmen who are located on the ground to throw switches for the handling of cars. In the yard at Harbin a surprisingly large number of men are used as ground switchmen. While the writer made inquiry as to the performance figures of these lines, it was impossible to obtain data that would satisfactorily show the facts and represent the normal conditions.

The Manila Railroad

Train-running methods conform strictly to the British "station-master" system, referred to at length in the Chinese and Japanese sections above. The small amount of signaling is along the lines of the British Board of Trade practice and as simple as it is possible to make this system of signaling. With the class of employees available, consisting almost entirely of natives in the train and station service, there is little doubt that this is the best method of operation, and government operation will be an added reason for continuing this arrangement.

Conclusions and Suggestions

While the distinctly departmental organization and the strictly station-master method of operation may impress representatives of American concerns doing business with the Chinese and Japanese railways as not being the best arrangement, it is the writer's opinion that the conditions are such that both these situations must be accepted. Business should be done with these railways along these lines particularly when it is a question of specifications or equipment (though this will seldom be the case outside of such matters as those involving signaling and train despatching). It may be true that by these methods the Far Eastern lines do not move traffic with the same speed as the American roads, but to do so they will be obliged to take a greater amount of risk on account of the class of men with which they have to operate these railways.

With the small amount of really modern signals and central train-control apparatus now installed, there is every reason why the simpler three-speed American method of signaling and selective telephones to direct present train working should be adopted in both Japan and China. This could be done with benefit, particularly to take care of the growing traffic which will necessitate increasing the traffic capacity of these railways from time to time.

Orders of the Regional Directors

Industrial Detention of Coal Cars.—The Northwestern regional director, file 44-1-205, calls on federal managers for reports to indicate responsibility for the detention of coal cars. Each agent is to report all coal daily, showing consignee, number of cars placed and number unloaded, number on private or team tracks placed for unloading and not released, and the number held for placement on account of the disability of the consignee.

Commercial Coal Supply and Requirements. — The Northwestern regional director, in Inquiry 239, requests the compilation of information concerning the storage and prospective needs of commercial bituminous coal in the Northwestern region. Reports are to show net tons on hand September 1, 1919, net tons required from September 1 to December 31, 1919, and the net tons required from January 1, to March 1, 1920. These three items are to be subdivided into industrial, public utilities and other consumers, including retail dealers, and these in turn are to be reported separately by states.

Accident Prevention Drives.—The Northwestern regional director, file 97-1-20, announces the National Railroad Accident Prevention Drive, from October 18, to 31, inclusive, and suggests that federal managers call a meeting of general officers to discuss plans for making this drive a success, the meeting preferably to be held in conjunction with the meeting of the General Safety Committee if the meeting of that committee is scheduled to be held in advance of October 1.

Chicago Joint Agreement Between Brotherhoods.—Circular 88, of the Northwestern regional director, quotes rules of the Chicago Joint Agreement between the Brotherhood of Locomotive Engineers and the Brotherhood of Locomotive Firemen and Enginemen, which are to be incorporated into existing schedules on railroads where such schedules exist and where they are not already included.

Export Bills of Lading.—The Southwestern regional director in Supplement 4 to Circular 240, defines the term "North Atlantic Ports," as constituting all ports in the United States from Norfolk, Va., north. In Supplement 5, to the same circular, the Southwestern regional director amends paragraph 6 of the original circular containing a notation to appear on all bills of lading. In Supplement 6, to the same circular, the Southwestern regional director amends Supplement 1 to the same circular, relative to the payment of undercharges.

Fire Prevention—Smoking.—Supplement 11 to Circular 32 of the Northwestern regional director states that during 1918 there were reporteed to the Fire Loss and Property Protection section, 252 fires directly attributable to carelessness in smoking or the use of matches, with a total loss of $159,629, and calls attention to the necessity for strict enforcement of the no smoking rule in wood working shops, paint shops, etc.

Railroad Hearings Before House Committee

Protest Against Plumb Plan by E. J. Rich. Railway Surplus and Business Prosperity

WASHINGTON, D. C.

THE FOLLOWING PROTEST against the Plumb plan was presented before the House committee on interstate and foreign commerce on September 12 by E. J. Rich of Boston:

"I think I may fairly say that I am bearing to you the message of the manufacturers of the United States. I have been requested to bear this message and to enter this protest against the plan of the railroad brotherhoods by the following organizations:

	Members.
Associated Industries of Massachusetts	1,300
Employers' Association of Montana	1,600
Indiana Manufacturers' Association	800
Iowa State Manufacturers' Association	1,500
Connecticut Manufacturers' Association, Inc.	600
Ohio Manufacturers' Association	550
Nebraska Manufacturers' Association	500
Wisconsin Manufacturers' Association	500
West Virginia Manufacturers' Association	350
Kansas Employers' Association	400
Manufacturers and Employers' Association of South Dakota	225
Utah Manufacturers' Association	200
Georgia Manufacturers' Association	250
California Manufacturers' Association	302
Associated Industries of Missouri	130
Kentucky Manufacturers & Shippers Association	173
New Hampshire Manufacturers' Association	400
Colorado Manufacturers' Association	560
Alabama Manufacturers' and Operators' Association	100
Associated Merchants & Manufacturers of New York	2,000
Employers Association of the Inland Empire	540
Pennsylvania Manufacturers' Association	4,200
Michigan Manufacturers' Association	1,050
Total membership	18,230

"The total invested capital represented by these organizations is not less than twenty billion dollars.

"I am also requested to enter the protest of that body of vigorous 100 per cent Americans, the United Commercial Travelers' Association, with a membership of 82,000. The Massachusetts Chamber of Commerce has also requested me to enter its protest against the brotherhood plan. This organization is composed of 69 constituent bodies, local boards of trade, having a membership of more than 40,000. The membership of these bodies is thoroughly representative of the great middle class. One has only to attend their conferences and meetings to be deeply impressed with the fact that their efforts are directed primarily towards the protection of the human rights of labor, rather than towards the preservation of the property rights of capital. I do not claim that this attitude is due to unselfishness, but rather to an enlightened comprehension of the real way to protect their private interests. It is in this spirit towards labor that this protest is made against the plan of the railroad brotherhoods. The manufacturers desire that their private interests may not be jeopardized. They take pride in what has been achieved by private enterprise and do not wish to exchange their property for a government bond and become coupon-cutters, but rather they desire to continue as active agents in the great industrial work of the nation.

"We do not anticipate that the railroad properties, or later our property, will be confiscated. We do not take seriously the implied threat of revolution which seems to have found lodgment in the heated brain of one of the sponsors of the Plumb plan. We have not the slightest apprehension that this committee will recommend the adoption of the plan, or that Congress would for a moment seriously consider it. When members of this Congress have spoken on this subject, there has been no uncertain ring to their utterances.

"It has been stated that this new and strange doctrine is spreading like wild-fire throughout the working classes. This may be an exaggeration, but there are many evidences that it is beginning to receive much enthusiastic attention in the ranks of organized labor. The plan is an adroit one. It has a peculiarly alluring appeal to prejudice and self-interest, and it is because of the danger arising from such an appeal that we desire to enter this vigorous protest.

"The principles of the plan are not the principles of socialism, for socialism in its theory is based upon what its advocates deem to be the public good. Socialism is the nationalization of industry in the interest of the public. The Plumb plan places all the burdens on the public, and gives to a privileged class all the alleged benefits. We see in bolshevism a perverted socialism. Under a bolshevistic regime, the workers are to manage all industry and to take all the profits. When the plan of the brotherhoods is analyzed, it is seen that the fundamental principle is that the public shall own the instrumentalities of transportation, which shall be managed for the benefit of the workers, by the workers, and if there is a loss, that loss shall fall upon the public.

"The fallacies of the plan have been punctured by the members of this committee, and its menaces have been clearly shown. But the issue is so momentous, and the danger of the spread of this pernicious doctrine so great, that I am sure you will pardon me if I undertake a brief analysis.

"It is first proposed that the government shall buy the railroads. It is claimed (and with truth) that the government can raise money at lower rates of interest than private corporations. This is one of the strongest arguments of all government ownership advocates. It is to be placed upon the credit side of the balance sheet, to be considered for what it is worth. The claim, however, that the government can raise money at four per cent is ridiculous. It would probably have to pay over five per cent. If so, the saving would not be much more than one per cent on the value of the railroads.

"It is claimed further that the public would not have to pay interest in the shape of railroad rates upon an inflated capitalization, and that by reducing the capitalization by, say, five billion dollars, a still further saving would be effected. It is true that there has been gross manipulation of securities and that many railroads are weighed down under a capitalization upon which the public ought not to be compelled to pay charges. Furthermore Congress ought now to provide a means whereby the strangle-hold which the banking interests necessarily have on the weaker railroads should be relaxed. But the amount of over-capitalization has been greatly exaggerated. There are some railroads whose capitalization is less than the money actually put into them, and there are many railroads organized in the early days whose bonds represent the cash and whose stock represents the hope of investors. Doubtless many railroads are over-capitalized in the sense that their capitalization is greater than the amount of money actually put in, but they are not over-capitalized in the sense that, under a wise method of financing, more capital was issued than was necessary in order to start the enterprise, and that is the test.

"In the last analysis the government will pay what the courts determine to be their lawful value, but that value, in the judgment of those qualified to judge, will not be materially less than the aggregate capitalization. The brotherhoods, in advocating government ownership on the basis of actual value, are proceeding along paths which have been trodden by many earnest and honest men, but suddenly the

path diverges into the wilderness of Russian bolshevism. A gigantic corporation is to be formed to take over the railroads with the money of the people. The whole body of employees constitute this corporation, and *'the stock of this corporation shall be held in trust for the benefit of the employees.'* This is the bald statement made by the proponent of the bill before the Senate committee last winter.

"Not only is the corporation to be run for the benefit of the employees, but it is to be managed by the employees. No one is misled by the adroit wording of the plan in this particular. Under this plan the employees are the corporation. How long would an officer hold his position who was not zealous in advancing the interests of his real employers? This attempt to convey the idea that the officers would represent something other than the interests of the employees is transparently dishonest. It is not intended that they should represent any other interests than those of the so-called classified employees, and any officer who attempted to ignore the interests of these employees and to favor the public interests would be summarily removed.

"This committee by its incisive questions has torn off the mask and has shown to the country the real power behind this corporation. But the advocates of the plan say that the profits are to be equally divided between employees and the public, and that in this way and because of this, the corporation will be managed in the public interest. The proponents of the plan grow eloquent in expatiating on the tremendous incentive which will be given to every employee to work efficiently and economically. Why this sudden change of attitude on the part of organized labor towards profit sharing and bonuses? In the past they have opposed anything which would speed up production and put a premium on efficiency.

"Let us analyze the proposition a moment. Wages are by far the greatest item of expense in the operation of a railroad. How are wages to be fixed? By an arbitration board, composed of members equally representing the employees and the officers. *That is, all the arbitrators are elected by those who will profit by the award, and who themselves, as employees and officers, will likewise profit by their own award* —all recipients of wages whose fairness they are determining. Today the officers appointed by the corporation represent the corporation, but under this plan they are appointed by a board all of whom are in the employee class. Because today the officers are the opposing party in a wage arbitration, there is an attempt to make it appear that they would be the opposing party in a wage arbitration under this plan. It is a device too transparent for serious consideration.

"Will initiative and incentive to efficiency be increased under this plan? The railroad employees are making wage demands which will probably average not less than an increase of 50 per cent over their present wages. Take the case of an employee earning $2,000. An increase of 50 per cent would amount to $1,000. That is what he would get if his demands were complied with. What would be his share of the surplus? If the profits were $100,000,000, the combined body of the employees would get $50,000,000, which, if divided equally among the 2,000,000 employees would amount to $25 apiece; somewhat less in the case of the classified employees. Which affords the greater incentive to effort, to work efficiently and conscientiously for the accumulation of a surplus of which they would get $25, or to demand from their own officers whom they elect and control an increase in wages? Certainly $25 has not the same lure as $1,000. Would the employees work conscientiously and efficiently for the accumulation of a surplus, or would they work the directors—*their* directors—for an increase in wages?

"But there would be no surplus, and no hope of surplus. After the payment of wages—a first lien on revenues—and other operating expenses, sinking fund requirements, extension of railroads into new territory, improvements and betterments, there would be nothing but deficits to be met by taxation. The employees would never give a thought to the will o' the wisp of a surplus.

"It is interesting how tenaciously the brotherhoods hold on to the right to strike. It would seem that as the employees fixed their own wages and conditions of employment there would be no occasion for a strike. But bear in mind that this plan originated with the 'Big Four,' who though more thoroughly organized than any other grades of employees are in a decided minority. Is there any doubt that the strike provision is retained as a club to be used against other organizations?

"The greatest evil which would come from this plan would be the utter demoralization which would exist throughout the ranks of railroad labor. What a scramble among labor leaders for the directorships and the important offices! *Directors once elected to office are subject to recall by those who elected them.* If the shopmen thought that the 'Big Four' were getting more than their proper amount of the spoils and should combine with the section men and other grades of employees, the existing officers would be recalled and their own leaders designated. One set of ambitious labor leaders would succeed another, even within each organization, and one organization would combine with others for the purpose of ousting those for the moment in power.

"It is fortunate that the issue is raised in a way that it can be met; for the defeat of this revolutionary plan will quiet agitation for its extension to other lines of industry. It is fortunate that this issue is raised before a Congress in which the members of both parties are standing firmly, courageously, fearlessly, in defence of American institutions."

P. J. Coyle, president of the Order of Railway Station Employees, urged the necessity for legislation establishing some tribunal to protect the interests of railway employees after the return of the roads to private management and to prevent the railroads from attempting to keep their employees from organizing. He also had some criticisms to make of the effect of the Railroad Administration's wage orders, saying that its attempts to standardize wages, while of great benefit to some of the employees receiving the lowest pay, did not work out equitably.

Hoyt Chambers, secretary of the National Civic Betterment League, told the committee that any legislation that would tend to "validate" anything like the present par value of railway securities would be a "great public larceny." To prove it, he said, he had taken a list of 12 railroads and computed the market value of their securities on the basis of newspaper market quotations as of September 9 at 56 per cent of par and on this basis he calculated the market value of all the railroads at $11,000,000,000. He also explained to the committee the reason for the high price of coal by saying that the railroads are holding up hundreds of cars of company fuel but that they occasionally let go of some of this coal to favored dealers at a profit. He said he was a former railroad man and knew what he was talking about and that he had evidence from 14 railroad division points but when pressed by the committee declined to name them without asking the permission of his informants. He also charged that the railroads are accumulating supplies at government expense sufficient to last them for years to come but he also declined to be specific on this point.

K. D. Loos, of Chicago, for the National Coal Association urged amendments to the car service provisions of the Esch bill, which he said, had already been adopted by the Senate sub-committee in the similar provisions of the Cummins bill, to impose more specific requirements upon the railroads to insure the equitable distribution of cars in times of shortage, in order, he said, to prevent the railroads from reviving the practice of assigning cars for railroad fuel and not count-

ing them against the mine rating of the coal operators having railroad fuel contracts. Before federal control, he said, the railroads used variations of this practice to obtain lower prices for their coal in return for the assurance of a full car supply, with the result that the mines not having railroad contracts were discriminated against. The practice was stopped last year by order of the President and by agreement between the railroad and fuel administrations at the time the roads were required to pay the regular price for coal but the operators were afraid it might be revived after the return of private management. The Interstate Commerce Commission now has power to issue orders prescribing the method of car distribution, he said, but they have proved ineffective because they run only against the roads named as defendants, because the orders expire in two years and because by the time the order is issued the period of car shortage is over and there is no redress for the past discrimination. He urged an amendment for the purpose of making the declaration of law specific with an effective penalty.

Representative Cooper remarked that if the plan of the United Mine Workers for a five-day week and a six-hour day is put into effect the operators will not need so many cars. Representative Sanders added that if the complete plan is adopted there would be no coal operators because it also provides for nationalization of the coal mines.

Railway Surplus and Business Prosperity

Edward B. Leigh, president of the Chicago Railway Equipment Company, testified before the committee on September 15, urging the importance of allowing the railroads to earn a surplus. Mr. Leigh said in part:

"What I ask you to consider relates specifically to our recommendation concerning surplus earnings. In the statement of objects made to you by President Johnson, as favored by our association, was this:

> ' * * * accumulation of surplus railway income in good years in order that in poor years railway maintenance, additions and betterments may be carried on vigorously.'

"Senate Bill 2906, the Cummins bill, looks in that direction. One of its provisions would make certain specified dispositions of a carrier's return in any year in excess of a fair return. In laying down the rule which the regulatory body is to follow in determining what is a fair return, the bill employs this language:

> 'A fair return * * * which may include a just allowance to provide reasonably for future years in which there may be insufficient earnings.'

"That is to say, wholly apart from the question of taking income from one road and giving it or lending it to another, or for the benefit of those who use another, the Cummins bill deals directly with each individual line and recognizes the legitimacy of its accumulating in prosperous years a surplus against lean years. Our association does not say that income should be diffused in any of the ways suggested. There are undoubtedly serious legal and constitutional difficulties. We do not pretend to have discovered a provision which will attain the end in view. What I am here to urge is that you adopt as your own the basic thought underlying the definition of a fair return which I have just cited from the Cummins bill, namely, that a surplus should be permitted, to any railroad that can earn it, as a fund for years of adversity.

"Some of the plans so ably conceived and presented to you, seem to be animated primarily by solicitude for the present holder of outstanding securities. Some of the so-called rules for rate-making have set forth that rates should be such as to yield a return; as if the be-all and end-all of rates was the return. To the security-holder, of course, the return is the object of the investment. As a security-holder he has no stake beyond the fact of the return and repayment of the principal. But to the user of transportation and to the user of what is transported, the return is merely a means to an end—namely, attraction of new capital for additions and betterments, including those which promise economies and, hence, ultimately a check on rate advances.

"It is gratifying to observe that there are certain leading plans in which the public rather than the security-holder is specifically made the primary object of solicitude. One of these is the Cummins bill. That measure sets forth the aspects which must be considered by the rate-regulating body and gives prominence to the needs of the people for transportation, hence for new capital, and hence for adequate rates.

"The statement of the same object by the Railway Business Association is this: ' * * * a federal statutory rule of which the effect will be that rates and fares of the railways within each traffic section shall be sufficient to yield the average railway in the group in the average year its necessary expenses and to provide the credit basis for average facilities.'

"In discussing the public interest in adequacy of rates and adequacy of return, you have ample testimony touching upon adequacy of facilities as a necessary underlying aim. I do not now volunteer any more. There is another aspect from which the national interest should be considered, and to that aspect I invite your attention.

"I refer to the effect of railway purchases in and of themselves as a stabilizer of industrial and commercial activity in every line whatever throughout the country.

"Ever since Henry Clay raised his voice for policies designed to stimulate prosperity, the attitude of our government has been one of solicitude for the welfare of each and every element in the population; first, for the sake of each element, and, second, for the sake of the country as a whole, all of the units being regarded as prospering by the prosperity of each. Until a few years ago this was the attitude toward railroads, and the frame of mind in which members of Congress are listening to the testimony of citizens seems to give promise that the attitude toward railroads may soon become such again.

"It is true that a large proportion of Americans, though probably at no time a majority, have always held the view that the government should avoid positive aid to citizens in their occupations. Such aid was asserted to be artificial stimulation, the cost of which fell on all the people, whereas the benefits might not be equitably diffused.

"Railroads may be said to constitute an exception, since the creation and maintenance of highways is a duty of government, whether performed directly or through franchises.

"But however you take it—accepting the theory of those who would let the citizen work out his salvation without government aid, and granting, for the sake of argument, that rail highways are not exceptional in that respect—what have we had? In place of aid, positive and aggressive suppression. The government has regulated rates under a statute which provided for restriction but did not provide for adequacy; and the consequence has been a practical cessation of railroad building and improvement, if not also an impairment of maintenance standards. This is only another way of saying that, by keeping rates too low and by making investors fear excessive restriction, which may be equally harmful, we have put a governmental brake on the purchase of railway supplies and hence on the industries which have plant and organization for their production.

"The government has in that field restrained trade. By what almost everybody now sees was plain neglect the government has interfered not only with the prosperity of an element in the nation, but with the prosperity of the whole nation.

"In a great country such as ours and in matters which

are under federal jurisdiction it is inevitable that here and there, for a time at least, mistakes of this sort will remain in force. We can only do our best to find and correct them. But a highly practical rule which we follow by instinct is to place on the docket, for first and most vigorous attention, those situations where a change in government policy would probably affect the largest number of people. The more wage-earners are involved, the wider-spread are the secondary effects.

"In general I make the statement that no occupation except agriculture employs so many people as do railroading and providing the needs of railroads. From raw material to finished product those employed in railway supply industries are believed to be pretty close to 2,000,000. Apparently another 2,000,000 are now employed by the railroads themselves, a large number of these engaged in the maintenance, improvement and extension of the properties.

"If new railroads were in the course of construction the number of employees would be increased by many thousands more whose existence makes no entry upon the statistics of employment compiled by the Interstate Commerce Commission until the new road is completed and actually doing business as a common carrier.

"Without attempting an exact mathematical statement of the number employed, we are in position to make a conclusive mathematical demonstration of the effect which the prosperity or adversity of these many millions has upon the prosperity or adversity of the nation as a whole.

"And the important phase of the railway problem which I desire to lay before you—one entirely different from any you have heretofore had presented to you—is found in a measurement of the extent to which restriction upon railway buying actually does depress general business prosperity, and, conversely, the exact extent to which normal railway purchases can and do hasten return of general activity following a depression, and prolong prosperity once restored.

"Comparatively few realize what a great factor the railways are in the buying field. Having this in mind, a short time ago it occurred to me to try to present this in some graphic form, which would more quickly portray this fact; to give a sort of "back-ground," as it were, for the more ready appreciation of this situation."

Mr. Leigh then presented and explained to the committee his charts showing the relation of railroad purchases to general business conditions, which are already familiar to our readers.

Rewarding Individual Efficiency

A. H. Smith, president of the New York Central, in a letter to Chairman Esch of the House committee, urges that participation of employees in the results of their labor ought to be placed on an individual basis, as a reward for individual efficiency that can be measured, instead of on the general basis of profit-sharing so frequently advocated. Mr. Smith said in part:

"Nearly all of the men on these railroads are, in my opinion, of our best citizenship. They are virile, stable men. Many of them do work of great importance and consequence. Their compensation must be relative, all conditions of their employment must be understood, and their relations to other employment must be considered.

"All men in all walks of life are given the same amount of time—lawyer, farmer and artisan. In addition, there is skill and effort which is variable and must be allowed for as they are furnished. I believe our solution of the railway wage problem is to give the individual employee a participation in the results of his individual labor. This is apparent at the time and ascertainable, and can be paid promptly. To participate in the profits as has been proposed is uncertain and is not the true measure. Such a plan will cause suspicion and distrust, unhappiness and unrest. It is not constructive even if it is feasible, which I doubt. It will not produce uniform results on different properties or on the same properties, and such inequalities will in time disrupt any such arrangement, and besides, it looks like confiscation.

"The man who by skill and effort, care and efficiency, moves a given tonnage in less time than others should have reward. Let us consider as a unit of production a block of railroad say five miles long, worth a million dollars, containing a train consisting of a locomotive worth $75,000, cars worth $240,000, loaded with freight worth $1,000,000. It is like a machine in a shop. The skill and effort which gets the work to the machine, through the machine and away from it contributes to diminish the time the machine is used for a given production, increasing the output and decreasing the cost. So the block should be used efficiently and the train moved expeditiously under safe rules. Any skill and effort that clears the line and enlarges its capacity should have reward.

"To illustrate: Assuming that the normal time of operation over a division for a freight train might be ten hours. Then the skill and effort which move it in nine hours have increased the productivity of the machine and should receive a premium. Conversely, if eleven hours are required a penalty is sustained.

"Man cannot survive without incentive. Without incentive there is no progress. Given incentive a man will try to progress. He will combine the factor of time, which is common to all alike, with skill and effort as he develops. What he gains for himself and contributes to the benefit of mankind will depend on the result of his use of his faculties and skill with time and effort.

"Present labor organizations tend to remove incentive by a horizontal leveling process. This submerges the individual into the average. It causes discontent because it violates human nature. Labor organizations will, eventually if not now, feel the effect of this principle and must ultimately recognize it. It must become the doctrine of the future labor leader if he is to point the way with truth and real leadership. It makes no difference whether facilities and plant are provided by privately owned capital or by publicly owned capital. The principle is the same. The waste of time with these facilities is delayed or inefficient production is a burden on all who must live by their production and those whose means have been borrowed or taxed to provide the plant."

Consolidation of Express Companies

George C. Taylor, president, and T. B. Harrison, general counsel, of the American Railway Express Company, appeared to ask that the legislation providing for the return of the railroads may contain a provision which will permit the continued consolidation of the express companies, which were merged last year under the direction of the Railroad Administration. The merged company was taken over by the government in November. Mr. Harrison said that the express companies were "scrambled" by a director general at the time when he thought that federal control was going to last a long time and that it had resulted in such great economies in overhead and traffic expenses that the express companies desire the combination continued. He said traffic expenses had been cut 50 per cent. The company's contract with the government does not provide for any compensation, but merely guarantees it against loss during federal control. Because of the unexpectedly large increases in wages the company has been operating at a deficit of about a million dollars a month, but with an increase in business and a slight increase in rates it was thought that the company could operate successfully. Mr. Esch asked about the effect of competition of the parcel post. Mr. Harrison indicated that the parcel post was not worrying the express companies much, saying that they carry a great many times as much business as the parcel post. The Esch bill, he said, provides for con-

solidations with the approval of the commission, and the Cummins bill provides a more definite plan of consolidation of railroads. Mr. Harrison said the express companies would like to have the provision of the Esch bill if it applies to them, but there is some doubt about whether it applies to consolidations already effected. He also opposed any rigid long and short haul bill, saying that it would absolutely destroy the present structure of express rates made by the Interstate Commerce Commission.

Newman Erb, president of the Ann Arbor, presented a statement before the committee urging the importance of allowing railroads to earn a sufficient surplus to provide for unproductive improvements and as a provision against lean years. He said that as between the conditions which formerly prevailed and government ownership, he would prefer government ownership, or as between former conditions and a plan of regional consolidation he would prefer the regional consolidation, but the important thing was to give assurance that the railroads should have sufficient revenues to furnish the required service and that the stronger lines should not receive more than they need and the weaker roads should not receive less. He also urged some government supervision over receivrships and consolidations to prevent the control of railroads by men who have no financial interest in them. He also advocated common ownership of freight equipment used for interline business.

W. M. Hopkins of Chicago discussed various provisions of the Esch bill and W. W. Manker, assistant traffic manager of Armour & Company, replied to statements made by a former witness that the packers are given a great preference by being permitted to own their refrigerator cars.

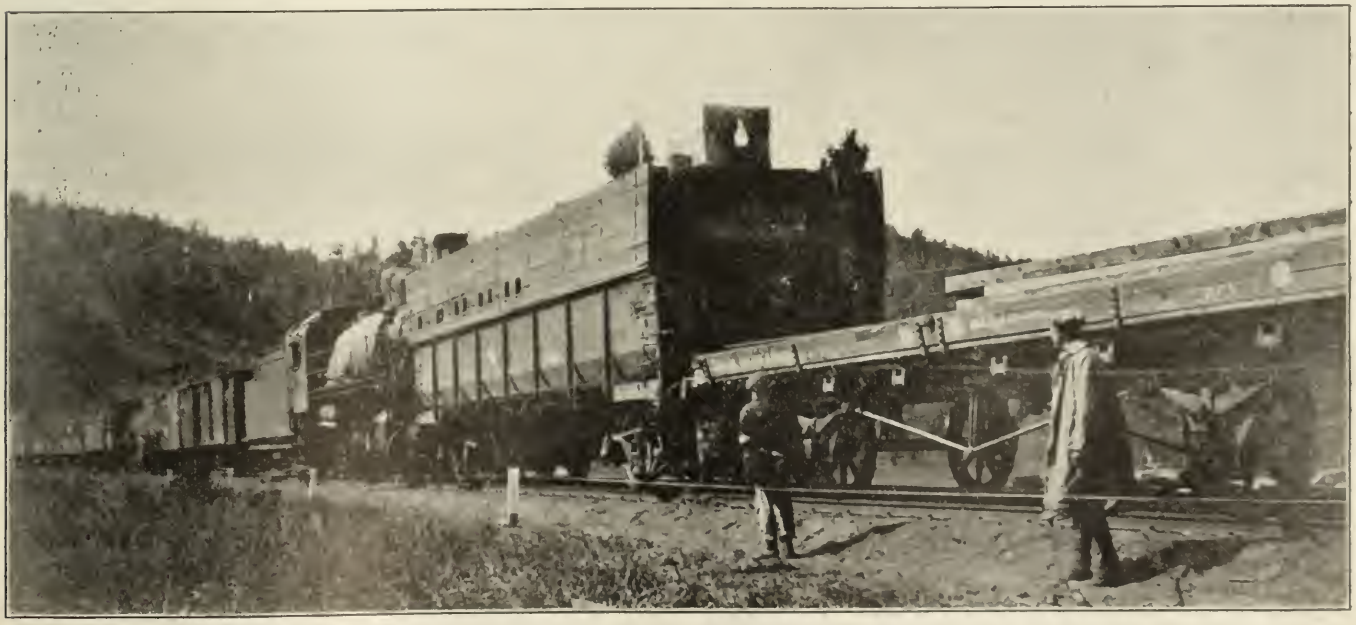
The views of the National Industrial Traffic League on reconstruction railroad legislation were expressed by Guy M. Freer, president of the league, who told the committee that practically all the league's recommendations were included in the Esch bill. He also discussed the Senate bill and the Cummins bill to restore the rate-making jurisdiction of the Interstate Commerce Commission. Regarding the provision inserted by the House committee in reporting this bill he said it was the idea of the league that during federal control jurisdiction over rates should be left with the federal commission but that there was no particular objection to the amendment if an additional provision could be added that in the event the President finds it necessary to make a general change in rates the same advance shall be made in the state rates without securing specific authority from the state commissions. Instead of 120 days, as provided by the Esch bill, Mr. Freer said the league would prefer a suspension period of six months. He opposed regional commissions but suggested that the Interstate Commerce Commission might establish branch offices. He also opposed giving the commission jurisdiction over port-to-port rates. Referring to section 14 of the bill, which requires the commission to take into consideration the cost of labor and other operating costs, Mr. Freer said that the cost of labor was given undue prominence unless all operating costs, which the commission is required to take into consideration, are also enumerated.

In many respects, Mr. Freer said, the Senate bill corresponds with the Esch bill, but it contains many other provisions, some of which are not favored by the league. It is generally in favor of a plan for preventing strikes, but believes that the public, as well as the employees and the employers, should have representation on the wage board.

B. F. Wooding, of Montclair, N. J., appeared before the committee on September 16 to urge legislation to require the railroads to install automatic train control devices, or more particularly the Wooding device, and he presented a long statement outlining its merits. Chairman Esch said the committee was not interested in any special device but that it was interested in any practicable method of protecting life and property that can be available within a reasonable cost.

Chairman Esch has announced that Director General Hines will not appear before the committee to give his views on railroad legislation. It has been understood that the director general would appear before the hearings were concluded and an effort was made to have him as the first witness, but the director general has informed the chairman that his views are outlined in an address he made at Swampscott, Mass., in June, which will be incorporated in the record of the hearings.

It was hoped that the hearings might be concluded this week, but indications at present are that they will run into next week.



Supplies for the Front in Russia

Doings of the United States Railroad Administration

Efforts to Improve Car Supply Situation. Traffic Committees Directed to Clear Dockets

WASHINGTON, D. C.

SHIPPERS who are complaining of car shortage and railroad officers who are called upon to explain why there is a car shortage will doubtless be delighted to learn that the fact is not due to government management, and that while there were car shortages on August 1 there was a net surplus at that time as compared with a net shortage on August 1, 1917, when the railroads were under private management. They will also doubtless appreciate the information that although there were about 216,000 freight cars officially classed as in bad order on July 1, there were still over 2,000,000 cars in service and not withdrawn for repairs on that date, which number was greater than the number of cars not withdrawn for repairs on July 1, 1917. These facts are contained in a statement relative to the freight car situation issued from the director general's office this week during his absence.

It is stated that they "ought to be borne in mind by the public" in appraising car service conditions. But those who are interested in the situation as of a more recent date may get their information from some other source, or in such a way that it is not so likely to be used by the public in appraising conditions.

The statement shows that on August 1 there was a net surplus of 88,000 freight cars as compared with a net shortage of 33,000 on August 1, 1917. From other sources figures are available showing that during the last week of August this year there was a net shortage of about 17,000 freight cars as compared with a net surplus on September 1, 1918, when the country was still at war. The Railroad Administration has not heretofore used its figures of car surpluses and shortages for publicity purposes, on the ground that they were inaccurate or liable to be used in such a way as to be misleading. Such figures were compiled and published by the American Railway Association up to April 1 last year, when they were discontinued by the Railroad Administration at a time of shortage. Later they were made up, although not given out publicly by the Railroad Administration and showed a comfortable surplus of cars during the latter half of 1918, which was increased to around 500,000 in March of this year. For a couple of months the Railroad Administration censorship allowed them to be published and for June 1 the net surplus was about 300,000. The net surplus had entirely disappeared by the last week of August when surpluses amounting to about 45,000 were reported throughout the country, whereas the total number of unfilled car requisitions was about 62,000.

The Railroad Administration statement is as follows:

"Walter D. Hines, director general of railroads, today authorized the following statement relative to the freight car situation:

"Current discussion of car shortages and related questions makes it important to bring to the attention of the public the fact that, contrary to what seems to be the public assumption, conditions in this respect are substantially more favorable than they were in recent years prior to the war.

"On August 1, 1917, the total car surpluses reported throughout the country were 43,481 cars, whereas on August 1, 1919, the total car surpluses were 107,900. The total number of unfilled car requisitions on August 1, 1917, was 77,257, whereas the total number of unfilled car requisitions on August 1, 1919, was only 19,271.

"The number of freight cars in service and not withdrawn for repairs on July 1, 1917, was 1,983,000. The number of freight cars in service and not withdrawn for repairs on July 1, 1919, was 2,065,000.

"The very fact of unified control of all the railroads has tended to concentrate the comments upon any inability to perform 100 per cent of the transportation required, but the foregoing figures show that the situation during and at the end of July, 1919, was very much better than in the corresponding period in 1917. It is believed this fact ought to be borne in mind by the public in appraising the existing car service conditions.

"The extent to which freight cars have been repaired in recent months has been the subject of some comment. The number of freight cars repaired and returned to service by months during the present calendar year has been as follows:

January	2,027,992
February	1,747,146
March	1,953,225
April	1,897,698
May	2,039,661
June	2,013,697
July	1,790,097

"On account of the fact that the Fourth of July came on Friday this year, and of the proportionately small amount of work done on the following day, the falling off in the number of cars repaired in July as compared with June is clearly explainable. The number of cars repaired per month in May and June kept fully up to the number repaired in January, although in May and June many shops were still working on shorter hours than in January.

"Much stress has been laid on the increase in the percentage of cars withdrawn for repairs in the recent months up to and including July. The fact is that this increase in the number of cars withdrawn for repairs has not been due to a falling off in the number of cars repaired but has been due to a number of complex factors which have arisen from the conditions resulting from the war, from the exceptional pooling of cars during unified control, and from questions arising between the Railroad Administration and the railroad corporations. The emphasis which has been laid upon the percentage of cars withdrawn from service for repairs is, therefore, misleading and does not give a correct idea as to the number of cars actually in service. The number of cars actually in service, not including bad order cars, increased from 1,983,000 on July 1, 1917, to 2,065,000 on July 1, 1919.

"The Railroad Administration, however, is not content with its ability to point to the fact that transportation service is more favorable than it was two years ago. On the contrary, extraordinary efforts are being put forth to secure the greatest possible improvement. Although the number of cars repaired in May and June, 1919, was fully up to the normal number of cars repaired, the Railroad Administration gave instructions on June 20, 1919, that all car forces be increased to the full standard measure of 48 hours per week and that additional shifts be worked where the additional employees could be obtained and where they could be economically used. The showing naturally to be expected from the putting into effect of these instructions was hampered in July by the intervention of practically a double holiday, and, of course, was temporarily prevented in August by the strikes of a large number of shop employees. Conditions having now been restored to normal, it is expected that these instructions will promptly show a most favorable result. Further than this, the Railroad Administration instructed on August 16, 1919, that all car forces be put on a basis of

54 hours per week. It is believed that this instruction will result in a marked improvement, also in the monthly repair of a much greater number of cars than the normal number and will steadily increase the number of cars actually available for service as compared with preceding years.

"In addition to this, the Railroad Administration is rapidly getting the benefit of the service of a large number of new cars constructed during federal control, but whose introduction into service was postponed on account of inability to agree with the railroad corporations as to the acceptance of the cars. This inability has been overcome. Between August 1 and September 6, 23,564 of these cars have been put into service, and they are now coming into service under the spur of recent instructions at the rate of over 900 per day."

Efforts to Improve Car Supply Situation

Director General Hines has authorized the following statement relative to the car situation in the United States:

"The Railroad Administration is fully alive to the importance of the car supply situation in the United States and is handling the matter energetically. Instructions have been issued to all the regional directors urging them to bend every effort:

"1. To speed up road and yard movements;

"2. To secure heavier loading of equipment;

"3. To establish and maintain complete and accurate yard checks;

"4. To reduce the number of bad order cars;

"5. To make prompt delivery to connections;

"6. To effect early deliveries at freight houses and team-tracks; and

"7. To expedite the movement of grain cars in terminals.

"Instructions have also been issued for the establishment in each important terminal of a committee of officers of the Railroad Administration whose duty it will be to study and expedite the movement of cars, empty and loaded, in their respective terminals.

"Every effort is being made to speed up the construction of the 100,000 freight cars ordered by the Railroad Administration last year and to place in service such of these cars as are still in storage. The Railroad Administration has decided to place all these cars in service irrespective of whether or not the allocations are accepted by the railroad corporations.

"On September 6, 1919, 54,068 of these cars were completed and in service and 17,469 were in storage awaiting lettering and numbering. The total number of cars in storage was reduced from 34,245 on August 1, 1919, to 17,465 on September 6, 1919. During the week ending September 6, cars in storage were stencilled and placed in service at the rate of 616 per day. New cars at the rate of 218 per day were completed and placed in service, thus making a total of 834 cars per day placed in service. All available railroad shops are being used for the purpose of supplementing the work of the car shops in stencilling cars in storage. The total number of these cars placed in service daily will increase during the next few weeks."

W. T. Tyler, director of the Division of Operation; Edward Chambers, director of the Division of Traffic, and Max Thelen, director of the Division of Public Service, have been appointed a committee to investigate all phases of the car supply situation in an effort to improve it, and it is understood they will confer with a large number of shippers who have been making complaints, including a committee appointed by the National Industrial Traffic League at its recent meeting at Pittsburgh, which sent a telegram to the director general urging an improvement in service and asking an opportunity to consult with him at Washington. Mr. Thelen attended the league meeting and made a report of it to Mr. Hines.

Loss and Damage Freight Claims Reduced

The efforts of the central administration at Washington, and of the regional directors, federal managers and freight claim agents to establish uniform practice and prompt settlements of loss and damage freight claims are showing very gratifying results, according to a statement issued by the Railroad Administration.

The Railroad Administration has caused to be compiled figures with respect to the unsettled loss and damage freight claims on roads under federal control, from which it is noted that on April 1, 1919, there were 806,707 such claims unsettled, whereas on August 1 this figure had been reduced to 519,316—a decrease of 287,391, or 35.6 per cent., in the number of unsettled claims.

Of the total number of outstanding claims on April 1, 1919, 363,476 had been outstanding four months or over. On August 1, this figure had been reduced to 218,424, a decrease of 145,052, or 60.1 per cent.

Statement by regions of loss and damage freight claims unsettled and on hand over four months:

Unsettled Claims

Region—	April 1 1919	May 1, 1919	Decrease	June 1, 1919	Decrease	July 1, 1919	Decrease	August 1, 1919	Decrease
Eastern	261,716	231,970	29,746	200,431	31,539	176,220	24,211	162,433	13,787
Allegheny	129,013	113,772	15,241	105,413	8,359	97,686	7,727	91,309	6,377
Pocahontas	9,158	8,419	739	7,245	1,174	5,093	2,152	4,757	336
Southern	133,724	121,174	12,550	110,346	10,828	95,844	14,502	80,910	14,934
Northwestern	141,204	129,617	11,587	118,247	11,370	104,518	13,729	93,469	11,049
Central Western	88,210	79,073	9,137	71,883	7,190	62,366	9,517	55,538	6,828
Southwestern	43,682	38,038	5,644	35,509	2,529	33,945	1,564	30,900	3,045
Total	806,707	722,063	84,644	649,074	72,980	575,672	73,402	519,316	56,356
				Over Four Months Old					
Eastern	121,892	108,226	13,666	94,059	14,167	80,641	13,418	71,909	8,732
Allegheny	58,765	53,134	5,631	51,315	1,819	46,154	5,161	40,011	6,143
Pocahontas	3,043	2,691	352	2,695	596	1,561	534	1,291	270
Southern	71,927	55,361	16,566	52,636	2,725	47,235	5,401	37,886	9,349
Northwestern	65,076	53,874	11,202	52,368	1,506	47,600	4,768	43,131	4,469
Central Western	31,598	25,905	5,693	24,123	1,782	20,819	3,304	17,655	3,164
Southwestern	11,175	9,834	1,341	8,076	1,758	7,575	501	6,541	1,034
Total	363,476	309,025	54,451	284,672	24,353	251,585	33,087	218,424	33,161

Traffic Committees Directed to Clear Their Dockets

As another step in preparation for the wind-up of the affairs of the Railroad Administration, Directors Chambers and Thelen, of the Divisions of Traffic and of Public Service, have sent letters to the chairmen of the Railroad Administration's territorial freight traffic committees, stating that it is desired so far as possible to clear the dockets of the various committees of pending subjects prior to the end of federal control. With this end in view, instructions are to be issued to all committees to discontinue immediately all investigations with a view to uniformity of rates, minimum weights, rules and practices because considerable time is being spent on such work which should be employed in disposing of the subjects on the dockets. This is not intended

to apply to general investigations already specifically authorized and upon the docket. All committees are directed to review the subjects now on hand to determine whether with the assistance available it will be possible to dispose of them prior to the end of federal control. If the force available is not sufficient, request for the necessary help should be made immediately. In order to save time it is also suggested that the committees may be subdivided into sections for conducting hearings.

Earnings and Expenses for July

The Operating Statistics Section of the Railroad Administration has published figures covering the financial results of operation for the month of July for all Class I roads in federal operation. These comprise 232,004 miles of road, or 97 per cent of the total of 240,177 miles of road federally operated.

The condensed income statement shows:

	Month of July		Increase or decrease		Seven Months Ended July 31		Increase or decrease	
	1919	1918	Amount	Per cent	1919	1918	Amount	Per cent
Operating Revenues	$449,694,136	463,958,521	d 14,264,385	d 3.1	2,774,193,441	2,519,925,384	254,268,057	10.1
Operating Expenses	352,957,237	312,701,610	40,265,627	12.9	2,409,687,708	2,102,951,292	306,736,416	14.6
Net Operating Revenue	96,726,899	151,256,911	d 54,530,012	....	364,505,733	416,974,092	d 52,468,359	....
Taxes, Rents, etc.	20,057,422	14,209,806	5,847,616	....	130,839,909	128,673,886	2,166,023	....
Net Operating Income	76,669,477	137,047,105	d 60,377,628	....	233,665,724	288,300,106	d 54,634,382	....
Operating Ratio	78.5	67.4	11.1	....	520,470,832	520,470,832	.....	....
	.....	.....	.....	....	286,805,108	232,170,726	54,634,382	....
	.....	.....	.....	....	86.9	83.5	3.4	....

d Indicates decrease.

One-twelfth of the annual rental due the companies covered by the report amounts to $74,352,976, so that the net profit to the government for the month was $2,316,501 for these properties.

In making comparison with last year it should be noted that while the freight and passenger rates are on substantially the same basis in both years, the wage scale of July, 1919, is substantially higher than that of July, 1918.

The comparison between the seven months periods is substantially affected by the fact that the rate increases, approximately 25 per cent, which were in effect this year, became effective for passenger and freight traffic respectively the middle and latter part of June, 1918.

Mechanical Committee

At a meeting of the Committee on Mechanical Standards last week a special committee consisting of A. W. Gibbs, H. L. Ingersoll and John Purcell was appointed to consider the elimination of angle cocks from the air brake train line. A report and recommendation will be made to the committee at its next meeting in November. The committee also made some minor changes in the proposed standard designs for caboose cars, which, as amended, will be submitted to W. T. Tyler, director of the Division of Operation, for final approval.

Car Shortage May Result in Higher Demurrage Rates

The numerous complaints being received by the Railroad Administration of car shortages in various parts of the country have aroused interest in the question of whether or not it would be advisable to return to the plan of high demurrage rates which was in effect during the war. One of the first things that Director General McAdoo did last year was to raise demurrage rates, almost over night, to a scale ranging up to $10 per car per day. After the armistice shippers besieged the Railroad Administration with demands for a reduction and some time ago Director General Hines reluctantly consented to such a step but he intimated at the time that in the event of a car shortage it might be necessary to put the high rates back in order to reduce the amount of car detentions by shippers and consignees and it is understood that such a move is now being considered. By September 1 the huge freight car surplus that existed earlier in the year had been converted into a net shortage, whereas on September 1, 1918, while the country was still at war, there was a net surplus of 36,000 cars. This is taken as an indication that many of the measures of war time efficiency, in which the shippers co-operated last year, have lost part of their effectiveness. It is now more difficult to induce shippers to load cars to capacity, particularly since the Food Administration's power to compel heavy loading has been given up, and it is no longer regarded as pro-German to hold a car under demurrage for several days awaiting loading or unloading. The California Vegetable Union has been burning up the wires in asking Congressmen to get its members a better supply of refrigerator cars, claiming that they are being discriminated against when the cars are being used for other purposes, which they consider less essential. The Railroad Administration has arranged to furnish 300 to 400 cars a day to California for fruits and vegetables but in reply to the protests point out that under a maximum demurrage rate of $5 a day cars are frequently held at eastern terminals during the time that would be required to get them back to California for another load.

From the Chicago Post

"One At a Time, Please, Gentlemen"

New Developments In Car Lighting Save Money*

Extensive Investigations Have Brought About Improved Methods of Regulating Electrical Equipment

By E. Wanamaker
Electrical Engineer, Chicago, Rock Island & Pacific

A RESUMÉ OF THE HISTORY of railway train lighting compiled from the records available shows that great strides have been made in the art since the days of the first experiments. To one Thomas Dixon, driver of the coach "Experiment" on the Stockton and Darlington Railway, in England, in 1825, is given credit for having first used artificial light in a railway car. He was a man of generous motives, and having in mind the comfort and convenience of his passengers on dark winter nights he placed a penny candle on a table, also provided by him, in the center of the car. From this humble beginning railway train lighting has grown and kept pace with the development of illumination in other fields and with the growth of other transportation facilities. Today, electric systems for lighting cars cost hundreds of dollars per car and a large number of employees are necessary to provide and maintain this service.

A review of the progress made in developing car lighting shows it is divided into periods of approximately 25 years for each illuminant used. The period of candle light lasted from 1825 to 1850, when oil lights were introduced. Oil lighting in turn gave away to gas in 1875, and gas continued to be the most generally used illuminant until about 1900, when the application of electricity to car lighting began to receive wide attention by railroads, and in this country at least is now the system generally preferred for new equipment.

Straight Storage

The earliest electric system of which we have a record was a straight storage system used on the London, Brighton and South Coast railway in 1881. Primary batteries were also tried in France in 1885 on cars operating between Paris and Brussels. At about this same time straight storage lighting was tried by the Pennsylvania Railroad and the Boston & Albany in the United States, and on the first-mentioned road this was for many years the electric system most used. Such a system requires an expensive charging plant at each terminal. Its main disadvantage is the limited time which a car can be kept in service without being held for charging and the liability of light failure due to batteries becoming discharged when trains are delayed or held from regular charging terminals. Another disadvantage arises from the fact that cars equipped with this system cannot be operated on branch lines or at isolated points where charging facilities are not available.

The "Head-End" System

"Head-end" equipment was first tried in 1887, when it was installed by the Pullman Palace Car Company in one of its composite cars operating between Jersey City, N. J., and St. Augustine, Fla., in the Atlantic Coast Line Special. In the same year, the Pennsylvania Limited was similarly equipped, and in 1888 the Chicago, Milwaukee & St. Paul also had a train equipped in this manner.

The head-end system was first tried out with a generator in the baggage car and no batteries, but due to frequent light failures caused by the trains being parted and the locomotives being cut off at division points, it was found necessary to place batteries on the first and last cars of each train so that if a train was parted to cut out or cut in cars, each section would have light. In some cases batteries were applied to each car. This greatly increased the time that lights could be depended upon in case of the generator unit being out of service and also made it possible for each car to have light when cut out.

Various means are used to control the lamp voltage and battery charging rates. Each road seems to have developed a system to meet conditions as they exist on its particular lines, which has resulted in several different schemes of wiring, battery charging and operation, all of which give results more or less satisfactory.

An axle-driven head-end system has been designed to furnish power for lighting the train and charging the batteries from a single unit, the batteries being distributed throughout the train, as for instance, one set in the baggage car, one in the observation or dining car, and sometimes one in the middle of the train. The number of batteries used and their location are governed by local conditions.

While this system is not liable to light failures, due to lack of steam, it has the same disadvantages as the steam driven, head-end systems, namely, that cars not equipped with batteries are dark when cut out of a train, that they are not interchangeable when operating on foreign lines, and are liable to light failure due to small battery capacity when trains are delayed or tied up. It would, therefore, seem that this system is unsatisfactory for universal operation.

For suburban and branch line service, the straight head-end system without any auxiliary battery has been found very economical and successful. The present practice for this class of service is to mount the turbo-generator on the locomotive in a manner similar to that used for mounting headlight turbines, the generator being of sufficient capacity to furnish current for the headlight and cab lamps and the maximum number of cars usually assigned to this class of service.

A three-wire system of wiring and standard train line connectors are used for making connections between cars and locomotive. No doubt, in the near future this system will be used more extensively on branch lines due to the low first cost, low maintenance cost, and the ease with which the installation can be made to existing power and rolling stock. All cars are similarly wired, and the number of cars in a train is only limited to the capacity of the turbo-generator and train line wires. Low first cost results from the simplicity of the car wiring system, which includes only a train line circuit and one lamp circuit connected to it with a fused knife switch in a steel switch box.

Credit for the earliest attempt at lighting a train with axle-driven equipment is given to the London Brighton and South Coast Railway, on which a crude system was tried out in 1883. Since that date development has gone on unceasingly, and individual axle-driven systems are now most generally used for train illumination in this country.

After years of test only one form of transmission for driving the generator is in general use. Various forms of belts and direct drive have been used, but due to the variable relation between the axle pulley and the armature pulley, and the climatic conditions, the rubber belt up to the present has been found to meet the requirements most economically.

* Abstract of a paper presented at the opening meeting of the Western Railway Club, Chicago, on September 15.

Some of the first generators were suspended from the car body, others were mounted on the truck. Much time has been spent in improving generator suspensions, which has resulted in the elimination of many wearing parts, thus simplifying and reducing the maintenance costs.

The body hung suspension is favorable to the maintenance of the generator and possibly to the car truck. With it the belt is considerably longer than with the truck type suspension. Therefore, the belt life must be increased in the same proportion as the length is increased in order to keep the belt cost per car mile the same. Much is claimed for both types of suspensions, each having its possibilities, the conditions under which they operate and the condition in which they are maintained being important factors.

An important point in connection with axle lighting is the proper application of axle pulleys. If they are not properly applied the belt life will be short and the maintenance cost high. In a great many cases axle pulleys are applied to eccentric axles which should have been turned to insure a perfect pulley seat. In some cases pulleys are applied with improper pulley bushings. Eccentric pulleys and small belt clearances over the brake beam comprise two of the main causes of short belt life. Farsighted mechanical men on some roads have made provisions for successful and economical operation of the belt drive by using turned axles or by turning a pulley seat on hammered axles to insure concentric pulleys. Also in some cases special brake rigging is being used to give ample belt clearance.

Maintenance

To secure good service from the entire equipment at a low operating cost a standardized systematic method of maintenance must be used. With the present design of equipments the belt cost constitutes the second largest single item of expense. Records should be kept from which individual belt mileage can be computed. From these records any car using an excessive number of belts will be noted and steps taken to correct any defects found.

At the periodical shopping of cars the electrical equipment should be thoroughly overhauled and placed in a first-class condition, all worn parts being removed and defects corrected. If this is done thoroughly heavy repairs will seldom be found necessary between the shopping periods.

A systematic inspection of the generator and suspension should be made each trip to see that all parts are in good condition. Once each year the generator should be dismantled and all parts thoroughly cleaned, fields and armature painted with insulating varnish and new grease applied to ball bearings.

Train-Line Facilities and Fixtures

On the majority of railroads, facilities are provided for making connections from car to car so as to provide light in a defective one. It is the almost unanimous opinion of car-lighting engineers that with the present equipment, facilities for train-line connections are essential if light failures are to be avoided, connectors being especially desirable for the protection of mail cars.

The tendency in fixtures is toward simplicity of design to harmonize with the interior construction of the car. Center-deck lighting seems to be generally preferred with a sufficient number of units, properly shaded, to give uniform distribution. Enamel finishes the same color as the car walls or ceiling at the point where the fixtures are located are most used, but there is reason for believing that in time the roads will again prefer metal finishes, as these, when properly applied to fixtures of pleasing design, help to improve the interior appearance of the car. In recent years statuary bronze has been the metal finish most used.

A matter of great importance is that of careful selection and design upon which depends effectiveness of the installation, both as regards light distribution and appearance. These various questions involve a study of intrinsic brilliancy, intensity, distribution and color.

Batteries

There are two distinct types of storage battery in use in car lighting service at the present time, the lead acid battery and the nickel-iron alkaline battery. Of the lead batteries there are two general types of plates, the Plante and the Faure. For a given output, the Plante is more costly, more bulky, and heavier than the equivalent pasted plate type. Thus far this type is more durable and better able to withstand the operating conditions incidental to car-lighting service. It is the type most used in car-lighting service, but some car-lighting engineers claim that the advantage it has had over the Faure type is decreasing with the increased cost of labor and improved methods for battery protection. The nickel-iron alkaline battery is of comparatively recent development and is radically different from the lead acid battery. It is light weight and mechanically rugged.

The cost of maintaining batteries constitutes the largest single item of expense in the maintenance of car-lighting equipment, and the entire development of regulators or apparatus for battery protection while the car is enroute has been made with a view of prolonging the life and reducing the cost of maintenance. However, good standard practice for handling batteries is also essential if this cost is to be kept within reasonable limits.

With the present design and construction, the cleaning period is comparatively short. By a change in design the same capacity could be maintained and yet the space for sediment could possibly be doubled, thus greatly prolonging the cleaning period, insofar as it is based on this particular feature. Some manufacturers are now endeavoring to produce a battery which will not have to be removed from the car for cleaning during the life of the positive element, or at least to prolong the period of time between the cleaning far in excess of present practice.

Battery Protection

The control of the generator output while the car is enroute has offered one of the most difficult problems to be overcome, since the life of battery and lamps depends to a large extent upon regulation.

Without the proper protection, the battery life may be only a third of what it should be. In a similar manner also the cost of maintaining the generator depends upon the regulation.

The duties of the regulator for car-lighting service are: (1) To connect the battery to the generator at the minimum speed and voltage for which the machine is designed to operate and to disconnect the battery when the speed and voltage fall slightly below the first mentioned value; (2) to provide a variable voltage to charge the battery at the proper rate, which is determined by the state of charge, and at the same time carry the lamp load, in the event it is turned on, up to the capacity of the generator; (3) when the battery has attained a full state of charge, the regulating means must prevent further charge thereafter, leaving the generator capable of supplying current to lamps or other translating devices; (4) to provide constant voltage on lamps while the car is in motion or at rest.

There are two types of regulators in general use, designed with the view to meet these requirements: First, ampere hour meter control; second, potential control. The first mentioned method charges the battery by starting at a high rate, which is gradually modified to a predetermined lower rate, and when a predetermined number of ampere hours have been put into the battery as indicated by the meter, the potential is reduced by the regulator sufficiently to prevent further charge. With this method it is necessary, for proper battery protec-

tion, to maintain the ampere hour meter in step with the state of charge of the battery.

It is apparent that the proper battery protection depends not only on the proper functioning of the meter itself, but also upon the battery remaining in normal condition in order that the battery and meter may remain in step with each other. Owing to battery characteristics and operating conditions, the meter does not always indicate the true state of charge.

In the second method of charging heretofore referred to as "potential control," inherent characteristics of the battery are taken advantage of to govern the charging rate, and when the battery has attained a full state of charge, to prevent further charge thereafter. With most potential control equipments, a current limit feature is embodied with the potential regulator to hold the maximum current to a value consistent with the generator capacity.

Many forms of potential control equipment have been placed on the market, most of which operate at potentials such that in the course of charging, the battery is caused to gas. In 1913 and 1914, efforts were made by the Rock Island to operate equipment at a maximum voltage of 2.3 volts per cell. At the beginning the experiment was found to be a failure, as in many instances cars on most runs arrived at terminals with the batteries in a decidedly discharged state. There were, however, cars in fast main-line service on which the batteries remained in a full state of charge and at the same time were not being overcharged, the batteries requiring flushing on an average of about every six months. This was encouraging and led to investigations which developed that the failures were not due to the fact that the low voltage would not keep the batteries charged, but resulted from the fact that this voltage of 2.3 volts per cell was not attained except at very high train speeds. In one test covering a period of five hours, the equipment maintained full voltage and load for less than 10 per cent of the running time. On the face of the evidence it looked as though a larger generator designed to give full voltage and load at a lower train speed would be required, but fortunately after further investigation it was found that with certain refinements in the regulating device, a lower cut-in speed could be secured.

A test made with an improved regulator with the same generator that was used on the previous test and over the same run, showed the following comparison:

Full load—Old regulator—35 miles an hour.
Full load—Improved regulator—24 miles an hour.
Full load time in 5 hours—Old regulator—10 per cent.
Full load time in 5 hours—Improved regulator—41 per cent.
In this case the capacity of the unit was increased 300 per cent.

The net results realized from the use of the improved regulator are increased capacity of the unit due to obtaining generator output at low train speed, and increased battery life, which is brought about by the following:

(A) The work imposed upon the battery of furnishing energy for the lights is greatly reduced by the increased working time of generator, and also by the fact that the current for the lights is supplied by the generator, and not by the battery, at all times after the generator cuts in.

(B) The battery is charged at the proper rate to prevent gassing and overheating with the attendant ill effects.

(C) The battery is protected from overcharge and the forming away of the reserve lead in the battery elements.

Even though only a part of the Rock Island equipments have been improved, the cost of operation and maintenance per car per month has not increased, in spite of the increased cost of labor and material, and a very large part of the savings is attributed to the better protection provided for the battery.

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The Conference of "Leaders of National Thought," Which Met at Glenn E. Plumb's Call in Washington, August 9 to 11

Seated, Left to Right: Edward W. Bemis, of New York, Economist; Henry J. Allen, Governor of Kansas; Judge Walter Clark, Chief Justice of the Supreme Court of North Carolina; E. F. Dunne, Ex-Governor of Illinois.

Standing, Second Row, Left to Right: Walter L. McMenimen, Deputy President Brotherhood Railway Trainmen; R. S. Sexton; J. A. H. Hopkins, Chairman of the Executive Committee of the Committee of Forty-eight; Morris L. Cook, Consulting Engineer of Philadelphia; James J. Forrester, Grand President, Brotherhood of Railway and Steamship Clerks, Freight Handlers, Express and Station Employees; J. F. Anderson, Vice-President, International Association of Machinists; A. B. Garretson, Advisor, Order of Railway Conductors; Glenn E. Plumb, Counsel, Organized Railway Employees of America; H. E. Wills, Assistant Grand Chief, Brotherhood Locomotive Engineers; Edward Keating, Manager Plumb Plan League; P. J. McNamara, Vice-President, Brotherhood of Locomotive Firemen and Enginemen; Frank P. Walsh; William M. Clark, Vice-President, Order of Railway Conductors.

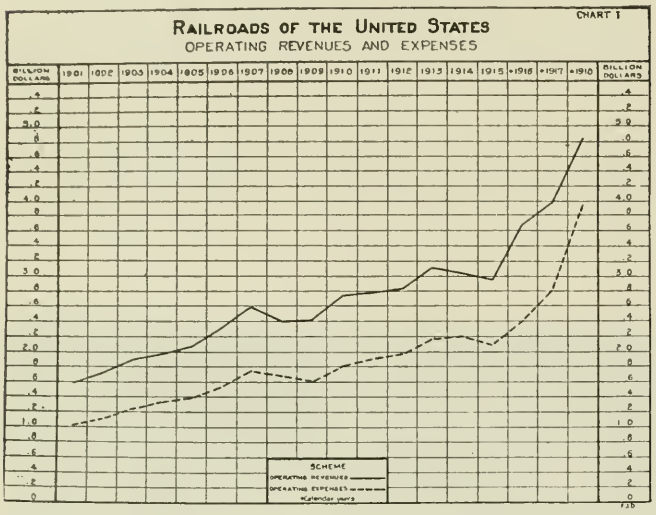
Back Row, Left to Right: Patrick Lee; C. C. Dill; M. E. Pew; Ray McClung; Frederic C. Howe, Commissioner of Immigration, Port of New York; Capt. O. S. Beyer, Jr.; Basil Manly, Former Joint Chairman of the National War Labor Board; Lincoln Calcord, and H. B. Brougham.

The Logarithmic Chart in the Analysis of Railroad Operations

By F. J. Deesen

The benefits derived from the use of graphic charts in analyzing statistics relative to railroad operation have resulted in their general adoption, not only in the United States, but throughout the civilized world. There are various forms of charts employed, depending upon the subject matter discussed, the most common of these being that in which equal distances are scaled off horizontally to represent time (years, months, etc.) and equal distances scaled off vertically to represent amounts (dollars, tons, miles, etc.). Chart I is an illustration of this form. The chart is divided lengthwise into 18 equal segments to represent each of the years from 1901 to 1918, and vertically into equal segments each equivalent to $200,000,000. The operating revenues are plotted and connected with a solid line, and the operating expenses plotted and connected with a broken line. The distances between the solid line and the broken line show the net earnings.

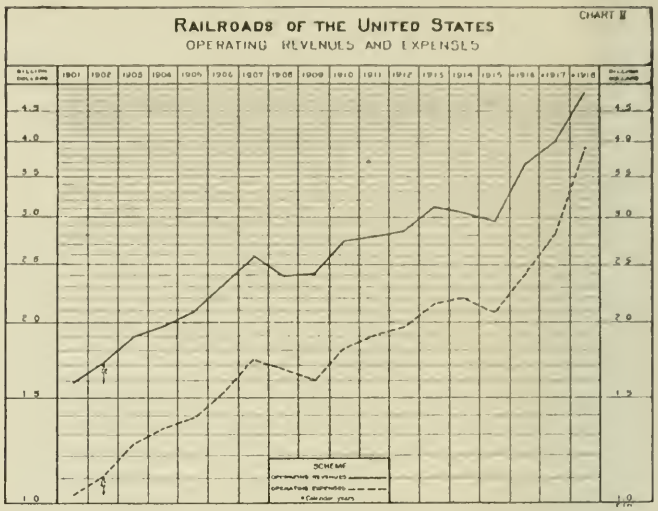
That the general trend of affairs may be more readily as-



certained from a chart like this than from a column of figures is self-evident. A glance at the chart will show the tremendous increase in operating revenues from about $1,600,000,000 in 1901 to over $4,800,000,000 in 1918, accompanied by a tremendous increase in operating expenses from $1,000,000,000 to nearly $4,000,000,000.

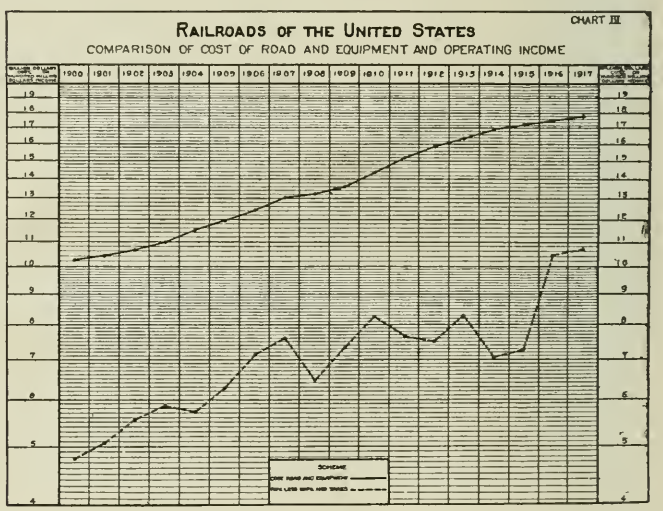
There is, however, one deplorable defect, in a chart of this nature, in comparing two sets of figures, as is done in this instance. From all appearances it seems that since the two lines do not come materially closer together, the roads are being operated just as efficiently in 1918 as they were in 1901, but consideration must be taken not as to whether expenses have increased the same or less in actual dollars as operating revenues, but whether expenses increased in the same or less *proportion* as revenues; in other words, the main question is, are the roads receiving the same proportion of their gross earnings in net as they were previously. From Chart I we cannot readily ascertain this. Of course net earnings could be plotted on this chart, but it would still fail to show whether they increased at the same rate as gross.

To overcome this defect, the logarithmic chart may be employed. Chart II illustrates the same figures plotted on the logarithmic scale as Chart I. It will be noted that the charts are divided in the same way in representing the years. The vertical scale on Chart II, however, employs the distances as used on the slide rule, so that an increase of any per cent on one part of the chart will show the same curve as an increase of the same per cent on another part. For instance, it will be noted that the distance from 1.0 to 2.0 is the same as that from 1.1 to 2.2, from 1.2 to 2.4, from 2.0 to 4.0, etc., each of which represents an increase of 100 per cent; that the distance from 1.0 to 1.5 is the same as that from 1.6 to 2.4, from 2.0 to 3.0, etc., each of which represents an increase of 50 per



cent; and so on for any percentage of increase. The same may be said of decreases.

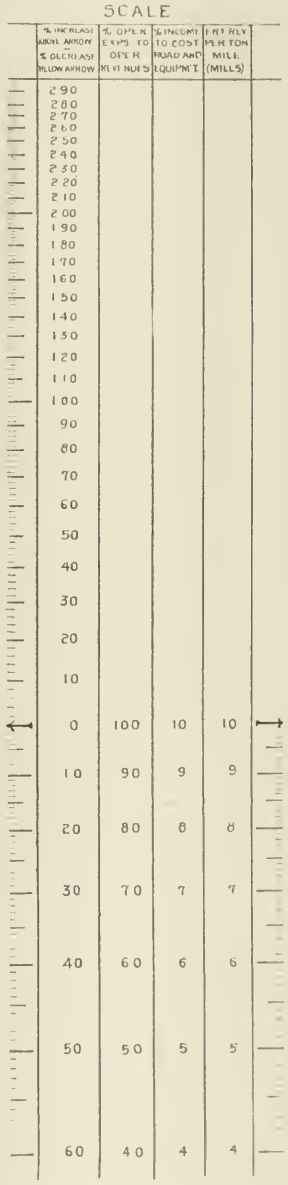
By plotting the logarithmic distances on a separate sheet of paper, scaling off the percentages of increase and decrease, as is done in the first column of the accompanying diagram, and applying this scale against the figures plotted on the chart, the percentages of increase or decrease can be easily read without any further figuring. For instance, placing the ar-



row of the scale on the 1901 operating revenues, 1.59, and reading straight up to 1902 operating revenues, 1.73, as designated by the arrow on the chart, we find that they have increased nearly 9 per cent; placing the arrow of the scale on 1901 operating expenses and reading straight up to 1902 operating expenses, we find that they have increased a little over 8 per cent. If we do the same thing with the figures plotted for 1917 and 1918, it will be found that an increase of a little over 21 per cent in operating revenues has been accompanied by an increase of over 40 per cent in operating expenses. Percentages of decreases may be read in like man-

ner by placing the arrow on the figure plotted for one year and reading straight down to that plotted for any subsequent year. In this way any year's operations may be compared with any previous year's operations. Comparing 1918 figures with those for 1901, operating revenues increased slightly less than 205 per cent, and operating expenses increased over 280 per cent.

Further use of the scale may be made in determining the ratio between the operating revenues and operating expenses of any year by applying the simple rules of division of the

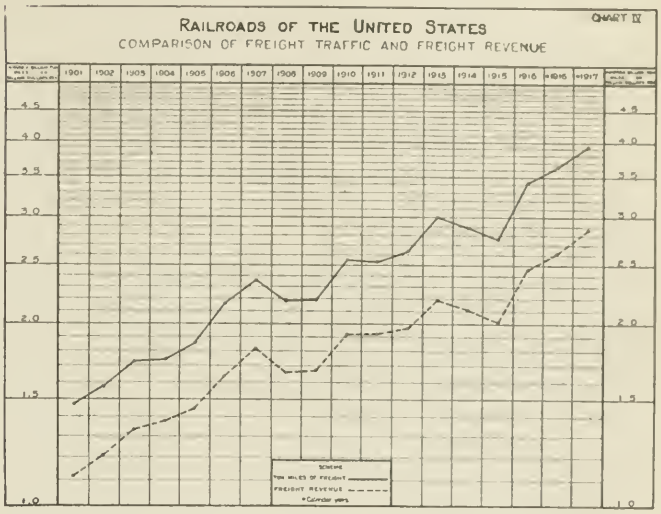


slide rule. If we place the arrow upon 1901 operating revenues and read down to the operating expenses of that year, it will be found the scale reads in the second column nearly 65 per cent, while doing the same with 1918 figures the scale shows a ratio of over 81 per cent; in other words a greater proportion of the gross earnings are going towards meeting expenses in 1918 than in 1901.

The logarithmic chart, therefore, shows both the rate of increase of two quantities and the ratios between them. A further comparison of Chart I and Chart II will disclose further advantages of comparing two sets of figures by means of the logarithmic chart.

Chart III is a comparison of the cost of road and equipment and operating income. The same scale may be used to read percentages of increase and decrease. Since the cost of road and equipment is shown in billion dollars and income in hundred million dollars, in order to determine the ratio between the two, the figures in the second column of the scale should be divided by 10, as is shown in column 3. Using the scale, then, the ratio of operating income to cost of road and equipment in 1900 is slightly over 4.6 per cent as against 6.0 per cent in 1917.

Chart IV gives a comparison of freight traffic and freight



revenue. The percentages of increases and decreases may be ascertained in the same manner as in Charts II and III. The figures in the fourth column of the scale will give the freight revenue per ton mile in the same way as the ratios were ascertained in Charts II and III.

It is impossible to enumerate all of the possible different comparisons that can be advantageously made on the logarithmic chart, such as that between locomotive miles and train accidents, etc.

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So Acute Is the Housing Problem in England That the Owner of This Ex-Railway Car Has Been Overwhelmed With Applicants Who Desire to Rent It

Roadmasters Hold Successful Meeting At Chicago

Large Attendance and Good Reports and Papers Characterize Thirty-seventh Annual Convention

The Victory or 37th annual convention of the Roadmasters' and Maintenance of Way Association was held at the Auditorium hotel, Chicago, on Tuesday, Wednesday and Thursday of this week. The attendance was the largest in the history of the association, over 600 roadmasters and higher maintenance of way officers being present. This attendance was the result in large measure of the active support of the United States Railroad Administration, instructions having been sent to all federal managers to arrange for as many roadmasters and higher maintenance officers to attend this meeting as could be spared from their work. As a result men were present from all part of the United States and also from Canada.

The officers for the past year were as follows: President, J. B. Oatman, division engineer, B. R. & P., Du Bois, Pa.; first vice-president, J. W. Powers, supervisor, N. Y. C., Rochester, N. Y.; second vice-president, W. P. Wiltsee, principal assistant engineer, N. & W., Roanoke, Va.; secretary, P. J. McAndrews, roadmaster, C. & N. W., Sterling, Ill.; and treasurer, C. King, supervisor, L. I., Jamaica, N. Y.

The convention was called to order at 10 o'clock Tuesday morning by Mr. Oatman. In his opening remarks he referred to the difficulties which have confronted the association during the past year, particularly because of the feeling that has prevailed among some members that the association should participate in discussions of wage matters and seek to secure more consideration for roadmasters. Mr. Oatman stated that the officers had decided that the association should adhere to the purpose for which it was originally established, namely, the improvement of maintenance practices.

Maintenance of Passenger and Freight Terminals

In large terminals, sections should be established so that yard gangs will be of a uniform size of 15 to 18 men, with a foreman and one assistant foreman. Main line gangs should not be as large as those employed in yards, as the work must be done to a higher standard and needs closer supervision. Section limits should be worked out by the supervisor or roadmaster on the equivalent mileage basis, giving due consideration to traffic and other local conditions. In terminals a regular force of laborers should be employed throughout the year to take care of regular maintenance work, with extra gangs for such work as rebuilding ladder tracks, laying rail and other special work.

In large terminals, a regularly assigned work train, with a work train gang, is necessary for the economical handling of material and supplies. The work train should have a designated headquarters, and a track or tracks assigned to work train equipment and maintenance of way material. Cars so placed can be obtained and handled by the work train without delay. With our present workday of eight hours and limited forces, it is necessary that work trains be given more opportunity to do their work than in former times.

The policing of yards is a problem of ever-increasing seriousness and varies with the different yards and kinds of freight handled. Cleaning yards with a work train with flat cars and a gang of 30 men will cost approximately $15 per thousand feet of track. Such tracks as station, coach yards and repair tracks should be cleaned daily by regularly appointed attendants, and the cleaning put in a rubbish car, if one can be placed conveniently. In yards where the daily accumulation is heavy, an incinerator plant is advisable. Much can be accomplished in policing through cooperation. The cleaning of yard tracks, where the condition can be prevented, constitutes one of the greatest wastes of money in the maintenance of way department, and should be called to the attention of the management in order that necessary action be taken to prevent the continued leakage.

In heavy classification yards it is generally difficult to obtain a track to make repairs, and for this reason repairs are generally made out of face. Arrangements are made for a designated track to be taken out of service for the working period of the day; a car with necessary supplies, such as ties, angle bars and other material is set on the track. The day's work is carried through and the track is restored to service during the night. Where a sufficient force is available, the track can be worked from both ends in the same manner.

In such yards the rebuilding of ladder tracks is the most difficult work in the maintenance of terminals. In doing this work it is necessary that everything possible be done in advance of breaking the track. All material must be checked, all rail cut and drilled for lead rails, all switch ties properly marked, so lengths can be identified at a glance. Where conditions permit, all material should be placed on the ground opposite the ladder. Where this is not consistent, all material should be assembled on cars, so loaded that it can be unloaded as used. Arrangements should be made to suspend operation over the ladder for a period of four hours, during which time a gang of 40 men experienced in laying switches can renew three switches. All old material should be removed to a place of safety on the same day the work is done. On ladder tracks, where the use of the track cannot be given up for any definite period of time, it is necessary to renew the rail on the old ties, a switch at a time, and the ties singly. This is very expensive and it is difficult to accomplish good work.

L. M. Denny, supervisor C. C. C. & St. L., chairman.

Discussion

Several speakers objected to any reference to the Railroad Administration's policy toward reduced maintenance expenditures. However, a motion to exclude reference to "the past six months of retrenchment" in the first paragraph was lost, although one relative to "limited forces" in the paragraph on work train service was sustained. The second paragraph elicited some criticism with reference to the use of smaller size gangs on main line work, but after it was explained that this referred to main lines *within terminals* and had no application to lines outside, a motion to approve this paragraph without change was passed.

In discussing the paragraph on work train service several speakers advocated the use of a motor truck for the delivery of materials about an intensively operated terminal, since the truck could be used on city streets without any of the delays incident to the delivery of material by work train on congested tracks. The committee was instructed to revise the paragraph so as to make proper reference to the advantage of motor truck service under certain conditions.

In the matter of eliminating the sharp angle frogs in the reconstruction of yards a number of members called attention to the fact that this was rarely possible. One speaker called attention to the opportunity for reducing the curvature of a

turnout having a given frog angle by continuing the turnout curve to the switchpoint and the point of frogs through the use of specially constructed frogs and switch rails. Some objections were also raised to the use of manganese tips on switches and considerable contradictory testimony was brought forth without leading to any definite conclusion. Several eastern men gave detailed information on the use of switchrail housings in the stockrails made by a special planer.

The use of a locomotive crane with a clamshell bucket was advocated for cleaning yards. As carried out in practice, all waste material is shoveled into the space between tracks and then picked up by the crane.

Highway Crossing Construction

Only a few roads have yet adopted such excellent substitutes for lumber as asphalt, road oil, macadam, etc., for farm, street and highway crossing construction, while concrete is not a novelty on railroads, as for years past its value and usefulness have been developing. A report from one supervisor's division shows that it required 53,678 ft. of lumber, 3,226 lb. of crossing spikes and a labor charge of $5,642.96 to maintain the public and private crossings on his territory for one year, the cost of the plank alone being $1,717.70. If this amount of lumber can be conserved on one division, assuming that it requires 512 ft. for one single track crossing, or twice the amount for double track, and assuming also that there are 50 or more highway crossings on each of 3,000 supervisors' divisions on the railways of the country, the use of some other material than lumber would mean the conservation of 76,800,000 ft. b. m., amounting to $2,457,600. And this does not include farm crossings or streets sometimes planked solidly from one side to the other of six or more tracks.

Since a crossing must be kept up continually, the method of maintaining it should be simple as to be grasped readily by the average workman. To be practical, the work should be performed with the least possible equipment and this should be of such character as will always be at hand. To be economical, the expense must be within reason and not exceed that of other methods and materials that are used for work of like nature producing like results.

The committee recommends that as far as possible all rail joints be eliminated in road crossings; that good drainage be installed, and that all road crossings in high speed tracks be made of crushed stone of standard size, mixed either with good road oil, bituminous macadam, asphalt or other good substitutes for lumber. In parts of the country where there is considerable frost and where tracks heave, the sealing of the crossings with these substitutes will keep out the moisture and frost and eliminate the heaving of tracks to a considerable extent, also the heaving of crossing planks, which is a source of danger, is eliminated. On slow speed tracks and where heavy trucking is done in yards, etc., tracks should be paved.

Excellent results have been obtained with crossings constructed of good clean crushed stone (ballast size), from a depth of 2 in. below the bottom of the ties up to the level of the under side of the head of the rail, and extending 2 ft. outside the rails, rolling or tamping it thoroughly, the rails having first been painted with hot asphalt below the under side of the head, and a mixture of fine crushed stone (up to ½ in.) and hot asphalt being packed about them for a distance of 8 in. on each side. The entire crossing is then covered with fine stone up to the level of the top of the rails, sprinkling it freely with a good quality of road oil, while fine stone is scattered. The cost of such a crossing is $11.95 for a single track, and $25.45 for a double track crossing (1918 prices) as compared with $28 and $56, respectively, for plant.

A similar type of crossing can be built by packing a mixture of crushed stone (½ in.) and hot asphalt about the rails for a distance of 4 in. on each side and then filling in with a mixture of bituminous macadam with a ½-in. top dressing of ½ in. stone mixed with bituminous material and rolled thoroughly. The cost of such a crossing is $6.55 and $16.25 for single and double tracks, respectively (1918 prices).

A third form of construction is secured by filling the spaces between the ties and between the tracks for the full width of the road between the outside ends of the outside tracks and for the full width of the highway with clean stone ballast thoroughly settled together, this stone of ballast size to come up to the under side of the head of the rail. A good grade of stone screenings containing particles of stone up to ½ in., but with the fine dust and loam screened out (or a clean, fine gravel containing a very small percentage of loam makes a good aggregate) is then mixed with two gallons of good No. 1 road oil to which one gallon of cold water has been added. Two gallons of this mixture are added to one cubic foot of aggregate and mixed well until all particles are well coated with this emulsified asphalt, the same as in mixing concrete. The concrete thus made is then spread over the surface of the road and rolled or tamped thoroughly to the level of the tops of the rails. Where the existing crossing is good except for the top surface, all that is necessary is to scrape off this top surface for about two inches below the top of the rail and proceed as above.

The cost of such a crossing is $13.95 for single track, and $29.45 for double track.

P. M. Dinan, Supervisor, L. V. (Chairman).

Discussion

The discussion of this report hinged largely on the recommendation of the committee that all rail joints be eliminated in road crossings. A number of members described their practice of using 39-ft., 45-ft., 60-ft. and 66-ft. rails through crossings in order to avoid joints in those limits. In some instances rails are cut in half and laid with square joints through the crossing to secure this result. The fact was brought out that it has become the recent practice of a number of rail mills to charge a premium of $5 or $6 per ton for rails longer than 33 ft.

This has tended to discourage their use in some instances, but even at this increased price a number of members expressed the opinion that it was a good investment and urged their extensive use.

A number of the speakers called attention to the large amount of timber being used for crossings and the saving of wood to be accomplished by using a substitute crossing. At the same time attention was drawn to several objections to the macadam crossings, including the difficulties encountered on sharp skews and the fact that some communities objected to their use. It was also conceded that they are not entirely satisfactory for paved city streets. However, it has been found that, with proper construction, most towns may be educated to the macadam construction and even induced to co-operate in carrying out the work. In recommending the use of a substitute for plank crossings, attention was called by several to the hazards of the plank crossing due to loose planks being picked up by the pilots of engines. To be a success a macadam crossing must have a good binder and even with this some material gets on the rail and causes a certain degree of pitting, but this was not considered at all serious.

The report was accepted by the association with the exception of formula No. 3, which the chairman stated was still experimental. This involves the use of an emulsified asphalt, concerning which considerable expert information was presented, following which this portion of the report was accepted as information.

The Labor Supply

Hugh Reid, of the United States Department of Labor, Washington, D. C., spoke Tuesday afternoon on the labor supply, the factors which are influencing it, and the outlook for the future. He stated that there are approximately 37,000,000 persons in gainful occupations in the United States, nearly 11,000,000 of whom are engaged in farming. Of the remainder approximately 3,594,000 are unskilled. The United States is a consumer of unskilled labor, converting it into skilled artisans. Its supply of unskilled labor comes almost wholly from abroad.

Previous to the war over 1,000,000 immigrants entered the United States annually, of which approximately 600,000 were unskilled. Following the outbreak of the European war, this immigration was reduced to 25 per cent of normal at once and in 1918 and 1919 it was only 9 per cent of the pre-war figure, while in the latter years the percentage of unskilled labor to the total fell from approximately 50 per cent to less than 25 per cent. During the war large numbers of unskilled men also returned to their homes. With immigration shut off, a swirling movement of labor was set up in the United States, as a result of which about 600,000 negroes came North, creating crop shortages in the South.

Speaking of the future, Mr. Reid stated that in his opinion no one can forecast accurately what may develop. The index to immigration to America is the industrial situation in Europe. He did not anticipate any great immigration immediately because of the expense and difficulty in reaching our shores. In his estimation the great problem is not that of the shortage of labor, but of its distribution. Because of the surplus which has ordinarily prevailed, the United States has never had to develop an elaborate system of labor distribution such as has been built up in Europe in the form of public employment exchanges.

In conclusion Mr. Reid stated that it was his belief that the labor situation will remain practically as it is now insofar as it may be affected by conditions outside of the United States.

Talk by Mr. Felton

At a meeting held on Tuesday evening, S. M. Felton president of the Chicago Great Western and formerly director general of military railways at Washington, gave a talk on the part played by railway men in America's participation in the war. He explained the entire lack of facilities of the French for the transportation of American troops and supplies and outlined the manner in which our railway troops and equipment were assembled and organized.

Following Mr. Felton's address a group of moving picture films were shown, illustrating the manufacture of steel rails from the unloading of the ore to the loading of the rails for shipment.

Increasing the Efficiency of Labor

By C. A. Morse
Chief Engineer, C. R. I. & P.

There has never been a time in the past generation when it was necessary that there should be such radical changes in maintenance of way methods. We have always been able to get cheap labor and have, in fact, used the cheapest class. The result has been little incentive for the use of mechanical appliances or for being particularly careful that every hour of every man was put in to the best advantage. With the cost of labor doubled and the wages of section foremen increased 50 per cent, there opens up a big field for the careful study of the use of both man power and machinery on our maintenance of way work.

There are in my opinion many advantages in this change in the wages of both section foremen and track labor. In the first place, there was no class of men on the railroad that, considering the responsibility that rested upon them, were so poorly paid as the section foremen. They were and are responsible for the track on their sections 24 hours in the day, and a more faithful and loyal set of men as a class does not exist, I for one was much pleased to see them get the increase in salary that they did.

The low wages paid track labor gave us the poorest class of labor in the land, in fact—except in the country districts—we only got what was left after every one had taken the pick of the men, and we were breaking in much of the foreign labor that could not speak English. They worked in maintenance of way gangs until they could understand and speak a little English and then the best of them left for work that paid higher wages. One result of this was that we have been very short of materials from which to make foremen and many roads have put on special apprentices at increased wages in order to train men for foremen. With the increase in wages now being paid we will be able to pick our men, and also to have plenty of timber out of which to make foremen since the salary paid a section foreman will make it attractive for them.

The fact that we are going to be able to have a better class of men brings us another problem, which is providing proper housing facilities. Old car bodies, tie houses, anything that resembled a protection from the weather has been considered all that was necessary. It is a good thing that something has come to cause a change in such methods. We should all insist on good clean, commodious, comfortable and sanitary quarters for track laborers. There is no reason why a man working on the tracks of a railroad should not have a place to eat, sleep and rest that is comfortable and inviting and where a man can maintain his self-respect.

With choice men well quartered there comes the problem for the section foremen, roadmasters and maintenance officers of using the services of these men to the best advantage so that every hour's work of every man is done where and in such a way as to return the best results to the property.

Maintenance of way work has too often been done in a haphazard manner, this being caused to a greater or less extent by the many interruptions that break into a day's work. In order to get the best results from a certain expenditure on a section or roadmaster's division, the work should be systematized; it should always be kept in mind that maintenance of way begins at the outside of the right of way fence on one side of the right of way and extends to the outside of the fence on the other side.

It is customary to replace or put splices on a broken rail *at once* when discovered. Next in importance should be the replacing of a broken tie, as soon as possible after it is discovered. This on the principle that "A stitch in time saves nine." Ditching of cuts should be done systematically and not left for "odd time" work. There is no work that pays for itself so promptly as ditching cuts—it saves surfacing the track through the cut at least once and often twice a year. A day should be set aside and section gangs required to ditch cuts either all of that day or a half of that day, and the foreman should be required in his weekly report to show the number of lineal feet of cuts ditched on one side during the week and its location. Repairs to right of way fences should be handled in the same manner.

There has been an idea on some railroads, especially those where ballasting has only been done for a few years, that track ballasted with broken stone, gravel, slag, etc., should not be taken out of face, but that the low spots should be raised and the line and surface maintained in that way. *This is a mistake.* All ballasted track should be

taken out of surface once in every three or four years, and a section foreman should be required to take at least one fourth of his track out of face each year, doing what he does continuously to a face.

Another matter that has attracted my attention this season, particularly in the western country where we have had so much wet weather and where we have such great crops, including a rank crop of weeds, is that our section foremen do not seem to realize the advantage of keeping this vegetation out of the track and ballast material. They are inclined to chase weak spots rather than to get after the vegetation.

Digging out the grass and weeds permits the sun and wind to dry out the ballast and embankment, and when dried out any work done on the track stays there, while if wet it goes down again after a few trains have passed over it.

Track bolts should be tightened at least twice a year, and both the bolts and the joints should be given a coating of crude oil at the same time. Some roads are oiling the rail below the head, including spikes, tie plates, joints and bolts, and believe it economical to do so, especially where they have much brine drip from refrigerator cars.

In order to do maintenance of way work systematically a maintenance of way budget should be made up for each roadmaster's territory, sub-divided into section foremen's territory.

This budget should be divided:

(1.) Into the minimum organization that can keep up the track, not including tie renewals; (2) The additional help required to do work that is required at certain seasons, such as mowing right of way and the tie renewal program; (3.) The additional help required to do work that would be of benefit and that would tend to cheapen future maintenance cost, such as widening embankments and cutting surface ditches; (4) An amount to cover extraordinary expense due to weather conditions, wrecks, removal of snow, ice and sand, and other extraordinary expenses. This item should be based on average expenses for this class of work, say during the past five years, revised to fit present labor and material prices.

Under each of these headings the labor cost and material cost should be stated separately. This budget should be made up in detail as to lineal feet of rail of different weights to be relaid; ties to be renewed, divided as to main tracks and sidings; cubic yards of ballast of each kind required, giving location where rail and ballast are to be inserted; lineal feet and location of cuts to ditch; lineal feet and location of surface ditches; lineal feet and location of banks to be widened; number and kind of road way signs to be renewed, etc., etc. With a budget of this kind carefully prepared, each section foreman has his year's work laid out for him and has something to work to.

With high priced labor it becomes all the more necessary to keep tools in good repair, and in the case of axes, adzes, scythes, shovels and hoes that they be kept sharp. A tool grinder should be kept on the car at all times so that tools may be sharpened as soon as they become dulled.

There are several types of mowing machines made that can be attached to a motor car or hand-car; there are disc weed cleaners; tie tamping machines are in use on many roads, and experiments have been made in the use of a caterpillar tractor for mowing right of way, plowing fire guards and ditching cuts.

With the class of men that we can get for the wages paid at this time, we can operate any of these machines. Much good work is being done at present in the use of the oxy-acetylene torch in repairing worn frogs and switches, and study should be made to see how any class of work can be done the cheapest, and if some mechanical arrangement will cheapen the work it should be used.

Treated ties should be used to reduce maintenance expense. While a roadmaster may not have the authority to get them on his particular road, he can help to get the people on his road to thinking about the matter. The railroads that began using treated ties 10 years ago are reaping the benefit of the investment today in big figures; they are averaging about 200 ties to the mile of all tracks, while the average number of ties used on a road where treatment has not been used is over 300 per mile of all tracks.

Large sums are spent in squaring up ties where track has run and this has to be done at least once a year. By the use of rail anchors this can be avoided, and the labor of squaring up the ties and retamping them and of getting the track back in shape will be saved.

It would be a great thing for all concerned, including the men employed on the sections, if the work could be arranged so as to keep practically the same number of men on the section the year 'round. When one can provide steady work for men, they will make homes and be able to live much better and be more contented and dependable. Much work, such as relaying of rail, can be done in the winter by doubling up section gangs.

The heavy sections of rail now in general use make it necessary to use track laying machines, and by their use the number of men necessary in a gang employed in relaying rail has been cut down fully one-half. In a similar way on ballast work, by the use of convertible side and center dump cars, the amount of shoveling to be done in getting ballast in its proper location has been very much reduced. The steam shovel and the ditching machine, together with a modern spreader, have reduced hand labor to a minimum in widening cuts and embankments. There should be a steam ditcher on every operating division, and in many places on every roadmaster's division.

The roadmaster should also revise his methods to coincide with the new order of things, so as to keep in closer touch with the methods employed by the foremen to get the best work. The days of the roadmaster riding on the back of a passenger train and throwing off "butterflies" has about gone. While he should ride a passenger train over his territory in daylight about once a week to keep in touch with the riding of the track, he should get over his territory the balance of the time on a motor car or *on foot*. A roadmaster should plan to walk over every foot of his track twice a year. He should plan to walk over *one* section each week, having the section foreman with him, if possible.

The "eight-hour" day has reflected a greater hardship on railroad maintenance of way than on probably any other class of work, for the reason that the section gang's work is scattered over from 4 to 10 or 12 miles, and the men go to and from the work on the company's time. The result is that where hand-cars are used the effective time on track is only about 6½ hours, and even with motor cars it is only about 7 hours per day.

There is bound to be an adjustment of wages downward when things get settled in this country, but everyone should try and save something out of the present high wages. There is no class of people that find it harder to save money than railroad employees, owing to their being transferred from place to place, and thus being discouraged from purchasing real estate. Building and loan associations are today regulated by the states, the same as banks, and are safe places to invest money, and they have the advantages of taking monthly payments.

I want to suggest that you talk to your section foremen about saving some of their money in this way, and they may induce some of their men to do the same thing. The man who is saving money is more apt to want to work steadily and he is also more apt to be saving for the company that he works for.

Labor Saving Devices

By J. B. Baker

Supervisor on General Manager's Staff, Pennsylvania Railroad, Philadelphia, Pa.

The weight of the rail now in use makes it imperative that a power rail loader be used. Those in common use consist of a derrick and boom, with rail hook, and obtain the air from the train line. A crew of six men is customarily employed to operate them. Small steam derricks are being used successfully to unload rail and work faster than air unloaders, but are more expensive to operate and maintain. Where rail is unloaded in reclamation yards, the magnet crane is the most economical equipment.

Where it is possible to obtain the use of the track for the major portion of the day, a power-operated rail laying machine is economical. A machine of this sort will lift the new rail into track and travel over the newly laid rail at slow speed. The splices are placed on the rail and bolted up by a close-quarter air motor using an air supply from the locomotive operating the rail derrick. Under heavy traffic, such as obtains on many eastern roads, it is possible to obtain the use of track for periods aggregating not more than from two to three hours per day. The gang must be organized, with a view to starting at once after the passing of the last train and make every minute count. In this operation a small hand-operated rail layer, consisting of a carriage and boom traveling on the opposite rail from that being installed, and lifting the rail by means of hand winches, is a real labor saving device. On rail weighing as high as 125 lb. per yard, this machine, operated with 5 men, will replace 20 men on the tongs. The old rail is thrown out several rail lengths ahead of the operation and the new rail set in by machine at the rate of a little better than one rail per minute. This operation is usually no faster than that done by a competent gang of tong men, but a speed can be maintained equal to that of the tong men by using less men and the operation by machine is undoubtedly easier on the men. In many localities it is frequently difficult for the men to accustom themselves to the use of this device, but where it has been in use for some time the men would object strenuously to going back to the old method. Sixty-foot rail weighing 125 lb. per yard, has been laid successfully with this device.

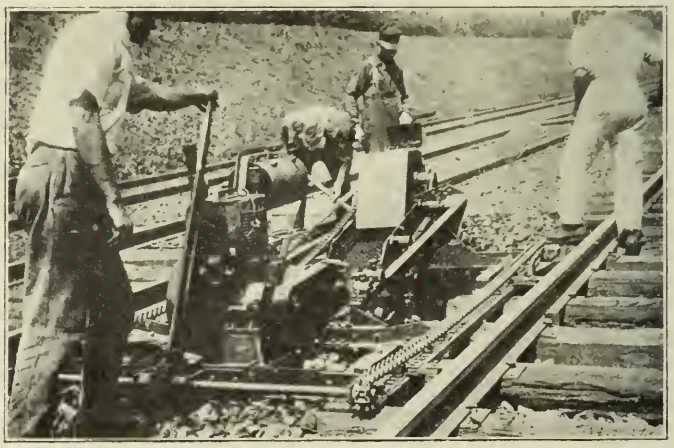
Unloading Ties—The unloading of ties is usually done by hand. Where ties are distributed by work train and a rail loader is on the train, a hook should be carried in the equipment which will unload from an open top car and release in mid air. Where unloading in yard is done with a view to piling ties, davits placed in the stake pockets, with hooks and chains, either power or air operated, designed to raise one or more ties at a lift, can be used to advantage. The possibility of clamping a light I-beam to the roof of a box car, extending through one door and supported on an A frame, with a view to assisting in the unloading of ties from such cars, should be given careful consideration in the light of existing local conditions.

It is not uncommon to receive ballast in flat bottomed gondola cars, making necessary the shoveling of this ballast over the side or end of the car. This is an extremely slow operation, and should be avoided wherever possible. In localities where steel mills are accessible, such cars have been turned over to the mills to transfer loading by a car dump to hopper cars. The usual charge for this work is one dollar per car. A drag scoop can be used to advantage on gondola cars, especially those with drop ends.

A ballast leveler which will remove the ballast to very close to the top of tie is an extremely economical machine, particularly where applying ballast in long stretches. It is perfectly practicable to reinforce a spreader or snow flanger so that this equipment can be used to advantage in leveling either stone or cinder ballast.

Cleaning Ballast

The cleaning of ballast in the center ditch and in the cribs is a job that until recently was conceded to be strictly a hand operation. The Trench-Zepp ballast cleaner provides a screen which is in many cases a help to the workman, especially in cleaning the border, but some difficulty has been experienced in the operation of these screens in the inter-track space, due to the necessity of lowering them for passing trains. It is frequently necessary for the workman to throw the ballast over his shoulder onto the screen, in which case the scattering of the dirt by the wind is objectionable. A machine designed to clean ballast in the inter-track space was recently built by the Link-Belt Company of Philadelphia, and is now in operation on the Pennsylvania Railroad. The machine is designed with conveyors or buckets which scoop up the ballast from the ditch and throw it onto a shaking screen. The dirt goes through the screen and is shoveled out by hand from a tray while the clean ballast passes over the screen and falls again into the ditch. The entire machine is operated by a gasoline engine mounted directly on the mechanism and is built with such compactness that it will clear traffic on both of the adjoining tracks. The method of disposing of the dirt was a problem in the design of this machine. An attempt was made to blow it to the rear of the cleaner through pipes, and collect it into bags, but this was not successful, as the pipes clogged easily if the dirt was slightly damp.



Ballast Cleaning Machine

The ballast cleaner moves forward on caterpillar travelers, resting on the ends of the ties, and operated by a hand ratchet at the rear. It is intended in future machines to connect this ratchet to the engine, enabling the ballast cleaner to move forward under its own power. A crew of five men is required to operate the machine, but this will be reduced to four when the device is self propelling.

The first attempts resulted in the cleaning of three rail lengths in five hours. As the men became accustomed to the machine this speed gradually increased and with the help of slight changes in the design, a speed of one rail length (33 ft.) in 45 minutes, is now being maintained.

A great deal of ballast cleaning would be eliminated if the front-end cinders and other dirt could be removed from the top of the ballast before they are allowed to find their way into the body of the ballast. This is in many places done by sweeping, and is at times neglected until the cinders lying on top of the ballast cause signal failures.

Although sweeping removes a large portion of this dirt, it also is the means of pushing some of the dirt into the crevices of the stone. Steps are now being taken to build a vacuum suction machine which will lift this loose dirt from the top of the ballast faster, more easily and more thoroughly than can be done by hand. In addition to this, plans have been drawn for a large vacuum ballast cleaner to be mounted on a flat car, with a view to picking up the ballast to a depth of 4 in. below bottom of tie in both cribs and inter-track space. The ballast would be screened and the dirt deposited in a gondola car, while clean ballast would be replaced in the track. It is estimated that a machine of this type should clean ballast at the rate of one-half mile of single track per day.

Applying Bolts and Spikes

The application of bolts by the common trackmen's wrench is being replaced, where possible, by faster and easier methods. Around interlockings, where it is possible to obtain a supply of air, a close-quarter air motor with a proper chuck and socket will be found to save time and labor during any track changes. The same close-quarter air motor with an extra chuck can be used to drill bolt and bonding holes. Where air is not available, the use of a ratchet wrench has been resorted to economically, the nut being tightened to a certain point with a ratchet wrench and tightened finally by about two pulls on a standard track wrench.

About two years ago a pneumatic spike driver was developed and placed on the market. It consisted of an air hammer mounted rather heavily with a cross arm handle at the top and a button at the bottom fitting over the head of the spike, with a view to driving the spike into the tie by placing the machine immediately on the head of the spike. While operating, the machine was about as efficient as two spike drivers, but the necessity of changing hose every 500 ft. and the newness of the machine in general, contributed to showing the operation unsuccessful. If the machine could be made to start its own spikes it would be a decided improvement, but any additional mechanissm would increase the weight, and the tool is cumbersome as it is.

Surfacing

Hand surfacing is being replaced on many roads by the pneumatic tie tamper. This operation has been largely limited to stone ballast, but with larger faced bitts there seems to be no reason why it should not be used to advantage in cinder and gravel ballast. One of the problems in the use of these tampers has been to train the men in handling the tool. When put in the hands of an inexperienced man these tampers are hard on the workmen and the men at first shun their use, but when taught how to properly hold the tool and after becoming accustomed to its working in general, very satisfactory results are being obtained. Experience has shown that best results can be obtained from the tampers by assigning a definite gang to their operation and allowing this gang to go from place to place over one supervisor's territory, rather than by passing the tampers from one section to the next, in which case they would be continuously in the hands of inexperienced men.

A comparison of the costs of machine tamping versus hand tamping, based upon the performance of these machines for several months showed, on the basis of 11,520 tie parts per mile of track (four parts per tie) a cost of $.038 per part for machine tamping as against $.050 per part for hand tamping, representing a saving per mile of track of $138.24 in favor of the machine tamping; and in another instance a cost of $0.027 per part for machine tamping as against $.050 per part for hand tamping, a saving of 2.3 cents per part, or $264.96 per mile of track, air being available from existing air lines in the latter instance.

Discussion

This paper brought out considerable discussion, particularly regarding special applications of standard equipment to local problems. Interesting ways were described in which difficult work normally requiring a considerable force of men was handled by use of special equipment.

Report on Drainage

No matter how good the rail, ballast and ties may be, if tracks do not have the proper drainage they will soon become out of line and surface. Drainage has been neglected on many roads in the last few years on account of the scarcity of labor. At the present time, with the high cost of labor, we must seek mechanical devices for proper ditching and draining. In the past, hand work and a work train were thought to be essential to the clearing of ditches. Today we have ditching machinery that will clear out ditches, shape and slope them. One ditching machine will do as much as 50 men.

Where water lies on the surface or in ditches in the fall and during the winter, we find the track heaving. It is just as expensive to shim tracks and keep constant watch over them when shimmed as to do the proper ditching to carry away the water so the road-bed will be dry and the track not heave.

Through cuts where silica sand, quicksand or alkali clay are encountered that slide quickly, the time to install drainage is in very dry weather; sheet piling should be used in opening the ditches. Great care should be taken to lay the tile to the proper fall from the beginning to the outlet of the tile. At the mouth of the tile a mattress of good heavy rip-rap or a bottom of old ties should be placed to prevent the dirt from washing away from under the tile.

Where there are soft spots in the track, either in cuts or on fills where track slides on account of improper drainage or softening, a ditch four or five feet deep and three or four feet wide, filled with rip-rap or stone, with laterals under the track, will be found to be very beneficial. Laterals should be placed wherever necessary to draw the water from under the tracks. Embankments extended along existing tracks on earth or clay and having during rainy seasons insufficient bond with the existing fill, slide frequently on account of this leakage of water between the old and new grades. In many cases an auger can be used to bore the side of the bank and a pipe placed therein to afford an outlet for the water.

Below are figures of the cost of ditching by different methods for 1917 and 1918.

	Per cu yard
American Steam Ditcher	$0.4131
Mahoney Ditcher	0.4034
Push Cars, two	0.5862
Car Barrows	0.7670
Wheelbarrows	0.7142
Casting	0.3525

These cost data were collected on work actually performed on a single track, having an average of six tonnage trains during working hours; of soft clay road-bed where the standard ditches are such as are ordinarily known or described as shoulder ditches.

J. P. Corcoran, C. & A. (Chairman).

Discussion

A number of roadmasters described their experience with the use of various types of ditching machines in the construction of side ditches. One speaker went into detail concerning the use of three ditchers in one train and reported considerable economy from this method since the charge for work train service was distributed over the output of the three machines. In answer to a question he stated that this method was used for rather heavy work and slides. The

depth of drains was the source of considerable discussion, it being pointed out that in northern latitudes it was impossible to cut the ditches deep enough to go below the frost line. Several men from northern railroads stated that they did not do much tiling on this account since a tile deep enough to avoid frost is too deep to be of value. This was questioned in one case where the speaker stated that he found it necessary to go four or five feet with a drain to get any results. There was also some discussion of sub-drainage. An officer of an eastern line described in considerable detail the methods which had been necessary to restore drainage on multiple track lines where the roadbed had been allowed to become saturated and mucky.

Equation of Track Values

A progress report was presnted by W. P. Wiltsee, principal assistant engineer, N. & W., Chairman, who stated that the committee has in view the possible establishment of the hours of labor required for each of the different kinds of work necessary in the upkeep of a section of railroad under different conditions, both as to traffic and as to physical characteristics.

Other Business

At the annual dinner on Wednesday evening the principal speaker was Charles H. Piez, president, Link Belt Company, and formerly vice-president of the Emergency Fleet Corporation; he told of his experience with handling of labor by an independent board not responsible to the corporation. Based on the failure of this plan he believed a return of the railroads to their owners must provide for negotiation with labor by a body responsible to the rate making authority.

W. G. Arn, assistant engineer of maintenance of way, Illinois Central, and formerly lieutenant-colonel, Thirteenth Engineers, and F. A. Preston, formerly major in the Aircraft Corps, also spoke.

St. Louis was decided upon as the place for holding the next convention.

The Track Supply Exhibit

The Track Supply Association presented its eighth annual exhibit in a room adjoining the convention hall. This exhibit was the largest which has ever been made by this organization, over 60 firms being represented. Special attention was given this year to the attractive presentation of the exhibits and to the display of full-size equipment rather than models or photographs.

The officers of the Track Supply Association for the past year are: President, Edward Coleman, American Hoist & Derrick Company, St. Paul, Minn.; vice-president, Wm. H. Armstrong, Ingersoll-Rand Company, New York; secretary-treasurer, W. C. Kidd, Ramapo Iron Works, Hillburn, N. Y.; directors, E. T. Howson, *Railway Age,* Chicago; J. V. Westcott, Q. & C. Co., Chicago; D. T. Hallberg, P. & M. Co., Chicago; and R. A. Van Houten, Sellers Manufacturing Co., Chicago.

The list of exhibitors together with the devices or materials on display and the names of their representatives is as follows:

An Reduction Sales Company, New York City. Oxygen, acetylene, welding and cutting apparatus. Represented by Ellsworth Mills, B. N. Law, R. T. Peabody, E. S. Brewer and B. A. Eliason.

Ajax Forge Company, Chicago.

Alexander Crossing Company, Chicago. Exhibiting continuous rail crossing. Represented by J. Eggleton and W. W. Rasser.

American Hoist & Derrick Company, St. Paul, Minn. Transparencies and photographs of "American" railroad ditcher. Represented by Edward Coleman, J. L. Hickey and C. T. Hook.

American Steel & Wire Company, Chicago. Railroad fence, woven wire fence and American steel fence posts. Represented by L. B. Shanahan, P. J. Hindmarsh, J. W. Collins, A. N. Frouds, M. E. Evans and W. E. Mackley.

American Valve & Meter Company, Cincinnati, Ohio. Anderson economy switch stands, interlocking switch stands and safety switch locks. Represented by J. T. McGarry and F. C. Anderson.

Anchor Company, Milwaukee, Wis. Anti-rail creepers. Represented by Orlando Metcalf and George H. Chadwell.

Balkwill Manganese Crossing Company, Cleveland, Ohio. Models of Balkwill articulated cast manganese railway crossing. Represented by S. Balkwill.

Bethlehem Steel Company, Bethlehem, Pa. New Century switch stand model 51-A, switch stand model 1217, Steelton positive switch stand model 52 A; switch stand model 1222 with and without target, double tongue for steam roads. Represented by R. E. Belknap, R. W. Gillispie, Neul E. Salsich, J. F. Hennessy and E. H. Gumbart.

Blaw-Knox Company, Pittsburgh, Pa. Clam shell buckets, culvert forms. Represented by R. D. Allrich and L. R. Grannis.

Buda Company, Chicago. Section car, jacks, No. 9 "C" switch stand, Hyduty Paulus track drill, new Liberty tool grinder. Represented by M. A. Evans, H. C. Beebe, E. A. Thiele and A. L. Bliss.

Carbic Manufacturing Company, Duluth, Minn. Carbic flare lights and cases, and oxy-acetylene cutting and welding equipments. Represented by G. B. Van Buren and C. H. Bolinder.

Carnegie Steel Company, Pittsburgh, Pa.

Chicago Malleable Castings Company, Chicago. Thomas rail anchor tie plates. Represented by L. Lewellyn, W. M. Osborn and Herbert MacDonnell.

Cleveland Frog & Crossing Company, Cleveland.

Crerar, Adams & Co., Chicago. Eureka bonding drills, Calumet track drills, jacks, shovels, brooms and die starters. Represented by Russell Wallace, G. D. Bassett, J. A. Martin, C. W. Gregory, W. I. Clock and R. M. Bullard.

Deeming-Endsley Company, Chicago.

Dressel Railway Lamp Works, New York.

Duff Manufacturing Company, Pittsburgh, Pa. Barrett track jacks, automatic lowering geared ratchet and ball-bearing jacks. Represented by C. N. Hulin and E. A. Johnson.

Elliott Frog & Switch Company, St. Louis, Mo.

Fairbanks, Morse & Co., Chicago. Light inspection car equipped with two cylinder kerosene engine and heavy section and extra gang car. Represented by E. C. Golladay, Benjamin S. Spaulding, A. A. Taylor, F. J. Lee, C. B. Skelton, F. M. Condit, E. Lang, Charles Wilson, G. Howard, D. K. Lee, E. J. Coverdale, Stephen Smith, H. E. Vergosen and Mr. Daggett.

Fairmont Gas Engine & Railroad Motor Car Company, Fairmont, Minn. Roadmaster's inspection car, hand car exhibition engine. Represented by W. F. Kasper and H. M. Starrett.

Frog, Switch & Manufacturing Company, Carlisle, Pa.

Hauck Manufacturing Company, Brooklyn, N. Y. Kerosene burner thawing outfits. Represented by Willis C. Squire and G. A. Nelson.

Hayes Track Appliance Company, Richmond, Ind. Derails and stands. Represented by S. W. Hayes and R. W. Slautterback.

Ingersoll-Rand Company, New York. Tie tamping equipment and air-operated track tools. Represented by William H. Armstrong, C. S. Kulp, J. N. Thorp, Jr., and C. W. Melcher.

Kalamazoo Railway Supply Company, Kalamazoo, Mich. Inspection car with step starter, kerosene or gasoline engine, level gage and master gage. Represented by J. B. McKinnon, D. A. Stewart, F. E. McAllister, M. C. Study and H. R. Miller.

Lackawanna Steel Company, Lackawanna, N. Y. Rail joints, safety head angle bar, Abbott joint plates, hook shoulder tie plates, rail anti-creepers, track bolts and spikes, deseamed rails, steel sheet piling. Represented by Jay L. Hench, F. E. Abbott, G. O. Benson and E. J. Wetter.

Lidseen, Gustave, Chicago. The Lidseen force feed oilers. Represented by E. W. Koon.

Lundie Engineering Corporation, New York. Lundie tie plate. Represented by C. Z. Moore, Eugene Brandies and W. Brooke Moore.

Luther Grinder Manufacturing Company, Milwaukee, Wis. Grinders to grind twist or flat drills and miscellaneous tools. Represented by C. R. Pfeifer, F. S. Hyland and H. T. Hardy.

Madden Company, Chicago. Illustrations of the three-man rail layer, model of Veerac motor, photographs derrick truck car, Harris-Muff ballast screen, models of the Wagner switch point straightener, Richter blue flag derail, Red Top fence posts, Blair tie spacer, model Clough unloading hook, and model perfect rail base. Represented by H. C. Holloway, W. W. Glosser and R. W. Dawney.

Miliburn, Alexander Company, Baltimore, Md. Portable carbide lamps, oxy-acetylene and cutting apparatus. Represented by John A. Schreiber and David Bartlett.

Mudge & Co., Chicago. Kerosene inspection motor car. Represented by Burton W. Mudge, Robert D. Sinclair, Karl J. Eklund, Albert C. Force, Fay E. Posson and L. O. Stretton.

National Lock Washer Company, Newark, N. J. Nut locks. Represented by R. L. Cairncross and A. T. Thompson.

National Malleable Castings Company, Cleveland, Ohio. Rail anchors, rail braces and tie plates. Represented by T. W. Aishton, J. J. Byers, L. S. Wright and J. A. Faitz.

North American Engine Company, Algona, Iowa. Inspection car. Represented by J. Edward Murphy, Dr. C. H. Cretzmeyer and E. A. Adams.

Oxweld Railroad Service Company, Chicago. Oxy-acetylene welding and cutting apparatus. Represented by F. C. Hasse, W. H. Kofmehl, L. C. Ryan, C. M. Marshall, I. Allison, R. C. Kohn, F. C. Tichen and H. N. Real.

P. & M. Company, Chicago. P. M. Henggi, Vaughan and Ajax anti-creepers and bond wire protectors. Represented by D. T. Hallberg, John Ritchie, John Reagan, George E. Johnson, J. E. Mahoney, F. W. Reeve and P. V. Samuelson.

Pocket List of Railroad Officials, New York. Copies of pocket list. Represented by J. Alexander Brown, Charles L. Dinsmore and Harold A. Brown.

Positive Rail Anchor Company, Marion, Ind. Rail anchors, Fallon girder

type guard rail brace and plate, Busse guard rail. Represented by Arnold H. Told, L. C. Ferguson and E. A. LeBeau.

Q. & C. Company, New York. Bonzano Thompson rail joint, guard rail clamps, Q. & C. snow melting track device, Q. & C. adjustable rail brace, rolled steel step or compromise joint, Q. & C. Freeland derails and Sampson rail bender; Fewings car replacers. Represented by L. T. Burwell, J. L. Terry, R. J. McComb, E. M. Smith, A. R. Horn and J. V. Westcott.

Rail Joint Company, New York. Standard, compromise, frog and switch-joint insulated rail joints. Represented by W. S. Boyce, Alex Chapman, Charles Jenkinson, J. H. Larson, R. W. Tayne, V. C. Armstrong, E. A. Condit, Jr., W. P. Thompson, McLeod Thompson, G. T. Williard, H. C. Hickey, E. F. Schermerhorn, J. N. Mead and C. B. Griffin.

Railroad Supply Company, Chicago. Tie plates and derailers. Represented by A. H. Smith, Hiram Buck, H. G. Van Nostrand, George Nibbe and E. H. Bell.

Railway Review, Chicago. Copies of paper. Represented by Harold A. Smith, Charles L. Bates and W. M. Camp.

Railway Safety Tie Company, Milwaukee, Wis. McSafety tie plate and steel concrete ties. Represented by E. M. McVicker and A. W. Tabert.

Ramapo Iron Works, Hillburn, N. Y. Manganese switch point, rolled steel double-shoulder switch slide plate, special switch slide plate, machined heel plate, switch stands, guard rail clamps. Represented by Thomas E. Akers, Arthur Germunder, J. B. Strong, J. Edgar Davidson, Robert J. Davidson, Jr., W. W. Snow and W. C. Kidd.

Reading Specialties Company, Reading, Pa. Guard rail clamps, rail benders, rerailers wtih clamps, trolley rerailers, compromise joints and derails, guard rail, car shed shoes, car chocks, tie spacers, clamps for broken rails. Represented by B. John Buell and W. J. Zimmerman.

Rodger Ballast Car Company, Chicago.

Simmons-Boardman Publishing Company, Chicago. Copies of Railway Maintenance Engineer and *Railway Age*. Represented by L. B. Sherman, E. T. Howson, W. S. Lacher and B. J. Wilson.

Sellers Manufacturing Company, Chicago. Sellers anchor bottom wrought iron tie plates. Represented by J. M. Sellers, G. M. Hogan, R. A. Van Houten, T. D. Crowley and R. J. Platt.

Southern Railway Supply & Equipment Company, St. Louis, Mo. Saunders car stopper. Represented by L. Boswell.

Templeton, Kenly & Co., Ltd., Chicago. Track jacks. Represented by W. B. Templeton and J. A. Cervenka.

Track Specialties Company, New York. Guard rail clamp, compromise rail joints, derails, rail benders, tie plates and rail braces, guard rail brace adjustable track shim, slide plate and switch brace, rail joints, anchor plate and foot guard. Represented by J. A. Bodkin.

Union Switch & Signal Company, Swissvale, Pa. Insulated rail joint. Represented by J. D. Roett and J. J. Cozzens.

Verona Tool Works, Pittsburgh, Pa. Track tools, track jacks, levels, gages, nut locks, Palmer rail joint spring and bonding strips, and Hillard portable milling machine. Represented by H. C. Mull, E. L. Ruby, E. Woodings, W. B. Lewis and A. T. Palmer.

Wharton & Co., Inc., William Jr., Easton, Pa. Guard clamps, Wharton O'Brien insulated switch rod and seamless steel cylinders for oxygen and hydrogen gas. Represented by H. F. McDermott, Charles M. Griffith and V. Angerer.

Wyoming Shovel Works, Wyoming, Pa. Red Edge track shovels. Represented by H. T. Potter, H. C. Emery, G. E. Geer and William Ziegler.

At the annual meeting on Wednesday morning the following officers were elected for the ensuing year: President, Wm. H. Armstrong, Ingersoll-Rand Company, New York; vice-president, David T. Halberg, P. & M. Company, Chicago; secretary-treasurer, W. C. Kidd, Ramapo Iron Works, Hillburn, N. Y. Directors, Alexander Chapman, Rail Joint Company, Chicago; F. M. Condit, Fairbanks, Morse & Company, Chicago; Herbert Potter, Wyoming Shovel Works, Chicago.

The Southern Railway announces that its line between Washington, D. C., and Atlanta, Ga., 649 miles, is now double track throughout, the last section of second track, about three miles long, having just been finished. After the completion of work which is now going on between Charlotte, N. C., and Spartanburg, S. C., this line will be equipped with automatic block signals throughout.

The Railway Fire Protection Association will hold its sixth annual meeting at the Hotel La Salle, Chicago, on November 18, 19 and 20, instead of on October 21, 22 and 23, as was originally planned and announced. This postponement was authorized by the executive committee of the Association in order that railroad representatives serving in the dual capacity of accident prevention and fire prevention officers would be free during the month of October to devote all their time to conducting the "National Railroad Accident Prevention Drive."

Train Accidents in July[1]

THE FOLLOWING is a list of the most notable train accidents that occurred on the railways of the United States in the month of July, 1919:

Collisions

Date	Road	Place	Kind of accident	Kind of train	Kil'd	Inj'd
†1.	New York Central	Dunkirk	rc	P. & P.	12	17
17.	C. C. & O.	Erwin	xc	F. & F.	0	0
17.	D. L. & W.	Ackermanville	bc	F. & F.	1	2
19.	Lehigh V.	Upton	rc	F. & F.	2	0
23.	Penn.	Tyrone	xc	F. & F.	1	3
*31.	N. Y. N. H. & H.	Portchester	rc	F. & F.	2	0

Derailments

Date	Road	Place	Cause of derailment	Kind of train	Kil'd	Inj'd
2.	Rich'd F. & P.	Milford	d. truck	P.	0	9
4.	N. Y. O. & West.	Crystal Run	unx	P.	0	0
*9.	Monong. Con't'g.	Pittsburgh	unx	F.	3	0
13.	Penn.	Kentland	fire	P.	0	5
14.	N. Y. Central	Lake Katrine	boiler	F.	2	1
18.	Del. & H.	Colonie	.....	P.	0	15
23.	M. K. & T.	Katy, Tex.	unx	P.	0	36
*25.	Balt. & Ohio	Long Run	.....	F.	0	0
30.	Phila. & R.	Linfield	unx	F.	2	2

Other Accidents

Date	Road	Place	Cause of accident	Kind of train	Kil'd	Inj'd
5.	A. C. L.	Charleston	boiler	P.	1	1
21.	Union Pacific	Castle Rock	boiler	F.	3	0

The trains in collision on the New York Central at Dunkirk, N. Y., on the first of July, at 2:20 a. m., were westbound passenger No. 7 and westbound passenger No. 41, No. 7, consisting of a locomotive and 12 heavy cars, running into No. 41, which was standing at the station. Eight passengers, three trainmen and one trespasser were killed, and 17 passengers were injured. The presence of the standing train was indicated by a home and a distant signal, and also a flagman; and the engineman (killed) applied the brakes; but an angle cock behind the tender was closed, making the brakes ineffective on the cars. A trespasser, riding between the tender and the baggage car had evidently closed the cock, ignorantly assuming that thereby he could stop the train, Dunkirk being his home. This collision was reported in the *Railway Age* of July 4, page 40.

The trains in collision on the Carolina, Clinchfield & Ohio at Erwin, Tenn., on the 17th, were a southbound freight, and a locomotive without train. The freight, consisting of 90 cars became uncontrollable on a descending grade and ran into the yard, striking the standing locomotive. Thirty-two cars were thrown off the track and damaged, and 25 of these, containing coal, were overturned. Estimated loss $23,000.

The trains in collision on the Delaware, Lackawanna & Western at Ackermanville, Pa., on the 17th were local freights. One engineman was killed, and one engineman and one fireman were injured. The collision was due to oversight of a conductor and an engineman, who disobeyed a despatcher's order.

The trains in collision at Upton, N. Y., on the 19th were eastbound freights. The leading train had been stopped because of failure of the locomotive, and the following train wrecked the standing caboose; and the conductor, inside of the caboose, was killed. A brakeman of the second train was also killed.

The trains in collision on the Pennsylvania Railroad near Tyrone, Pa., on the morning of the 23rd about 12:16 o'clock, were an eastbound through freight and a switching freight. The latter, coming out of an industry track, ran into the side of the train on the main line. One engineman and three other employees were injured, the engineman fatally. The yard-

[1]Abbreviations and marks used in Accident List:
rc, Rear collision——bc, Butting collision——xc, Other collisions——b, Broken——d, Defective——unf, Unforeseen obstruction——unx, Unexplained——derail, Open derailing switch——ms, Misplaced switch ——acc. obst., Accidental obstruction——malice, Malicious obstruction of track, etc. ——boiler, Explosion of locomotive on road——fire, Cars burned while running——P. or Pass., Passenger train——F. or Ft., Freight train (including empty engines, work trains, etc.) ——Asterisk, Wreck wholly or partly destroyed by fire——Dagger, One or more passengers killed.

train had run past a signal set against it (an interlocked position-light dwarf). Three main tracks were blocked and 31 passenger trains were delayed from nine minutes to two hours. Thirteen freight trains were delayed from 20 minutes to nine hours.

The trains in collision on the New York, New Haven & Hartford, near Portchester, N. Y. (in the township of Greenwich, Conn.) on the 31st, were westbound through freights. The leading train extra 098 was just coming to a stop, because of a block signal set against it, and the following train, M. H. 3, drawn by a heavy electric locomotive, ran into it at about 20 miles an hour. The caboose and eight cars were wrecked. The two men in the front end of the electric locomotive (the engineman and another engineman riding as instructor) were killed. The wreck took fire from an electric wire and these two men were burned. The collision occurred at 5:25 a. m., in clear weather. The conductor of another westbound freight, running on track No. 3 (to the right of track No. 1, on which the collision occurred) noticed that the engineman of M. H. 3 was apparently asleep and while passing called to him, but was not answered. The engineman at fault was 40 years old, and had been on duty 10 hours, 35 minutes. The point of collision is seven miles west of Stanford, Conn. All four main tracks were blocked 5½ hours. Investigation shewed that the colliding train had passed both cautionary and stop signals set against it, and that both of the men had been asleep probably several minutes prior to the collision.

The train derailed on the Richmond, Fredericksburg & Potomac at Milford, Va., on the evening of the 2nd was northbound passenger No. 66. Three express cars, two mail cars and two coaches went off the track and one mail car was overturned. Nine persons were injured, none seriously. The derailment was due to failure of an equalizer bar of front tender truck.

The train derailed at Crystal Run, N. Y., on the fourth was westbound passenger No. 25. Five coaches were overturned and ditched. The train was well filled but the injuries to passengers were all classed as slight. The train was running at 40 miles an hour when a wheel of the tender jumped the track.

The train derailed on the Monongahela Connecting Railroad near Pittsburgh, Pa., on the 9th was a local freight. The locomotive was thrown off the track at a switch and was overturned, demolishing two dwelling houses. The engineman, the conductor, and a child in one of the houses were killed. The houses took fire from the locomotive firebox.

The train derailed on the Pennsylvania Lines near Kentland, Ind., on the 14th, was eastbound passenger No. 902. The train ran upon a burning trestle and the last two coaches fell through. Three trainmen, one mail clerk, and an express messenger were injured.

The train derailed near Lake Katrine, N. Y., on the 14th, was an eastbound freight. The locomotive was wrecked by the explosion of its boiler, and was overturned. The engineman and fireman were killed, and a brakeman was injured. The explosion was caused by low water.

The train derailed on the Delaware & Hudson near Colonie, N. Y., on the 18th, was one consisting of a locomotive and two coaches carrying workmen to the company's shops. One coach was thrown off the track and overturned and 15 employees were injured.

The train derailed at Katy, Tex., on the 23rd of July, was Gulf, Colorado & Santa Fe passenger train No. 17, running over the Missouri, Kansas & Texas. Seven cars ran off the track and 32 passengers and 4 employees were slightly injured; estimated total damage to cars $28,000. The cause of the derailment was not determined.

The train derailed at Long Run, W. Va., on the 25th was westbound freight No. 97. The locomotive was thrown off the track in a tunnel and the resulting wreck took fire. Seven cars of oil and merchandise were burnt up. The wreck blocked the tunnel for three days and trains between Clarksburg and Parkersburg had to be run by way of New Martinsville.

The train derailed at Linfield, Pa., on the 30th of July, was a southbound passenger. The baggage car was overturned. The engineman and fireman were killed and two passengers were slightly injured. The cause of the derailment was not determined.

The train involved in the accident near Charleston, S. C., on the 5th, was northbound passenger No. 82. The locomotive was wrecked by the explosion of its boiler, and the engineman and fireman were injured, the fireman fatally.

The train involved in the accident on the Union Pacific near Castle Rock, Utah, on the 21st was an extra freight. The locomotive was wrecked by the explosion of its boiler and the engineman, fireman and one brakeman were killed. Explosion due to low water.

Electric Car Accidents.—In a butting collision of electric cars near Punxsutawney, Pa., on the night of the 16th of July one passenger was killed and another was injured. Both of the motormen jumped off in time to save themselves. It is said that a defective block signal was the cause of the collision. The half dozen other electric car accidents reported in the newspapers in July caused injuries numbering from 3 to 20 each; but no fatal injuries, so far as reported. One of these accidents, at Pittsburgh, Pa., on the 15th, was a case of a street car being struck by lightning. The motorman was stunned; but the other injuries appear to have been due to panic rather than to electricity.

Canada.—At Stonecliff, Ont., on the sixth, the Imperial Limited express, of the Canadian Pacific, was derailed by a malicious obstruction and the fireman was fatally scalded. On the Canadian National near La Duramtaye, Que., on the 11th the eastbound Maritime express was derailed and the engineman and fireman were killed. Four other derailments of passenger trains in Canada resulted in a few injuries each, all being reported as not serious.

From the New Orleans Times-Picayune

"Well, Well, We'd Better Go Slow About This"

Convention of Traveling Engineers' Association

Economical Speed for Slow Freight Trains and Methods of Handling Air Brakes Discussed

The Traveling Engineers' Association met for its twenty-seventh convention at the Hotel Sherman, Chicago, on September 16, with H. F. Henson, road foreman of engines of the Norfolk & Western presiding. After the opening prayer President Henson addressed the convention.

President's Address

Mr. Henson spoke in part as follows: Our last convention met during the great world struggle and at that time all our attention was devoted to bringing the conflict to a successful conclusion. We have met the challenge of war. Now let us meet the challenge of peace and securely re-establish justice, loyalty and freedom. In these trying times labor cannot afford to put itself in the position of obstructing the wheels of progress. The workers must see that not only loyalty to their country but also loyalty to its industries is essential. The conservatism and loyalty of the traveling engineers has never been questioned and they can help to influence opinion among the many employees with whom they come in contact.

After referring to the present industrial unrest, Mr. Henson made a plea for rigid economy in the use of fuel and supplies on the railroads. In discussing the affairs of the association he mentioned that the American Railroad Association has invited the Traveling Engineers' Association to amalgamate with it and asked the members to give the matter consideration.

A report an handling air brakes was then submitted by the committee on that subject.

Handling Air Brakes on Passenger Trains

Before coupling to the train, the compressor steam valve should be opened wide, the steam end lubricator feed increased to about two drops per minute for each compressor having two steam cylinders, or one drop per minute for each compressor having one steam cylinder; then, to assist in charging the train quickly, the brake valve should be placed on tap and maximum main reservoir pressure accumulated.

Charging Train.—To charge the train quickly, release position should be used until, on use of running position, five pounds less than standard brake pressure is shown. The application for the terminal test of the brakes may then be made if those who will inspect the train are ready; otherwise the charging should be completed in running position.

Standing Brake Test.—After receiving the proper air whistle signal to apply brakes, a 20-lb. continuous reduction should be made and the brakes held applied until the inspector or trainman who is responsible for the proper operation of the brakes leaving any particular terminal has examined the brake on each car to see whether it is applied and has correct piston travel. Then, on receiving the proper train air signal, which should be given by the car discharge valve on the last car, the brakes should be released. When the rear brake releases, the one or more inspecting should examine each brake to ascertain whether all have released.

Brake Pipe Test.—If, for any reason, an angle cock or double-heading cock have been closed at any time, it should be finally insured that all such have been reopened by making an application, getting a signal that the rear brake has applied, then releasing and receiving a signal that the rear brake has released.

Running Brake Tests.—A running test is made by the engineman making an application that will satisfiy him that the brakes can be operated from the brake valve, and if he finds that they cannot be, he must at once signal for brakes. This must be made when engines have been changed or at other times after parted hose has been recoupled; also a sufficient distance (so that the train can be stopped by hand brakes) from draw-bridges, railroad crossings and other hazardous places and before going down heavy grades.

Incoming Brake Inspection

On completing a stop at a terminal, the brakes should be left applied with a reduction of 20 lb. If the brakes were held applied to the stop with a light application, enough should be added to make a total of 20 lb.

Starting and Slacking

Starting quickly, slipping drivers, taking slack harshly, or starting quickly after slacking, will cause shocks that are disagreeable to passengers and damaging to equipment. To avoid these the throttle should not be opened until the brakes are released. It should be opened gradually then, and the cylinder cocks should be open when starting conditions will permit, particularly during short movements, as at water cranes and when taking slack. Even after a slow-down and release, care should be taken not to open the throttle before all the car brakes are full released, and then it should be opened gradually. The sanders should be kept in good condition, and sand used when necessary to prevent the drivers from slipping. Where failure to start requires taking the slack, the throttle should be closed, the independent or straight air brake applied, the locomotive reversed, then the engine brake should be graduated off. Steam should be used if necessary, to close in all train slack. If the train must be backed to a more favorable place for starting, before reaching the point where the stop is to be made, and while still working steam, a brake pipe reduction of six or eight pounds should be made The engineer should continue to work steam moderately until the stop is completed so as to have all slack closed in. The engine should be reversed, the release of the brakes started, and, at the time when experience indicates that the holding power of the rear brakes is ending, steam should be used but as carefully as consistent with starting the train and avoiding damaging shocks.

Independent Brake Use

The independent brake should not be used in making passenger train stops. It should be applied and left in application position to prevent the locomotive from moving while taking coal or water, when oiling or doing work on the engine, during other than a short stop on a grade, and as explained, for taking slack. When releasing the independent brake, the valve handle should be moved to running position only. If the engine brake does not release, a "kick-off" with the automatic brake valve should be made.

Train Slack Control

Smooth handling of passenger trains requires that slack must never be changed suddenly. The action of the brakes in changing the slack will be most severe at low speeds. Therefore, any heavy reduction should be avoided when speed is low. As the heavier the reduction the rougher will be the slack action, the split-reduction should be used

when commencing other than light applications. To help avoid objectionable slack action while applying the brakes on trains of more than eight cars, and where conditions will permit, the use of steam should be continued to hold the slack while the brakes are being applied.

Use of Sand While Stopping

Sand should not be used while braking on good rails, except in an emergency. Sand should be used to prevent wheels sliding on slippery rails. It should be started flowing before the brakes are applied in service braking, and immediately after the brakes are applied in emergency braking, continuing its use throughout the stop.

Complete Release

To completely release passenger train brakes (this does not include partial release with graduated release equipment), the automatic brake valve handle should be moved to release position, back to running position, and then, after waiting about seven seconds, "kick-off" should be made. How long to stay in release the first time depends mainly on the length of the train, but to an extent also on the main reservoir pressure. The proper length of time in release position is indicated when the brake pipe hand shows at least five or six pounds more after returning to running position than before moving from lap to release, and will vary from a second with a very short train to not more than 15 sec. with the longest train. If, after returning to running position, the brake pipe hand shows a pressure higher than the feed valve adjustment, release position was used too long. A release should not be attempted unless the pressure has been reduced at least seven pounds below the standard carried if the train has less than eight cars, and ten pounds for longer trains.

Stopping Without Graduated Release

Stopping without graduated release from usual speeds requires the two-application stop. The reasons for the two-application stop are the same as for the graduated release stop, and its method is to come as near to the graduated release stop as possible. The application should be made from usual speeds, as with a graduated release braked train; that is, while working steam, and using the "split-reduction," a reduction of about 15 or 18 lb. should be made, depending on the speed and grade. Then steam should be gradually shut off or reduced to a drifting throttle as required. This application should have been made at a point that will have reduced the speed to 12 or 15 m. p. h. when about 500 ft. from the stopping point. To release the train brakes, release position should be used for a time to suit the length of train, then move to running position until the brakes are released. For the second application, a reduction of about seven pounds should be made and followed with a little more when necessary, but endeavoring to avoid a total of over ten pounds. At the proper time, depending on whether the train consists of less than eight cars, the brakes should be released by using release position, then running position, followed by the kick-off. A heavy second application indicates too high speed at the first release or being too near the stopping point when the second application is started.

One-Application Method for Stops From Low Speeds

When making stops from low speeds, sufficient time should be allowed between shutting off steam and starting the brake application to permit the drawbar springs to re-act and start the slack in. An application has the same effect, due to the head brakes applying first. The effect on the slack is stronger at slow speeds. Therefore, the two acting together will produce very disagreeable shocks. Where the one-application method is being used, a split-reduction should be made, the first reduction not over six or seven pounds, which may be followed by further reductions if needed, but the first reduction should be made early enough to avoid making a total application of more than ten pounds when the stop is completed.

Emergency Stops

In an emergency, the brake valve handle should be moved quickly to emergency position and left there until the train stops. As an emergency application produces the quickest and highest braking force, it may cause shocks and slid flat wheels; hence may be used only to avoid injury to persons or damage to property.

Mountain Grade Braking

Retaining valves should be used when descending mountain grades whenever the brakes cannot be re-charged to within ten pounds of standard pressure. When operating with retaining valves, the application should be sufficient to insure a release, so that the train is retarded by the retaining valves, and not by sticking brakes. Graduated release must not be used when retaining valves are cut in, and when retaining valves are not cut in, not more than one release graduation may be used between complete re-charges. Release position of the brake valve should be used when re-charging, followed with the kick-off. Limiting the maximum speed to 30 m. p. h. on grades of 3 per cent to 3½ per cent, and 45 m. p. h. on grades of 2 per cent to 2½ per cent, provides for avoiding much of the trouble and annoyance from burned brake shoes, and an average margin of safety compared to level grade work.

Double Headers and Pushers

With more than one locomotive, the brakes should be controlled from the head locomotive and the air signal should be connected to and operate on it. On each other locomotive, the brake pipe should be cut into the train brakes, unless specifically excepted for certain pusher engines used for a short distance only, keep the automatic brake valve cut out, and its handle in running position, the compressor operating as usual, and, if had, the independent brake valve in running position. When a train is to have a helper locomotive coupled on ahead, the regular engineman will apply the train brakes with a 20 lb. brake pipe reduction before the helper couples on, leave them applied, and close the double-heading cock. The helper engineman will, after coupling, release the brakes and then make the brake pipe test. When a helper locomotive is to be cut off, its engineman will apply the brakes with a 20 lb. reduction and leave them applied. The regular engineman, then in charge, will release them and make the brake pipe test. The automatic brake valve on other than the head locomotive must not be cut in at any time or for any reason except for a plainly needed emergency application of which the head engineman is unaware or unable to make.

In starting a train with two locomotives ahead, commencing to use steam at the same time will cause severe shocks and damage, therefore the second engineman must not use steam until the head engineman has started the train or done all he can to this end. Braking with two locomotives ahead must be done with more than usual care, to avoid rough handling. This is due to the additional weight and slack at the head end, and, usually, the extra length of train.

With a pusher locomotive on the train, the head engineman will, when the train is to be started, allow the pusher engineman to endeavor to start it. When he has done so, or, being unable to, is using full power, the head engineman will carefully assist. When the train is being stopped, the pusher engineman will continue to use steam lightly until the stop is completed, so as to hold in the slack.

Backing Train Movement

When ready to make a backing train movement in which the back-up hose may or will have to be depended on for

more or less control, and on receiving the signal to back, the engineman will lap the automatic brake valve. The man at the rear end will, when the back-up signal is given, at once make a sufficient discharge from the back-up hose cock to insure a substantial application of the brakes. On the engineman noting by the air gage and by the brakes applying that this required reduction has been made, he will make the usual release and proceed to back up.

When making such backing movement, the automatic brake valve should be carried in running position so that, while permitting brakes to be applied, they will release and re-charge. The only exceptions are that the engineman will apply the automatic brake whenever necessary to insure the safety of the train, and will release the brakes in the usual manner, to guard against stuck brakes, as soon as any stop is completed.

Slow Downs

While still working steam, a first brake pipe reduction of about seven pounds should be made. After the exhaust closes, it should be followed by further reductions as required to obtain the desired low speed. To insure a prompt and certain release of all brakes, the reduction must total at least ten pounds before attempting to release. If less, the needed amount should be added just before releasing. At this and other similar times when releasing, release should not be made before the service exhaust ceases, and steam should not be used quickly, as either one or a combination of both will cause a severe jerk.

Brakes Sticking

One cause for brakes "sticking" or failing to release is attempting to release a lighter application than is here recommended. Another cause is some brakes re-applying on the locomotive or near the head end after releasing, and a failure to make the kick-off. Another cause for stuck brakes is a defective feed valve that allows the brake pipe pressure to vary from time to time, or a good feed valve that cannot regulate the pressure uniformly because of too little excess pressure, as a result of too low governor adjustment or a governor defect, or having less actual excess pressure than indicated, due to an error in the gage

If stuck brakes are noted on a running train that is fully charged, the surest way to release it is to make a reduction of ten pounds, wait until the service exhaust ceases, then make the regular release, followed by the "kick-off." If an application is impracticable, they should be kicked off carefully—not long in release.

Overcharged Brakes

If a train of the older or P-M equipment is overcharged while running, the pressure can be reduced to the standard by applying and releasing the brakes one or more times without much re-charging. With the L-N equipment an overcharge of 5 lb. may be got rid of by reducing the brake pipe pressure to 60 lb. and releasing. If there is a heavier overcharge while running, the high pressure should be maintained until the next stop is completed, then the brake pipe pressure should be reduced to 60 lb., and after the brake pipe exhaust ceases, the brake pipe should be recharged as indicated on the brake pipe gage to 5 lb. below the original pressure to which the train was overcharged. This should be repeated until the re-charge pressure is the pressure to be carried.

Brakes Apply From Unknown Cause

Should the brakes apply from an unknown cause, it indicates that a conductor's valve has been opened, a hose burst, other serious leaks have occurred in the train, or the train has parted. In such cases the throttle should be closed immediately, the automatic brake valve lapped and left on lap until the train is stopped and the signal to release has been given.

The report is signed by T. F. Lyons, (N. Y. C.), chairman; Eugene Hartenstein, (C. & A.); Fredric Kerby, (B. & O.); L. S. Ayers, and W. R. Garber, (K. & M.).

Discussion

M. O. Davis (A. T. & S. F.) advocated the use of the drifting throttle on long descending grades. He also recommended keeping the engine brakes released when making the running test starting out of terminals. Mention was made of the use of gas engine oil for lubricating the air cylinders of locomotive air compressors, and L. P. Streeter (I. C.) stated that while good results had been secured with automatic lubricators on regularly assigned engines, some difficulty had been experienced in securing successful operation where locomotives were pooled. F. B. Farmer (Westinghouse Air Brake Company) expressed the opinion that a maximum speed of 45 miles an hour on descending grades was too high. In reply G. H. Wood (A. T. & S. F.) stated that trains could be brought to a stop on descending grades from a speed of 45 miles an hour in the same distance that they could be stopped on level track from 65 or 70 miles an hour, and for that reason there was no more danger involved. Where cast iron wheels were used the high rate of speed might result in extensive heating of the wheels and in that case it would be necessary to limit the speed. In closing the discussion the chairman stated that the committee realized the speeds given were not applicable in all cases. They were intended rather to establish a maximum limit which could be deviated from according to the judgment of the traveling engineer.

Adjusting Tonnage of Slow Freight Trains for Average Speed of Twelve Miles an Hour

A railroad is most efficient when it produces the maximum ton miles per hour at the least expense consistent therewith. Engine efficiency should not be measured only by the percentage of possible tonnage handled per train, but preferably by the percentage of the maximum ton miles which can satisfactorily be handled per engine per month. Prof. W. J. Cunningham has well said:

"The time element has not generally been given the recognition it deserves. Ton miles per train hour as a unit is analogous to the horsepower unit, but instead of foot pounds per minute we use train ton miles per hour.

"The unit is the resultant of the train load multiplied by the speed in miles per hour. It is influenced favorably by an increase in load or in speed or in both, or by an increase in one factor proportionately more than a decrease in the other factor. . . . A large part of the expenses vary with the hours, hence it is important that the ton miles per hour shall increase. The capacity of the road in periods of peak-loads of traffic will vary with the ton mile production per train hour.

"The ultimate unit of freight car efficiency is: 'Net ton miles per car day.' Cars produce ton miles only when in motion. . . . We are all familiar with the reasons which make it difficult to get a larger daily mileage, but sometimes it may appear that we have become too complacent in accepting these reasons as a complete explanation. In times of car shortage, an increase of one car mile per day throughout the country would be equivalent to adding about 100,000 cars to those available for service."

Apparently this condition can be but slightly improved by increasing the speed of freight trains, because of the small percentage of the time that a car is in movement. But in this we may be deceived to a considerable extent, for in hundreds of instances which have come under the observation of every experienced railroad man, a small increase in the running

time of a train has resulted in the loss of a car day for each car in the train at destination, and frequently an aggregate loss of many car days, as well as per diem charges (which may again interest us soon) at intermediate stations, terminals and junctions. An increase in the time on road also means less time at terminals for repairs, or fewer trips per locomotive. Continued exhaustive strain on locomotive parts is expensive, as such usage invariably results in failure or excessive repair work and time out of service, which, in addition to the direct expense, necessitates an increase in locomotives owned or under lease.

Generally the fuel consumed per ton mile is reduced as the engine load is increased within a reasonable limit, but the wages per train crew per trip are increased in most instances, and frequently it has been found expedient to reduce train tonnage much below the possible maximum in order to clean up blockaded divisions and thus to best serve the public as well as the stockholders. Solely on a ton mile per hour basis a gradual gain in locomotive efficiency can be shown as speed increases to thirty or thirty-five miles per hour; but when the speed of freight trains averages more than fifteen miles per hour, many factors other than ton miles per hour affect the net economy.

During the period between 1890 and 1900 many railroads recognized the inadequacy of old methods of tonnage rating, and began the application of scientific and more logical methods, including the use of dynamometer cars, and adjusted tonnage. The real improvement thus brought about was so alluring that many operating officials lost balance, and failing to consider the immediate ill effects of overloading, went to an unprofitable extreme which still exists too frequently.

The probability of costly delays and accidents increases very rapidly as the length of train approaches the present maximum. The modern locomotive usually can keep a train moving which it cannot start without running out the slack with such force as to overstrain even the best draft gears and couplers. These parts are thus often subjected to destructive forces when long trains are handled over track with sharp variations in grade and while the slack in such trains is run in or out rapidly by air brake operations.

The probability of failure of trains to make expected movement, with consequent expensive road and yard congestion, increases rapidly as train tonnage closely approaches the possible maximum, even though there is no breakage or accident.

The modern locomotive attains its maximum fuel and thermal efficiency at speeds of not less than twelve miles per hour while working at approximately 25 to 30 per cent cut-off. As the cut-off is increased, the thermal efficiency decreases rapidly. At lower speeds, high degree superheated steam is not obtained, and the possible economy from this source is not realized. Superheater locomotives are capable of higher sustained speeds than saturated steam engines capable of dragging the same load, and full advantage should be taken of this superiority. On low grade divisions where it is necessary to half stroke or in many instances to nearly full stroke the engine most of the way between terminals, these features are worthy of careful consideration.

Fully as important as any of these considerations is the psychological effect on the train and engine crews. The present-day appeal is for co-operation, and we feel safe in saying that the extent to which co-operation will be forthcoming from the engine and train crews will be most gratifying if these employees are permitted and encouraged to "get over the railroad." Delays or depressingly slow movement exhaust patience and interest, and without interest and initiative on the part of engine and train crews the best performance cannot be obtained.

Aside from the psychological effect on employees, the time element in calculation of wages of train crews, at one time negligible, has become of great and increasing importance during the past few years. Let us not forget that an equitable relation between this item and the distance between terminals must be maintained. Speaking generally, shortening the distance between terminals, with the cost of consequent new terminals and abandonment or lessening in productiveness of many present terminal facilities, would increase charges to capital account and operating expenses excessively.

Adjusting tonnage properly is one big factor in good railroading. On a railroad handling many high-speed and important passenger, express and mail trains on the same tracks used by freight trains, the maximum possible tonnage per train will result disastrously; while on roads having four tracks, for example, a closer approximation to maximum possible tonnage may be satisfactorily maintained. Often on single-track roads where sidings are five or six miles apart, it is with difficulty that trains can make one hundred miles within the sixteen hours unless the average speed exceeds twelve miles per hour, excluding delays.

The committee is of the opinion that the volume and character of traffic, the physical characteristics of the roadway, and the locomotive equipment vary so greatly on the several roads and in many instances on the various divisions or sections of the same system, that the problem of determining the most suitable average speed and tonnage for freight trains generally must be solved for each division or district. Numerous carefully conducted road tests and expert analysis of performance and cost records should be made to determine the most economical operation.

In the table are shown records of the average freight train speeds for 23 different roads.

AVERAGE FREIGHT TRAIN SPEEDS
As Reported to the Operating Statistics Section in Item 10 (c) of Form C. S. I.

Railroads	Average freight train speeds, M. P. H. 1918 Aug.	Sept.	Oct.	Nov.	Dec.	1919 Jan.	Feb.	Mar.	Apr.	May
A. T. & S. F.	12.4	12.4	12.6	12.5	12.6	12.4	12.9	13.1	13.0	13.2
B. & O. East Lines	8.4	7.6	8.0	8.3	8.1	9.4	8.7	9.4	8.9	8.7
B. & O. West Lines	9.7	9.5	9.9	8.5	10.4	11.0	11.2	11.2	11.2	9.9
Boston & Maine	10.9	10.6	10.4	10.4	10.3	10.6	10.5	10.7	10.9	11.0
C. & N. W.	11.2	11.2	11.1	11.3	11.4	11.2	11.1	11.0	11.1	11.3
C. B. & Q.	10.8	10.8	10.6	10.7	11.0	11.1	11.1	11.2	11.1	11.4
C. M. & St. P.	10.6	10.3	10.2	10.2	10.2	10.5	10.7	10.5	10.9	10.9
C. R. I. & P.	10.9	10.9	11.1	11.5	11.7	11.5	11.7	11.8	11.6	11.9
Erie	10.2	10.0	9.5	9.7	9.8	10.2	10.7	10.7	10.7	10.5
Gt. Northern	9.7	10.3	10.1	10.0	10.2	10.3	10.3	10.2	9.9	10.0
Illinois Central	11.9	....	11.5	11.5	11.5	11.5	11.1	11.3	11.5	12.0
Lehigh Valley	10.8	....	11.0	10.3	11.0	11.7	12.2	12.0	12.1	11.4
L. & N.	10.2	....	10.1	10.2	10.3	10.4	10.8	11.1	11.5	11.7
Mo. Pacific	10.0	....	10.3	10.2	9.6	9.8	9.5	9.4	9.7	11.0
N. Y. Central	9.7	....	9.2	9.6	10.1	10.6	11.7	10.8	10.8	11.0
N. Y. N H. & H.	9.6	9.8	10.2	10.1	9.7	10.0	10.2	10.5	10.7	10.8
Northern Pacific	12.0	11.6	11.1	11.2	11.4	13.2	11.9	11.9	11.8	10.9
P. R. R. East Lines	8.8	8.9	8.9	8.3	8.0	8.3	8.9	8.8	9.0	9.2
P. R. R. West Lines	8.2	8.4	8.5	8.7	9.5	10.3	10.8	11.1	11.3	11.2
Southern	11.0	10.9	10.5	10.5	10.4	10.6	10.5	10.6	9.9	10.9
S. F. No. of Ashland	9.3	9.2	9.0	9.0	8.9	9.4	9.6	9.5	9.6	9.7
S. P. So. of Ashland	10.9	11.1	10.7	11.0	11.0	11.2	11.4	11.3	11.5	11.6
Union Pacific	15.6	....	14.8	13.9	14.5	14.7	14.9	15.5	14.8	14.7
Arithmetical average	10.5	10.2	10.8	10.3	10.5	10.9	11.0	11.0	11.0	11.1

Arithmetical average of averages, 10.8 miles per hour.

The above table will be supplemented by figures showing speeds for the months of June, July and August, and also by figures showing the average train load on various roads, in the proceedings to be published.

The report is signed by H. C. Woodbridge, chairman, E. F. Boyle, J. S. Meidroth and F. R. McShane.

The dynamometer car or testing plant should be used to determine whether the locomotive is properly designed and constructed, but tonnage rating should not be determined solely by the use of data thus obtained. Allowance must be made for slight defects in the locomotive, slightly inferior fuel, variation in efficiency of engine crews, and the multitude of variables in car and track construction and maintenance, all of which affect movement. For example—the movement of cars with wheels having worn treads requires much more power on curves than would be necessary if the original con-

tour of the wheel treads obtained. Cars with sufficient coupler side-play, anti-friction side bearings, well-lubricated center plates and journal bearings, also can be moved with less power than others of the same capacity not so prepared. The extent that the outside rail is elevated on curves, materially affects the movement of tonnage trains, etc.

We believe that with very rare exceptions an average speed of more than twelve miles per hour for tonnage freight trains can be attained and maintained without reduction in the properly determined maximum allowable tonnage, and that this tonnage will exceed the present rating in some instances, if the transportation and mechanical departments co-operate effectively in determining the proper rating, and if the officers of these departments, as well as those in the maintenance of way department, put into regular use every possible means for the elimination of delays.

Some of those furnishing information to the committee, assumed that the average freight train speed was at present considerably in excess of twelve miles per hour, and were fearful that the committee would advocate the reduction of the present average speed.

Discussion

F. P. Roesch (U. S. R. A.) discussed the comparative cost of handling tonnage with light and heavy engine loading giving statistics for stated conditions which showed that the heavier loading was the more economical. S. Kerby (B. & O.) expressed the opinion that locomotives are often overloaded and better results would be secured by reducing the tonnage and increasing the speed. L. R. Pyle (U. S. R. A.) brought out that enginemen in general do not like to haul heavy tonnage trains and are prone to state that the motive power is overloaded even though the loading is adjusted so that trains can be moved at reasonably good speed. Curves showing the variation of cost with varying tonnage prove conclusively that the net revenue increases with heavier loading. Mr. Pyle expressed the opinin that on many roads operating results could be greatly improved by eliminating delays and by keeping motive power in condition to perform economically. J. H. DeSalis (N. Y. C.) called attention to the fact that the cost of locomotive repairs, considered on a mileage basis, often exceeded the wages of the train crew and for that reason the effects of varying tonnage on the unit cost of repairs must be considered. Several members spoke on the necessity for co-operation between the traveling engineer, trainmaster and despatcher in order to reduce delays and increase the average speed of trains between terminals. The prevailing opinion was that there is little danger of overloading locomotives if the main journal bearings are kept in good condition.

An account of the latter part of the convention will be published in next week's issue of the *Railway Age*.

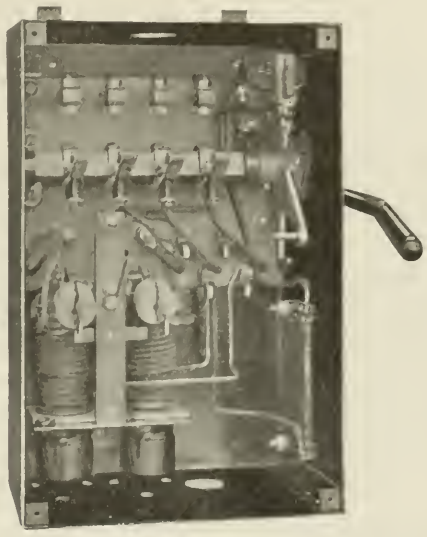
Enclosed Starters for Squirrel Cage Motors

Protection for both the motor and the operator is the principal feature of design in two new enclosed starting switches manufactured by the Cutler-Hammer Mfg. Co., Milwaukee, Wis.

One switch contains an overload protection unit, which is so designed that the circuit is not interrupted by a high initial starting current or by momentary overloads, yet gives protection against the continuance of harmful overloads. This inverse time element action is obtained by the retardation of a plunger in an oil dashpot. The time required for the relay to operate on any given overload condition may be varied by turning an adjusting screw.

The other switch is a three-pole fused starting switch, especially adapted for those motors which cannot be connected directly across the line when starting. A resistor with two sets of terminals allows the motor to be started on either 60 per cent or 75 per cent line voltage. When the motor has reached normal speed, the resistor is cut out of the circuit and the fuses inserted, which is accomplished without breaking the motor circuit. Therefore, the fuses do not carry the heavy starting current, and need be of no greater capacity than to insure proper motor protection.

Both types of starters are completely enclosed and are so designed that it is impossible to touch any live parts either while operating or while renewing fuses and making adjustments. The enclosing cases, which are arranged for conduit



Switch with Overload Protection. Cover Is Removed, Showing Contactors, Duplex Relay and Low-voltage Coil

wiring, prevent the accumulation of dust and grease on the contacts besides protecting the workmen from live parts. All contact posts and fingers are of standard *C-H* drum construction, easily inspected and renewed. Both types of switches are provided with low voltage protection coils.

Lowering the Panel of the Three-pole Starting Switch Deadens the Fuses and Makes Them Accessible for Renewal

To operate either type of starter, it is only necessary to raise and lower the handle, which can be locked to prevent unauthorized operation. The starters are made in various capacities for operating squirrel cage motors on potentials not exceeding 550 volts.

General News Department

The Division of Valuation of the Interstate Commerce Commission has served tentative valuations of the Chicago, Terre Haute & Southeastern, the Hawkinsville & Florida Southern and the Wadley Southern.

Pleasure travel has been very heavy in Western Canada this season, swarms of people coming from the United States. The hotel at Banff, Alberta, reports that it has refused sleeping quarters to 15,000 tourists this season.

The American Society for Testing Materials, which has hitherto had offices at the University of Pennsylvania, has now established society headquarters at the Engineers' Club Building 1316 Spruce street, Philadelphia.

The safety officers of the Northwestern region met at the Hotel Morrison, Chicago, on September 16 for the purpose of discussing plans for the "National Railway Accident Prevention Drive," to be held October 18-31, inclusive.

The American Association of Engineers has removed its national headquarters from 29 South La Salle street to 63 East Adams street, Chicago. The Chicago chapter of the association will retain its offices at 29 South La Salle street.

Indications of valuable oil deposits have been found adjacent to the line of the Chicago, Milwaukee & St. Paul in Montana and Washington. President R. M. Calkins states that boring for oil has been started in several spots near the road in Callam County, Wash., and in Musselshell County, Mont.

A plan for preventing strikes, similar to that embodied in the Canadian law, is provided in a bill, H. R. 9062, introduced in Congress by Representative Wood of Indiana. It provides for the appointment by the President of commissions to investigate labor controversies and would prohibit a strike or lock-out pending the conclusion of any investigation by a commission.

A tropical hurricane and tidal wave practically destroyed Corpus Christi, Tex., Port Aransas and Portland, and other nearby towns, on September 14, killing and injuring hundreds of persons; the railroads were not seriously affected. Relief trains sent from San Antonio, Brownsville and other points have already reached the affected districts with food and medical supplies.

The St. Louis, (Mo.) municipal bridge across the Mississippi river is leased (as regards its railway dock) to produce revenue, and so the city of St. Louis will have to pay taxes on the Illinois half of the bridge. This is a decision recently rendered in the County Court of St. Clair County, Ill. The Illinois half of the bridge has been valued at $600,000, and the 1918 taxes on this amount, which were in suit, are about $17,000.

A campaign for increased production in all industries has been started by the Chicago Association of Commerce in the shape of an appeal to workmen for intelligent co-operation in meeting the present industrial crisis. Statements of the problem and the necessity for increased production have been prepared by the Association of Commerce in such form as to be suitable for inserting in pay envelopes and others for display upon bulletin boards.

The Greenville & Western Railway, extending from Greenville, S. C., northward, 23 miles, to River Falls, evidently out of commission because of unsafe road bed, will resume business as soon as the new ties can be laid and certain trestles have been repaired, so as to make the track passable. This is the substance of a letter received by the South Carolina Railroad Commission and given out at Columbia. The road has been bought by W. H. Cook, of Duluth, Minn.

Representative McKeown has introduced in Congress a joint resolution providing that no railroad shall declare a dividend out of funds received from the government as compensation for the use of its property during federal control until the company shall have settled all valid final judgments rendered prior to federal control, including judgments from which appeals were pending at the time and became final subsequent to the taking over of the railroads by the government.

The United Mine Workers, in session at Cleveland, Ohio, on September 13, following an address by Glenn E. Plumb on government ownership of the railways and their operation by railway employees, adopted a resolution endorsing the Plumb Plan and pledging the support of the miners' organizations to obtain its enactment. The mine workers also invited the railroad brotherhoods to join them in an alliance for joint action, to be extended later into an economic alliance with labor organizations in other basic industries.

The executive council of the Federated Railway Shopmen of the Chicago district has called a national convention to be held at Chicago on September 25, to act upon the new wage scale granted to shopmen recently. According to statements made by officers of the executive council, steps will be taken at the convention to oust the grand lodge officers now conducting the wage negotiations with Railroad Administration officers at Washington. The convention was called by John D. Sanders and M. L. Hawver, who were the leaders of the recent unauthorized strike of shopmen in the Chicago district. So far as can be learned it has not been sanctioned by the international officers of the shopmen's brotherhood and was called without their knowledge.

Oil as fuel has long since supplanted coal on the lines of the Southern Pacific in Southern California; nevertheless the removal of the old coal handling facilities has not been entirely consummated. An instance of this recently was brought to light in the application of the Pacific Electric Railway Company to the Railroad Commission of the State of California for authority to dismantle and remove its long wharf at Port Los Angeles, Cal., and to take up the railroad tracks adjacent. This wharf was originally used by the Southern Pacific for a coal wharf. With the advent of oil as fuel the Southern Pacific transferred the principal part of its fuel handling in Southern Californa to the port of San Pedro and allowed the wharf to fall into disuse. A large part of the wharf was destroyed by a storm several years ago and the application says that the need for it no longer exists, and that it constitutes a menace to other wharves.

National Transportation Conference Plan Introduced as a Bill in Senate

Senator Frelinghuysen of New Jersey has introduced in the Senate a bill, S. 2998, embodying the plan for railroad regulation proposed by the National Transportation Conference, which was called by the railroad committee of the Chamber of Commerce of the United States.

Canadian Regulations for Train Markers

In order to standardize both equipment and operating practices, the Board of Railway Commissioners for Canada recently ordered that all passenger cars and cabooses hereafter constructed shall be equipped with marker sockets fixed at such elevation as will permit lamps and flags to be placed therein from the platform or floor of the car without the use of steps. Furthermore, according to the order, all passenger cars and cabooses now in use and not equipped with marker sockets in this position must be so equipped on or before

May 1, 1920. The action was taken because of the placing of marker sockets at the corners of the roofs in addition to the lower position on some of the passenger cars of the Grand Trunk.

Pyle National Exhibit

Through an oversight the report of the exhibit of railway supplies held in connection with the convention of the Railway General Foremen's Association, published in last week's issue, failed to mention the display of the Pyle National Company. This exhibit consisted of an 18 in. headlight case, an 18 in. special with glass reflector, an 18 in. special with wing side number doors, a K.2-generator, E.2-generator, E.-generator, 14 in. standard case, 1,450 lamp stand, Young valve gear, 32 U. and 33 E. connectors, 402 B. wheel, 1,602, 602 B wheels. This company was represented by J. Will Johnson, W. Miller, O. W. Young, W. Smith and T. P. McGinnis.

The M. W. Brotherhood

The United Brotherhood of Maintenance of Way Employees and RailwayShop Laborers is holding a convention at Detroit, Mich., with approximately 2,000 delegates from the United States, Canada and the Panama Canal Zone present. The convention will last two weeks (September 8-20). The discussions are to be on the wage question, including its relation to living costs, and the probability of calling a strike unless wage demands and working agreements are not granted. The membership has already voted power to the executive committee to call a strike of the 600,000 men employed in maintenance of way and railway shop work. The latest reports from the convention indicate that the organization will abide by President Wilson's plea to postpone action on wages until the conclusion of the government's eorts to bring living costs to normal.

Signal Division A. R. A.—Annual Meeting

The first annual meeting of the Signal Division of the American Railroad Association, and the twenty-fourth annual meeting of the former Railway Signal Association, was held at the Congress Hotel, Chicago, on September 17-19, with 311 members, representing the railways of the United States and Canada, in attendance. An address of welcome was delivered by Harry B. Miller, prosecuting attorney for the City of Chicago, after which the regular business of the Division was taken up, and the committee reports were presented for discussion and action. The committees reporting and the subjects of their reports appeared on page 526 of the *Railway Age* for September 12. The entertainment provided consisted of luncheons on Wednesday and Thursday, a theater party on Wednesday night and an informal roundtable dinner on Thursday evening.

New Locomotives for Canadian Pacific

The Angus shops of the Canadian Pacific at Montreal, Quebec, recently completed 16 new locomotives which were used to draw the royal train carrying the Prince of Wales across Canada. Locomotives of this type, which are said to be the heaviest in service in the Dominion, are being turned out at a rate of one every five and a half working days. The total weight of each engine and tender in working order is 480,000 lbs., the cylinders are 25 in. by 30 in., the diameter of the driving wheels is 75 in. and the boiler carries 200 lb. steam pressure, giving the locomotive a tractive effort of 42,000 lb. The tender holds 8,000 imperial gallons of water and 12 tons of coal. The new locomotives are to be used in the passenger service of the Canadian Pacific between Fort William, Ont., and Winnipeg, Man., and between Smith Falls, Que., Trenton and Havelock.

McAdoo's Passes Discussed in Senate

The issuance of railroad and Pullman passes to W. G. McAdoo and to members of his family on the strength of his appointment as special counsel for the Railroad Administration for the state of New York was criticised in the Senate on September 15 by Senator Sherman of Illinois and defended by Senator Robinson of Arkansas, who said that Mr. McAdoo was serving without compensation and had served as director general without compensation during the war. "It is small business to make an attack on Mr. McAdoo under the circumstances," he said. In reply to a question by Senator Kellogg as to what services Mr. McAdoo performs as special counsel Senator Robinson said that according to his information they are largely advisory but far in excess of the value of the passes. Senator Kellogg said he doubted if there has been a time in years when so many people have been traveling on railroad passes "as in a time when no one should have a pass" and he declared that Congress ought to prohibit the issuance of passes at all.

Arbitration Rules

The Arbitration committee of the Mechanical Section of the American Railroad Association, calling attention to requests for interpretations and for arbitrations that are not prepared in accordance with the rules, promulgates the following general rules:

1. Requests for interpretation of the Rules of Interchange must be signed personally by the chief mechanical officer of the railroad or company. Questions received from car foremen, bill clerks, inspectors and others in a minor capacity, will not be considered. Many of the questions raised by these minor officers could and would be settled by the chief mechanical officer without being referred to the arbitration committee.
2. In presenting requests for interpretation, all facts in the case should be clearly stated, and, wherever possible, repair cards and other records involved should accompany the letter.
3. Where the question for interpretation is the result of a controversy with another company, the name of the other company should be given in order that the committee may, if necessary, request additional information from both parties to the dispute. Several requests for interpretation of the rules have been presented recently that were in reality disputes that should have been prepared as arbitration cases.
4. All cases presented for arbitration should be prepared in accordance with provisions of Interchange Rule 123. Both parties to the dispute should join in presenting the case. The entire file, including original repair cards, joint evidence certificates, etc., should accompany the prepared statements.

Lumber Men Consider Railroad Problem

Lumber men and the lumber industry generally have always taken interest in railroad problems; however, with the present complex situation, the railroad question has occupied even more of their convention time than formerly. The governmental relations committee of the National Lumber Manufacturers' Association, sitting recently in Chicago, adopted resolutions vigorously denouncing government ownership or operation of railroads, and proposed rigid long-and-short-haul provisions. At the summer meeting of the Northern Wholesale Hardwood Lumber Association held recently at Minneapolis, Minn., resolutions were adopted advocating the return of the railroads to their corporate owners not later than January 1, 1920, under proper regulation of the power of the Interstate Commerce Commission and also opposing any rigid long and short haul provision. The Northern Pine Manufacturers' Association, at Minneapolis, Minn., adopted resolutions opposing government ownership of railroads and government guarantees of railroad income, but favoring government loans to roads which are in financial distress.

Eastern Oregon Supports Senate Bill 360

The passing of laws which will assure the people of Eastern Oregon railroad rates now in effect under federal control and prevent transcontinental lines from being returned to pre-war schedules under private management has been urged in letters recently sent by H. H. Corey, a member of the Public Service Commission of Oregon to Senators Cummins, Poindexter, Kellogg, Pomerene and Robinson, who are the committee appointed to draft a law for the solution of the railroad problem. Mr. Corey's letter said in part:

"We of the eastern portion of this state are very much interested in Senate Bill 360, known as the "long-and-short-haul legislation." In view of the arbitrary manner in which the carriers in the past have discriminated against intermountain points, we feel that there can be no compromise on this measure. We hope that you may see the justice of granting at least equal railroad rates when the long-and-short-haul distances are disregarded because of competitive conditions. We think this is a large concession, for, as we view it, there is little justification for a carrier to haul several hundred miles further over mountain ranges at the same rate as for the shorter haul."

Mr. Corey has also urged financial, industrial and commercial organizations throughout eastern Oregon to prepare

and present strong endorsements of Senate Bill 360. He tells them that the practice of allowing lower rates from the east to the Pacific Coast, than for the shorter haul to intermediate points, not only denies to Eastern Oregon an equal opportunity in the manufacturing and jobbing business but has practically put out of business Oregon's coast ports. "Portland has suffered more from lack of water transportation than any other port of the Pacific Coast. There five transcontinental lines meet the potential boat rates, this making it impossible for them to operate; while the roads make up any deficits that may occur from this practice by assessing higher rates in the back haul territory. . . ."

The Heavy Hand and Its Lesson

Written under the imprint of a red hand and the caption above is the August accident record of the Pere Marquette and other roads under the jurisdiction of Federal Manager Frank H. Alfred. The first paragraph of the August bulletin, prepared by George Bradshaw, supervisor of safety, tells the cause of the red hand: "Well, boys, we have been hard hit this month. Seven of our men have made their last runs and entered the great terminal. William Ryan, a brakeman on the Canadian division fell from a car, was run over and killed; William Young, a laborer in Sarnia roundhouse was fatally injured in falling from the running board of an engine on which he was working and five employees of the Chicago-Petoskey division were killed in a collision between an extra freight and a regular passenger train. The cause of the collision was clear and undisputed—the entire crew of the freight simply forgot about the (opposing) passenger train and they came together at full speed on a sharp curve between stations."

The bulletin, with its moral, ends as follows:

"In the midst of life there is death, and in the best devised system of safety there is ever lurking the germ of a serious mishap. It has always been and always will be so long as men measure short of perfection. Our sacred duty is to so conduct and govern ourselves that this germ will be least likely to develop and multiply within us. A man in train service is never off duty and the book of rules is only one short paragraph in the great volume of his guiding principles."

Standard Steel Car Company Strikes Riot

A permanent committee has been appointed to represent the manufacturers of 36 states who attended the "Our Country First Conference" held in Chicago September 8 and 9, a report of which appeared in the *Railway Age* of September 12. This committee was announced recently by John M. Glenn, secretary of the Illinois Manufacturers' Association, under the auspices of which organization the conference was held. The committee, which consists of 16 men, among whom are four prominent railway and railway supply men, was selected to obtain a country-wide ratification of anti-red resolutions which are to be presented to Congress. Among these resolutions is one asking that the Interstate Commerce Commission be empowered to decide the wages of railway employees, as well as the rates for transporting freight and passengers. Following the performance of this duty, the committee will function as the agency of the manufacturers of the nation in propaganda work. The committee consists of: Charles Piez, president, Link-Belt Company, Chicago, chairman; E. B. Leigh, president, Chicago Railway Equipment Company, Chicago, and representing the National Association of Manufacturers, New York; Alba B. Johnson, president, Railway Business Association, New York; Samuel O. Dunn, editor, *Railway Age*, Chicago; George M. Gillette, Minnesota Employers' Association, Minneapolis, Minn.; Milo D. Campbell, National Milk Producers' Federation, Coldwater, Mich.; Thomas Creigh, American Institute of Meat Packers, Chicago; R. H. Rice, National Conference of State Manufacturers' Associations, West Lynn, Mass.; Charles S. Keith, National Lumber Manufacturers' Association, Kansas City, Mo.; W. H. Stackhouse, National Implement and Vehicle Association, Springfield, Ohio; H. H. Merrick, Mississippi Valley Association, Chicago; Dwight T. Farnum, American Institute of Industrial Engineers, St. Louis, Mo.; J. J. Phoenix, National Association of Hosiery & Underwear Manufacturers, Delavan, Wis.; S. Edward Davis, Butter and Egg Board, Chicago; George M. Verity, Ohio Manufacturers' Association, Columbus, Ohio, and John M. Glenn, secretary, Illinois Manufacturers' Association, Chicago.

Standard Steel Car Company Strikers Riot

The strike of workmen at the Hammond, Ind., plant of the Standard Steel Car Company, which has been in progress for approximately two months and which necessitated the calling out of eleven companies of the Indiana state militia several weeks ago, again assumed a serious aspect on September 9, when five strikers were killed and 15 wounded in a battle between 1,000 former employees of the company and the police. About two months ago the workmen at the plant went on a strike for increased wages and improved working conditions. The strike did not cause serious trouble until about three weeks ago, when rioting broke out between the strikers and the police and a number of persons were injured, as a result of which the Indiana state militia was ordered to Hammond to restore order. These troops were withdrawn about two weeks ago and since that time the strikers have been returning to their work in small numbers, thereby creating bad feeling among the men who refused to return. On September 9, about 200 men on their way to work were attacked by a crowd of 1,000 strikers, who in turn were ordered to disperse by police and special guards employed by the company. The rioting which ensued as a result of the attempts of the police to arrest the leaders of the mob resulted in the death of five of the strikers and the wounding of 15. Since this latter outbreak there has been no serious trouble reported and the strikers continue to return to their work in small groups.

Safety Committees' Work in June

The Safety Section, Division of Operation, of the United States Railroad Administration, has issued bulletin No. 7, showing that in the month of June, on the class 1 railroads, 158 employees were killed, and 10,000 were injured, as compared with 210 killed and 12,624 injured in the corresponding period of 1918. In June of this year the number of meetings held by general and local safety committees was 1,958, with an attendance of 32,020. The magazines, pamphlets and other printed matter distributed, numbered 1,095,808 pieces.

This bulletin contains detailed suggestions to supervisors of safety, on the government operated railroads, for making effective the "National Railroad Accident Prevention Drive" which is to be conducted from October 18 to October 31.

Committee meetings should be generally held during the ensuing four weeks and the drive definitely presented; there should be general inspections of tools, shops, buildings, and all railroad property; clean-up periods, short or long, and meetings early in October, to be managed by foremen and gang bosses; and pledge cards should be circulated. It is desired also that the co-operation of ministers, schools, public officers, etc., shall be secured and, in general, that all the methods heretofore proved useful in no-accident drives be employed now with the utmost possible efficiency. Men should be drilled, and every individual who can do anything in this direction should be assigned to a position for action.

The records of the results of the drive are to be made up on the basis of casualties per 100 persons in the service, comparison being made with the casualty records for the period October 1-15; and also with last year's October record. Reports will include all deaths or bodily injuries which are to be reported to the Interstate Commerce Commission.

The bulletin ends with an appeal to everyone to take personal pride in making the drive a success. The net decrease in casualties in the first half of 1919 was 19,110 employees (or 21,390, if all cases are included). Special care should be taken with new men in the service, who must be watched, advised and instructed.

Western Railway Club Opening Meeting

On Monday evening, September 15, the Western Railway Club, Chicago, held its opening meeting of the season at the Hotel Sherman, Chicago. R. M. Calkins, president of the Chicago, Milwaukee & St. Paul Railway Company, discussed the railroad situation from the standpoint of the corporation. He said in part that the railroad companies were willing to accept government regulation, fair and just wages to em-

ployees, pooling of cars when necessary and unification of terminals if the service rendered would be more efficient and economical, but in return it would be only just that the owners of railroad securities should be allowed a fair return on their investments. The problem is to ascertain where the money is to come from to finance the railroads, to extend their facilities and to give adequate service to the public if these securities do not offer a fair return, for insurance companies, banks and other financial institutions which have been purchasers of large quantities of railroad stocks and bonds, are now looking elsewhere for investments.

In regard to rates and the Cummins plan now before the Senate committee, Mr. Calkins said that it did not seem fair to allow a certain rate and then ask that all over and above a certain margin of profit be returned to the government, because it would certainly kill initiative on the part of those in charge of railroad properties and discourage the employees from attempting to save any thing over and above the fixed margin of profit. When a rate is fixed it stays fixed until changed by the rate making bodies, in contrast with the prices of a great many commodities which are shipped over the railroads at a fixed rate. For instance, beef, pork or mutton may vary five or six cents per lb. up or down even within a week's time, while the rate per lb. for shipping such meat remains the same. He stated that it was his belief that this high cost of living would adjust itself rapidly if the railroads were turned back to their owners as soon as possible, providing legislation was enacted which was fair and just to all.

Following Mr. Calkins' address, a paper on "Railway Train Lighting" was presented by E. Wanamaker, electrical engineer, Chicago, Rock Island & Pacific. This paper outlined the history, development and progress of train lighting since its early beginning in England in 1825.

National Association of Railroad Commissioners

The call for the thirty-first annual convention of the National Association of Railway and Utilities Commissioners, to be held at Indianapolis, Ind., on October 14, was given in the *Railway Age* last week, page 527. President Charles E. Elmquist expects that the committee reports to be presented at this convention will be unusually interesting and important. They will be taken up, so far as practicable and convenient, in the order in which the subjects are given below. Members are called upon to make special effort to be present, and to attend the session of the first day, when the opening address will be delivered by Hon. C. B. Aitchison. It is not safe, says the circular, to infer that the propaganda against state regulation is dead. "Congress must be thoroughly informed of the facts concerning our dual system of regulation and the necessity for its continuance. Justifiable pride in the accomplishments of the state commissions, a proper consciousness of our responsibilities to the public, and a clear appreciation of the complex problems of reconstruction, vitally relating transportation and utility services to our industrial fabric, make it imperative that every member of the association attend."

The twenty subjects to come before the convention, as indicated by the titles of the committees, together with the name of the chairman of each committee, are as follows:

Standardizing annual and special reports of companies; U. G. Powell, Nebraska.
Railroad rates in inter-mountain states; H. H. Williams, New Mexico.
Terminals and Warehouses; O. P. B. Jacobson, Minnesota.
Special war committee.
Public ownership and operation; J. S. Allen, Wisconsin.
Safety of railroad operation; C. C. McChord.
Safety of operation of public utility companies; W. D. B. Ainey, Pennsylvania.
Railroad service, accommodations and claims; C. C. Marshall, Ohio.
Service of public utility companies; C. B. Hill, New York
Railroad rates; E. J. Bean, Missouri.
Public utility rates; T. W. D. Worthen, New Hampshire.
Car service and demurrage; O. P. B. Jacobson, Minnesota
Express and other contract carriers by rail; E. O. Edgerton, California.
Statistics and accounts of railroad companies; U. G. Powell, Nebraska.
Statistics and accounts of public utility companies; C. E. Schreiber, Wisconsin.
Grade crossings and trespassing on railroads; H. H. Williams, New Mexico.
Valuation committee; W. A. Shaw, Illinois.
Capitalization and inter-corporate relations; H. P. Long, Louisiana.
State and federal legislation; V. E. Wilson, Nebraska.
Publication of commissions' decisions; A. R. Weed, Massachusetts.

Exhibitions at Traveling Engineers' Convention

The following is a list of the companies exhibiting at the convention of the Traveling Engineers' Association, Hotel Sherman, Chicago, September 16 to 19:

Air Reduction Sales Company, New York—Oxy-acetylene welding apparatus and gases. Represented by E. L. Mills, R. T. Peabody, S. H. Shaykin, M. M. Weist and B. A. Eliason.

American Flexible Bolt Co., Pittsburgh, Pa.—American flexible bolt, American reduced body staybolt, American marine hollow bolt, American hollow staybolt iron, American rivet. Represented by R. W. Benson, W. F. Heacock, L. W. Widmeier and W. W. McAllister.

American Locomotive Company, New York—Locomotives, Alco reverse gear, flexible staybolts, Alco throttle lever, Alco trailing truck, Alco lateral motion box, Alco rotary snowplow. Represented by W. J. Murray, G. G. Jones and G. P. Robinson.

American Steel Foundries, Chicago—Simplex clasp brake, Simplex couplers, Simplex shelf coupler pocket, Ecluse coupler yoke, Economy draft arm, steel side frames. Represented by W. G. Wallace, W. C. Walsh and J. H. Tinker.

Anchor Packing Co., Philadelphia, Pa.—Packings of all kinds for railroads and power plants. Represented by J. P. Landreth and J. C. Weedon.

Ashton Valve Company, Boston, Mass.—Ashton safety valves, pressure recording gages, locomotive steam and air gages, test gages, dead weight and gage tester, wheel press recording gage and whistles, protected dial gages. Represented by J. W. Motherwell, H. O. Fettinger and J. F. Getzrust.

American Arch Co., New York—Security brick arch and new double tube supported arch. Represented by J. P. Neff, A. W. Clokey, R. J. Hunmeright, W. L. Allison, F. G. Boomer, J. D. Brandon, E. H. Cook, T. M. Ferguson, E. T. Mulcahy and W. W. Neale.

Baldwin Locomotive Co., Philadelphia, Pa.—Locomotives. Represented by W. T. Sample and C. H. Gaskill.

Barco Manufacturing Company, Chicago—Engine tender connections, car steam heat connections, coach yard steam heat connections, freight train departure yard air connections, air reservior joints, Barco crosshead and slide, Barco automatic smoke box blower fitting, Barco roundhouse blower and blow off connections. Represented by F. N. Bard, C. L. Mehoe and C. Thomas.

Bird-Archer Company, New York—Harter circulating boiler plate, boiler compound. Represented by F. B. Bird, C. W. Bird, L. F. Wilson, L. D. Bush and C. W. McGurn.

Boss Nut Company, Chicago—Boss lock nuts, bolts and rivets. Represented by J. A. MacLain, J. W. Fogg and W. G. Willcoxen.

Broschart Threadless Pipe Coupling Company, Trenton, Mo.—Train line couplings and accessories. Represented by J. L. Broschart.

Buda Company, Chicago—Model G. W. headlight equipment. Represented by H. Bayley, M. A. Ross and W. F. Davis.

Chamber Valve Company, New York City—Throttle valves. Represented by F. H. Clark.

Chicago Pneumatic Tool Company, Chicago—Pneumatic tools. Represented by L. C. Sprague, A. C. Andresen and C. W. Cress.

Commonwealth Supply Company, Richmond, Va.—Lewis power reverse gear. Represented by S. H. Lewis.

Crane Company, Chicago—Valves and fittings. Represented by F. D. Fenn.

Dearborn Chemical Company, Chicago—Water treatment for locomotive boilers. Represented by G. R. Carr, J. D. Purcell, W. S. Reid, L. L. Beele, O. H. Rehmeyer, L. H. Bowen, I. P. Bowen, C. H. Everett, C. S. Murray, J. E. Roddy, H. Ross and T. H. Price.

Joseph Dixon Crucible Company, Jersey City, N. J.—Brake cylinder greases, front end finish, rub liner lubricant, general graphite lubricants. Represented by H. L. Hewson, I. R. Brandon and J. E. Simpson.

D & M Cleaning Process, Chicago—D & M cleaning process. Represented by D. L. Lewis and F. M. Hilgerink.

Detroit Lubricator Company, Detroit, Mich.—Three feed Detroit standard lubricator, with transfer filler attachment, one U. S. standard three-feed lubricator and Detroit automatic flange oiler. Represented by A. G. Machesney and A. D. Howard.

Electric Pneumatic Seal Company, Centralia, Ill.—Car stopping device for use in hump yards. Represented by L. W. Wiley.

Elda Brass Mfg. Company, Cincinnati, Ohio—Lubricators, injectors, water glasses, coal sprinklers, boiler checks, line checks, locomotive appliances. Represented by E. O. Corey and H. V. Glenn.

Flannery Bolt Company, Pittsburgh, Pa.—F. B. C. flexible staybolt, universal sleeve, Tate flexible staybolt. Represented by W. M. Wilson.

Franklin Railway Supply Company, New York—Franklin butterfly

fire door, Franklin lateral preventer, Franklin buffer, Economy engine truck McLaughlin flexible joints, unit safety bar, Universal valve chest, Franklin automatic driving box wedge. Represented by J. L. Randolph, C. W. F. Coffin, S. G. Allen, J. L. Bacon, H. F. Ball, J. G. Berger, L. Brooks, R. G. Coburn, W. T. Comley, W. H. Coyle, R. F. D. Mott, H. M. Evans, P. Gillespie, C. H. Godfrey, W. T. Lane, F. W. Martin, C. F. Owens, J. A. Partington, F. R. Peters, C. F. Prescott, F. L. Reed, S. D. Rosenfelt, J. Sinkler, H. R. Stafford, R. H. Stickney, P. Weiler, P. Willis and C. L. Winey.

Galena Signal Oil Company, Franklin, Pa. Represented by C. McNair, H. Hale, F. J. Walsh, W. F. Walsh, D. L. Eubanks, A. J. Poole, W. J. Watsn, W. E. Auger, C. B. Royal, I. P. Ferguson, J. F. Linahen, W. H. Foster, J. A. Graham, B. P. Corey, W. L. Trout, F. Smith, R. Webb, J. J. Dyer, I. Farmer, P. Stack, W. O. Taylor, M. Meehan, J. A. Roosevelt and J. S. Brown.

Garlock Packing Company, Palmyra, N. Y.—Packings. Represented by G. W. Sullivan and W. H. Cook.

Garrett-Callahan Company, Chicago—Magic boiler preservative. Represented by A. H. Hawkinson, W. Rollinson, O. A. Leath and E. V. Sackett.

A. W. Gillespie & Company, Chicago—Economy locomotive fire door. Represented by A. W. Gillespie and J. S. Seeley.

Hunt Spiller Manufacturing Corporation, Boston, Mass.—Piston valve bushings, piston valve packing, piston valve bull rings, cylinder packing, crosshead shoes, driving box shoes and wedges, knuckle pin bushings, side rod bushings. Represented by J. G. Platt, V. W. Ellet, E. J. Fuller, C. Galloway and F. Hartman.

H. G. Hammett, Troy, N. Y.—Staytite metallic piston rod and valve stem packing.

Hanna Locomotive Stoker Company, Cincinnati, O.—Locomotive stokers. Represented by W. T. Hanna, F. E. Cornwell, L. J. McConnell and J. R. Gallagher.

Henry Manufacturing & Grease Cup Company, Terre Haute, Ind.—Henry automatic grease cup. Represented by M. Henry.

International Correspondence Schools, Scranton, Pa.—Correspondence courses. Represented by E. M. Sawyer, H. T. Pettinger, C. Z. Meyers and J. W. Harding.

H. W. Johns-Manville & Company, New York—Air pump and throttle packing industrial and brake cylinder packing sets, insulation for pipes, boiler and locomotive lagging, brake slack adjuster. Represented by J. E. Meek, J. C. Younglove, P. C. Jacobs, P. R. Austin, E. H. Willard, D. L. Hennings, L. S. Wilbur, H. M. Butters, G. Christenson, J. H. Trent and H. Flannagin.

Lewis Valve Company, New York—Lewis automatic drifting valve. Represented by F. M. Patterson.

Locomotive Firebox Company, Chicago—Nicholson thermic syphons for locomotive fireboxes. Represented by J. L. Nicholson, S. Hawley and J. T. Anthony.

Chas. R. Long, Jr., Company, Louisville, Ky.—Railway paints, locomotive black varnish, Staybrite front end paint, Lo-kost front end paint, Lovico process freight car paints, passenger car and locomotive enamels. Represented by Harry Vissering, G. S. Turner, W. H. Heckman and J. M. Monroe.

The Leslie Company, Lyndhurst, N. J.—Pressure regulators and removable coupling nuts. Represented by S. I. Leslie and J. J. Cizek.

Locomotive Feed Water Heater Company, New York—Model of feedwater heater and pump. Represented by W. L. Allison, E. A. Averill and W. T. Bennison.

Locomotive Lubricator Company, Chicago—Schlacks' system of force feed lubrication for locomotive valves and cylinders. Represented by C. W. Rudolph, O. H. Neal and W. J. Schlacks.

Locomotive Stoker Company, Pittsburgh, Pa.—Duplex stokers. Represented by C. D. Barrett, W. S. Bartholomew, J. J. Byrne, O. B. Capps, W. G. Clark, D. F. Crawford, J. J. Hannahan, E. Prouty, L. V. Stevens, O. W. Deitrich, H. C. Cale, A. N. Willsie, D. T. Carlisle, E. Ryan, R. C. Jordan, E. G. Haskin and F. H. Tryon.

Locomotive Superheater Company, New York City—Pyrometer for superheater locomotives. Represented by G. E. Ryder, R. R. Porterfield, R. M. Osterman, K. E. Stillwell, G. Fogg, G. E. Crisp, B. R. Bristol, B. G. Lynch, H. Spicer, J. E. Monroe, H. B. Oatley, R. J. Van Meter, F. Schaff, W. Boughton, A. C. Louden, W. A. Buckbee, B. Browne, A. C. McLaughlin, S. MacDonald, C. Wickham, W. Tawse, J. Bell and H. C. Bell.

Lovejoy Tool Works, Chicago—Cone bearing journal jacks. Represented by W. H. Dangel.

Manning, Maxwell & Moore, New York—Ashcroft Manufacturing Co., gages, Hancock inspirator, Hancock boiler tester, boiler checks, appliances. Consolidated safety valve. Represented by C. L. Brown.

Metal & Thermit Corporation, New York—Thermit and alloys, compounded with chromium, nickel, iron, titanium and manganese; thermit process for pipe welding, thermit welding equipment. Represented by W. H. Moore, H. S. Mann and C. D. Young.

W. H. Miner, Chicago—Draft gears, side bearings. Represented by J. R. Mitchell and B. S. Johnson.

Mudge & Company, Chicago—Mudge-Slater spark arrester. Represented by J. K. Vanatta and G. W. Bender.

Nathan Manufacturing Company, New York—Injectors, lubricators, boiler checks, gage cocks, water gages, boiler washer and tester. Represented by O. Best, W. R. Walsh, W. Brumble, J. Arn, H. Gettys, J. Lemley, F. C. Davern and R. Welsh.

National Railway Devices Company, Chicago—Shoemaker vertical fire doors. Represented by J. G. Robinson, E. J. Gunnison and F. Lind.

National Boiler Washing Co., Chicago—National hot water locomotive boiler washing system. Represented by D. Anderson.

National Tube Co., Pittsburgh, Pa.—National pipe and tubes.

National Waste Co., Chicago—Packing and wiping waste. Represented by G. Green.

New York Air Brake Co., New York City—Forsyth automatic air and steam connector, air pump strainer, type L, automatic brake valve, leather and rubber gaskets for air brake equipment, pipe fittings for railroad air brake service. Represented by G. Kleifges, W. J. Elliot, H. Yohn, W. Owens and L. W. Sawyer.

Ohio Injector Company, Chicago—Chicago lubricator, Chicago flange oiler, Chicago non-lifting injector, Chicago U. S. Standard special II injector, Ohio water glass protector, Ohio lifting injector, Chicago automatic drifting valve. Represented by A. C. Beckwith, F. W. Edwards, W. S. Furry and F. B. Farnsworth.

Okadee Company, Chicago—Okadee front end hinge, locomotive blow-off valves, tender hose couplers, Okadee water gage, glass and round-house washout valves. Represented by A. G. Hollingshead, G. S. Turner and W. H. Heckman.

O'Malley-Beare Valve Company, Chicago—Multiplate valves, Perfection self-grinding gage cocks, water glass drains, special locomotive valves. Represented by T. O'Malley, E. O'Malley, J. E. Brown, J. N. Gallagher, J. Pigott, F. Hitesman and W. Morris.

Paxton-Mitchell Company, Omaha, Neb—Paxton-Mitchell piston rod packing and Leighton cylinder packing rings. Represented by J. L. Paxton and F. J. Myers.

Pyle-National Company, Chicago—Headlight cases, with glass reflector and wing side number doors, K.2-generator, E.2-generator, E.-generator, 14-inch standard case 1450 lampstand, Young valve gear, 32 U. and 33 E. connectors. Represented by J. W. Johnson, W. Miller, O. W. Young, W. Smith, J. Reese, C. LeFevre, R. L. Kilker, T. P. McGinnis, C. P. McGinnis and G. Haas.

Pilliod Company, Swanton, O.—Baker valve gear. Represented by E. J. Barnett, W. H. Bellmain, K. J. Eklund and R. H. Weatherly.

Pocket List of Railroad Officials, New York City—The Pocket List. Represented by C. L. Dinsmore and J. Alexander Brown.

Railway Review, Chicago.

Schroeder Headlight & Generator Company, Evansville, Ind.—Headlight with switch lens and special lens for diffusing light on yard and switch engines. Represented by J. H. Schroeder, A. H. Varney, E. B. Barris, C. E. Kinnaw and F. Edmunds.

Wm. Sellers & Company, Inc., Philadelphia, Pa.—Feed water equipment and special devices. Represented by J. D. McClintock and J. R. New.

Simmons-Boardman Publishing Company, New York City—*Railway Age*, Railway Mechanical Engineer, Locomotive Dictionary, Car Builders' Dictionary. Represented by A. F. Stuebing, J. M. Rutherford and F. H. Thompson.

Sargent Company, Chicago—Ironclad water glass protector, Sargent safety water gage, E. S. E. Reflex gage, E. S. E. water glass cocks, Renn gage cock, Loodige quick acting blower valves, E. S. E. automatic feed grease cup, Martins self-locking grease plug. Represented by G. S. Garren and K. C. Robbins.

Southern Locomotive Valve Gear Company, Knoxville, Tenn.—Southern valve gear. Represented by E. L. Challman.

Smith Adjustable Hub Plate Company, Chicago—Smith adjustable hub plate. Represented by A. J. Sams and R. G. Long.

Standard Stoker Company, New York—Locomotive stokers. Represented by J. A. Carey, H. L. Walker and F. M. Morley.

W. S. Tyler Company, Cleveland, O.—Draftac spark arrester. Represented by J. H. Jackson and A. D. Busch.

Universal Equipment Company, Toledo, O.—National Gregory automatic fire door.

Universal Packing & Service Company, Chicago—Spring journal box packing. Represented by L. Rowe.

United States Metallic Packing Company, Philadelphia, Pa.—King type single and tandem piston packing, King type air pump packing. Represented by M. B. Brewster, H. E. Hyslop, L. B. Miller and J. Luscombe.

Vapor Car Heating Company, Chicago—Locomotive cab heating arrangement; pressure reducing valves, steam gages, traps and metallic straight pert steam joints. Represented by E. C. Post.

Harry Vissering & Co. Chicago—Viloco fire door, Crescent metallic piston rod and valve stem packing, sanders, duplex sander valves, bell ringers and Viloco steam compressor governors. Represented by G. S. Turner, J. M. Monroe and W. H. Heckman.

J. H. Watters, Anniston, Ala.—Locomotive track sanders, feed water strainer valves. Represented by J. H. Watters.

Western Railway Equipment Company, St. Louis, Mo.—Linstrom syphon, Western M. C. B. malleable iron journal wedge and security dust guard. Represented by R. M. Hoerr, R. L. Langtim and S. H. Campbell.

Westinghouse Air Brake Company, Pittsburgh, Pa.—H.-6 brake valve with collapsible equalizing piston, No. 4 brake pipe vent valve, M. C. B. hose couple gage, hose coupling packing ring gages, triple valve shipping caps, auxiliary devices governor, freight brake cleaners and testing outfit, brake cleaning tools, air compressor strainer. Represented by W. S. Bartholomew, C. J. Ohlmstead, J. S. Y. Fralich, J. B. Wright, L. Wilcox, L. M. Carleton, A. K. Hohmyer, F. H. Parke, A. L. Berghane, W. Sleet, A. G. Houston, F. B. Farmer, J. A. O'Malley, H. H. Burns and F. B. Johnson.

At a meeting of the Railway Equipment Manufacturers' Association, held on Tuesday, the following officers were elected: President, C. W. Floyd Coffin, Franklin Railway Supply Company; Vice-President, David L. Eubank, Galena Signal Oil Company; Secretary, Fred W. Venton, Crane Company; Treasurer, Charles L. Brown, Manning Maxwell & Moore.

Checking Percentages by Chart

An article and chart by William Wyer was published in our issue of June 27, on page 1826. The caption to this chart was through an error placed at the side of the chart instead of at the bottom of the chart. Thus, in other words, to read the chart according to the directions of the caption, the page should be turned horizontally instead of held vertically

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF JULY, 1919

Name of road.	Average mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total	Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
Alabama & Vicksburg	141	$151,094	$69,004	$234,610	$38,412	$49,589	$1,728	$86,281	$9,797	$188,117	80.18	$46,117	$46,492	$12,229	$34,237
Alabama Great Southern	312	589,679	289,340	906,084	176,272	196,131	11,521	322,098	19,481	732,308	80.82	173,776	23,561	150,199	—95,008
Ann Arbor R. R.	301	323,448	71,819	416,556	39,262	51,346	4,138	203,299	9,034	307,232	73.75	109,324	16,700	92,576	33,549
Arizona Eastern	377	276,781	37,880	329,134	64,570	49,454	2,543	100,641	17,006	234,097	71.12	95,036	16,282	78,697	30,741
Atchison, Topeka & Santa Fe	8,665	9,819,183	4,318,963	14,833,620	1,906,298	3,125,406	165,856	5,170,782	242,814	10,561,981	71.20	4,271,640	572,426	3,965,330	—2,420,894
Atlanta & West Point	93	88,813	101,318	215,621	27,929	38,498	3,117	80,887	7,493	161,971	75.11	53,650	8,500	45,150	—27,157
Atlanta, Birmingham & Atlantic	639	334,703	97,570	449,934	106,371	109,875	6,661	231,261	11,739	465,893	103.54	—15,959	16,000	—31,973	—36,354
Atlantic City	177	91,158	461,722	570,708	38,434	54,041	2,705	233,098	1,295	329,680	57.76	241,028	12,000	229,028	32,086
Atlantic Coast Line	4,874	2,982,980	1,361,441	4,612,693	749,180	1,066,499	61,882	2,201,730	102,860	4,205,063	91.16	407,630	220,000	186,571	—986,747
Baltimore & Ohio Chicago Terminal	90	.....	3,071	210,134	26,914	46,191	1,120	109,745	6,151	195,499	93.03	14,634	26,542	—12,026	47,713
Baltimore & Ohio	5,151	12,171,529	3,028,920	16,320,566	2,702,540	4,497,787	181,424	6,415,107	362,271	13,782,445	84.44	2,538,121	339,742	2,197,326	—2,382,324
Baltimore, Chesapeake & Atlantic	87	101,824	68,416	174,429	15,889	173,449	1,292	99,904	3,415	293,949	168.52	—119,521	3,161	—122,681	155,349
Bangor & Aroostook R. R.	632	231,425	69,885	319,127	73,021	125,410	4,901	139,263	12,238	360,710	113.03	—41,583	21,000	—64,101	—80,503
Beaumont, Sour Lake & Western	118	77,849	30,915	114,035	35,905	17,913	2,112	51,894	5,796	113,619	99.63	416	2,700	—2,293	—8,052
Belt. Ry. Co. of Chicago	31	.....	.....	355 156	36,849	52,064	425	167,464	1,172	263,973	74.32	91,183	15,682	75,500	22,062
Bessemer & Lake Erie	217	1,370,662	38,128	1,433,648	163,008	355,997	12,777	376,934	19,179	934,940	65.21	498,709	14,500	484,209	—446,504
Bingham & Garfield Ry	37	81,870	1,624	85,926	41,628	37,231	1,325	23,225	3,620	110,159	128.20	—24,233	6,232	—30,465	—221,003
Birmingham Southern R. R.	29	35,594	.....	42 714	5,048	5,801	730	22,332	3,408	37,318	87.36	5,395	—2,733	7,916	—79,644
Boston & Maine	2,258	3,815,721	2,133,986	6,518,287	916,573	1,167,204	57,279	3,214,197	168,616	5,557,268	85.25	961,020	180,086	780,726	—661,778
Buffalo & Susquehanna R. R Corp	296	200,326	6,798	224,345	53,093	96,496	1,527	66,472	7,247	224,836	100.22	—490	3,250	—3,740	—26,444
Buffalo, Rochester & Pittsburgh	589	1,066,021	141,638	1,253,044	189,328	402,235	15,561	532,519	30,740	1,172,745	93.59	80,299	27,000	53,222	—276,213
Canadian Pacific Ry. Lines in Maine	233	87,617	33,934	131,291	76 573	27,511	2,456	68,704	3,458	178,703	147.33	—47,412	11,000	—58,412	—22,915
Carolina, Clinchfield & Ohio	282	485,772	46,618	541,427	58,680	97,692	5,173	145,662	14,171	321,339	59.35	220,088	16,300	203,724	119,685
Central New England	301	545,907	25,378	594,331	140,329	66,968	2,834	213,563	12,566	437,478	73.61	156,853	16,000	140 813	—12,204
Central of Georgia	1,918	1,163,364	622,973	1,930 223	349,942	318,913	38,834	784,416	60,496	1,555,138	80.57	375,085	65,580	308,804	—121,479
Central Ry. Co. of New Jersey	685	3,199,271	888,506	4,352,061	447,121	852,788	38,620	1,789,750	117,129	3,267,556	75.08	1,084,512	157,401	927,096	—852,437
Central Vermont Ry	411	397,239	91,611	532,575	122,572	121,608	12,290	294,638	17,213	571,146	107.24	—38,571	17,400	—55,975	—83,942
Charleston & W. Carolina	342	171,489	37,952	220 526	37,182	41,889	5,310	116,000	2,695	263,276	92.17	17,251	8,500	8,750	—34 072
Chesapeake & Ohio	2,509	4,903,511	1,396 827	6,665,251	1,002,227	1,524,202	38,429	2,376,296	112,177	5,087,467	76.32	1,577,784	158,400	1,419,085	—814,934
Chicago & Alton	1,050	1,498,778	600,310	2,220,876	366 493	579,327	23,438	856,943	49,875	1,889,707	85.08	331,169	55,500	275,496	—497,153
Chicago & Eastern Illinois	1,131	1,569,281	446,701	2,154,410	336,962	708,344	20,637	860,039	44,029	1,981,051	91.95	173,353	79,500	93,382	—622,523
Chicago & Erie	269	671,577	119 214	855,385	135,384	120,853	10,948	456,903	27,794	754,118	88.16	101,266	27,678	73,582	—120,642
Chicago & North Western	8,090	8,791,354	3,485,832	13,321,598	1,931,093	2,262,259	82,004	5,152,128	244,303	9,772,014	73.35	3,549,584	475,000	3,073,621	—899,075
Chicago, Burlington & Quincy	9,372	8,636,011	3,447,556	13,068,386	2,249,036	2,423,780	88,924	4,706,970	316,723	9,917,013	75.88	3,151,374	463,118	2,688,059	—1,568,953
Chicago Great Western	1,496	1,156,951	575,173	1,857 565	287,972	372 055	29,968	921,936	45,341	1,470,635	79.16	386,930	54,975	331,629	80,128
Chicago, Indianapolis & Louisville	657	711,795	248,411	1,052 075	142,432	250,966	16,214	465,320	25,592	911,030	86.59	141,044	47,340	93,384	—27,157
Chicago Junction Ry	12	.....	.....	325,131	49,847	51,249	163	218,706	7,022	326,987	100.57	—1,857	2,129	—3,985	—32,808
Chicago, Milwaukee & St. Paul	10.648	8,510,393	3,005,284	12,617,449	2,292,982	4,266,828	120,425	5,731,558	334,319	12,838,955	101.76	—221,507	458,809	—682,614	—2,962,237
Chicago, Peoria & St. Louis	247	101.595	26.165	136,421	44.638	73.228	3,349	83.703	8,444	213,362	156.39	—76,940	6,100	—83,041	—87,663
Chicago, Rock Island & Gulf	474	259,097	94,342	374,593	56,362	63,192	7,566	157,081	11,716	297,506	79.42	77,087	13,155	63,919	4,533
Chicago, Rock Island & Pacific	7,594	6,362,183	3,005 740	9,847,273	1,575,222	1,928,404	123,232	3,916,667	194,951	7,781,939	79.02	2,065,335	356,719	1,708,075	—203,540
Chicago, St. Paul, Minneapolis & Omaha	1,749	1,529.131	692,186	2,352,013	422,198	398,137	23,857	1,003,764	60,206	1,912,936	81.33	439,076	103,577	334,844	—306,327
Chicago, Terre Haute & S. E.	374	302.745	22,084	339.193	61 129	137.255	2,278	132,336	8,236	342,696	101.03	—3,503	14,500	—18,003	—201,033
Cincinnati, Indianapolis & Western	321	187,345	56,416	266,853	47,994	86,934	7,594	133,876	14.423	291,806	109.35	24,953	10,261	—35,214	—32,794
Cincinnati, Lebanon & Northern	76	93,967	9,550	119,083	8,705	18,873	1,484	47,185	1,330	77,179	64.81	41,505	4,404	37,101	17,780
Cincinnati, New Orleans & Texas Pacific	337	797,214	315,016	1,168,391	208,794	465,123	20,468	505,989	16,435	1,218,956	104.33	—50 566	37,000	—87,658	—477,073
Cincinnati Northern	251	216,463	22,106	244 913	31,014	52,085	2,321	90,876	5,337	181,633	74.16	63,279	8,500	54,779	—30,393
Cleveland, Cincinnati, Chic. & St. Louis	2,395	4,212,350	1,598,307	6.255 155	707.229	1,227.355	83,163	2,499,305	128 220	4,701.972	75.16	1,553,183	185,000	1,367.805	—1,421,719
Colorado & Southern	1,099	765,442	267,959	1,094,279	213,123	236,405	7,309	365,478	32,150	862,134	78.78	232,145	47,000	185,008	—45,531
Colorado & Wyoming Ry	41	21,655	1,285	84,031	13,272	18,159	388	38,659	3,725	74,203	88.30	9,828	4,000	5,828	16,240
Cumberland Valley	163	396 406	82,785	503,056	60,777	97,723	6,850	178,479	10,712	355,348	70.63	147,709	7,382	140,327	—69,794
Delaware & Hudson Co.	875	2,775,851	302,569	3,258 572	432,525	803,133	18,221	1,316,540	115,839	2,715,343	83.32	543,229	60,000	482,530	—187,894
Delaware, Lackawanna & Western	955	4,495,926	1,231,050	6,342,043	760,732	1,245,722	53,646	2,392,140	111,480	4,631,029	73.02	1,711,014	318,427	1,391,552	—954,923
Denver & Rio Grande R. R.	2,593	1,880,898	791,265	2,840 670	515,673	574,350	23,123	856,836	70,880	2,100,926	73.95	739,744	115,000	624,229	267,651
Denver & Salt Lake R. R.	255	229,344	61,223	296,925	106,959	74,964	1,084	153,984	5,321	342,312	115.28	—45,387	9,000	—54,395	—56,986
Detroit & Mackinac	381	115,534	38,256	161,252	16,685	28,075	711	60,555	1,950	106,872	66.27	54 380	8,439	45,940	26,101
Detroit, Toledo Shore Line	61	207,246	.....	209,760	32,213	37 097	2,386	53,228	10,590	135,514	64.60	74,246	8,250	65,996	10,510
Detroit, Toledo & Ironton	454	281,804	16,018	313,391	93,193	85,170	2,559	131,229	13,300	325,450	103.85	—12,060	5,641	—17,777	—92,307
Duluth & Iron Range	292	1,214,526	24,252	1,318,816	97,470	114,183	287	236,703	14,803	464,043	35.19	854,772	65,646	789 045	—319,393
Duluth, Missabe & Northern	412	3,220 114	47,654	3,342,896	174,847	130,314	2,523	423,511	22,467	754,918	22.58	2,587,979	168,250	2,419,730	—473,938
Duluth, South Shore & Atlantic	598	320,191	124,145	475,606	121,810	68,441	5,340	181,291	8,731	391,852	82.39	83,753	70,000	63,695	—113,548
Duluth, Winnipeg & Pacific	178	121,185	23,557	148,679	42,058	31,405	3,595	65,691	6,759	150,256	101.06	—1,577	8,307	—9,883	—2,988
East St. Louis Connecting	3	.....	.....	119,099	18,000	12,149	252	67,293	3,088	101,127	84.91	17,973	2,000	15,973	18,646
El Paso & S. W.	1,027	677,957	169,139	896,157	272,466	196,070	9,883	281,682	26,506	793,955	88.59	102,202	48,363	53,799	—463,380
Elgin, Joliet & E.	831	1,468,993	42	1,699,458	131,839	326,043	7,323	568,856	24,519	1,058,564	62.28	640,895	64,624	576,356	—353,132
Erie R. R.	1,989	5,813,241	1,417,286	7,868,833	974,540	2,117,503	73,871	3,809,875	189,699	7,211,624	91.64	657,209	269 475	386,641	—147,396
Florida East Coast	764	443.915	185,044	703,535	123,160	127,706	6,924	279,439	18,975	565,506	80.38	138,028	61,084	76,853	36,316
Fonda, Johnstown & Gloversville	88	43,821	74,870	123,673	15,821	9,155	1,072	51,649	6,490	84,188	68.07	39,485	4,900	34,585	1,940
Ft. Smith & Western	253	92,557	29,924	130,285	24,210	30,603	3,786	43,709	7,133	110,178	84.56	20,107	5,000	15,105	3,259

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF JULY, 1919—CONTINUED

Name of road.	Average mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
Ft. Worth & Denver City Ry.	454	$609,872	$337,139	$977,489	$75,590	$174,479	$4,087	$321,455	$23,759	$602,371	61.62	$375,117	$19,250	$355,835	$217,456
Ft. Worth & Rio Grande Ry.	235	60,210	56,705	124,458	25,223	18,584	2,080	53,859	4,624	104,370	83.85	20,088	2,984	17,103	13,38[illegible]
Galveston, Harrisburg & San Antonio...	1,381	1,348,942	512,015	1,929,827	252,130	403,257	17,936	687,196	51,546	1,431,233	74.16	498,593	52,892	445,157	—266,07[illegible]
Galveston Wharf Co.	13	.....	.....	80,419	53,546	1,762	4	31,848	2,009	79,330	98.64	18,911	15,400	—34,311	11,69[illegible]
Georgia R. R.	328	300,988	157,923	484,978	50,941	73,812	5,962	247,744	19,732	398,394	82.14	86,583	5,950	80,633	—270,84[illegible]
Georgia Southern & Florida.	402	216,973	93,361	337,828	44,190	54,670	5,745	168,188	11,429	283,824	84.01	54,004	13,732	40,243	18,192
Georgia & Florida.	348	59,513	24,474	88,975	27,542	22,991	2,071	53,094	5,924	111,623	125.45	—22,646	4,200	—26,852	31,039
Grand Rapids & Ind.	569	470,422	232,611	758,146	66,138	156,936	11,222	346,357	21,867	606,945	80.06	151,201	25,951	125,247	—59,918
Grand Trunk Western Lines.	1,001	1,372,698	362,543	1,878,237	233,340	361,850	18,498	849,259	51,343	517,548	27.56	360,690	50,140	310,503	—92,544
Great Northern Ry.	8,244	7,365,972	2,049,630	10,226,746	1,510,691	1,452,645	64,894	3,661,020	152,056	6,971,532	68.16	3,255,214	282,192	2,972,376	433,75[illegible]
Gulf & Ship Island R. R.	307	162,779	62,046	237,418	48,812	52,684	4,098	83,092	11,259	260,216	84.33	37,202	12,206	24,823	—73,207
Gulf, Colorado & Santa Fe.	1,937	1,171,918	482,070	1,740,137	400,429	334,315	21,426	708,112	47,492	1,511,765	86.87	728,373	71,168	156,543	—304,446
Grand Trunk Lines in New England...	172	85,481	49,416	154,020	87,734	33,409	3,360	133,372	10,817	281,733	182.91	—127,713	14,500	—142,213	—84,34[illegible]
Gulf, Mobile & Northern.	424	188,234	52,333	251,377	48,112	49,036	5,284	108,048	10,595	220,404	87.67	30,973	11,627	19,344	—872
Hocking Valley	350	1,120,055	120,397	1,321,946	103,274	333,060	5,975	387,391	21,945	851,570	64.41	470,375	21,718	492,093	—116,623
Houston & Texas Central.	847	479,639	235,509	755,186	132,654	128,812	7,106	306,796	21,624	596,053	78.92	159,134	34,722	124,[illegible]15	—81,667
Houston East & West Texas.	190	132,224	53,504	193,881	33,302	18,062	1,238	83,347	4,889	140,836	72.64	53,044	6,751	46,166	12,924
Illinois Central	4,787	6,335,366	2,079,253	9,026,106	1,529,874	2,334,369	75,042	3,609,902	208,419	7,787,265	86.27	1,238,841	436,669	799,731	—2,169,874
Indiana Harbor Belt.	116	.....	.....	583,672	103,402	100,711	1,754	350,366	16,148	572,380	98.06	11,292	9,954	1,338	—36,174
International & Great Northern.	1,159	801,943	306,015	1,172,191	255,745	291,744	12,113	534,567	42,161	1,144,514	97.63	27,676	29,999	—2,410	—112,850
Kanawha & Michigan.	176	324,316	58,285	392,592	59,136	145,035	3,474	135,466	13,843	356,960	90.92	35,632	19,657	15,974	—64,562
Kansas City, Mexico & Orient.	272	110,791	21,396	137,298	38,452	36,378	1,729	63,963	6,530	147,052	107.10	9,754	6,250	—160,004	—2,971
Kansas City, Mexico & Orient of Texas	465	77,216	17,025	98,733	36,865	36,971	1,378	58,523	9,026	142,761	144.59	—44,029	5,000	—49,029	30,849
Kansas City Southern	774	963,162	225,763	1,286,014	181,909	258,808	3,255	529,055	24,393	1,003,004	77.99	283,009	61,250	221,540	46,449
Kansas City Terminal.	27	.....	.....	123,113	16,654	11,445	.....	24,712	873	54,715	44.44	68,398	20,150	48,248	47,82[illegible]
Lake Erie & Western	902	684,815	70,216	792,568	159,650	205,196	12,846	342,683	23,483	743,809	93.84	48,759	46,100	1,070	—127,115
Lehigh & Hudson River.	96	224,250	3,913	234,908	28,973	43,714	1,815	80,673	6,226	161,402	68.71	73,506	5,400	68,106	—9,279
Lehigh & New England	234	298,878	1,360	312,130	39,794	97,403	1,886	119,186	11,756	268,674	85.91	44,056	7,381	36,676	—198,166
Lehigh Valley	1,435	4,587,025	705,079	5,731,596	891,744	1,307,814	46,719	2,376,412	118,605	4,761,402	83.07	970,194	182,750	786,494	—928,987
Long Island R. R.	398	530,963	2,005,347	2,744,891	264,895	486,953	18,744	1,022,566	47,496	1,850,948	67.43	890,942	94,428	796,357	—388,63[illegible]
Los Angeles & Salt Lake.	1,168	899,795	330,444	1,313,207	234,374	275,053	16,510	462,133	31,677	1,061,803	80.85	251,404	71,598	179,372	—241,191
Louisiana & Arkansas	302	133,967	39,602	178,760	77,981	36,050	3,139	68,992	6,127	192,289	107.56	—13,529	11,317	—24,838	—19,32[illegible]
Louisiana Ry. & Nav. Co.	349	245,495	35,064	297,406	84,389	62,572	2,924	103,951	8,164	261,999	88.09	35,407	14,000	21,391	—56,373
Louisiana Western	207	238,976	116,378	368,961	58,836	58,495	4,514	95,207	10,396	229,583	62.22	139,378	8,778	130,561	—71,591
Louisville & Nashville	5,013	6,411,033	2,066,261	8,894,919	1,329,671	1,995,018	131,431	3,582,181	189,049	7,271,973	81.75	1,622,946	260,771	1,361,214	—1,425,923
Louisville, Henderson & St. Louis.	199	148,519	74,852	234,334	44,756	30,836	5,577	91,253	7,239	179,661	76.66	54,673	4,000	50,640	—29,673
Maine Central	1,216	896,637	495,835	1,522,557	313,764	335,166	19,016	806,636	34,072	1,517,717	99.68	4,839	25,623	—70,803	—374,042
Maryland, Delaware & Virginia.	82	90,070	63,765	156,635	7,791	109,125	1,270	89,020	2,147	209,354	133.65	—52,719	1,734	—54,472	79,157
Michigan Central	1,861	2,180,295	1,919,675	6,654,232	820,921	1,168,010	67,606	2,305,941	112,349	4,556,797	68.47	2,097,436	285,000	1,811,530	—496,867
Midland Valley	388	223,747	83,617	314,298	73,259	53,121	3,512	122,804	11,684	264,380	84.11	49,918	6,786	43,035	—37,58[illegible]
Mineral Range R. R.	100	38,546	322	43,161	19,325	17,550	362	27,234	976	65,543	152.06	—22,442	3,500	—25,942	29,618
Minneapolis & St. Louis R. R.	1,646	833,312	245,965	1,128,932	163,740	250,792	11,164	509,103	28,624	963,767	85.36	165,164	49,017	114,998	67,715
Minneapolis, St. Paul & Sault Ste. Marie	4,243	2,797,342	839,910	3,875,751	591,480	632,046	24,168	1,456,342	98,501	2,830,195	73.02	1,045,555	181,516	863,705	44,818
Mississippi Central	164	54,700	37,299	103,604	22,923	32,758	1,532	37,264	5,793	100,269	96.78	3,335	3,325	—183	—62,613
Missouri & North Arkansas.	365	82,073	44,806	134,808	58,771	35,585	1,655	68,799	8,152	172,866	128.23	—38,058	6,242	—44,535	—59,918
Missouri, Kansas & Texas R. R.	1,713	2,137,453	688,773	2,967,076	498,721	779,773	30,535	942,369	77,210	2,343,017	78.96	624,058	90,326	533,494	—155,140
Missouri, Kansas & Texas of Texas.	1,796	1,253,836	648,581	2,025,905	507,609	403,476	24,173	1,010,640	77,320	2,041,559	100.77	—15,654	47,828	—64,122	—332,610
Missouri, Oklahoma & Gulf.	332	104,677	19,607	130,752	65,578	47,515	1,613	75,656	7,783	198,383	151.72	—67,632	8,500	—76,134	—54,636
Missouri Pacific	7,301	5,383,926	1,867,094	7,741,549	1,543,273	1,548,434	83,996	3,117,239	207,402	6,536,581	84.44	1,204,968	263,015	938,294	—696,654
Montour R. R.	54	126,808	1,085	136,762	33,222	67,744	1,915	27,847	6,704	137,676	100.66	—913	2,551	—3,466	—43,285
Mobile & Ohio	997	984,010	185,404	1,240,775	178,085	288,311	24,469	598,022	40,707	1,129,471	91.02	111,304	45,000	66,197	—95,917
Monongahela Ry.	108	306,092	20,621	320,725	50,986	23,279	663	93,256	6,929	175,112	54.59	145,613	5,000	140,613	1,041
Monongahela Connecting	6	.....	.....	135,039	24,246	50,975	545	59,914	6,269	141,949	105.12	—6,910	1,521	—8,431	—52,444
Morgan's Lou. & Tex. R. R. & S. S. Co.	400	474,484	176,143	676,708	139,429	122,685	8,963	232,736	19,327	524,796	77.55	151,912	29,796	122,071	—155,465
Nashville, Chattanooga & St. Louis.	1,247	1,107,603	492,722	1,677,521	262,059	375,404	33,155	733,231	42,791	1,453,799	86.66	223,722	50,000	173,660	—585,891
Nevada Northern	168	117,452	8,817	131,950	25,659	19,396	723	33,348	4,195	83,440	63.23	48,511	23,100	25,411	—60,280
New Orleans & N. E.	398	338,319	180,944	590,289	89,275	103,789	6,595	237,337	14,496	455,401	77.14	134,888	28,357	—106,532	26,601
New Orleans Great Northern.	284	183,314	50,282	240,334	36,911	37,204	2,029	92,165	8,877	177,575	73.88	62,760	8,532	54,197	—22,559
New Orleans, Texas & Mexico.	191	122,790	42,454	171,489	45,316	36,299	3,101	56,572	7,189	151,079	88.09	20,410	10,000	10,396	4,098
New York Central	6,075	16,082,435	9,072,347	28,185,031	3,482,034	5,174,907	277,725	10,146,611	627,638	20,095,936	71.30	8,089,096	1,032,515	7,054,523	—149,922
New York, Chicago & St. Louis.	574	1,507,258	199,437	1,804,503	196,525	340,689	25,860	786,786	52,653	1,407,334	77.99	397,169	55,000	341,972	—203,131
New York, New Haven & Hartford.	1,965	4,490,241	4,208,372	9,612,541	1,217,684	1,614,073	75,235	4,321,453	256,531	7,627,785	79.35	1,984,755	268,000	1,716,454	—1,076,704
New York, Ontario & Western.	569	616,178	593,654	1,369,302	204,634	188,616	7,962	436,697	20,111	858,020	62.66	511,282	27,000	484,282	—6,491
New York, Philadelphia & Norfolk.	121	657,032	122,832	824,958	61,202	207,051	9,776	344,541	11,107	655,760	79.49	169,199	16,520	152,679	—84,457
New York, Susquehanna & Western.	135	238,843	64,098	336,527	30,875	59,755	1,883	206,390	7,750	306,635	91.11	29,892	37,111	—7,324	24,163
Newburgh & South Shore.	7	.....	.....	107,874	26,064	40,843	.....	62,485	3,836	133,227	123.50	—25,353	6,692	—32,044	—50,945
Norfolk & Western.	2,088	5,093,904	1,083,465	6,385,269	844,985	1,859,157	36,955	2,318,979	107,960	5,175,365	81.05	1,209,904	260,000	949,808	—1,465,191
Norfolk Southern	906	317,575	178,048	518,523	138,125	102,455	8,599	286,992	21,699	558,325	107.67	—39,803	16,000	—55,838	—58,113
Northern Pacific	6,610	6,004,759	2,035,856	8,679,736	1,480,375	1,283,839	61,728	3,127,247	176,366	6,155,716	70.92	2,524,019	715,284	1,808,229	—505,130
Northern Alabama	112	58,071	14,580	74,365	32,600	6,502	1,605	47,940	1,544	90,180	121.26	—15,815	3,700	—19,515	58,388

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF JULY, 1919—CONTINUED

Name of road.	Average mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
Northwestern Pacific	507	$322,292	$309,460	$694,787	$98,956	$72,488	$5,986	$246,283	$12,388	$438,251	63.07	$256,536	$25,424	$231,067	—$61,986
Oregon Short Line	2,347	2,302,513	660,298	3,152,984	400,753	416,395	18,964	905,433	93,225	1,899,796	60.25	1,253,188	172,005	1,080,754	21,9.0
Oregon-Washington R. R. & Nav.	2,070	1,675,664	605,636	2,431,632	369,438	359,924	26,150	871,114	89,220	1,733,175	71.27	698,457	113,614	584,667	—39,881
Panhandle & Santa Fe	772	416,037	117,467	553,820	60,585	147,959	4,746	204,115	14,650	431,858	77.97	121,962	20,895	100,969	—6,840
Pennsylvania R. R. West	1,754	7,516,226	2,022,607	10,344,104	1,473,397	2,214,345	84,087	3,799,565	193,466	7,837,678	75.76	2,506,426	329,421	2,176,915	—815,844
Penn. RR, East	5,361	21,584,063	9,640,182	33,753,654	5,213,669	9,127,827	315,308	13,748,173	732,760	29,732,119	88.08	4,021,535	952,916	3,066,765	—7,077,434
Perkiomen	41	88,888	9,883	101,416	3,674	2,673	13	34,521	276	41,175	40.60	60,241	1,800	58,441	—10,050
Peoria & Pekin Union	19	17,773	2,290	94,954	25,544	30,907	941	70,031	4,906	132,328	139.36	—37,375	9,500	—46,875	—40,468
Pere Marquette	2,232	2,138,668	689,049	3,061,499	195,408	459,372	31,922	1,162,564	69,166	1,929,763	63.03	1,131,737	62,826	1,068,699	321,178
Philadelphia & Reading	1,127	5,432,365	879,363	6,602,516	574,117	1,368,806	42,702	2,750,384	125,007	4,877,059	73.86	1,725,457	143,228	1,582,229	1,980,293
Pittsburgh & Lake Erie	224	2,053,572	247,833	2,465,195	187,106	576,263	16,626	793,188	44,681	1,619,321	65.68	845,874	75,500	770,374	—601,796
Pittsburgh & West Virginia	63	85,136	9,870	105,381	46,686	38,312	1,316	60,393	5,547	156,658	148.65	—51,277	11,472	—62,749	—76,362
Philadelphia, Bethlehem & N. E.	71	.....	.....	59,865	9,172	10,992	370	38,898	827	60,259	100.66	—394	1,050	—1,444	—22,955
Pittsburgh & Shawmut	103	88,820	4,205	94,111	41,575	37,445	1,376	33,081	2,900	116,379	123.66	—22,268	970	—23,238	—43,837
Pittsburgh, Cincinnati, Chic. & St. Louis	2,383	5,531,123	2,100,796	8,356,210	918,432	2,352,717	84,135	3,405,504	180,786	7,020,878	84.01	1,335,332	240,658	1,094,380	—1,341,073
Pittsburgh, Shawmut & Northern	204	103,338	4,794	112,569	25,684	43,929	1,000	40,666	5,232	116,520	103 51	—5,951	1,852	—5,802	74,266
Port Reading	21	132,568	.....	197,537	16,106	—3,169	18	122,819	121	135,955	68.82	61 582	9,000	52,583	—44,312
Richmond, Fredricksburg & Potomac	81	310,756	355.159	711,510	43.771	85,843	5,031	216,513	15,715	367,153	51.60	344,356	12,294	332,061	91,866
Quincy, Omaha & Kansas City	255	55 614	25,658	87.974	46.760	15,578	86	46,428	1 679	109.679	124.67	—21,705	3,053	—24,757	—20.562
Rutland	415	209,366	131.085	420,697	55,529	84,570	6,840	187,823	11.637	347,797	82.67	72 699	19.628	53,072	3,636
St. Joseph & Grand Island	258	191,212	42,218	246,377	44.189	49,673	1,630	107,213	11,566	214,272	86.96	32,104	11,856	20,248	—11,584
St. Louis, Brownsville & Mexico	548	350,706	155,285	527,816	95,857	69.654	9,264	127,096	18.097	319,968	60.62	07,848	10,000	197,853	103,342
St. Louis Merchants Bridge Terminal	9	.....	391	257,752	54 396	22.160	716	156 097	5,704	239,074	92.75	18 678	8,000	10,670	—41,513
St. Louis-San Francisco	4,761	4,459,400	2,010,956	6,751,176	1,049,949	1,162,504	77,444	2,394,349	183,471	4,864,832	72.05	1,886,343	205,242	1,679,057	—436,491
St. Louis, San Francisco & Texas	134	140,204	24,521	172,785	15,654	21,917	2,408	68,271	6,726	114,976	66.54	57,809	1,629	56,066	40,759
St. Louis Southwestern	939	784,715	198,096	1,030,172	131,715	257,058	17,546	347,962	37,058	795,789	77.24	234,385	59,882	174,238	195,454
St. Louis Southwestern of Texas	814	405.577	156,142	590,633	139,681	187,254	10,020	321,933	22,427	686.021	115.24	—89,389	21,000	—110,449	—189,724
San Antonia & Aransas Pass Ry.	732	265,623	115,534	400,491	87,751	86,204	6,436	165,133	12,687	357,992	89.38	42,499	15,000	27,456	30,385
Seaboard Air Line	2,563	1,915,941	1,419,369	3,606.673	500 543	621 332	61,787	1,548,445	118,322	2,876,696	79.76	729,977	135,000	594,745	—144,765
St. Louis Transfer	6	.....	.....	100,909	8,676	5,632	172	38,018	2 376	54,873	54.37	46,035	100	45,935	11,639
South Buffalo	11	39,860	.....	82,140	3,925	15,708	291	50,257	3,178	73,361	89.31	8,780	3,167	5,613	—25,692
Southern	6,982	6,832,005	3,774,088	11,320,441	2,158,365	1,742,528	130,337	4,426,467	275,708	8 804,766	77.77	2,515,676	323,160	2,188,528	—2,168,632
Southern Ry. in Mississippi	278	81,893	44,263	133,186	31,020	13,827	2,066	75,706	3,981	126,593	95.04	6,593	9,000	—2,407	9,462
Southern Pacific	7,049	9,925,300	3,817,804	14,734,601	1,900,535	2,801 639	95,705	5,486,113	247.204	10,819,442	73.42	3,915,159	666,431	3,249,879	—1,156,041
Spokane International	156	90,154	18,979	112,884	22,441	8,197	1,876	32,325	4,645	69,385	61.46	43,499	4,012	39,487	1,792
Southern Pacific Steamship Lines	...	561,474	37,913	650,610	13,580	582,321	15,595	539,326	23,154	1,173,957	180.44	—523,346	13,466	—536,813	—567,420
Spokane, Portland & Seattle	554	394,049	243,180	683,816	70,236	63,328	4,999	264,163	20,331	366,221	53.55	317,595	59,200	258,333	—8,980
Staten Island Rapid Transit	23	89,900	103,960	218,134	25,677	21,397	939	107,065	9,433	164,510	7,541	53,624	17,000	36,624	27,452
Tennessee Central	292	136,026	54,108	199,707	80,494	41 380	2,343	93,989	6,611	225.036	112.96	—25,330	5,135	—30,466	108,941
Terminal R. R. Assn. of St. Louis	16	.....	3,581	332,804	55,758	33,942	718	123,965	4,670	223,057	67.02	109,746	28,250	81,487	37,540
Texarkana & Ft. Smith	67	92,845	18,645	121,262	23,039	25,842	692	81,370	3,011	133,556	110.13	—12,294	6,458	—18,765	—51,047
Texas & New Orleans	469	473,522	179,496	722,183	119,422	143,478	4,483	221,339	15,913	543,347	75.23	178,836	21 356	157,258	72,946
Texas & Pacific	1,916	1,940,451	905,603	2,984,573	335,577	609,962	27,984	1,162,612	76,406	2,236,644	74.94	747,929	160,000	647,504	56,582
Toledo & Ohio Central	435	781,727	67,461	928,985	137,979	332,751	7,769	347,381	16,319	845,223	90.98	83,763	33 862	49,889	—350,613
Toledo, Peoria & Western	217	69,977	48,739	126,455	17,141	40,257	1,819	74,411	5 030	138,658	109.64	12 204	8,500	—20,704	29,389
Toledo, St. Louis & Western	454	551,808	72,051	663,367	139,785	132,277	5,807	292,277	10,443	580,589	87.52	82,778	26,000	56,778	—173 354
Trinity & Brazos Valley	368	70,475	23,939	98,592	42,116	46,256	1,899	57,344	8,071	155,886	158.11	—57,093	5,714	—62,809	—24,810
Ulster & Delaware	128	63,599	41,174	122,227	25,731	20,155	2,680	73,483	5,396	127,285	104.13	—5,058	4 800	—9,858	—39.411
Union R. R. of Pennsylvania	40	.....	.....	696.018	64,618	176,772	246	380,133	6,687	628,451	90.29	67,567	7,714	59,853	—245,082
Union Pacific	3,614	6,241,159	2,080,652	9,064,459	1,203,647	1 643 535	53,524	2,558,125	257,110	5,933,787	65.46	3,130,672	286 736	2,843,211	1,222,438
Utah	98	96,784	752	98,664	15,085	18,614	191	21,157	2,092	57,140	57.91	41,524	3,072	38,452	30,364
Vicksburg, Shreveport & Pacific	171	187,484	83,258	285,743	38,127	59 426	3,728	94,354	9,465	207,901	72.82	77 843	15,242	62,573	20,692
Virginian Ry.	523	877,403	69,714	1,031,118	179,635	180,554	4,652	338,781	18,303	724,679	70.28	306,439	35,700	270,739	—104,623
Wabash	2,503	2,986,342	947,111	4,214,716	703,150	749,959	63,090	1,981,514	118,705	3,640 540	86.37	574,175	107,786	466,059	—1,044 874
Washington Southern	35	144,501	222,862	406,879	29,908	38,224	2,269	115,990	5,647	192,037	47.19	214,842	6,379	208,463	96,689
West Jersey & Seashore	361	325,500	978,586	1,372,040	222,317	214,143	9,983	530,808	21,046	1,004,006	73.18	368,034	50,403	317,622	90,778
Wichita Falls & N. W.	328	140 496	55,152	202,544	58,096	27,636	1,834	109,244	7,600	204,399	100.91	—1,855	9,908	11,926	34,290
Western Maryland	688	985,233	109,301	1,205,223	193,444	383,887	15,917	431,712	44,769	1,080,952	89.69	124,272	43,200	81 072	83,598
Western Pacific	1,011	864,236	187,614	1,096,800	234,408	174,613	12,915	324,960	21,865	790,466	72.07	306,335	45,908	260,299	124,714
Western Ry. of Alabama	133	101,892	79,460	194,671	25,315	38,047	3,109	72,442	6,823	149,419	76.75	45,252	7,500	37,752	5,928
Wheeling & Lake Erie	511	1,181,429	62,085	1,403,599	217,242	264,818	6,029	472,388	26,137	989,939	70.52	413,660	55,500	358,151	188,037
Yazoo & Mississippi	1,381	1,471,083	421,405	1,968,809	302,337	422,102	14,508	665,412	44,842	1,419,412	72.09	549,397	75,683	473,296	194,748
Minnesota & International	194	58,542	29,126	93,563	22,146	15,577	467	47,026	3,502	88,720	94.82	4,843	4,640	203	—9,140
Northwestern Pacific	507	1,731,042	1,356,455	3,436,286	701.967	483,176	35,446	1,536,045	87,294	2,854,936	83.08	581,350	157,734	423,189	—397,066
Oregon Short Line	2,347	15,001,285	3,874,894	20,208,927	4,114,129	3,467,298	111,866	6,184,099	612,305	14,895,128	73.71	5,313,799	1,137,574	4,174,787	—1,121,626
Oregon Washington R. R. & Nav.	2,069	10,248,484	3,721,855	15,196,784	3,003,202	2,381,759	189,505	6,185 312	654,245	12,601,186	82.91	2,595 599	797,131	1,796,701	—702,865
Panhandle & Santa Fe	772	2,298,125	608,298	3,055,108	724,868	1,100,107	1,526,990	1,558,773	103,798	3,502,369	114 63	—447,261	117,059	565,055	1,097,181
Pennsylvania R. R. West	1,754	41,276,619	11,865,159	57,964,459	8,166 591	15 542,004	511,715	25,410,481	1,300,198	51,332,497	88 55	6,631,962	2,140,524	4,489,896	3,308,639
Pennsylvania R. R. East	5,361	132,748,544	58,046,399	208,379,929	30,998,646	58,651,647	1,809,843	93,167,293	5 110,371	193,549,100	92.88	14,830,829	6 360,065	8,522,670	632,551
Perkiomen	41	536,672	53,078	612,609	36,274	30,719	132	251,912	2,177	321,361	52.45	291,247	12,600	278,647	72,799

Traffic News

The Chamber of Commerce of Houston, Tex., on behalf of the Houston Car Wheel & Machinery Company, has petitioned the Dallas (Tex.) District Freight Traffic Committee for a revision of rates on old and new car wheels and axles to points in Arkansas and Oklahoma. Changes are requested in the rates on scrap iron and steel, old wheels on or off axles and new wheels and axles. The proposed rates would allow Houston car wheel manufacturers to compete with those in St. Louis and Kansas City.

The Canadian Railway War Board has recently issued an order allowing regularly organized railway and steamship ticket agencies to continue the sale of railway tickets under such arrangements as the individual railway companies believe best suited to protect their interests. This action is taken, according to the board, because of the character of service rendered by these organizations to the public and to the railways in the handling of railway transportation.

The grain elevators at Fort William and Port Arthur, Ont., number 36, and in the near future, following the completion of certain additions, the total capacity of these elevators will be 55,560,000 bushels of grain. This is the largest elevator storage capacity of any port in the world, exceeding Chicago and Minneapolis. A large proportion of these elevators are fireproof. The Port Arthur elevator has a capacity of 9,500,000 bushels. The elevators in this port can unload 2,360 cars in ten hours, and the 23 elevators on the water front can in that time load into steamers 9,350,000 bushels. On one day, November 30, 1915, they actually did load 7,350,000 bushels. —*Canadian Pacific Bulletin.*

Traffic conditions for the week ended September 8 show some improvement in the movement of freight throughout several of the regions, compared with the same period in 1918. In the Southern region, according to the figures issued at Washington, revenue freight loaded showed an increase of 3,807 cars over the corresponding week of last year, and 10,973 cars over the week ended September 1, 1919. In the Central Western region lumber loaded showed an increase of 16 per cent and grain 8 per cent over the same week in 1918. In the Southwestern region 37,881 cars of wheat were loaded during the period July 1 to September 3, being an increase of 8,850 cars over the same period last year.

The Pacific Coast Shipbuilders' Traffic Association, with headquarters at San Francisco, Cal., has been organized recently to obtain reductions, if possible, on the present freight rates on ship steel. The association is composed of 18 Pacific Coast shipbuilding companies, and its officers are as follows: L. R. Bishop, chairman, representing the Southwestern Shipbuilding Company, the Long Beach Shipbuilding Company and the Schaw-Batcher Shipbuilding Company; H. C. Reed, secretary, representing the Bethlehem Shipbuilding Corporation, Ltd.; C. E. Robinson, treasurer, representing the Pacific Coast Shipbuilding Company. Soon after the organization of the association it began an active campaign to have the existing transcontinental freight rates on steel reduced in order that Pacific Coast shipbuilders would be enabled to continue the fabrication of steel ships. Letters outlining the present situation on the Pacific Coast and its relation to transcontinental steel rates have been sent to Max Thelen, director of public service, and Edward Chambers, director of traffic, of the Railroad Administration

The necessity for loading cars to full capacity and releasing them promptly in order to avoid a car shortage has been called to the attention of shippers, consumers and officers of the Railroad Administration in a letter recently made public by the Public Service Commission of Oregon. The letter says in part: "Grain is now moving and very shortly the maximum shipments may reasonably be expected, followed by the transportation of apples, potatoes and perishables, with demand for refrigerating equipment. Our lumber shipments must be adequately cared for, and this Commission, mindful of the past, requests that the Administration give such attention to Oregon's needs as will prevent any recurrence of adverse conditions heretofore encountered by our shippers. We suggest again directing the attention of shippers both by circular and placard, to the necessity of loading to full capacity, and promptly releasing cars, with such other advice as will tend to assist in conserving the supply, and speeding up the movement. We further suggest the advisability of carriers moving traffic to destination by the most direct route available."

According to a report on overseas traffic for the week ended Sept. 10, 5,842 cars of commercial export freight were received at North Atlantic ports for this period, compared with 869 cars for the same week in 1918, an increase of 4,973 cars, or 572 per cent, for the first ten days of September, 1919, over the corresponding period for 1918. The report shows that there were 14,186,237 bushels of grain stored in elevators at North Atlantic ports for the period mentioned. There were received during the week 6,549,358 bushels of grain, while 6,587,037 bushels were cleared. The total amount of grain in elevators as of Sept. 10 represents 72 per cent of the total elevator capacity at these ports. At South Atlantic and Gulf ports there were 10,366,191 bushels of grain in elevators, the elevators at Port Arthur being the only ones reported empty. At North Atlantic ports there were 20,321 cars of export freight on hand on September 10, 1919, compared with 20,593 cars for the same day of the preceding week. The report shows that there were 8,621 cars of export freight on hand at South Atlantic and Gulf ports as of September 9, 1919, as against 8,958 cars on September 3, a decrease of 337 cars.

Freight Situation on the New Haven

E. J. Pearson, federal manager of the New York, New Haven & Hartford, has issued an appeal to shippers and consignees to release cars more rapidly in order to avoid an embargo. Loaded cars are accumulating and the co-operation of the shippers, which brought relief in July and August, is still urgently necessary. He says further:

"Since the recent strike the number of cars placed at destination for unloading has rapidly increased from an average of about 8,000 a day to between 11,300 and 12,000, and, in addition, there are a considerable number of cars at destination awaiting space on unloading tracks. Unloading is progressing at the average rate of 2.4 days per car placed. Previous record has been at the rate of less than two days per car placed, which, on account of the necessities of the present situation, should be improved upon if possible.

"At the present time there are about 50,000 cars on the system, whereas the record volume of traffic formerly was handled with 5,000 to 7,000 less. The present increase is congesting transportation facilities, restricting the inbound movement, the current performance of terminal switching, prompt removal of empties, the receipt and forwarding of trains, and is decreasing capacity for maximum performance. The demand for empty cars is extremely urgent."

"The work of construction needed for the completion of extensive terminal improvements, including also a transfer station at Cedar Hill (New Haven), has been recently resumed through the assistance of the United States Railroad Administration, so that within a few months capacity will be still further increased.

Coal Production

Bituminous coal production in the United States for the week ended September 6 is estimated by the Geological Survey at 9,660,000 net tons, a decrease of 7.6 per cent as compared with the week before, apparently due to the observance of Labor Day as a holiday in some districts. However, the rate of production, the report says, appears to have risen, and at least maintained that set up in late August. For the week ending August 30, the percentage of full time output lost on account of car shortage was 24.1, as compared with 16.8 per cent the week before. In part, however, the report says, the change was more apparent than real because, without any change in the number of cars, an adequate car sup-

ply one week when the demand is dull and men are on strike may become an inadequate supply the next week when demand is brisk and men are back at work. Such an apparent change seems to have occurred in Illinois; but taking the country as a whole the less adequate car supply was real and the number of empties available for loading was smaller than the week before. Car supply, instead of improving, during the week of August 30 became somewhat less satisfactory and just now the principal obstacle in the way of increased production is shortage of cars.

National Industrial Traffic League Meeting

The National Industrial Traffic League's summer session was held at Pittsburgh, Pa., on September 4 and 5. The reports of the various committees of the league were presented, however, much of the time was taken up with the discussion of action taken by the executive committee regarding legislative recommendations for the solution of the railroad problem and discussion of the car shortage situation. Among the legislative recommendations made by President G. M. Freer of the league, in reporting for the executive committee, are suggestions that Congress be asked to provide a time limit within which carriers must present bills for charges on shipments, opposing the extension of the jurisdiction of the Interstate Commerce Commission over port-to-port water rates, and endorsing the suggestion made to the House Committee for a provision in the law that interstate rates will not automatically revert to their pre-war status when the roads are restored to private ownership, but will continue until June 30, 1921, unless changed by action of the properly constituted authorities. With the exception of the latter recommendation the league approved of the executive committee's recommendations. The latter recommendation created considerable debate as to its probable effect and the question was postponed for further discussion.

A report of an investigation conducted by the league as to the car shortage situation was also presented. The answers to a circular sent by the league to its members asking for information as to the reasons for the car shortage stated briefly that poor switching, slow movements in transit, failure to repair bad order cars, accumulation of administration cars because they were not allotted, freight schedules lengthened, bad condition of motive power and labor disturbances, both industrial and railroad were contributing factors. Max Thelen, director of the Division of Public Service, who was present at the meeting, replied to each of the assigned reasons for the car shortage, outlining the administration's side of the problem. The action taken by the league on this matter was expressed in a telegram prepared by a sub-committee and forwarded to Director General Hines assuring the continued cooperation of the shippers but demanding further efforts by the Railroad Administration to avoid a car shortage.

Among the resolutions adopted by the league at the meeting are the following:

A resolution offered by the executive committee providing that the directors of public service and traffic be requested to require that application for the cancellation of rates alleged to be obsolete should be accompanied in all cases by a showing that interested parties have been consulted as to the actual or prospective use of such rates and whether or not these parties consented to the withdrawal of the rate, also that all tariffs carrying such cancellations shall contain in connection therewith a provision to the effect that such rates shall be re-instated on one day's notice on proper showing that the rates will be actually used.

A resolution, also offered by the executive committee, recommending that legislation be enacted that will continue the rates, fares, etc., existing, with intra and interstate, at the time the carriers are returned to private operation until same be later changed either by the act of the carrier or carriers as provided by law or by properly constituted authority having jurisdiction.

A resolution recommending that the law provide for a board of conciliation and arbitration to hear labor railroad disputes whose decision should be subject to revision only by the authority to whom it would report. Railroad employees would waive their right to strike and would be guilty of conspiracy, punishable by proper remedy, if they did strike though they might resign. The Board would be composed of eight members—two from carrier employees, two from carrier officers and four from the general public—and would be appointed by the Interstate Commerce Commission and report to it.

President Freer was instructed by the league to oppose the rigid long-and-short-haul clause section of the Cummins Bill, the provision for a transportation board, the provision for rate zones and in his discretion such other portions of the bill as are opposed to the provisions of the Esch-Pomerene bill, in his appearance before the House Committee. The league also voted that the Senate Committee be asked to have hearings on the Cummins bill.

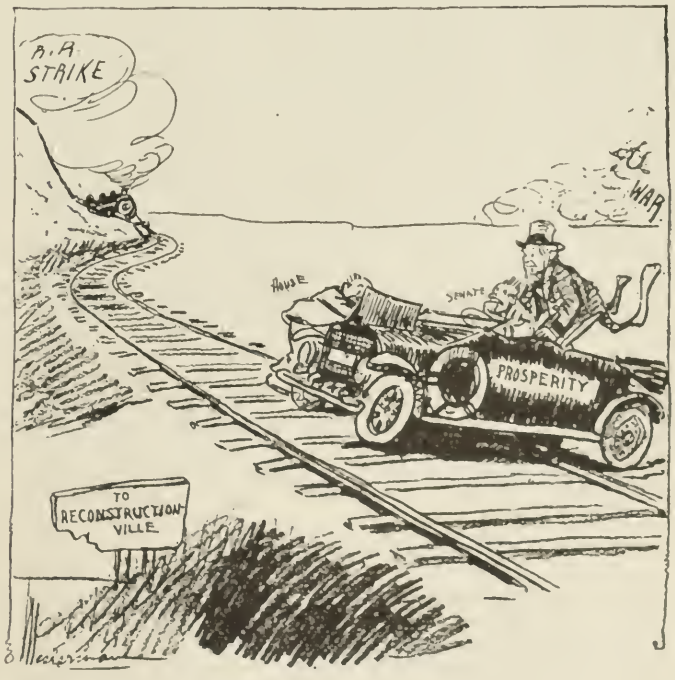
Anthracite Shipments for August

The production of anthracite continues to increase, according to the statement of the Anthracite Bureau of Information, Philadelphia. The shipments for August amounted to 6,144,144 gross tons, as compared with 6,052,334 tons in July, which in turn had the record for largest shipments since October, 1918. Compared with August, 1916, the latest normal year in the anthracite trade, the shipments last month showed an increase of a little over 600,000 tons or about 11 per cent.

For the first five months of this coal year the shipments have amounted to 28,752,699 tons, as compared with 26,678,333 tons for the corresponding period of 1916, an increase of 2,074,366 tons.

The shipments by railroads were as follows (gross tons):

	August, 1919	August, 1916	Five Mo., 1919-1920	Five Mo., 1916-1917
P. & R.	1,142,713	1,000,667	5,559,110	4,904,976
L. V.	1,171,026	1,026,074	5,220,226	4,865,344
C. of N. J.	560,331	541,156	2,593,506	2,633,831
D., L. & W.	936,212	875,131	4,619,134	4,063,406
D. & H.	716,333	572,822	3,380,415	3,007,146
Penna.	438,214	482,416	2,029,557	2,265,283
Erie	678,437	658,044	3,161,576	3,182,216
N. Y. O. & W.	182,450	184,708	838,560	814,272
L. & N. E.	318,428	190,779	1,350,615	941,859
	6,144,144	5,531,797	28,752,699	26,678,333



From the Columbus (O.) State Journal

Stalled

Commission and Court News

Interstate Commerce Commission

Discrimination Against Western Pacific Ordered Removed

The Interstate Commerce Commission in a decision by Commissioner McChord, finds unlawful and in violation of the second paragraph of Section 3 of the commerce act a lower basis of divisions of joint through passenger fares between points in California and Salt Lake City and points north and east thereof accorded to the Western Pacific by the Southern Pacific and the Atchison, Topeka & Santa Fe than they allow each other of similar joint fares. The decision also holds that the Western Pacific is entitled to reparation, although the amount has not yet been determined. Commissioner McChord says the expression of rates and charges in the form of divisions makes them none the less rates and charges which may be discriminatory. The effort to relieve a discrimination does not necessarily involve the power to describe, the order of removal normally operating in the alternative, and that as the commission has found that the division fixed upon was discriminatory that statement of the fact establishes the damage. The amount of the damage is demonstrable and does not depend upon any contingency. The plaintiff, because of the unlawful practices of the defendants was placed in an unfavorable and unjust situation with respect to passengers transported by it between points in California and Salt Lake City as compared with its competitors. If it had been placed in the same situation as its competitors it would have received more money for each passenger transported, but as the exact amount of damage cannot be determined upon the record, the plaintiff should prepare a statement showing the details of the transportation of passengers, upon which the commission will consider the entry of an award of reparation.

Commissioner Clark dissented to the award of reparation, but concurred in the remainder of the report. Commissioner Eastman filed a concurring opinion and Commissioners Daniels and Hall filed dissenting opinions. Commissioner Daniels said he was unable to agree that reparation should be awarded and that he was inclined to doubt whether the evidence disclosed a violation of Section 3. By continuing its participation in through routes and joint fares with the Western Pacific, he says, the Southern Pacific voluntarily short hauls itself, and the joint fares must therefore be regarded as a distinct concession on the part of the Southern Pacific. A different basis of divisions resulting from such an inequality of mutual conditions generally is not necessarily unlawfully discriminatory. Mr. Daniels also says that the record may be searched in vain for evidence showing that the plaintiff sustained actual damage. If the Santa Fe and the Southern Pacific had demanded of each other the same minimum divisions as they demanded of the Western Pacific the latter would not have derived any benefit therefrom. Commissioner Hall agreed substantially with Commissioner Daniels, pointing out that while the Southern Pacific and the Santa Fe competed with each other, their lines are so located as to supplement each other and in many instances each is a necessary and important connection of the other; while the Western Pacific supplements neither in any practical sense and affords to neither any traffic possibilities of consequence.

State Commissions

The New York State Public Service Commission, Second District, has ordered the installation of "audible-visible" warning signals at highway grade crossings on the New York Central and the Delaware & Hudson, as follows: At Elsmere; between Elsmere and Delmar; at Guilderland Center and at the Guilderland road two miles from South Schenectady.

The Public Service Commission of New York, Second District, acting on a complaint of the Brotherhood of Railroad Trainmen, decides that the full-crew law, of New York, prescribing the number of men to be employed on freight trains of over 25 cars, but excepting trains on roads less than 50 miles long, does not apply to the Wallkill Valley Railroad, 32 miles, a branch of the New York Central extending from Kingston, southwestward to Montgomery. Although the branch is operated under lease, as a part of the New York Central system, which is much more than 50 miles long, the commission holds that as the branch trains never run on to the main line, the Wallkill Valley is to be treated, so far as this law is concerned, as a separate railroad. Either as to its ownership, or as to its method of operation it is not "a railroad of more than 50 miles in length."

The New York State Public Service Commission, Second District, acting on a complaint of the Brotherhood of Locomotive Engineers, decides that locomotives should not be towed under steam except under the control of an engineman or of a fireman with at least one year's actual experience; and not in charge of a fireman until he shall have established his ability by satisfactory examinations and tests. The complaint was against the Boston & Maine for permitting engines to be towed under steam when manned only by a fireman. On this road steam locomotives, with their trains, are hauled through the Hoosac Tunnel, about 5 miles, by electric locomotives. Evidence was presented to the effect that engines have been thus run while manned by stupid or careless firemen. As a fireman is, presumably, in training for the position of engineman, the commission holds that, after one year, he ought to be able to attend to such elemental duties of the engineman as are required when the engine is being towed. The decision requires, therefore, that such firemen shall have had one year's experience and that this fact, with his qualifications, shall be made a matter of record, which record shall be accessible to the commission.

The New York State Public Service Commission, Second District, considering a complaint against the American Railway Express Company, in Buffalo, decides that the rule of that company limiting its pickup service to the hours before 5 p. m., and providing for no pick-up service in Buffalo on Sunday, is reasonable. Certain bakers, fish dealers, makers of ice cream, and motion picture exchanges, have been accommodated in former years by evening and Sunday wagon service; but the commission holds that these branches of traffic should not be considered as such serious necessities as to warrant the Sunday (or evening) wagon service; these shippers, in these irregular hours, must do their own carting. The express company's offices are kept open for the receipt of shipments during the entire 24 hours every day, including Sundays.

Court News

Taxation of Automatic Block Signals

The Montana Supreme Court holds that the block-signal system of a railroad located on the roadbed and attached to the track, and operated automatically by passing trains, is assessable by the state board of equalization and not the county assessor. Judgment for the railroad in an action against a county treasurer was affirmed.—N. P. v Dixson (Mont.), 174 Pac. 706.

Limitation of Liability—"Character of the Shipment"

In an action by a shipper against a railroad for the full value of a shipment of oriental rugs, destroyed en route by a fire of unknown origin, it appeared that the shipper had undervalued the rugs and thus obtained a lesser freight rate. The New York Appellate Division holds that the railroad was not liable for more than the declared value of the rugs, as it had no knowledge of the "character of the shipment" within the meaning of the Carmack and Cummins amendments. The shipment was described as rugs but this gave the railroad no knowledge that it consisted of valuable oriental rugs.—Haddad v. Southern Pacific, 185 App. Div. 500.

Foreign Railway News

German Railway Rates Raised.—From October 1 all railway passenger and baggage rates in Germany will be raised 50 per cent.

I. T. Williams, general manager of the London & North Western Railway of England recently had conferred upon him the honor of knighthood.

Sunday Traffic on German Railways.—Suspension of Sunday traffic on Baden, Wurtemburg, Bavarian and other German railways for all purposes except transport of essential foodstuffs, is said to be contemplated, owing to coal shortage.

The Colonial Government of the Dutch East Indies, says the Far Eastern Division of the Bureau of Foreign and Domestic Commerce, proposes to build 10,000 miles of railway during the next 15 or 20 years. This is only possible, colonial officials say, by the investment of American capital with the assistance of American engineers.

Representing a Real Service

LONDON.

The Engineer (London) states that during the year 1918, 1,029,000 men passed through the Soldiers' & Sailors' Free Buffet provided by the London & North Western Railway Company at Euston.

Ambulance Trains Over Great Western

LONDON.

The Great Western Railway Magazine states that from the outbreak of war until the end of June this year, 5,895 loaded ambulance trains passed over the Great Western railway, 2,989 of which were loaded to stations on this company's system.

Railway and Port Concessions in Russia

According to Danish authority England is asking for a railway concession through Esthonia to Russia, in order to open up a road to the Russian market. It is also stated that negotiations are being carried on with a view to leasing the islands of Dagos and Oesel to England for the construction of a large commercial port there.

A New Electric Railway in Switzerland

A concession has been granted to the Berne Power Works for an electric narrow gage railway between Meiringen and Guttanen. This line will be used at first for the transport of goods in bulk for the erection of the projected water-power works at Oberhasli, and afterwards will doubtless attract a fair amount of tourist traffic.

Japanese Railway Reform

Reforms on the Japanese Government railways have been instituted (says the Japan Chronicle). Till recently all locomotives made very short runs to the great inconvenience of the traveling public. A new type of locomotive, which made a run between Tokyo and Hamamatsu, a distance of 167 miles, without changing, is to be used in time on all the government railways.

Railway Development in Queensland

The Queensland Acting Minister for Railways has been inspecting the Burnett district of Queensland in connection with the scheme of railways for opening lands to settlement by soldiers. It is proposed to construct four spur lines in conjunction with the proposed Many Peaks to New Cannindah line, including junctions with the line at Mundubbera and the Dawson Valley line. The area of land to be developed is 2,500,000 acres, and it is estimated that it will provide land for 15,800 settlers. The estimated cost of the railways is £1,420,000, while the provision will have to be made for roads and water supply.

Rapid Reconstruction of Belgian Railways

Reuter's Agency learns from a Belgian official source, says the Railway Gazette (London), that when the armistice was signed 1,500 kilometers of Belgian railways had been destroyed. So rapid has been the work of repair that today only 300 kilometers are out of order. On the principal railway from Ostend to Brussels marvelous work has been accomplished, and the normal service is being run on the embankment line which was constructed at the time of the Ghent Exhibition, and all work has been more or less restored to its pre-war condition. The bridges on the Lys and Scheldt are in a fair way towards completion, and meantime the service is maintained over temporary bridges.

Exports of Cars in July

Exports of freight cars in July totaled 1,986 valued at $4,146,923, as compared with 5,055 valued at $13,675,186 in June and 3,008 valued at $6,268,078 in May. No passenger cars were exported in July. The detailed figures as compiled by the Division of Statistics of the Bureau of Foreign and Domestic Commerce are as follows:

	Passenger Cars		Freight and Other Cars	
COUNTRIES—	Number	Dollars	Number	Dollars
France	.....	.....	1,417	3,117,436
Italy	.....	.....	300	514,800
Canada	.....	.....	30	21,650
Honduras	.....	.....	4	590
Mexico	.....	.....	12	3,450
Cuba	.....	.....	18	15,257
Dominican Republic	.....	.....	1	2,150
Brazil	.....	.....	150	294,750
Chile	.....	.....	1	14,340
China	.....	.....	50	162,500
Total	.....	.....	1,986	4,146,923

Railway Construction in Mexico

Satisfactory progress is being made, writes a correspondent in the construction of the extension of the Llano Grande branch of the National Railways of Mexico. The road is being built by E. E. Shaw, an American contractor. He has about 1,800 men employed in the grading and track laying work. The first 28 miles out of Llano Grande will be finished in a few more weeks. It will penetrate a dense forest of commercial timber. The rails for the new line are being manufactured by the Monterey Iron & Steel Company. The proposed terminus is the Pacific port of Mazatlan. The surveyed route is over the heights of the Sierra Madre range, with a drop from about 10,000 feet altitude to sea level within a distance of about 30 miles. At Llano Grande large lumber mills were established several years ago. It is planned by owners of timber tracts reached by the road to install other lumber mills. From Llano Grande the branch line runs to Durango, 75 miles, where it connects with the old Mexican International Railroad that runs to Piedras Negras, opposite Eagle Pass, Tex.

British Trade with Germany

In commenting on trade with Germany the London Times Trade Supplement says:

There is an old adage about the folly of cutting off one's nose to spite one's face, and logically this saying applies to the question of future trade relations between Britain and Germany. Other countries, with the possible exception of Belgium, whose experience of Hun methods has been burned in too deeply to be quickly forgotten, are making strenuous efforts to secure a commanding position in the German market. Distasteful as the idea of doing business with Germans is to large numbers of people, we are afraid that the exigencies of the situation will compel us to bid for our share of the German market.

The decision of the Federation of British Industries to

open a branch in Cologne is a recognition of an unwelcome necessity. The facilities which will be afforded thereby will no doubt be very valuable, particularly in the direction of investigating the financial standing of German firms desiring to do business with this country. This extremely necessary work will certainly prevent a good deal of loss to British exporters.

Belgian Railroad Receipts

Belgian railroads are now said to be working with 60 per cent of pre-war efficiency, writes Trade Commissioner Harry T. Collings from Brussels, under date of August 13. That the railroads are fast returning to normal conditions is shown by the following figures giving the receipts of Belgian railroads for the first five months of 1919, as compared with the corresponding months in 1914. (All conversions have been made at the normal rate of exchange, $0.193 per franc.)

	Receipts			
	From Passengers and Baggage		From Freight and Other Merchandise	
Month—	1914	1919	1914	1919
January	$1,464,677	$885,677	$3,537,497	$929,102
February	1,304,101	1,025,023	3,626,084	1,261,834
March	1,485,907	1,469,309	3,887,599	1,993,304
April	1,752,826	1,940,229	3,673,176	2,321,404
May	1,834,272	2,161,986	3,625,891	2,773,410

These figures should not be taken to indicate equivalent numbers of passengers or quantities of freight in the two years compared, Mr. Collings says. Previous to the war, railroad fares and freight rates were exceedingly low in Belgium. In general, one may say that the railroad fare in 1914 was 3 cents a mile first class, 2 cents second class, and 1 cent third class. Fares have now been increased from 40 to 50 per cent. Previous to the war, tickets good for travel on all lines in Belgium for 15 days from date cost about $12 first class, $8 second class, and $4.75 third class. These are not issued at present. Cheap workmen's tickets permitted workmen in 1914 to go to and from work up to a distance of 3 miles for about one-half cent a mile, for longer distances the cost per mile was much lower—tickets permitting a journey of 25 miles each way costing as low as one-seventh of a cent a mile. Many of these tickets have not been issued since the war; those issued are at much higher cost per mile than before the war. Proposals have recently been made to increase still further railroad fares to enhance government receipts.

In 1914 freight rates in Belgium were exceedingly low and were uniform throughout the country, except that a special rate was granted for large quantities of merchandise destined for export (tarifs des ports de mer). The present freight rates in Belgium are 40 per cent higher than before the war and may be increased soon.

Aldington Becomes General Manager of Great Western

Charles Aldington recently was elected general manager of the Great Western Railway of England, succeeding Frank Potter, deceased. Mr. Aldington has many acquaintances among the railway officers of the United States, having traveled over and studied the railways of the United States extensively. Mr. Aldington, like most American railway executives, has risen from the ranks. He entered the service of the Great Western as a junior clerk when 14 years old. In 1894 he became chief clerk to the superintendent of the London division. Five years later he became traffic superintendent of the Central London Railway, but returned to the Great Western in 1902 and for a time was attached to the staff of the general manager. In 1909 he became assistant to the superintendent of the line and later was made assistant superintendent of the line. On January 1, 1911, he was appointed superintendent of the line and held this position until March, 1919, when he was made assistant general manager. In 1905 he was a delegate to the International Railway Congress at Washington. He familiarized himself with railway practice in France, Germany and Italy and elsewhere on the Continent, as well as in America. While superintendent of the line Mr. Aldington inaugurated a fine system of express freight trains, which for some years prior to the war were a distinct feature of the service of the Great Western Railway. He introduced the system of telephone train control and he also fostered the extension of road motor car service to and from country districts not served by a railroad.

Exports of Railway Track Material in July

Exports of track material in July were considerably less than those of any previous month this year. Rails exported amounted to 32,707 tons valued at $1,870,583, as compared with 67,028 tons valued at $4,208,872 in June. The totals for July as compiled by the Division of Statistics of the Bureau of Foreign and Domestic Commerce are as follows:

	Spikes		Steel Rails		Switches, Frogs, Splice Bars, etc.
	Pounds	Dollars	Tons	Dollars	Dollars
Belgium	527,871	37,117	1,163	67,279	27,586
France	149,730	5,636	1,074	66,574	20,529
Italy	.....	.....	.....	.....	909
Netherlands	.....	.....	214	17,952	6
Norway	.....	.....	33	2,000	.....
Portugal	.....	.....	811	44,960	5,640
Sweden	.....	.....	202	17,136	1,433
England	.....	.....	1,992	114,998	4,101
Scotland	.....	.....	200	12,803	602
British Honduras	.....	.....	.....	.....	71
Canada	24,675	764	356	20,352	28,044
Guatemala	200	10	.....	.....	.....
Honduras	10,600	436	341	18,459	1,568
Panama	.....	.....	.....	.....	820
Salvador	1,000	70	8	1,000	2,856
Mexico	515,498	23,734	1,992	78,299	44,762
Newfoundland and Labrador	.....	.....	.....	.....	196
Jamaica	.....	.....	145	8,540	139
Trinidad and Tobago	.....	.....	.....	.....	23
Other British West Indies	2,000	100	31	1,500	42
Cuba	507,724	20,771	3,077	144,091	30,241
French West Indies	.....	.....	120	5,040	.....
Haiti	30,000	1,053	.....	.....	.....
Dominican Republic	....	.....	3	244	.....
Bolivia	.....	.....	.....	.....	4,480
Brazil	342,943	20,943	10	359	29,368
Chile	44,400	1,850	.....	.....	1,760
Colombia	59,892	3,379	128	7,262	2,527
Ecuador	40,000	1,600	.....	.....	.....
Peru	.....	.....	.....	.....	3,911
Venezuela	.....	.....	.....	.....	234
China	.....	.....	933	70,197	.....
Japanese China	456,330	20,899	772	66,748	2,400
British India	.....	.....	24	1,677	1,087
Straits Settlements	.....	.....	191	18,000	420
Other British East Indies	.....	.....	52	3,486	.....
Dutch East Indies	561,124	46,270	5,613	305,858	29,002
Japan	363,940	11,634	12,770	742,928	33,989
Siam	134,000	11,291	.....	.....	.....
Philippine Islands	32,000	1,497	452	32,901	10,188
British South Africa	.....	.....	.....	.....	298
Total	3,803,927	209,054	32,707	1,870,583	289,232

Effect of French Railway Nationalization

In a manifesto published on June 2, the French Federation of Railway Employees protested against the proposed rise in rates, and suggested as an alternative the nationalization of all the French railways. Commenting upon this, the Journal des Débats of June 7, points out that a rise in rates is inevitable in view of the huge deficits on working—5,500,000,000 francs in 1914-19, and 3,000,000,000 francs for 1919 alone. But would nationalization benefit the users of the railways or the Exchequer? asks the Journal. It is easy to answer the question by comparing the working co-efficient (operating ratio) of the State system, which was 120 per cent in 1918, with 87 per cent for the Midi, 85 per cent for the Paris-Orléans, and 90 per cent for the Paris-Lyons-Méditerranean. The State figure exceeds even those of the companies serving the liberated districts: 96 per cent for the Est, and 112 per cent for the Nord. A comparison has been made between the Ouest system purchased by the State and the Orléans system, which have a very similar traffic both in kind and length of haulage. The Orléans deficit for the last 10 years (1909-1918) reached 241,000,000 francs. If, instead of being worked at a working co-efficient ranging from 52-85 per cent, the co-efficient of the Ouest had been employed (68-120 per cent) the deficit would have exceeded 1,200,000,000 francs. From these figures the cost of complete nationalization to the taxpayers may be guessed. The Federation, moreover, the Journal continues, omits to mention that not the least of the causes of the actual deficits of the lines is the rise in wages of the personnel. Before the war the employees of the great railways earned about 800,000,000 francs. In 1919 they will share nearly 4,000,000,000 francs, or an increase of 400 per cent. A rise in rates is unavoidable, and the increased revenue thus gained will be accompanied by the reduction of work owing to the general adoption of the eight-hour day.

Recent Damages to Mexican National Railroads

The National Railroads, says a recent issue of Excelsior, quoted in commerce Reports, have suffered serious losses in the recent storms, and it is officially estimated that an additional expenditure of 200,000 pesos will be necessary for ties alone, without counting the value of the material which the railroads have at present on hand for the purpose. It is said that even greater expenditures will be necessary for rails and other supplies. The materials which were stored in Torreon, Durango, Monterey, and other cities of the north have been used already for the repair of the lines in the State of Chihauahua, which have been more seriously damaged than in any other section. Paulino Fontes, Director of the Railroads, states that the President of the Republic, in view of the absolute necessity of immediately repairing damages which have been done, has decided upon the immediate appropriation of money for these purposes, in addition to that which is taken in from freight and passenger transportation.

More than 50 bridges, large and small, have been destroyed by the storms in the division from Jimenez to Chihuahua. Almost as many more have been destroyed from Chihuahua to Ciudad Juarez and in the branch from Jimanez to Chihuahua. The repairing of the bridges will be very expensive and it will be necessary to make an even greater outlay in the construction of enbankments to support the roadbed, which has been completely obliterated in many places for miles.

It is stated that the large Ortiz bridge, in the State of Chihuahua, will have to be completely rebuilt. It is planned to construct a new bridge entirely of concrete, in order that it may more successfully resist the repeated overflows of the River Concha. Eng. Angel Pembert has been delegated by the President to make a thorough investigation of the probable cost of the work and of the conditions under which it may be carried out.

England's Exports and Imports

LONDON, England.

The following table, taken from the English Board of Trade statistics, gives the exports and imports of railway material of the United Kingdom for the seven months ended July, 1919, as against the same period for the two previous years:

EXPORTS	1919	1918	1917
Locomotives	5,946 tons	12,318 tons	13,584 tons
Steel rails	65,621 tons	18,088 tons	24,403 tons
Railway wheels and axles	7,683 tons	5,829 tons	2,980 tons
Tires and axles	14,321 tons	11,205 tons	12,238 tons
Chairs and sleepers	8,938 tons	4,076 tons	4,250 tons
Railway carriages for passengers	£249,882	£418,782	£109,557
Railway trucks, wagons, etc	£646,913	£175,875	£276,552
Machine tools	£1,024,408	£858,533	£1,324,772

IMPORTS	1919	1918	1917
Locomotives	29 tons	178 tons	112 tons
Steel rails	3,748 tons	278 tons	219 tons
Tires and axles	2 tons	368 tons	1 ton
Machine tools	£2,660,041	£2,211,516	£1,456,812

The following tables show the distribution of steel rails exported from the United Kingdom:

	1919	1918	1917
To Russia	49 tons	.....	.....
Sweden	3,901 tons	.....	.....
Portuguese East Africa	1,030 tons	5 tons	1 ton
Chile	160 tons	.....	124 tons
Argentine Republic	127 tons	.....	.....
British South Africa	1,992 tons	13 tons	100 tons
British India	25,151 tons	2 tons	104 tons
*Straits Settlements	8,091 tons	.....	38 tons
Ceylon	3 tons	.....	.....
Australia	21 tons	.....	10 tons
New Zealand	7,291 tons	21 tons	132 tons
Other countries	17,805 tons	18,047 tons	23,894 tons

The following table shows the distribution of locomotives exported from the United Kingdom:

	1919	1918	1917
To Spain and Canaries	605 tons	150 tons	74 tons
Other countries in Europe	1,608 tons	8,189 tons	9,593 tons
Argentine Republic	529 tons	193 tons	138 tons
Other countries in South America	289 tons	183 tons	79 tons
	1919	1918	1917
To British South Africa	277 tons	441 tons	1,943 tons
British India	1,672 tons	2,386 tons	857 tons
*Straits Settlements	65 tons	39 tons	253 tons
Ceylon	73 tons	35 tons	10 tons
Australia	427 tons	57 tons	178 tons
Other countries	401 tons	645 tons	459 tons

*Including Federated Malay States and Labuan.

Equipment and Supplies

Locomotive Deliveries in July

The Railroad Administration has issued the following:

For period July 1 to July 5

Works	Road	No.	Type
American	Vgn.	3	USRA Mallet
		3	
Baldwin	B&LE	5	USRA S. F.
	B&O	2	USRA Pac.
	Erie	6	USRA Pac.
	C&O	1	USRA Mount.
	P&R	1	Mallet
	P.L.W.	1	Mallet
	SP	1	S. F.
	T&P	1	S. F.
	UP	—	
		18	

For week July 6 to July 12

Works	Road	No.	Type
American	C&NW	6	USRA 6W. Sw
	Vgn.	3	USRA Mallet
		9	
Baldwin	AT&SF	4	Pacific
	AT&SF	3	S. F.
	B&O	1	USRA Pac.
	C&S	2	USRA S. F.
	Erie	1	USRA Pac.
	Ga.	2	USRA 8W. Sw
	N&W	1	Mallet
	Penn.L.	1	Mallet
	Sou.Pac	1	S. F.
		16	

For week July 13 to July 19

Works	Road	No.	Type
American	C&NW	4	USRA 6W. Sw
	CSTPM&O	8	USRA 6W. Sw
	Vgn.	3	USRA Mallet
		15	
Baldwin	AT&SF	7	Santa Fe
	CC&O	1	Mallet
	CRI&P	6	USRA Mik.
	N&W	1	Mallet
	B&O	2	USRA Pac.
	C&S	1	USRA S. F.
	SP	2	Santa Fe
	AT&SF	1	Pacific
	P.L.W.	1	Mallet
		22	

For week July 20 to July 26

Works	Road	No.	Type
American	Vgn.	2	USRA Mallet
		2	
Baldwin	P.L.W.	2	Mallet
	SP	1	Santa Fe
	C&S	2	USRA S. F.
	CRI&P	3	USRA Mik.
	P&R	1	Mallet
	B&O	1	USRA Pac.
	AT&SF	4	Santa Fe
	AT&SF	1	Pacific
	P.L.W.	3	USRA S. F.
		18	

For period July 27 to July 31

Works	Road	No.	Type
Baldwin	P&R	1	Mallet
	AT&SF	2	Santa Fe
	P.L.W.	1	Santa Fe
	P.L.W.	2	USRA S. F.
	T&P	2	USRA Mik.
	SP	1..	Santa Fe
		9	

Grand total 112

In addition to the above, the American Locomotive Company completed 53 foreign and shipped 2 miscellaneous domestic locomotives, and the Baldwin Locomotive Works completed 20 foreign and shipped 7 miscellaneous domestic locomotives.

Locomotives

THE BELGIAN GOVERNMENT.—The American Locomotive Company is figuring on 400 locomotives for the Belgian government.

THE CUBA RAILROAD COMPANY has ordered from the American Locomotive Company one 4-6-0 type locomotive, with 20 in. by 26 in. cylinders, and a total weight in working order of 152,000 lb.

THE AMERICAN TRADING COMPANY, Cuba, has ordered from the American Locomotive Company one 2-8-0 Consolidation type locomotive, with 14 in. by 20 in. cylinders and a total weight in working order of 72,000 lb.

THE IMPERIAL KARAFUTO GOVERNMENT has ordered from the American Locomotive Company one 2-6-2 tank locomotive with 14 in. by 22 in. cylinders, and a total weight in working order of 90,000 lb.

THE MOGYANA RAILWAY OF BRAZIL has ordered from the American Locomotive Company four 2-6-6-2 Mallet type locomotives with 16½ in. and 26½ in. by 24 in. cylinders, and a total weight in working order of 160,000 lb.

THE CENTRAL OF BRAZIL has ordered from the American Locomotive Company six 4-6-2 type locomotives with 21½ in. by 28 in. cylinders, and a total weight in working order of 205,000 lb.; also seven Consolidation type locomotives with 21½ in. by 26 in. cylinders, and a total weight in working order of 165,000 lb.

Freight Cars

THE UNION TANK CAR COMPANY is inquiring for prices on 1,000 tank cars.

THE UNION TANK CAR COMPANY is inquiring for prices on 1,000 tank cars.

THE BUFFALO BOLT COMPANY, Buffalo, N. Y., is inquiring for two 50-ton flat cars.

NEW YORK CENTRAL.—The Ryan Car Company is making repairs on 300 freight cars.

W. R. GRACE & Co., New York, is inquiring for 40-ton coal cars, number not stated, for export.

O. B. CINTAS, Havana, Cuba, has ordered 150 flat cars from the American Car & Foundry Company.

THE SOUTH AFRICAN GOVERNMENT RAILWAYS have ordered 300 drop-side and 200 high-side gondola cars from the Pressed Steel Car Company.

THE MAGNOLIA PETROLEUM COMPANY, Dallas, Tex., has ordered 25 40-ton, 8,000-gal. tank cars from the American Car & Foundry Company.

Iron and Steel

THE CHICAGO, ROCK ISLAND & PACIFIC has ordered 231 tons of deck plate girder spans from the American Bridge Company, Chicago, to rebuild its bridge over the Platte river, near Ashland, Neb.

Miscellaneous

THE HASKELL & BARKER CAR COMPANY, Chicago, has placed an order for 400 tons of repair material, largely plates, to be used for repairs on 300 hopper cars of the Pennsylvania Railroad.

British Locomotives for Central and South America

LONDON.

An article in "Modern Transport" states that the North British Locomotive Co., Limited, Glasgow, have received an order for 38 4-8-0 two-cylinder compound locomotives for the Central Argentina railway.

Sir W. G. Armstrong Whitworth & Co., Ltd., has now in hand ten 4-6-0 type locomotives for the Leopoldina Railway (Brazil).

The Colombian National Railway has ordered six Kitson-Meyer type locomotives from Kitson & Co., Ltd., Leeds, three of which have already been delivered. All of these locomotives are fitted with the Robinson type of superheater.

Supply Trade News

R. S. Hunter has been appointed Chicago manager of the **Warren Oil Company of Pennsylvania**, Warren, Pa.

The **American Locomotive Company** is planning to carry out improvements to double the capacity of its plant at Chester, Pa. The work will cost about $1,000,000.

E. M. Cutting, Pacific Coast manager for the **Edison Storage Battery Company** with office at San Francisco, Cal., has been appointed manager of the railroad department with office at Orange, N. J. Mr. Cutting entered railway work in 1888 in the signal department of the Southern Pacific. In 1898 he was appointed supervisor of signals for the Western division and in 1902, in addition to his duties in the signal department, he was given charge of all electric train lighting. In 1908 he became engineer of train lighting, heating and ventilation, resigning in 1912 to become Pacific Coast manager for the Edison Storage Battery Company, which position he held until his recent promotion. Mr. Cutting was instrumental in initiating the movement which culminated in the formation of the Association of Railway Electrical Engineers of which he was elected president in 1909.

E. M. Cutting

Work has begun on an extension of the rail mill at the plant of the **Algoma Steel Company**, Sault Ste. Marie, Ont. The improvement will cost several hundred thousand dollars and is part of development plans made by officers of the company which involve an expenditure of from $5,000,000 to $7,000,000.

The **Western Electric Company**, New York, has recently added a lighting department to its general sales organization. This new department is under the direction of **E. Cantelo White.** Mr. White has served in the electric lighting field for almost 15 years, both in the United States and Canada, as a salesman and designer of lighting equipment.

Charles Riddell has resumed his duties as manager of the Chicago office of the **Baldwin Locomotive Works** and the **Standard Steel Works Company.** Mr. Riddell, who was formerly manager of the Chicago office, has been serving as assistant secretary and treasurer in the financial department at the Philadelphia, Pa., office for the past year and a half. **Arthur S. Goble**, manager of the Chicago office, has been transferred to the St. Louis, Mo., office.

C. H. Norwood, contracting electrical and mechanical engineer, has moved his offices from 417 South Dearborn street, Chicago, to 116 West Illinois street, where increased shop facilities will permit the manufacture of electrical and mechanical specialties pertaining to moving bridges. The business will be incorporated about October 15 under the name of the C. H. Norwood Company. James B. Noonan, office manager, will then become a member of the firm.

The **Dunbar Manufacturing Company**, Chicago, manufacturers of railway and automobile supplies, has appointed **W. C. Irwin** district sales representative in St. Louis and the Southwest, with office in the Frisco building, St. Louis. Mr.

Irwin has been in the railway supply business for several years and at present is district representative for the Doss Nut Company, Chicago, the Railroad Supply Company, Chicago, and the Woven Steel Hose & Rubber Company, Trenton, N. J. During the war Mr. Irwin was a captain in the Engineers' Corps of the United States Army.

The Baldwin Locomotive Works and the **Standard Steel Works Company,** both of Philadelphia, Pa., have opened a branch office in the Merchants National Bank building, St. Paul, Minn. **Henry Blanchard,** sales representative in the Chicago office of the concerns, has been appointed manager of the new branch offices. Mr. Blanchard entered the service of the Baldwin Locomotive Works and the Standard Steel Works Company in the latter part of 1915, in the Philadelphia office. In April, 1919, he resigned as assistant to the vice-president in the Philadelphia office and was transferred to the Chicago office as sales representative. Prior to entering the service of these companies he served as sales engineer of the American Steel Foundries, with office in Chicago.

Lieutenant-Colonel L. P. Winby, whose appointment as managing director of the P. & M. Company (England), Ltd., with offices at 31 Budge Row, London, E. C., was announced in the *Railway Age* of June 27, page 1842, is now in this country on a six weeks' business trip for the purpose of undertaking the accounts of a few companies manufacturing railroad and engineering appliances and who desire foreign business which can be reached by the selling organization of the P. & M. Company (England), Ltd., in the British Empire and in the East. This company controls the sale of rail anti-creepers in all countries outside of the United States, Canada, Mexico and Cuba, under the patents of the P. & M. Company, Chicago.

L. P. Winby

Lieutenant-Colonel Winby was born in Glamorganshire, England, and educated at Brighton College and Cambridge University. He entered the Royal Engineers (British Army) in 1900 and served under Lord Roberts in the South African war. Leaving the army in 1902 he joined the firm of L. P. Winby & Co., Queen Anne's Chambers, Westminster, London, S. W., engaged in engineering work, including the construction of railways in South Africa. At the outbreak of war he rejoined the army and served continuously in France and Belgium as a lieutenant-colonel in the Westminster Dragoons, resuming his former work after the signing of the armistice. In June of this year he was appointed managing director of the P. M. Company (England), Ltd.

Trade Publications

Automatic Ore Unloaders.—The Wellman-Seaver-Morgan Company, Cleveland, Ohio, in a recent bulletin, presents an extended article on the W-S-M automatic ore unloader built by that company at a number of points on the Great Lakes for the unloading of cargo ships into railway cars or storage piles. The special feature of this equipment is a grab bucket of enormous capacity.

Machine Tool Equipment.—A number of two-page bulletins have been issued by the Bilton Machine Tool Company, Bridgeport, Conn. These bulletins are bound in a cover with punched holes to which others may be added from time to time and each briefly describes and illustrates a machine made by this company. These include gear milling and hobbing machines, automatic milling machines, automatic cam feed drill presses, drilling and riveting machines, etc.

Railway Financial News

Boston & Maine.—The bill in equity by Edmond F. Brown et al, owners respectively of 55 and 52 shares of Boston & Maine stock, seeking to have the court review, annul, modify or amend the order of the Massachusetts Public Service Commission approving the plan to reorganize the Boston & Maine under the act of 1915, has been dismissed by the Supreme Court of Massachusetts. The 1915 statute gives the Boston & Maine the right to acquire ownership of all leased lines and issue bonds and stock to the amount of $13,306,090 to refund the floating debt.

Chicago & Western Indiana.—This company has given notice that interest which fell due September 1 on its $15,000,000 6 per cent collateral trust gold notes, will be paid on and after September 15, at the office of J. P. Morgan & Co. The principal of these notes also matured the first of this month, but no provision for paying it has been made, except the invitation to the holders to extend the notes at 7 per cent. More than 75 per cent of the notes have been deposited under the extension agreement with the Bankers Trust Company, which will pay the September coupon on the deposited notes by check. The offer to extend the notes is still open. The notes first matured September 1, 1918, and were extended for a year, with an extra compensation of 1¼ per cent.

New York Central.—J. P. Morgan & Co. are forming a syndicate to offer $15,000,000 New York Central one-year 6 per cent notes. These notes are to be secured by pledge of $20,000,000 New York Central refunding 4½s and 75,000 shares of Reading Company first preferred stock, the collateral having a value of over 120 per cent of the amount of notes issued. The new notes are being offered at 99⅝, to yield about 6.40 per cent. The state bank commissioner of Massachusetts has declared the issue legal investment for Massachusetts savings banks.

New York, New Haven & Hartford.—Federal Judge Mack has set October 28 for the hearing of arguments on motions made by Harold Norris and more than 1,300 other stockholders of the New Haven for permission to intervene in the suit of Edwin Adams and others for the recovery of more than $150,000,000 alleged to have been wasted by William Rockefeller and other former directors of the company. Judge Mack will also hear on the same day argument on a motion for the appointment of a limited receiver to prosecute the Adams suit at the expense of the company.

Seaboard Air Line.—This company is offering an extension privilege of one year on a 7 per cent basis to holders of the $4,000,000 6 per cent notes which were due September 15. The September 15 coupon, plus a cash compensation for extension of $9.50 per $1,000 bond, is being paid at the Guaranty Trust Company, New York. The collateral behind the notes will be increased from $5,334,000 first and consolidated 6 per cent bonds to $6,000,000. The extension has been approved by the Railroad Administration. The company's gross income for 1918 and 1919 will be about $7,099,857, the agreement arrived at between the Railroad Administration and the Seaboard Air Line calling for an annual compensation of $6,920,025. Estimating corporate expense at $50,000, and taking charges as of 1917, the company should have a net income of $941,452, against $854,067 in 1917.

St. Louis-San Francisco.—The Missouri Public Service Commission has authorized this company to issue $1,283,000 of its prior lien mortgage 6 per cent bonds to reimburse the company for money actually expended for its income and to sell the same at not less than 90 cents on the dollar. The money expended represents the acquisition of additional property.

Meal Stations, on the time-tables of railroads in Sweden, are indicated by the simple but suggestive picture of a crossed knife and fork opposite to the name of the station.

Railway Officers

Railroad Administration

Central Administration

W. J. Cunningham has resigned as assistant director of the Division of Operation, effective on September 15, to return to his work at Harvard as James J. Hill professor of transportation. Mr. Cunningham organized and was appointed manager of the Operating Statistics Section early in 1918 and was appointed assistant director of the Division of Operation, and also chairman of a special committee on maintenance expenditures, on June 1, this year.

Regional

C. T. Beven has been appointed acting terminal manager at New Orleans, La., vice **E. A. Kelley**, deceased.

Federal and General Managers

E. R. Richardson, assistant to the federal manager, has been appointed federal manager of the Coastwise Steamship Lines succeeding **H. B. Walker**, who has resigned to reassume direction of the Old Dominion Line. Mr. Richardson was freight traffic manager of the Ocean Steamship Company before the steamships were taken over by the Railroad Administration.

Financial, Legal and Accounting

R. D. Anderson, assistant engineer on the Minnesota and Dakota division of the Chicago & North Western, has been appointed special engineer in the accounting department, a position recently created, with office in Chicago.

Operating

J. S. Spelman, general superintendent of the Western Pacific at San Francisco, Cal., has also been appointed division superintendent, Western Division of the Western Pacific only, with headquarters at Sacramento, Cal.

Subsequent to the separation of the Southern Pacific from the Western Pacific, the Deep Creek and the Tide Water & Southern, and the appointment of **E. W. Mason** as general manager of the latter lines, as announced in *Railway Age* of September 5, the following appointments have been made by General Manager Mason, the officers to have jurisdiction over the Western Pacific, the Deep Creek and the Tide Water & Southern: **H. K. Faye,** general freight and passenger agent of the Western Pacific, to be traffic manager; **J. P. Quigley,** superintendent Western Division, Western Pacific, with headquarters at Sacramento, to be superintendent of transportation and telegraph, with headquarters at San Francisco; **W. R. Groom** to be chief special agent and **W. T. Jacobs** to be purchasing agent. H. K. Faye in turn has appointed **B. K. Smith,** assistant general freight and passenger agent of the Western Pacific, general passenger agent, and **W. J. Shotwell,** assistant freight agent. Unless otherwise stated the headquarters of these officers are to be at San Francisco.

Traffic

O. O. Ogden, has been appointed general agent of the Natchez & Southern and the Natchez & Louisiana Railroad Transfer with offices at Natchez, Miss.

J. H. Wingfield has been appointed manager of dining cars of the Southern Railway, Lines East, with office at Washington, D. C., succeeding **W. Netherland,** deceased. **E. H. Rosecrans** has been appointed superintendent of dining cars, Lines East, with office at Charlotte, S. C., succeeding Mr. Wingfield.

Samuel L. Seymour, assistant to George D. Ogden, freight traffic manager of the Pennsylvania, Eastern Lines, with office at Pittsburgh, has been retired under the pension rules of the company after 51 years of continuous service. Mr. Seymour will engage in general insurance brokerage business with Edwards, George & Co., Pittsburgh.

Augustus E. Ruffer, general superintendent of the Erie, eastern division, with office at New York City, has been furloughed for service with **A. T. Hardin,** regional director of the Eastern region. **Herman J. Klein,** assistant general superintendent of the Erie, Lines East, has been appointed acting general superintendent to serve during Mr. Ruffer's absence.

Obituary

George S. Leavenworth, mining engineer of the Tennessee Copper Co., engaged a great part of his life in railroad location and construction work, died August 8 at Ducktown, Tenn. Mr. Leavenworth was a graduate of the University of Vermont. At the time of his death he was engaged in mining operations in the South.

Charles M. Jacobs, member of a district board of production of munitions for the British Ministry of Munitions during the war; noted authority on tunnel construction in many parts of the world and particularly in New York, London and Paris where he had practised; superintendent of construction of six tunnels in New York City, among them the Pennsylvania tunnels and the Hudson Tubes, died Sept. 14, in London. In 1907 Mr. Jacobs was appointed consulting engineer to advise the French government on a proposed tunnel under the Seine river near Harve. Although he submitted plans and estimates the work was never done, probably because of the war. He was also consulting engineer to the contracting firm of Dade & Pelle for the tunnel under the Seine at Paris, part of the rapid transit system of Paris, completed in 1908. Until 1915 when he retired from active engineering work, he was a member of the firm of Jacobs & Davies. He visited his New York office each year until 1913.

C. M. Jacobs

Mr. Jacobs was born and educated in England, receiving a mechanical training in the workshops and drafting offices of the firm of **Charles and William Earle,** engineers and shipbuilders, Hull, England, and was finally appointed superintendent engineer in the construction of marine works; practised as consulting engineer in South Wales and London and came to the United States in 1889 by invitation of the late **Austin Corbin,** then president of the Philadelphia & Reading, to advise on various schemes in which that gentleman was interested, and more especially with reference to designing deep tunnels for rapid transit between Brooklyn, New York and Jersey City. During the period from 1890 to 1896 he was consulting engineer of the New York & New England Railroad; Elmira, Cortland & Northern; Long Island Railroad, and also chief engineer of the Blackwells Island bridge. In 1892-4, as chief engineer of the East River Gas Co., he designed and constructed a tunnel between Ravenswood, L. I., and Seventy-first St., New York City. There are laid through this tunnel two large gas mains with a 3-ft. gage railway track alongside. This tunnel was driven simultaneously from both sides of the East River. The headings met at midnight July 11, and were joined up, thus completing the pioneer tunnel under the East river. From 1902 until about 1909, Mr. Jacobs served as chief engineer of the North River division of the tunnel lines of the Pennsylvania.

EDITORIAL

Railway Age

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Another Strike!

FOLLOWING IN THE TRACKS of the "Reds" who are now trying to throttle the country by tying up the steel industry, the radical leaders of two printing trades' unions in New York have demanded that the employing printers shall, in effect, turn their respective businesses over to their employees. The vehicle is an unreasonable demand for a minimum wage of $50 a week of 44 hours and a threat to strike if not granted.

On its face, the issue is local. In fact, it is the kindling of a nation-wide conflagration with far-reaching possibilities. Under the circumstances it is our plain duty as American citizens to fight until the last vestige of fire shall have been stamped out.

At this writing it is impossible to predict when we shall again be able to get out another issue of the *Railway Age;* but we ask the indulgence of subscribers and advertisers alike until we can resume. In the interim, our editorial staff will continue to function to the end that our readers shall not fail to have a connected story of happenings in the railway world. Should it be necessary, a way will be found to get out special bulletins covering matters vital to the operation of our railways and the welfare of those who make what the railways buy.

The Steel Strike

Entirely irrespective of the pros and cons of the strike in the steel industry, it is clear that the struggle has resolved itself into a contest between Americanism and alienism. This is shown not only by the fact that it is the foreign element—mostly Slavs—who are on strike, but by the character of the leader of the strikers—in reality, William Z. Foster, secretary of the Steel Workers' National Committee. Mr. Foster is an out-and-out radical. He was at one time an organizer of the I. W. W., and in 1911 was sent by that organization to Europe, where he spent much time with the radical leaders in France, Germany and Austria-Hungary. He later left the I. W. W., and is working in the A. F. of L. on the basis that the way to work out his radical ideas is through the medium of the established labor organizations. In short, he has adopted a policy of boring his way in, or of getting into the stronger organization, of inoculating it with his theories, and of carrying them out by means of a militant minority. Further than that, he is the joint author of a book, "Syndicalism," published in Budapest in 1911, in which among other things he favors the revolution by general strike. The *Iron Age* in its latest issue has done the people a service by reproducing passages from this book, such as "The syndicalist knows that capitalism is organized robbery and he consistently considers and treats capitalists as thieves plying their trade. He knows they have no more right to their wealth they have amassed than a burglar has to his loot." Or, "In his choice of weapons to fight his capitalist enemies, the syndicalist is no more careful to select those that are 'fair,' 'just' or 'civilized' than is a householder attacked in the night by a burglar. He knows he is engaged in a life and death struggle with an absolutely lawless and unscrupulous enemy . . . With him the end justifies the means." Speaking of the general strike, he says, "The general strike is the first stage of the revolution proper." With a leader capable of preaching such doctrines as these to a mass of more or less uneducated and un-Americanized foreigners, all kinds of trouble may be expected. It is fortunate, however, that the issue is so clear. This country is American, and a question of Americanism can be decided only one way.

Working for the Public

The Plumb plan "makes him (the workman) the true servant of the public and of the country, which rewards his efficient service with an interest in the dividends of the enterprise. . . . . For a man will work for the public more unstintingly than he will work for that impersonal thing called Capital. . . ." These are the words of Grand Chief Warren S. Stone of the Brotherhood of Locomotive Engineers in an article entitled "The Labor Campaign Is On," in the September number of the Locomotive Engineers' Journal. Observation of the actions of men in government service, and particularly under the civil service rules, does not bear this statement out. Moreover the employees in railroad service are now working for the public—a public which has treated most of them handsomely, both as to wages, and working conditions. The employees generally do not seem to be at all appreciative of this; indeed they are treating the public with much the same contempt as are the profiteers. A group of railway mechanics was discussing one of their number and criticising him because of his close attention to his work. "He forgets that he is working for the government and acts as if he were still working for a private corporation," said one of them. Thoughtless words; and yet reflecting an attitude which unfortunately is all too general. Inefficiency means decreased production and higher cost of living. Democracies are slow to anger, but once aroused exert an irresistible force in righting wrongs. America has high ideals—the question is whether those who are abusing them will awaken in time to see the handwriting on the wall and profit by it.

Effects of Safety Campaigns

The "no accident" campaigns recently conducted by the United States Railroad Administration have been highly successful from the standpoint of both the railroads and the employees. Even if their effects were confined to the railroad field, they would be worth the efforts and time expended on them, but their influence is beginning to be felt much farther than their authors anticipated. The Chicago Association of Commerce has designated October 9 as "Fire and Accident Prevention Day." In its announcement of this one-day drive for the prevention of fires and accidents, the association has given credit to the Railroad Administration for what it has accomplished in drives of a similar nature, and the publicity

matter prepared for the drive refers to the experience of the Railroad Administration as proving that 75 per cent of accidents are due to carelessness on the part of individuals, and can be prevented by inspiring individuals to be careful. Safety work has long been carried on by railroad companies, industrial concerns, and municipal, state and governmental agencies, but the Railroad Administration has had an especially good opportunity for carrying it on effectively, because it could make its influence felt on such a large mileage of railroads and throughout the entire country. Habits of carefulness may be formed in short, intensive no-accident drives, which will outlast the actual campaigns.

Government Ownership of Coal Mines

The *Railway Age* often has pointed out that the application of radical policies to the railways was sure to be followed by the advocacy of radical policies in other fields of industry. The Plumb plan provides for government ownership and employees' management of the railroads. The coal miners have not waited for the adoption of the Plum plan to begin an agitation for the application of a similar policy to the coal mines. The United Mine Workers of America has commenced a propaganda for nationalization of the coal mines and participation of the employees in their management. It also has decided to demand a 30-hour week and a large advance in wages. The railways are the largest purchasers of coal, and their owners and officers are interested in the new program of the miners because of the very large increase in railroad expenses which its adoption would cause. But the demands the miners have decided to make have a much broader significance. They are a striking illustration, in addition to many others the country recently has been afforded, of the extent to which radical counsels are coming to prevail in organized labor. We now have both the labor brotherhoods and the United Mine Workers engaged in propaganda for the acquisition of the industries in which they are employed at the expense of the general public and their management partly or wholly by the employees. The adoption of such plans would result in the overthrow of existing American industrial and political institutions, and evidently the support of many large labor organizations is being won for plans which their leaders know would involve an industrial and political revolution. It is daily becoming clearer that we have entered a great struggle between those who wish to preserve the existing institutions of America and those who wish to establish socialism and sovietism in their place. The first great fight will be over the future ownership and management of the railways. If private ownership and management wins in this field it will probably win in others. If private property in railroads is destroyed private ownership of other kinds of property also probably will be destroyed. The issue is clear-cut, and we have no doubt as to the side on which a great majority of the people finally will array themselves.

A Superintendent's Nights and Days

A superintendent manages the work of his division through three principal assistants, the engineer, the master mechanic and the trainmaster. Which of the three is the most important is not a practical question, for each one is absolutely essential; but which of the three should engage the most of the superintendent's time and attention is a question which all competent observers will in most cases answer alike; it is the trainmaster. Director General Hines has sent out a letter intimating that operating officers are not giving sufficient attention to roadway and mechanics, particularly roadway, which evidently has enlivened a good many staff meetings; and some of these officers have a feeling that they are being unfairly criticised. This feeling would seem to be due to abnormal sensitiveness. If the roadway of a division is neglected the division engineer is the man immediately responsible. It may be that the division superintendent, rather than the chief engineer or the general manager, was responsible for the selection of the division engineer, but this is not usually the case. A chief in Washington must, indeed, work through the chief division officer to find out what is going on from day to day on the division, but the latter ought not to need a great deal of time to fix the manager's attention on the essential issues. The reasons why the superintendent must live with the trainmaster more than with the other two are to be found in the nature of the case. The trainmaster may be likened to the stage manager of a theatre; the division engineer to the painter of the scenery. While the show is going on—which, on a railroad, means all of the time—the stage manager's office is the critical place. Or, to adopt a simile used by George M. Basford in one of his addresses, we may compare the superintendent to the conductor of an orchestra; he must concentrate attention on the players, not on the men who made the instruments. Again, the science of keeping up track and that of maintaining locomotives are comparatively settled; the young officer has, or should have, a good mental equipment of clearly defined principles; whereas the trainmaster must learn efficiency from a multitude of teachers. Much of his knowledge must come from experience; he cannot get it from books or at school. Even at his best he, much oftener than the other two, has problems which he cannot settle; and the man who (having been duly diligent) has the largest number of unsolved puzzles, is the one who is entitled to the first call on the superior's time and attention.

The Annual Convention of the Signal Division

THE FIRST ANNUAL CONVENTION of the Signal division of the American Railroad Association, which was held in Chicago on September 17-19, resembled previous conventions of the old Railway Signal Association in that there appeared to be a determination to forward constructive measures that will conform to or improve upon the best present practice.

During the past few years the annual convention of the Railway Signal Association has been held in September. It is now recommended that the annual meeting be held in July in order that the executive committee of the American Railroad Association can dispose of each year's work of all its sections and divisions at its annual convention, which is to be held each year in November. Such an arrangement would necessarily require a change in the time of holding at least one of the two stated meetings of the Signal division. These stated meetings have heretofore been held in March and June, and it is proposed now to hold them in March and December. It is probable that some objections may be raised to July as the annual convention month. In normal times that is a busy time for the signal department. Construction work, seasonal repairs, and inspections are usually going at full speed. Then, also, July is about the middle of the vacation period, when the department is short handed. Under such circumstances, it may mean that some roads cannot send representatives to the annual convention. Besides, passenger business is especially heavy at that time of the year. So far as the stated meetings are concerned, there probably can be no objection to holding one in March, since has always at least one day been set aside during that month for one of the stated meetings. December,

however, may prove to be a poor time to hold such a meeting. At that time of the year, at least in some parts of the country, storms are prevalent and it may, therefore, be out of the question for some members to attend. There is one feature, however, that may relieve the situation somewhat, and that is that at any meeting, committee reports may be submitted to the members for action by letter ballot.

The subject of automatic train control was brought up again by Committee 10—Signaling Practice, in the form of recommended requisites for the design and construction of such devices. It is the opinion of some of those who have made a detailed study of train control devices that the time has come when service tests should be made on a larger scale and that the railroads should lend all the assistance practicable to those who are conscientiously engaged in the development of such devices.

Another problem confronting the association is illustrated by a remark made during the meeting that only five per cent of the total signal business of one signal supply company conformed to Railway Signal Association standards. This might at first seem surprising; for it would appear that the railroads should use material approved by the Railway Signal Association and the Signal division of the American Railroad Association. It would seem that, inasmuch as a great deal of time and much conscientious constructive work have been devoted to the development of standard materials, the amounts of such materials used by the railroads should represent more than five per cent of the total signal supplies purchased. It is true, however, that the Railway Signal Association has not yet prepared standards for all signal materials, but it is certain that they have been prepared for more than five per cent of such materials. It is understood that when the executive committee of the American Railroad Association approves the work of any section or division of the association and it is also approved by the Railroad Administration, the use of such materials or specifications becomes mandatory. In such a case it might be possible for the executive committee of the American Railroad Association and the Railroad Administration to approve many of the standards already adopted by the Railway Signal Association, in which case the total signal business of a signal material manufacturer would soon show a much larger percentage of R. S. A. standard supplies than indicated by the statement referred to.

The Plight of a Short Line Railroad

One of the witnesses on Monday before the House committee on interstate commerce is the builder and owner of an 88-mile railroad running out of Savannah, Ga. George M. Brinson appeared before the committee and testified that he had put over $700,000 of his own money into his road, the Midland, which runs back from Savannah through a timber and agricultural country, crossing two or three other railroads and running through no large towns excepting Statesboro. Not only had Mr. Brinson built the road largely with his own money, but he was president and, as he remarked in answer to a question of one of the committee, was about all the officers there were. He had previously built other small roads in the south and had made a fair amount of money out of them. The Midland runs through what Mr. Brinson characterized as the richest county in Georgia. Building the road afforded transportation facilities to villages and rural communities heretofore without a railroad outlet. The road had been in operation only a very few years when the United States went into the war.

Mr. Brinson testified that the road cost about $1,200,000, which presumably included equipment. There are outstanding $360,000 of bonds which are now in default of interest. The bonds are held by quite a number of different people and as yet no foreclosure suit has been begun. Mr. Brinson, because there seemed no better way out of a hopeless position, signed one of the standard short line contracts with the government, but what he had to tell the committee was in substance that he could not go on operating the road under present conditions and make it pay even its expenses and the interest on the bonds, disregarding any return on his own investment of $700,000. Neither did he think any one else could take the road and operate it in such a way as to pay expenses and interest on the bonds even if his own interests were wiped out completely. The bonds are only at the rate of $4,000 a mile.

Is this a plain case of a man making a bad business venture and now coming before Congress and asking to be helped out? It is not; if Mr. Brinson's testimony may be taken at its face value, and the testimony was remarkably convincing and apparently made a considerable impression on the members of the House committee. In Mr. Brinson's opinion, this was a clear case where the government through its action, necessary as that action might be to meet war conditions, had wiped out his investment of $700,000 and had created conditions which made the many other short lines situated somewhat as the Midland is, unprofitable, if not actually a source of expense instead of revenue to their owners.

The owner of this little road, since the roadbed was entirely unseasoned, had bought five old, "rattle-trap"—the word is his—locomotives, with the intention of running them until the roadbed had been seasoned enough to justify putting on heavy new locomotives. The Midland did not have cars enough of its own to do its local business, but, as Mr. Brinson expressed it, it was a family affair between him and his connections; he could give them traffic and they were willing to let him use their cars. But government operation changed all that.

Fully as disastrous, however, to the Midland and like-situated roads, in Mr. Brinson's opinion, as the shutting off of car supply after the government took over its trunk line connections and the routing of freight by a government line rather than over an indepepdent line, was the situation created by the government's railroad labor policy. Before government control a short line such as the Midland could hire men through individual bargaining with them, could, in effect, make a strictly local, rural industry of operating a local line through an agricultural country. Now, Mr. Brinson testified, his local labor demanded the same rate of wages as the government was paying. He could no longer get a boilermaker to speed up when one of the "rattle-traps" broke down. Now this boilermaker must have not only the same wages, but the same restricted output as the boilermaker on the Central of Georgia, United States Railroad Administration.

We see in this testimony of Mr. Brinson some confusion of economic causes which might have been effective whether or not the government had taken over the operation of the trunk lines and causes which are directly traceable to the policy of former Director General McAdoo, but the one thing that stands out clear and seemingly irrefutable and the thing that visibly impressed the House committee was the fact that unless the American people are willing to forego expansion of railroad facilities through the building of such roads as this independent 88-mile line, some specific provisions will have to be made in the bill for the reorganization of the American railroad systems for the encouragement of the short line railroad builder. Mr. Brinson thought that the Cummins bill, if he understood it correctly, would possibly help him out of some of his difficulties, but he did not go so far as to express the opinion that it would encourage other optimistic would-be railroad builders to put $700,000 into a new railroad anywhere in the south.

It is true that the aggregate mileage of all the short lines is not large when compared with even a few of the largest

systems, but the short lines play a part in the economic life of the country that should not be overlooked, and while the short line problem is a small one compared to the great problems which face Congress in regard to the American transportation question as a whole, it is one that deserves study and, it would appear, has the sympathetic interest of Congress.

What Is a Strike?

THE PROVISIONS in the Cummins bill designed to bring about the settlement of labor controversies by an impartial tribunal instead of by the use of, or, more frequently, by the threat of force, and to prohibit "any combination or agreement with the intent *substantially* to hinder, restrain or prevent the movement of commodities or persons in interstate commerce," has called forth a lot of impassioned rhetoric about interference with the inalienable right of a free-born American citizen, or of two such citizens, to quit his or their employment peaceably, when they have regretfully arrived at the conclusion that they can no longer maintain or improve the "American standard of living" on the wages offered them. This notwithstanding the fact that the bill says specifically that "nothing herein shall be taken to deny to any individual the right to quit his employment for any reason."

The constant repetition of the presumption that a strike consists of a peaceful folding of the hands or that it is properly described by the euphemistic language used by Mr. Plumb recently when he said that men would "cease to serve" is becoming tiresome. It is true that we have no basis in experience for a proper conception of the kind of nation-wide strike that has been occasionally threatened by the train service brotherhoods and other large organizations of railroad employees but we have had plenty of experience of the kind of strikes that includes such practices as throwing emery dust into machinery, soap into locomotive boilers and bricks at the heads of men who are not only willing but anxious to take the places of the strikers and to try to maintain a standard of living on the wages that they scorn and by hours of labor that they find irksome.

We have also had recent experience of the fact that a strike does not necessarily mean a termination of employment, because when Mr. Hines announced that such an interpretation would be placed upon the action of the Pacific coast train employees and of the shop men on a number of eastern roads if they failed to report for work by a specified time the men returned to their jobs.

It even seems somewhat problematical whether the provisions of the Cummins bill would apply to the individual employees under the present form of strike ballot on which an employee signs his name to an authorization to the officers of the union to "use the protective features of the organization if necessary," knowing that if he does not so sign his name will be recorded in a little notebook carried by the walking delegate for future reference. It would seem that the conspiracy in such cases would be on the part of the labor leaders. The latter like to have it appear that they are "sitting on the lid," in anxious endeavor to restrain their restive followers from a too rash eagerness to burst the bonds of serfdom, but their bluffs have been so successful in the past that it is a little difficult to predict with assurance what would be the result if they were brought to a showdown.

There are ways to find out, however. One way would be to force the labor leaders to play their strike card and show to what extent their claims represent the real feeling of the men. This might also tend to show how many of the easier jobs at higher pay which the labor organizations point out in their arguments they might be able to fill. For example, the shop employees last year got a raise on the ground that it was necessary to keep them from migrating to the shipyards, but although they were allowed less than the shipyard scale, the increase in wages for the shopmen was followed by a large increase in the number of them applying for railroad service. The mere taking of a strike vote is so easy and usually has been so successful, and the methods of labor organizations include so many ways of making it unpleasant for a man to vote against a strike, that it is time to find out what a strike vote means.

Another way would be to enact into law some such provision as that contained in the Cummins bill and let a class of employees submit its grievances to arbitration by a board on which they would have equal representation. Then if the board should award them, say, only 25 per cent instead of 50 per cent and the men should still feel so dissatisfied and so disgusted with their employment that they would feel justified in "ceasing to serve" we imagine that the law could be repealed before enough new jails could be built in which to house the martyrs, because the jails now in existence might be needed for the leaders, whose interest in their own jobs is causing most of the trouble. If, on the other hand, a large percentage of the men should even grumblingly accept such a trifling increase in their emolument until they could think up a new excuse for reopening the case, or if the peaceable strikers motoring homeward to await their summons to court should find their passage obstructed by the pedestrians in search of employment, they might be led to join with the public in a conclusion that the law was a good one.

Public Sentiment and the Steel Strike

E. H. GARY, chairman of the United States Steel Corporation, has declined on behalf of the corporation to deal with organized labor, and the long-threatened great strike in the steel mills has begun, in spite of the plea of President Wilson that it should be postponed until after the industrial conference which he has called.

There is a circumstance relative to the attitude of the Steel Corporation which is highly significant. Although its refusal to recognize or deal with organized labor has resulted in a great strike, its course has received little criticism from the press, except the labor and socialist papers; and the sentiment of the public seems to be in its favor. If the Steel Corporation had assumed a few years ago the same attitude it would have been criticised by a large part of the press, and public sentiment would have been against it.

One of the reasons why, in this crisis, the Steel Corporation has fewer critics and enemies than it would have had a few years ago is that it has voluntarily given its employees large advances in wages and the opportunity to acquire its stock and share in its profits. Another is that it promptly and patriotically placed all of its vast resources at the disposal of the government during the war. There is another reason, however, which probably is much more important and influential. This is the tendencies which large labor organizations recently have been manifesting.

Until some years ago employers generally held the whip hand in dealing with their employees. The public knew this resulted in much injustice and not a little oppression and accepted the view that labor must be organized to secure its rights and protect its interests, and that employers should recognize organized labor. Until recently the public has looked with sympathy and approval upon the increase in the number of labor organizations and the growth of their memberships. A great impetus to the growth of the labor organizations was given during the war by the government's attitude of friendliness to them.

But simultaneously with the recent acceleration of the

growth of labor unions there has been occurring a change in the purposes which many of them avow and in the methods they use. When labor organizations were weak they demanded that employers should submit controversies with them to arbitration. Recently, however, there has been a growing tendency on the part of strong unions to decline arbitration, and to insist that all their demands must be granted under penalty of a strike. The first conspicuous illustration of this change in the attitude was afforded in the controversy regarding the basic eight-hour day on railroads in 1916, which resulted in an order for a general railroad strike and the hasty enactment of the Adamson law. Formerly the labor unions confined themselves to seeking better working conditions, shorter hours and higher wages for their members. Recently their demands in respect to working conditions and hours have been rapidly growing more extreme until finally the coal miners have asked a 30-hour week accompanied by a large increase in wages; but the unions are no longer confining their activities to such matters as working hours and wages. For years the socialists tried without success to secure control of the American Federation of Labor. Recently, however, large labor organizations affiliated with the Federation have begun to advocate measures which would be even worse than socialism. The railroad labor organizations are carrying on a propaganda for government ownership of the railroads and their management by the employees. The coal miners have begun a propaganda for government ownership of the coal mines and the division of their management between the government and the miners. Under these schemes, while the public is to buy the industries in question, it is not to be allowed, as it would be under socialism, to manage its own industries, but is to turn them over largely or wholly to the irresponsible management of the persons on the pay roll.

At the very time when big unions are demanding that the government shall nationalize vast properties and practically turn them over to the unions to manage, the unions have begun to lose control of their own members. The advocates and spokesmen of organized labor used to contend that collective bargaining between employers and employees was necessary to secure not only justice but continuous orderly operation of industries. Recently, however, the members of labor unions in all parts of the country have begun to strike in violation of their contracts with their employers and contrary to the orders of their own organizations. These "outlaw" strikes have even occurred in shipbuilding plants and on railroads which at the time were under the control or actual management of the government. These have been strikes against the government itself.

Developments such as those mentioned are making a very unfavorable impression upon all classes who do not belong to labor unions and even on many members of labor unions. When members of labor unions strike in violation of their contracts and contrary to the orders of their own officers, the question naturally is raised as to what good it does to carry on negotiations and make contracts with labor organizations. When they demand a 30-hour week, as the United Mine Workers are demanding, the question arises as to whether continued increase in the strength of labor unions will not result in a curtailment of the production of coal and of other commodities which will be destructive of the welfare of the working and all other classes. When labor unions commit themselves to such schemes as the Plumb Plan and nationalization of the coal mines, the question naturally arises as to whether the continued growth of unionism will not strengthen the movement for extreme radicalism and push the country finally into socialism or bolshevism. Many of the labor leaders disavow socialism; but socialism is merely the public ownership and *public management* of all the facilities of production, distribution and exchange, while the present labor leaders seem disposed to force upon the country public ownership and *labor class* management of all large industries, which would be worse than socialism. The extreme demands which have been made, the "outlaw" strikes which have occurred and the radical measures which have been proposed have been supported by the spokesmen of labor in words which themselves have been alarming. They have used the familiar language of the socialist and the anarchist in denouncing property owners, and the word "revolution" frequently has been on their lips.

There undoubtedly is a connection between recent developments in the labor world and the attitude of the press and the public toward the controversy between the United States Steel Corporation and organized labor. The general press and public are inclined to think that the Steel Corporation in refusing to recognize organized labor may be fighting the public's battle. If the public believed that recognition by the Steel Corporation of organized labor was all that was involved its attitude might be different. But naturally the public is beginning to wonder whether the further recognition of organized labor by employers and its further growth in membership and power means that there are to be disastrous curtailments of production in the United States; that contracts made by organized labor are not to be observed by it; that organized labor is going to refuse to submit its demands to arbitration; and that it is going to become a giant agency for the promotion of socialism, or even bolshevism. The public naturally reasons that if these are to be the results of the development of labor organizations, their recognition by employers is not so desirable as it formerly seemed to be. Knowledge of the fact that John Fitzpatrick and W. Z. Foster, the principal leaders of organized labor in the steel strike, are extreme radicals, Foster being an avowed advocate of the overthrow of the present industrial system, and of the use of "direct action" to bring this about, is not adapted to make the public look with less suspicion and apprehension upon the steel strike.

Only time will tell what is to be the outcome of the strike. The patent fact, however, that the attitude of the general press and public is far less friendly to organized labor in this struggle than it would have been a few years ago may well cause the leaders and members of labor organizations to pause and reflect. The people of the United States are just as determined not to be ruled by an autocracy of the proletariat as they ever were not to be ruled by an autocracy of the plutocrats. A vast majority of them are not in favor of socialistic or bolshevistic measures, but believe in private ownership and individual initiative. A large part, and perhaps even a majority, of the members of labor organizations are not in sympathy with the extreme radicalism being manifested by their present leaders. In other words, while the tendency of the labor organizations is to become more radical, the general trend of American sentiment is conservative, and there is a growing belief among the people that the labor organizations are trying to use the power they believe they possess to exploit the general public. Many very strong men and organizations, just when they have thought their power had reached its maximum and was ready to be used with the maximum effect, have suddenly found themselves rendered powerless and even crushed by the overwhelming reaction of an aroused and exasperated public.

The proposed alliance between the railroad brotherhoods and the unions of coal miners is expected by the officers of the United Mine Workers to result in joint action in wage demands. A committee has been appointed by the United Mine Workers to meet a similar committee from the railroad brotherhoods on October 1, to prepare a plan of co-operation in presenting wage and working condition demands.

Letters to the Editor

National Department of Public Works Versus the Corps of Engineers, U. S. A.

Chicago.

To the Editor:

The United States Engineer Corps is a body of men justly proud of its record, but hostile to any movement which threatens its authority or reduces its field of action. It has on its roster the names of many men who deserve credit for high attainments. Their country had educated them and made them a class apart, invested with authority and clothed with dignity. They have been entrusted with vast responsibilities and for the most part have discharged those responsibilities worthily, but not without the advice and help of untitled civilian engineers, who have paid for their education and gotten their experience without the aid of a paternal Government. It is these men who have done the vast proportion of the work for which men who wear insignia of military rank have been accorded, and have graciously accepted, the credit.

A statement of the vast area of the field of operation of the Corps of Engineers is a fitting preface to what I am about to say. Continental United States has an area of 3,742,583 square miles, within which are 26,410 miles of navigable rivers, 1,200,000 square miles of arid lands, and 75,000 square miles of swamp lands. Our continental and insular coast line is 48,881 miles long, not including our water front on the Great Lakes. We have between 35 and 40 continental ports, besides all those in our insular possessions. There are 517 West Point engineers to care for this vast array of work, as shown by the "Statement showing rank, duties, and addresses of the officers of the Corps of Engineers," issued by the War Department on January 1, 1919. A large proportion of the 375 captains and lieutenants were rushed through West Point without completing the course of study. We have then, old and young, experienced, and novices, 517 officers to do the vast work suggested by the citation previously made.

There are in the United States over 100,000 engineers in the various lines coming within the term engineering. Thousands of these men responded to war's compelling need; the American Society of Civil Engineers supplied more than 1,500. The American Society of Mechanical Engineers sent 1,497. The American Institute of Mining Engineers, 739. The American Society of Electrical Engineers supplied 1,412. The American Society for Testing Materials supplied 575. The architects sent hundreds. These were not novices, but men who, when the need was presented, were able to meet it, and their record of achievement is a proud one. They know that they have earned recognition from the government. They are so self-respecting that they are not willing, now that the piping days of peace have returned, to do the planning and the work which must be done along their several lines, and submit their work to a military engineer who, as a matter of form, will attach his name to the plans and as a matter of course, accept the credit which goes with the work.

Military engineers are educated to meet the constructive and destructive needs of war, and war has demonstrated to the United States its need for them. They do not fit into the every day life of a democracy. Their training makes them autocratic. Most of them, however, have the instincts of gentlemen and they deport themselves as such, but the officer is a rare exception who can wholly divest himself of a superior attitude toward the civilian. The feeling may be successfully camouflaged but it is only in concealment.

We think that no record will disclose a structure designed for the uses of peace and erected under military direction which has been designed, supervised, and completed wholly by the military engineer without aid or counsel from some civilian engineer. In support of this statement the Sault Ste. Marie locks and the Panama Canal are in evidence. Are not the skill and brains of Alfred Noble, Joseph Ripley, L. C. Sabin, David Molitor, Isaac De Young, and many other civilians built into the Sault structures? Then take the Panama Canal. It is to the glory of the Corps of Engineers, U. S. A., that they were in charge of that tremendous project, and the names of Goethals, Sibert, Gaillard and Hodges will always flash upon the screen of memory when that work is thought of, and *they* have had recognition and reward; but we who know, will also remember Williamson, Goldmark, Schildhaur, Cornish, Zinn, Nichols and their civil associates. Alfred Noble, too, left his impress upon that great work. The Pacific division had as its Chief, S. B. Williamson, civilian, all of whose aids were civilian engineers.

An examination of the Chief Engineer's report for 1913 (Vol. 6, Statement of Construction Expenditures to June 30, 1913) shows that the military on the Atlantic division built 2,265,415 cubic yards of masonry for $16,993,254.33, or an average of $7.50111 per cubic yard; and that the civilians on the Pacific division built 2,453,320 cubic yards for $13,646,-113.96, or an average of $5.5627 per cubic yard; showing a civil economy of $1.9384 per cubic yard over the cost of the Military division, or a saving of $4,745,515.49 on the job. Did Williamson ever receive any recognition from Congress? He did receive it from a business organization to which his achievement recommended him. Did any one of his civil associates receive commendation or reward from Congress? If so, when, and what was it? And furthermore, we know that these engineer officers did not plan the Panama canal. The type and salient features of that canal were worked out by a minority of the International Commission for the Isthmian Canal. To the project thus prepared the army engineers fell heir,—a project changed, except as to dimensions, in only one particular. The lake which the minority planned on the Panama side of the Culebra cut, with dam across the Rio Grande and locks between Sosa and Ancon, was abandoned because locks in that location would be within range of gunfire from warships. The locks were moved back to Miraflores and a large item of cost was added to the work. The wisdom of this move from the military standpoint could not be questioned then, but the World War has shown such advance in the power of modern artillery, and indirect fire has reached such precision of aim that the interposition of a hill and the withdrawal for a few miles count for but little as a means of defense.

I have grown old in engineering service and I have been in touch with military engineers for 40 odd years. I have admired, valued and still value the friendship of many of them. But I have not learned to admire the system which environs them, and I believe that the injection of that system into the activities of our civil life is a harm so great that it needs to be abated, as it will be by the passage of the bills supported by the Engineers, Architects and Constructors Conference on National Public Works and introduced on June 25, in the Senate by Wesley L. Jones and in the House by Frank G. Reavis, and the 100,000 or more engineers of our country should use every honorable influence and means to secure that legislation.

Isham Randolph,
Consulting Engineer.

Eight-Cent Street Car Fare in St. Louis.—The Public Service Commission of Missouri has authorized an increase in street car fares in St. Louis to 8 cents, the advance to continue for six months.

Raising a Large Train Shed Under Traffic

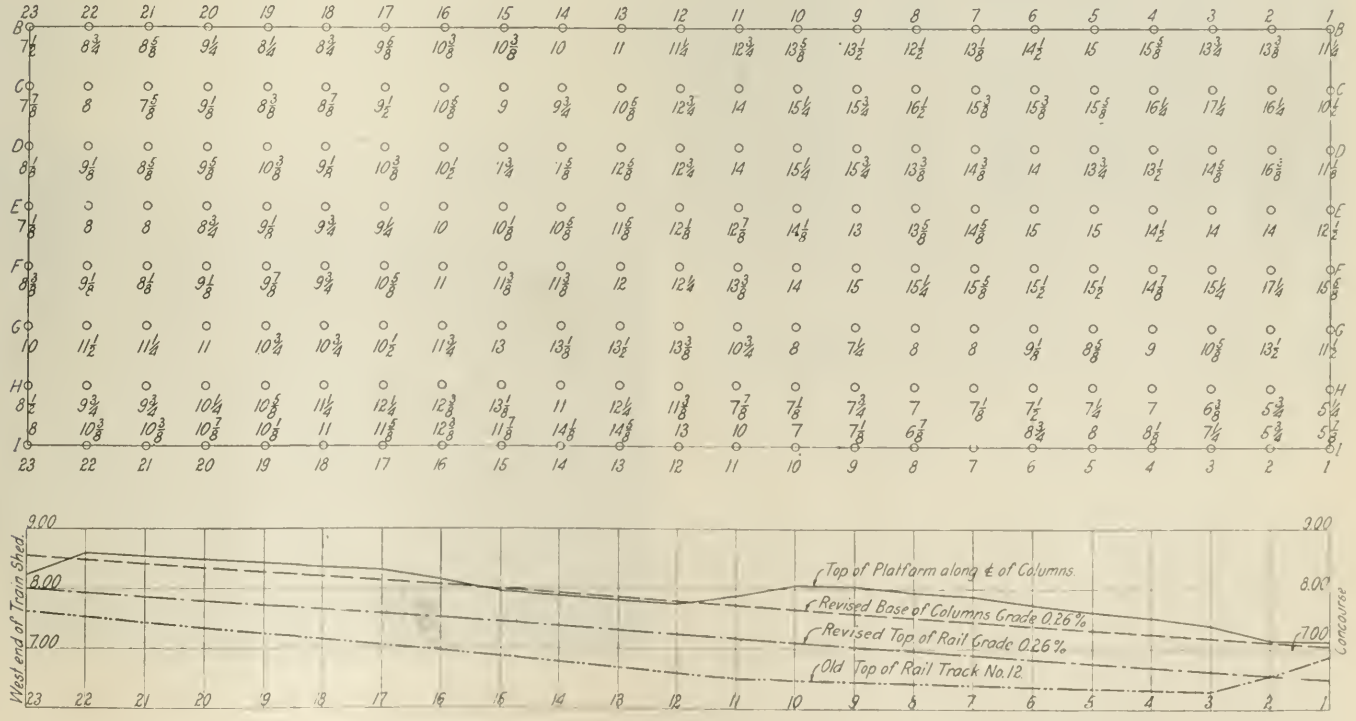
Lackawanna Lifts Entire Structure at Hoboken to Overcome Settlement and Restore Original Clearance

Looking Over the Train Shed Toward the Station

RAISING A TRAIN SHED having an area of approximately five acres and weighing about 18,000,000 lb., from 4 to 17 in. above the level to which many of its supporting columns had sunk, is the unusual engineering project which has just been completed by the Delaware, Lackawanna & Western at its Hoboken (N. J.) terminal. The work was done under the necessity of interfering as little as possible with the 1,500,000 passengers passing through the terminal each month and the operation of the 225 trains which arrive at and depart from the terminal daily. The project involves an expenditure of more than $250,000 and, in addition to raising the shed, includes the complete reconstruction of the skylighting facilities.

The Shed

The trainshed at Hoboken was erected in 1907. It is of the Bush type with columns set in rows along the center of each platform, supporting a series of arches which extend laterally from center to center of platforms. The roof of the shed is formed of reinforced concrete slabs resting on purlins which are 6 in. bulb angles. The concrete roof slabs are 2 in. thick, reinforced with expanded metal and

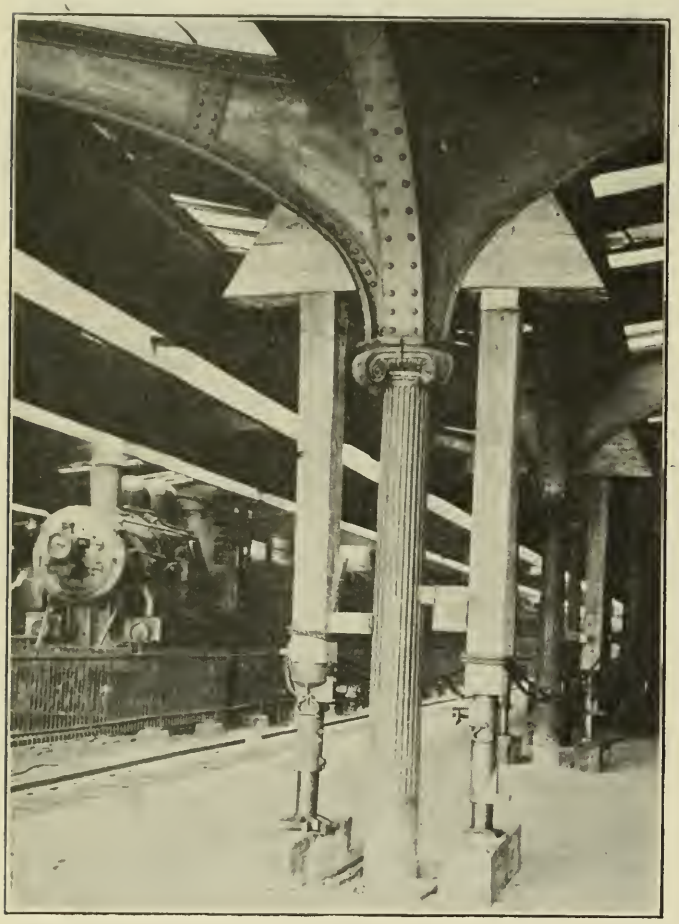


Plan of Shed Showing Amount of Raise. A Typical Profile

covered with a composition roofing. Smoke ducts are provided over the center of each track, and daylight is admitted to the shed through continuous skylights over each platform 7 ft. 10 in. in width of ⅜-in. wire glass.

The shed is 360 ft. wide by 630 ft. long. It covers 14 tracks and has an area of approximately five acres. It weighs approximately 18,000,000 lb. and is supported by 207 cast iron columns which rest on concrete foundations and which, in turn, are supported on wood piles averaging 80 ft. in length. The site is on made ground over the old bed of the Hudson river, and the supporting piles are driven into the mud underlying it.

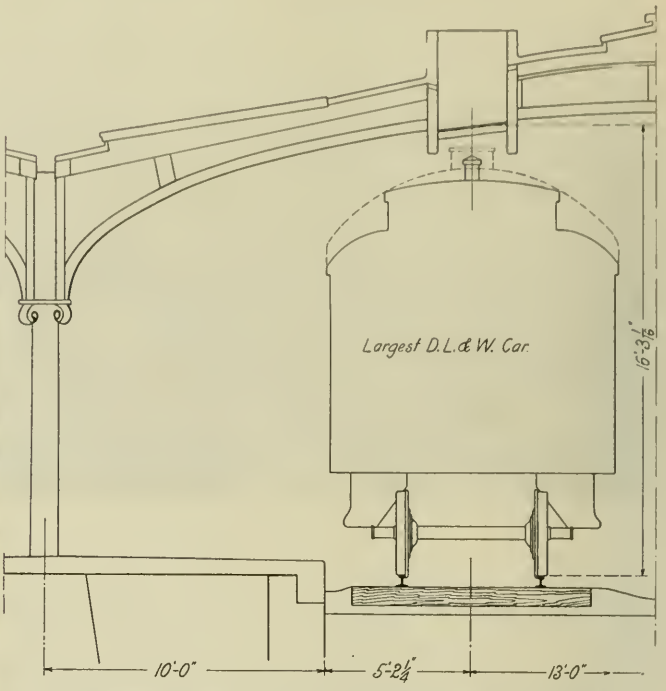
Shortly after the completion of the shed settlement was noted in the pile foundations. The settlement was irregular in extent, ranging from a minimum of 5¼ in. to a maximum of 17¼ in. As a result of this subsidence it became necessary to raise the tracks to a temporary grade, reducing the clearance under the roof from that originally provided, and the lifting of the shed was undertaken to restore ample clearance as well as to provide for the continually increasing size and height of motive power and equipment. The wire glass skylights originally provided had been found difficult to maintain in good repair owing to the vibration set up in the structure by trains and the exhaust from locomotives. Consequently, when it became necessary to raise the shed it was decided to replace the original skylights with others of the vault type.



A View of the Jacking Apparatus. The Extent of the Raise Is Indicated on the Column

At the time of its erection four expansion joints were provided in the length of the shed, dividing it into five sections which were tied together with structural steel connection members. The roof was made weather tight by flashings of copper over the joints. As built, the bases of the supporting columns were embedded in concrete foundations, and before lifting could be begun it was necessary to cut away this concrete from around the column bases.

In planning the work it was decided to raise an entire section at one time, providing jacks at each column in a section. The first lifting operations were confined to the section adjoining the concourse after it had been cut free from the adjoining section. The connection members between the sections were cut by means of acetylene torches.



Clearance of Train Shed After Completion of Work

The lifting was accomplished by hand jacks resting on wooden blocks placed on the concrete platforms and jacking shores working against blocks of wood, triangular in shape, firmly secured to the flanges forming the section of roof support next to the columns, by bolts passed through the rivet holes. The arrangement of the jacking apparatus is shown in one of the photographs, and with the jacks installed at all the columns the weight was first taken at the columns where the settlement was greatest. After this

A View of the Old Type Skylights

all the jacks were started and the entire section brought up to the proper grade.

In the lifting of this section the jacks were supplemented by levers of 12-in. by 12-in. timbers mounted on the smoke ducts at the expansion joints, the ducts acting as fulcrums and furnishing the means for attaching the chains and hooks to the section to be lifted. On the opposite side of the joint the ducts acted as the resistance against which the levers worked through the blocks and falls.

During the lifting of the first section the possibility

The Completed Roof in a Panel of the Train Shed Consists of Two Sections of Concrete Slab and One Section of Glass

of jacking continuously from one end of the structure to the other suggested itself, and on experiment was found to be practical. Consequently the remainder of the work was done in that manner, thus obviating the necessity and expense of cutting the expansion joints between sections and the use of levers.

The continuous jacking was begun by lifting the first line of columns in the second section approximately 2 in. in the first lift. This was followed by a similar lift of the No. 2

The Forms, the Glass and the Copper Expansion Joints

columns in the section after which a lift could be made either in the No. 1 or No. 3 columns, and so on to the end of the structure.

When the lifting was begun it was feared that the jacking operations might cause further settlement in the foundations, but this did not prove to be the case, and the raising progressed without any serious trouble. Owing to the settlement of the foundation, however, certain of the steel members had taken a permanent set, and in lifting the north line of columns where the settlement had been comparatively slight it was found that in raising the adjoining line of columns to the permanent level it was necessary to raise the north line above the grade. On completion of the lifting these columns were jacked down to the proper grade with little trouble.

A force of approximately 20 men was employed in making the preparations for the jacking operations, this being increased to 40 men during the actual operation of the jacks. With all in readiness the work of lifting the first section was accomplished in one day. In lifting the shed the lift in many cases was sufficient to bring the column bases above the level of the platforms, which were then raised in accordance with the new grade of the shed.

The Skylights

Under the old skylighting arrangement ⅜-in. wire glass was used in both the trainshed and concourse roofs, the skylights in both cases being of the continuous type. In the trainshed a skylight was provided over each platform. Under the new plan the wire glass is replaced by skylights of the vault type furnished and erected by the Keppler Glass Constructions, Inc., of New York. In the roofs of both

A Concrete Curtain Wall on the North of the Shed Complicated the Jacking Operations

the concourse and the trainshed the area of glass will be reduced approximately 67 per cent, the photographs of the old and new conditions showing clearly the manner in which this reduction is accomplished. In a trainshed bay the new glass is installed in the center of the three panels and reinforced concrete slabs are inserted in the end panels. In the concourse roof the new skylights are continuous, the reduction in glass area being made in the transverse section, concrete slabs replacing every other row of the old skylights.

The new skylights are made up of vault lights 7-in. square supported by reinforced concrete beams, the reinforcement consisting of ¼-in. steel rods placed between the rows of glass in both directions. In placing the glass, separators of cardboard strips are used which may be stripped out by hand from underneath the roof when the forms are taken down.

Throughout the roof, copper expansion joints, as shown in one of the photographs, are used every 9 ft. When placed the joints provide also for drainage, being made continuous in the concourse roof by means of lapping. In the skylights, themselves, each glass is free to expand and contract, each unit being given a coat of white along its corrugated edges

in order that there will be no interference with the light rays. Over this is placed a preparation of asphalt which permits expansion in each glass.

The concrete slabs are reinforced with expanded metal, the concrete mix being 1:2:4. The mix of the concrete surrounding the glass in the skylights is 1:2½. The concrete plant is located at the track level, all materials being brought in by train. The outfit consists of the mixer and an elevator. The materials are wheeled to the mixer which discharges into push buggies which are elevated to the roof where timber runways are provided.

The lifting of the shed was begun in June of this year and completed in August. It was done by company forces under the direction of L. L. Talynn, acting chief engineer of the Lackawanna; A. E. Deal, bridge engineer, and M. H. Doughty, division engineer.

Work is now under way on the new roof and skylights, and it is estimated that this portion of the project will be completed early in November.

Convention of the Associated Business Papers

THE FOURTEENTH ANNUAL CONVENTION of the Associated Business Papers, Inc., was held at the Congress hotel in Chicago on September 18, 19 and 20. This organization is composed of companies publishing over one hundred of the largest technical and trade papers in the United States.

In addition to transacting business affecting primarily the interests of the publications belonging to the Association, the convention heard addresses and adopted resolutions touching upon the present industrial unrest, the large reconstruction problems confronting the country, and took action intended to make the business press a potent factor in the education of public opinion regarding these matters.

Resolutions which were drafted by a committee headed by H. G. Lord, president of the Technical World Journal, of Boston and New York, called attention to the present labor unrest and current radical labor movements, and instructed the Executive Committee of the Association to take whatever steps were necessary to bring about such co-operation between the editorial departments of the different publications of the Association and between the Association and other organizations as will enable the business press to exert the maximum influence for sound industrial and governmental policies.

The resolutions set forth that while an increase of government activities during the war were necessary, it is now desirable that government activities in relation to business shall be reduced to the lowest practicable minimum. Adverse reference was made to such projects as the Plumb Plan and the nationalization of the coal mines. Congress was commended because it evidently is determined not to give serious consideration to any scheme for government ownership of railroads and their management by the employees, but to adopt measures for the return of the roads to private operation.

The enactment of legislation which will cause railway rates to be so made as to encourage adequate development of railroad facilities was advocated.

The following officers of the Association for the ensuing year were elected: President, Samuel O. Dunn, Chicago, Editor, *Railway Age*, and vice-president, Simmons-Boardman Publishing Co.; vice-president, M. C. Robbins, New York, president, The Gas Age; treasurer, H. L. Aldrich, New York, president, Marine Engineering; members of the Executive Committee, A. J. Baldwin, vice-president, McGraw-Hill Company, New York; R. Marshall, president, Concrete, Detroit, Mich.; F. P. Porter, president, Building and Buildings Management; A. O. Backert, vice-president and manager, Penton Publishing Co., Cleveland, Ohio; Roger W. Allen, president, Allen-Nugent Company, New York; A. C. Pearson, president, Dry Goods Economist, New York.

At the session of the Association on Thursday morning papers were presented by H. G. Lord and H. M. Swetland, president of the United Publishers Corporation, on the business press as "the partners of business." These papers outlined and emphasized the ways in which the business papers can best serve the industries with which they are connected.

Charles Piez, president of the Link Belt Company, and formerly vice-president of the Emergency Fleet Corporation, delivered "An Appreciation by Business." Mr. Piez discussed the industrial situation now confronting the country, and especially the phases of it due to the present radical labor movement. He pointed out that this unrest is largely due to an exaggerated idea on the part of labor as to the amount of the products of industry which goes to capital, and emphasized the necessity of business concerns and business papers frankly and clearly presenting to labor the facts regarding the amount of return derived by labor on the one side and capital on the other from their joint efforts in production. He also emphasized the good that the business press can accomplish by actively engaging in the work of educating business men as well as workingmen regarding the economic principles of efficient production and the advantages of the present American system of industry and government over the socialistic system which organized labor is now disposed to advocate.

An address on "The Significance of the Plumb Plan" was delivered by Samuel O. Dunn, editor of the *Railway Age*. He pointed out that one of the most significant features of the Plumb Plan is that it is the first formal demand made by any large body of American workingmen to have the management of a great industry transferred from the brains in that industry to the hands in it. Since the Plumb Plan was announced the coal miners have proposed a somewhat similar plan regarding the coal mines. Both schemes contemplate the purchase of great industries by the government at the expense of the public, after which they are to be turned over to the employees to manage. It is claimed that great increases of efficiency would be obtained under employees' management, but, Mr. Dunn contended, the great increases in industrial efficiency in the past have been due to the ability and initiative of able men to whom the existing industrial system has afforded the opportunity to rise to positions where they could exert an influence over industrial operations in proportion to their ability. Government ownership and employees' management of industry would interpose insuperable obstacles to the rise of able men to the most important positions in industry, and would put the power of management in the hands of those who would not own the industries and who would therefore have no sense of responsibility for the results of their management. Under the Soviet scheme of ownership and management the individual disappears as a factor in industry, and is replaced by committees of the proletariat.

The sessions of the Association on Friday and Saturday were devoted chiefly to consideration of problems relating primarily to the editing and publishing of business papers.

At the annual dinner on Friday evening A. C. Pearson, president of the Association, acted as toastmaster, and the speakers were Prof. Sorres, of the University of Chicago; Prof. John A. Scott, of Northwestern University, and Major-Gen. Leonard A. Wood. General Wood urged the business papers to oppose the current radical movements and defend the political and industrial institutions which have been established by and under the federal Constitution.

Signal Division Holds its First Annual Convention

Automatic Train Control Considered; Switch Lamp Standards Submitted and Other Details Discussed

THE FIRST ANNUAL MEETING of the Signal division of the Engineering section of the American Railroad Association and the twenty-fourth annual meeting of the former Railway Signal Association was held at the Congress Hotel, Chicago, September 17, 18 and 19, inclusive, with a total registration of 254. R. E. Trout (St. L. & S. F.), chairman of the division, occupied the chair, and H. S. Balliet (N. Y. C.), secretary of the division, acted as secretary of the meeting.

President's Opening Address

The president, in his opening address, dwelt mainly upon the character of the work being carried on by the division and its importance to present day railroad operation. He said, in part:

"A recent typical example of the division's work is the ballast, rail and bonding resistance formula which provides an approved and recognized reference sheet for use not only for a poorly maintained ballast section for track circuits, but also for sections containing zinc treated ties. I personally was unable to convince my own railroad that the annual installation of zinc treated ties should not exceed 12.5 per cent in any track section until I used this division's recommendations. Their adoption resulted in the avoiding of many signal interruptions and saved money by making unnecessary the shortening of track sections.

"The railroads may be led to adopt the division's standards and specifications more freely if a larger number of the field construction and maintenance forces attend the stated and annual meetings so that all standard plans and specifications submitted may be criticised fully. The committee chairmen will thus get the benefit of these men's actual field experience covering years of work. As to new standards, I wish to urge the preparation of standard switch layouts with fittings and that consideration be given the locking feature so that the switch point will be locked with reference to the stock rail instead of to the locking or plunger stand. With the present arrangement it would be possible to remove the stock rail and still complete the locking.

"A well signaled single track division is certainly a step in the right direction, as the signals will increase the capacity of that division, and with the added safety to be derived through the track circuit the signals will, as is being done today, practically eliminate the '31' train orders. The '19' order can be delivered with safety and little reduction in speed. These features, with the addition of insuring the observance of signal indications, in the opinion of your chairman, come very near the goal. The observance of signal indications may be brought about by automatic train control or more severe disciplinary measures for improper observance during surprise or efficiency checks. With this end in view I suggest that the checks and the required discipline be made under the supervision of competent Interstate Commerce Commission inspectors. We all know how thorough these inspectors are after an accident. No manner of protection will entirely eliminate the human equation.

"The automatic train control would have eliminated a large number of our recent serious accidents. The division, through the Railway Signal Association, can well lay claim to the present automatic train control requirements which have been the means of holding the design and consideration of such devices to those that will pass signal requirements. There are today one or more completed serviceable train control devices for steam railroads that should facilitate the handling of trains to a greater extent than will the automatic signal alone due to the continuous control. That is, these devices assume control of the train instantly whenever a dangerous condition occurs which can be detected by the track circuit. With train control in sight, it is advisable to consider whether automatic block signals should be installed first, getting nearly 100 per cent protection from them with the increased capacity they afford, which later could be followed with installations of train controls, or whether it would be advisable to make complete installations of both.

"The educational features derived through the work of the regional committees have increased the efficiency of the signal departments as the meetings permitted an exchange of experiences and methods that are of great value to our railroads.

Automatic Train Control

"The use of some form of automatic train control has been recommended by the Interstate Commerce Commission for some time in connection with reports covering investigations of serious railroad accidents. This subject was brought more prominently before the railroad officers through the establishment of an automatic train control committee by the United States Railroad Administration on January 14 by Director General Hines. This committee was instructed "to make a study of and report upon automatic train control devices now undergoing tests upon various lines of railroads, or available for test, with their recommendations for installation, and for the practical suggestion of any device now or during its investigation, made available for that purpose, which it may consider practicable and reasonably conforming to the purposes to be accomplished." In this connection the views presented by two members of the division on automatic train control are of particular interest to the operating officers."

The speaker then proceeded to quote from Messrs. Anthony and Shaver, as follows:

C. C. Anthony, formerly assistant signal engineer of the Pennsylvania Railroad, said: "I should like to bring before you at this time a few thoughts in connection with automatic stops or automatic train control. It is my belief that the time has come when trial on a larger scale than usually has been undertaken so far is desirable. A number of years ago, when I was more closely associated with the work of the Railway Signal Association, I made a statement somewhat as follows: 'If a railroad should insist that an automatic stop must be installed on its lines, a practical and workable one would soon be in service.' Possibly I was wrong at that time, but several years have elapsed since and development has gone on to such a point that I feel sure devices are available which will meet the requirements and work successfully in regular service.

"I think we know pretty well that not all the work done in this field has arrived at the development of one or more good automatic stops; at least in some cases, it has seemed that this was a mere incident and that selling stock was the main thing. But in several cases conscientious efforts have been made by individuals, not often by the railroads, on development work in connection with automatic train

control apparatus. I believe we have reached the point where one or more such devices may be expected to give satisfactory service and should be tried and proved on a fairly large scale. A great deal of money has been spent on development work which cannot go much further without much more extensive trials than have usually been given so far. Requisites of automatic train control have been formulated and revised several times; but requisites alone will not bring results. Those who are working conscientiously in this field need the help and encouragement of extensive operation in service. An engine division commonly is accepted as the proper unit for a trial installation of a train control device.

"Possibly this is not the time to make such a suggestion, but an expression of the conviction of the signal division that large scale trials of train control devices are desirable—that the time for further development by that means is here and no longer in the future—would certainly give enough impetus to the work; this, of course, provided the division has reached that conclusion.

"It seems to be the thought of many that all sorts of difficulties are in the way of practical applications of a system of automatic train control. I think few of us have gone into that part of the problem in detail. We simply have thrown up our hands at the prospect, and have been more than willing to put off the effort until it should be forced upon us. I recently have had occasion, however, to give the matter some study in possibly its most difficult phase—the application of automatic stops on single track—and I think I may say that the difficulties are not so great as we have imagined. Some changes in the signal controls when they also become automatic stop controls are, of course, necessary to secure full protection between opposing trains without interfering with their approach at meeting points. But the problem does not seem so monumental, after all, when one gets down to the details.

"I wish to leave with you these two thoughts; that the next step in the development of automatic train control—a step that the art is now ready for, and that ought to be taken in the very near future—is trial on a large scale, with hearty co-operation on the part of you who are on the railroad 'side of the fence'; and that there is no need to shrink from the difficulties to be overcome in dealing with practical operating conditions."

A. G. Shaver, consulting signal and electrical engineer, speaking on the same subject, said in part:

"The railroads have not given heretofore much attention and money to the development of new ideas and new schemes for their own use. This development has been carried on mostly by the inventors and the manufacturers, sometimes at heavy expense. The time has arrived when the railroads must interest themselves in such matters, at least to the extent of lending a helping hand.

"Automatic train control development requires much experimentation and costs considerable money. Thus far the railroads have not shown great enthusiasm regarding it. Many operating officers favor it; I have an idea a majority of them do. Of course, the railroads look to their signal engineers as experts in such matters, and they depend on their reports and opinions. The signal engineer is naturally conservative, and especially in a subject so important as train control he does not want to make any mistakes.

"His duties are numerous, and he is a very busy man. He does not have time to study and analyze highly technical subjects of such broad scope and difficult detail as train control is supposed to be, and for the same reasons also it is difficult for him to keep up with progress in the art as fully as he would like to do. Therefore, he considers train control cumbersome and complicated—although Mr. Anthony says it is not, and I agree with him. Hence, generally speaking, the signal engineer is not enthusiastic and encouraging regarding it.

"Because of general sentiment favoring automatic train control, we signal engineers must set ourselves to the task of becoming familiar with it and of being charitable in our consideration and criticisms, which I am sure we shall be when we are fully informed. And we should use our influence with the railroads that train control systems of merit shall be given an opportunity and a fair show in demonstrating what can be done by installations being made of sufficient size and extent to be considered worth while; for example, equipping an engine division as Mr. Anthony suggests. Signal engineers can be of much help and it is due them that they should have credit for their part in such an important undertaking."

First Day's Committee Reports

Thirteen of the 17 committees of the Signal division submitted reports for discussion and action. At the first day's session reports were made by Committee No. 16—Standard Clauses and Sections; Committee No. 2—Mechanical Interlocking, and Committee No. 3—Power Interlocking.

Committee No. 16, F. B. Wiegand (N. Y. C.), chairman, in connection with the standardizing of various clauses and sections in the different specifications as adopted by the Signal division reported on general provisions; standard sections; general electrical requirements and on phrases and words. A brief discussion took place on the information submitted. It was voted that the report as revised be approved and submitted to letter ballot for inclusion in the manual.

Committee No. 2, C. J. Kelloway (A. C. L.), chairman, reported on specifications for a mechanical interlocking machine, having approved Saxby & Farmer locking; on a compensation chart and a specification for machine locking with a view of establishing uniformity and sequence. A compensation chart revised to meet the suggestions made by members at the annual meeting in New York in 1918 was presented as a part of the report.

There was some discussion on the question of using a greater lever length for interlocking machines to permit greater ease of operation. Some members said that the Saxby & Farmer machines used in Canada, England and France have longer levers, thus increasing the ease of operation. It was pointed out, however, that it was necessary to have a specification for the machines of the Saxby & Farmer type now manufactured in this country, and if special machines were desired another specification would have to be drawn up to cover the conditions.

It was suggested that the committee, in preparing a specification for mechanical locking, provide for clearing opposing signals on the same route when no traffic is handled on the crossing line, so as to dispense with the need of operating the plant at certain periods, thus reducing the expense of operation. The compensation chart submitted will enable construction forces properly to set compensators for temperature changes. After revision the report was approved and will be submitted to letter ballot for inclusion in the manual.

Considerable discussion occurred on the specification for machine locking, establishing uniformity and sequence with reference to the locking of lifting type derails in both the normal and the reverse positions. Some changes in phraseology were proposed, and it was decided that the report be accepted as progress and referred back to the committee.

Committee No. 3, F. B. Wiegand (N. Y. C.) chairman, submitted specifications for electric locks for interlocking machines; for power interlocking machines; for universal first and second range voltage electric lock for hand operated switches; and for universal electric motor switch operating and locking mechanism, first and second range voltage.

The specification for electric locks for power interlocking

machines developed some discussion with reference to the phraseology used in various parts of the report. The report was received as information. It was felt that better provision should be made in the specification to cover the wiring between terminal boards and electric locks, light levers, etc., on the machine. A number of revisions were suggested and the committee recommended that the specification as revised be adopted for submission to letter ballot and inclusion in the manual, which motion was carried.

Little discussion was brought out on the specification for universal first and second range voltage electric locks for hand operated switches, and it was moved that this specification be received as information. Motion carried.

Considerable discussion occurred in connection with the specification for universal electric motor switch operating and locking mechanism, first and second range voltage, with reference to the average operating thrust of 700 lb., and the time of operation. It was the feeling of the manufacturers that the present low voltage switch machines could not be operated in the time specified with a thrust of 700 lb. on the throw rod. It was moved that the specification for universal electric motor switch operating and locking mechanism, first and second range voltage, be referred back to the committee for further action and consideration; which motion was carried.

The Second Day's Session

On September 18, the committees submitting reports were Committee No. 11—Batteries and Switchboards; Committee No.5—Rules for Maintenance and Operation; Committee No. 4—Direct Current Automatic Block Signaling; Committee No. 8—Alternating Current Automatic Block Signaling, and Committee No. 10—Signaling Practice.

Committee 11, R. B. Elsworth (N. Y. C.), chairman, submitted a specification for primary battery jars, which after a little discussion was accepted and submitted to letter ballot for inclusion in the manual.

Committee No. 5, L. R. Mann (Mo. Pac.), chairman, submitted instructions for the installation and handling of caustic soda batteries. The discussion brought out slight changes in wording for certain paragraphs, which were accepted by the committee, after which the report as revised was adopted and submitted to letter ballot for inclusion in the manual.

Committee No. 4, C. F. Stoltz (C. C. C. & St. L.), chairman, presented unit specifications for direct-current motor-operated signal mechanism, 10 to 30 volts. Considerable discussion was offered on the various sub-paragraphs and many minor changes in phraseology, and additions were suggested for the committee's consideration. This specification was referred back to the committee.

A report was also submitted on the use of zinc treated ties in track circuits, which, in part, follows: "As the electrical conductivity of zinc treated ties decreases with age during the first year better results may be had by allowing the ties to season for a period of from two to six months before using in a circuited track, thus avoiding the use of the tie while its conductivity is greatest.

"For good results the number of zinc treated ties installed per year in any track circuit should not be greater than 15 per cent of the total number of ties in that circuit."

In the discussion of this subject, C. A. Dunham (G. N.), said that after 15 years' experience with zinc treated ties he had found that the ordinary tie renewals in track circuits did not affect the operation of the circuit if it did not exceed 3,000 ft. in length. F. W. Pfleging (U. P.), said that in his experience with zinc treated ties when not more than 0.3 or 0.4 lb. of zinc chloride per cu. ft. was used he had experienced no trouble in connection with track circuits with ordinary tie renewals. Some zinc treated ties having as much as 0.5 lb. of zinc chloride per cu. ft., however, had caused trouble and made it necessary to shorten up track circuits where these ties were used. The report on the zinc treated ties was submitted as information.

Committee No. 8, C. H. Morrison(N. Y., N. H. & H.), chairman, reported revisions suggested at the June meeting covering material included in various specifications for A. C. automatic block signaling. It was ordered that the specifications presented at Atlantic City in June, and as revised, be submitted to letter ballot for inclusion in the manual.

The committee recommended that the specification for alternating current electric generators be cancelled and eliminated from the manual as the revised specification for alternators covers the subject; and this was agreed to. The specification for single-phase track transformers, 250-volts or less, was recommended by the committee to be eliminated from the manual as the specification for single phase line transformer, oil-immersed, self-cooled and the specification for single phase track transformer cover the above subject It was moved that this recommendation be adopted and the motion was carried.

Committee No. 10, J. A. Peabody (C. & N. W.), chairman, in presenting the report on the problem of signaling railroads with reference to the effect of signaling and the proper location of passing sidings on the capacity of the line, decided that the work on this subject is complete insofar as it relates to the proper location of passing sidings on the capacity of the line, and that the problem of signaling can more properly be handled by the sub-committee which is assigned to report on requisites of signal locations for automatic block signals for single track roads. The recommendation of the committee that this subject be considered closed was adopted.

The committee reporting on automatic train control submitted for the information of the members of the division the definitions and requisites adopted by the Automatic Train Control Committee of the United States Railroad Administration on February 4, 1919. It was recommended that these requisites be accepted as information. The discussion with reference to the automatic train control following the presentation of the requisites is given above.

The Third Day's Session

Reports were presented on September 19 by Committee No. 9—Wires and Cables; Committee No. 15—Valuation; Committee No. 17—Specifications for Oils; Committee 13—Electric Testing, and Committee 6—Standard Designs. After the submission of the last report the results of the election were announced and other unfinished business presented.

Committee No. 9, W. H. Elliott (N. Y. C.), chairman, submitted for consideration a specification for wire joints, accompanied by drawings, Nos. 1403 to 1407 inclusive, and also submitted a specification for friction tape. It was the sense of the meeting that not enough construction details in the form of instructions were contained on the drawings, inasmuch as they represented the only information furnished the men in the field. The various drawings were criticised from a construction standpoint, and numerous suggestions made; after which the report was referred back to the committee for further consideration. The specification for friction tape was discussed to some extent, and it was voted that this be approved for submission to letter ballot for inclusion in the manual.

Committee 13, P. M. Gault (I. C.), chairman, presented a specification for portable direct current volt-ammeters. During the discussion the committee accepted several minor changes which were suggested, after which these specifications as revised were approved for submission to letter ballot for inclusion in the manual.

Committee 15, J. M. Carley (B. & A.), chairman, submitted a progress report in part as follows: "We have

concentrated our work on: the average life in years of the important units of the different types of signal installations, considering depreciation and obsolescence separately; tables for the different types of signal installations which will show the percentage of material to be added to cover waste, contour, sag, loss, breakage, etc., and on the extension of the study made of labor costs by a joint signal committee of the Interstate Commerce Commission and the President's Conference Committee, to establish a percentage to be added to material, to arrive at the total cost. Studies are being made to establish a percentage to be added to the cost of material to cover labor and other costs in the installation of highway crossing signals, bells and gates. The committee has prepared a list of about 100 major items of signal material which is to be mailed out to signal engineers for obtaining information as to the average service life of the various units. The report was accepted.

Committee No. 17, I. S. Raymer (P. & L. E.), chairman, submitted a specification for mechanism, lubricating oil and an historical sketch on oils. The specification for the oil was discussed at considerable length, and some felt that it should include two grades of oil, one for use in the northern section of the country and the other for use in the southern section.

A representative of one of the signal manufacturers stated that it was necessary to have two grades of oil because of the climatic conditions, that is, one grade for certain sections where the temperatures were high and one for the sections where they were low. It was claimed that if one grade of oil only was provided for the entire country it would necessarily have to be for use in that part where low temperatures prevailed, and when this oil was used in hot climates evaporation would make it necessary for the mechanisms to be oiled more frequently. The report was turned back to the committee for further consideration. The historical sketch on oils was accepted as information.

Committee No. 6, F. P. Patenall (B. & O.), chairman, submitted for adoption at the meeting one revised drawing and three new ones. In addition, four new drawings were presented as information and for discussion. The drawings presented for adoption were R. S. A. drawing 1014, one-way horizontal type compensator, revised; drawing 1459, staff tip adapter, new; drawings 1460, switch lamp (cylindrical type), new, and drawing 1461, switch lamp base socket, new. These were accepted for submission to letter ballot for inclusion in the manual. The four new drawings submitted as information were: Drawing 1440, switch lamp (spherical type); drawing 1470, train marker lamp; drawing 1480, engine signal lamp, four lens, and drawing 1490, engine signal lamp, two lens. These were accepted as information.

During the discussion objections were raised to the use of the same size lens in switch lamps when they contain more than one because, even though it is the practice to have damaged lamps repaired at a central point by experienced men, it sometimes happens that roadmasters and others have been successful in getting through requisitions for new lenses and have made repairs in the field which have resulted in not getting the lenses in the proper place. It was the thought of the committee, however, that all such lenses should be the same size as this is a matter which has been thoroughly discussed at previous committee meetings. It was also felt that one type of lamp bracket socket should be used on all cars, because of the interchange of cars.

Officers Elected

The officers of the division chosen for the ensuing year are as follows: Chairman, C. J. Kelloway (A. C. L.); first vice-chairman, F. W. Pfleging (U. P.); second vice-chairman, F. B. Wiegand (N. Y. C.); secretary, H. S. Balliet (Grand Central Terminal). The following were elected to the Committee of Direction to serve for a period of three years: W. H. Elliott (N. Y. C.); C. H. Morrison (N. Y., N. H. & H.); J. A. Peabody (C. & N. W.); F. P. Patenall (B. & O.), and K. E. Trout (St. L. & S. F.). Those elected to serve for a period of two years are: C. A. Dunham (G. N.); G. E. Ellis (I. C. C.); H. K. Lowery (C. R. I. & P.), and E. E. Worthing (So. Pac. Lines, Atlantic System). Those elected to serve for one year are: J. H. Cormick (Can. Nat'l.); W. J. Eck (Southern); A. H. Rice (D. & H.) and E. G. Stradling (C. I. & L.).

Change in Schedule of Meetings

It was announced that because of the necessity of having all reports in the hands of the Executive Committee of the American Railroad Association not later than October 15, in order that this committee might act upon them at its November meeting, it would be advisable to change the present schedule of meetings. In this connection it was the sense of the Committee of Direction that the first stated meeting should be held at New York the first week in December, the second stated meeting to be at Chicago in March, and the annual meeting should be held in July. This arrangement would give the various committees opportunity to round out their work and report to the Executive Committee of the American Railroad Association. The time between the July and the December meetings would also give all committees a long period to prepare reports for presentation in December. The proposed change was given as information, and will be presented to the division for approval by letter ballot later.

Signal Appliance Association

The officers of the Signal Appliance Association, chosen for the ensuing year at a meeting held in Chicago, on September 17, are: Chairman, A. S. Anderson (Adams & Westlake Company); vice-chairman, J. Warren Young (Kerite Insulated Wire & Cable Company); secretary and treasurer, F. W. Edmunds (Schroeder Headlight & Generator Company). Those elected to the Executive Committee are: W. J. Gillingham (Hall Switch & Signal Co.); M. R. Briney (Federal Signal Company); C. S. Pflasterer (National Carbon Company); W. P. Allen (Union Switch & Signal Company); J. W. Hackett (Okonite Company); H. G. Thompson (Transportation Engineering Company); S. G. Johnson (General Railway Signal Company). The chairman of the Arrangements Committee for the ensuing year is Henry Lee (Simmons-Boardman Publishing Company), and the chairman of the Place Committee is George A. Blackmore (Union Switch & Signal Company).

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A Railway Car Converted Into a Bolshevik Library at Riga

Organization for Purchasing and Stores*

Executive Officer Should Supervise Purchasing, Selling, Storing, Handling, Protecting and Disbursing

By Henry B. Spencer
Director, Division of Purchases, United States Railway Administration

When the Railroad Administration was being organized, the function of purchasing the larger items of material, the use of which was more or less common to all railroads, such as rolling stock, rail and ties, as well as general supervision of the purchasing of all other supplies, was combined with the function of providing the finances for the operation of the railroads under the Division of Finance and Purchases. The director of this division was assisted in his duties by two committees, each composed of three members, one known as the Advisory Committee on Finance and the other as the Central Advisory Purchasing Committee.

It was determined later that the relation between the financing of the railroads and the purchasing of their necessary supplies was not so intimate as might be supposed, and this finally led to a separation of the functions of finance and purchasing and the creation of two distinct divisions, known as the Division of Finance and the Division of Purchases, each in charge of a director with assistant directors replacing the original Advisory Committees.

The work of the Central Advisory Purchasing Committee, which was subsequently absorbed in the Division of Purchases, has been very largely carried on through the local purchasing organizations of the various railroads, supervised as to detail by regional purchasing committees, which form a part of the staff of each regional director, and through him report to the director of the division.

The railroads under federal control annually purchase material and supplies of all kinds to the value of approximately $1,700,000,000. Since the organization of the Division of Purchases, it has expended directly $400,000,000 for rolling stock and $9,000,000 for rails, and has quite directly supervised the production and distribution of 120,000,000 cross ties which have cost $90,000,000. From the inception of the work it has been the policy of the director in disbursing these large amounts to obtain the widest possible distribution of the business among all of those manufacturers who were able to supply any portion of the railroad requirements and to encourage as much as possible individual initiative on the part of those supplying the materials for the railroads, and to give all of the various devices which have been presented for attention, careful and impartial scrutiny with the object of adopting for use as many of them as could be shown to offer results that were satisfactory from both mechanical and economical standpoints.

Cross Tie Situation

The cross tie situation has presented one of the most difficult problems with which the division has had to deal. A great many interesting facts have been developed by the concentrated survey which the division has been enabled to make of the entire field of tie production, and one of the lessons we have learned in that respect has been that in a great many cases the local production has not been developed or conserved to the best advantage, so that in a large number of cases individual railroads have drawn on foreign territories for a larger portion of their supply than was economically necessary and to that extent have increased their own cost of operation and have influenced higher costs on other railroads through competition established in the territories from which they procured certain portions of their supply.

I believe that if when the railroads return to private management the executive officers will give serious thought to some co-ordination of action with respect to the development and economical distribution of the tie supply of the country considered as a whole, most beneficial results can be obtained in their costs of maintenance, in which the cross tie plays such an important part.

One step towards a permanent improvement which, in my judgment, is vital to the best interests of the railroads as well as of the tie-producing industry, would be the adoption by the railroads of a standard specification for controlling the purchase of cross ties and a uniform and universal application of the requirements of such a specification by a standardized inspection. The efforts which the Railroad Administration has made to bring about such a condition have not only met with the unqualified endorsement of the more reputable tie producers, but have acted to improve the average quality of the ties being used by the railroads, as well as to conserve the timber from which they are produced. I believe that concerted action in this direction on the part of the railroads, taken perhaps through the medium of the American Railroad Association, would prove to be of incalculable benefit.

Due to the abnormal conditions existing in the manufacturing world during the year 1918, the difficulty of obtaining supplies for the operation of the railroads became increasingly great and the Division of Purchases was directly represented in every section of the War Industries Board which had to do with the allocation and control of manufactured products used by the railroads, and was in constant touch with the Priorities Board and the Price Fixing Committee.

In the original organization of the Railroad Administration, no definite provision was made for any distinct supervision of the cars and distribution of the material bought under the jurisdiction of the Division of Purchases, the work of this character being left to the discretion of the regional directors and the local federal managers.

Railroads Carry Too Much Stock

At the beginning of federal control the railroads had reserve stocks of material in their possession aggregating in value $495,680,000. The difficulty of obtaining deliveries of material within any reasonable time and the higher prices paid for such as was obtainable, resulted in greatly increasing the value of these stocks, which on July 1 of this year had reached the enormous total of $642,192,000, an amount, by the way, which is much larger than necessary. It is gratifying to be able to report that through the co-operative effort of the federal managers and their respective organizations these large balances are being reduced. (Since January 1, $14,000,000 worth has been transferred.)

The constantly increasing investment in material did not fail to attract attention and led to an investigation of the causes. It soon became evident that there was no uniformity of practice among the railroads with respect to the

*From an address at the September meeting of the New York Railway Club. Mr. Spencer was prevented from attending the meeting because of the death of his mother. He was represented by Assistant Director George G. Yeomans.

purchase, conservation and distribution of their material. This lack of uniformity in the handling of such a large investment led to an examination of the methods and the results which were being obtained by the different railroads. It became apparent that the best results were being obtained by those railroads which had entrusted this work to a department created exclusively for that purpose, and to which was given the sole responsibility for the proper care and distribution of the material and the accounting for its receipt and disbursement. These organizations were found to be working with various degrees of success on different railroads but, generally speaking, were obtaining better results than were found on those railroads where the work of this nature was wholly or partially under the jurisdiction of other operating departments which used the material.

The amount of material in stock on July 1, 1919, represented an average supply sufficient for six months' operations, based on the average monthly consumption during the first six months of the year. Those railroads which have maintained for some years well organized and effective stores departments have been able to so control their investment in material that it did not exceed an average of four months' supply. If all of the railroads had been equally well managed in this respect they would have expended approximately $215,000,000 less for their material than they actually did expend in the last 18 months.

Relation Between Purchasing and Stores Departments

It further became apparent that the relation which existed between the work of the purchasing department and the stores department was so intimate and their activities so vitally interwoven, and that the results which were being obtained on railroads which had recognized the affinity of these departments in their form of organization, were so much better as a rule than those obtained on roads where this relationship was not recognized, that it was determined to combine the operations of the stores department with those of the purchasing department, under the jurisdiction of the Division of Purchases, and joint instructions to that effect were issued by the directors of the Division of Operations and the Division of Finance and Purchases in October, 1918, the general tenor of which was that an independent stores department reporting to the purchasing agent should be organized on each railroad under federal control.

The necessity for a strong organization working along well systematized and effective lines to properly care for the vast amount of materials in which the railroads have so large an investment, may be illustrated by the following approximate figures, comparing the amount of money spent for material by the railroads under federal control with their operating revenues and expenses:

Approximate average daily operating revenues	$12,600,000
Approximate average daily operating expenses	11,300,000
Approximate average daily purchases	4,600,000

(These purchases do not include any rolling stock.)

It will be seen that out of every dollar earned 36½ cents is expended for material.

Operating Officers at Fault

One of the fallacies indulged in by the average railroad operating officer seems to be that he does not regard money expended for material as being money spent until it appears in and affects his operating expenses. To this fallacy I attribute much of the apparent lack of interest on the part of railroad executives to bestow the same careful attention on the stocks of material which are accumulated by their subordinates that they give to the other details of their business. As soon as money has been transformed into material, it has apparently lost all value until it reappears in the shape of an operating expense, and some of us have not yet learned that it requires even more diligent attention to prevent serious losses through improper care in the purchase, distribution and accounting for material than for the money itself which it represents.

For a great many years it was one of the accepted theories that the users of material were the men best qualified to determine the amount which it was desirable to provide for future use, to care for the material which had been provided, and to account for its ultimate disposition.

To this theory is due the unnecessarily large accumulation of material found on many railroads. It is still being acted upon in some cases, although its validity has been disproved by the advance which has been made during the past 15 or 20 years in the methods of handling this important branch of railroad operation.

It has been effectively demonstrated that this work can be more economically and efficiently performed by an organization devoting its entire attention exclusively to that feature of the business and working independently, but in co-ordination with those departments whose functions include the using of the material. The sole function of the stores department is to provide materials and supplies suitable for the service for which they are required, when and where they are needed and at the lowest net cost, which involves the work of properly storing and protecting the property until it is used and accounting for it accurately.

Concentrate the Management of the Service of Supply

The receipt and distribution of material is so intimately involved with its procurement that they cannot be successfully disassociated, and experience points directly to a combination of the purchasing and stores department under a single authority as the ideal form of organization for the service of supply.

For the stores organization to be effective and efficient and produce the economy which it should, it is important that adequate and convenient facilities shall be provided for the handling and storing and issuance of materials. The storerooms and yards should be planned so that the materials can be readily inventoried and the storekeeper and his assistants can at all times readily see and know the amount of stock on hand.

It is, of course, advantageous to have modern storerooms, but it is not necessary in order to obtain results that these facilities are immediately built. With intelligent planning and co-operation between the engineering department the present facilities can generally be modernized and made efficient at comparatively small costs, but it is important that in locating and designing any new facilities of this nature, or in remodeling those which already exist, the final decision as to details should be made by those who are directly responsible for the handling of the material. For handling scrap and heavy materials, it is desirable that cranes and other modern facilities for reducing the cost of labor shall be provided. Reclamation machinery should be installed wherever it is found that it will result in economy, and for various reasons this work should be entirely under the supervision of the stores department.

In order to obtain the best results which such an organization should be capable of producing, the importance of its work must receive recognition. It should be immediately apparent that the officers who are entrusted with the investment of 35 per cent of the gross earnings of a railroad should be men of character, ability and experience. Responsibility of this magnitude cannot be successfully placed upon shoulders of incompetent or inexperienced men without resulting disastrously, but with the proper personnel results can be and are being procured which seem almost incredible to those who still adhere to the theories and practices of the past.

Illustrating the possibilities of the case, I quote from the performance records of two typical railroads, one above the average with an efficient organization such as I have

attempted to describe and one below the average which has not as yet fully developed its stores department along the lines indicated.

Road *A* at the beginning of federal control had $11,840,000 invested in the ordinary run of material, exclusive of rail, ties and fuel. This represented 5.6 months' supply, based on the average monthly consumption for the first six months of this year, and was abnormally high due to large purchases made at the low prices prevailing prior to the entry of this country into the war.

During the 18 months ending June 30, last, this railroad has reduced this investment 17.5 per cent, or $2,079,000, and is currently using 21.5 per cent of its stock every month, or turning it over more than two and one-half times per year.

Road *B*, a smaller road, which should therefore be more easily controlled in such matters, had an investment in similar material of $6,955,999 at the beginning of federal control, which represented 5.1 months' supply on the same basis. During the same 18 months' period this railroad increased its stock $4,731,000, or 68 per cent, and on June 30, 1919, had an investment of $11,686,000, of which it is currently using only 11.5 per cent monthly and has enough money tied up in material to last it for approximately nine months.

If the supply department of the latter railroad had been as effectively organized and managed as the former, it would have expended $5,951,000 less for material than it actually spent during the last 18 months, or $330,000 per month. It would have had that amount free for other uses and would also have avoided the expense of handling and caring for this large amount of stock as well as the inevitable losses incident to depreciation and obsolescence which accompany such unnecessarily large accumulations of material.

These are extreme cases, but they show conclusively that executive officers can well afford to devote considerable attention to this department of the service and to expend sufficient money to secure the supervision of trained experts in this particular field and to adopt the methods which have been successful in producing such economical results.

After carefully studying the practical results which have been obtained by the various railroads under federal control, it is my conclusion that the best means of enabling executive officers to obtain effective supervision and control of these large expenditures is to concentrate the exclusive management of the service of supply in the hands of a single organization created for that particular purpose and to which should be entrusted every detail of the work of procuring, storing, distributing and accounting for all supplies of every description that are required for the maintenance and operation of the property. Under such a system there is no division of authority, and there can be no shirking of responsibility. The records of performance present a complete and comprehensive view of the entire situation with respect to the total investment of the railroad in materials, and render that investment more responsive to the current needs of operation and easier of effective control.

It is not possible to accomplish this where the authority and responsibility for the amount of the expenditure and the custody of the material is divided among several different departments and where the accounts are distributed among numerous independent units, which renders the work so intricate that the combined results cannot be presented in a manner that permits the details to be clearly grasped without laborious research.

The money spent for material is the same kind of money and must be obtained in the same way as the money that is spent for labor, and the requisitions for material purchases should be scrutinized with the same care and attention that is given to the pay rolls. It too frequently happens that our gaze is focused so persistently upon the pennies in the payroll that we fail to see the dollars in their converted form which are being lost through inadequate supervision and imperfect methods in the purchase and handling of material. There is a natural tendency to shun the expense involved in any work which does not of itself produce a direct and tangible income, but from the figures I have quoted no one can doubt that Road *B* would have been fully justified in adding $100,000 or even $500,000 a year to the payroll of its supply department if by so doing they would have created an organization which would have functioned as effectively as the one which Road *A* has built up. It is these concealed losses which are most difficult to bring to light and which sometimes seem incredible when exposed, but I know of no way of exposing them more clearly than in the manner I have endeavored to outline, and until they are exposed the proper remedy cannot be applied.

Recapitulation

To recapitulate: On a large system or railroad the organization for the purchasing, selling, storing, handling, protecting and disbursing of all materials and supplies should be under the jurisdiction of an executive officer of sound business judgment who must at all times be posted on commercial and market conditions. He should be assisted—

(1) By purchasing officer or officers with necessary forces, etc., who will procure the material from the manufacturers and producers with efficiency and economy;

(2) By managers of the stores department with clerks, laborers, etc., who will make requisitions and supervise the caring, storing, accounting and issuing of all supplies. He should keep the supply of material on hand to the lowest practical amount consistent with market conditions.

There should be the fullest co-operation betwen this department and the departments which control the use and consumption of materials, such as the department of maintenance of way and structures, maintenance of equipment, transportation and construction and improvements.

Railroad Hearings Before House Committee

WASHINGTON, D. C.

SEVERAL DAYS of the hearings on proposed railroad legislation before the House committee on interstate commerce were devoted last week to the representatives of steamship lines, who vigorously opposed the provisions of the Esch bill designed to give the Interstate Commerce Commission jurisdiction over port to port rates. W. E. Clark of Seattle, Wash., representing the Pacific Steamship Company, told the committee that such legislation might result in "regulating American shipping into the bone yard." Legislation to benefit water lines, he urged, should permit a free hand in competitive foreign commerce, including Alaska, and provision for export and import rates on American railway lines applying only to water freight moved by American ships.

A Question as to What Farmers Think

Benjamin F. Marsh, director of legislation and executive secretary of the Committee on Transportation of the Farmers' National Council, told the committee that it is a waste of time for Congress to consider any plan for the return of the railroads to private management. He advocated government ownership and "democratic operation" of the railroads, although he did not define his idea of democratic operation. He said, however, he was not in favor of the Plumb plan unless it were amended in some particulars. When Mr.

Marsh said the farmers are almost unanimous for government ownership Chairman Esch said he had a letter from Thomas C. Atkeson, representing the National Grange, saying the farmers are opposed to government ownership. Mr. Marsh said that would make it necessary for him to expose the "fraudulent claims" of the National Grange. He declared that instead of having 1,000,000 members it has only 620,000 and that many of them are not farmers; that its membership has never adopted a resolution against government ownership, and that its method of voting is not representative of the members of the state organizations, but represents merely the votes of the masters of the state granges and their wives. He then proceeded to read a number of letters from masters of state granges and presidents of state farmers' unions declaring that the farmers of their states were almost unanimously for government ownership.

Representative Rayburn of Texas remarked that his district is almost entirely an agricultural one, and that the farmers are the most violent opponents of government ownership he knows of. When the letter from the president of the Illinois farmers' union was read, Representative Denison of that state inquired as to whether any referendum of the Illinois farmers had been taken, because, while there might be a farmer in Illinois for government ownership, he had never heard of one. Mr. Marsh said that no referendum had been taken, but that the writer of the letter had given his judgment of the opinions of the farmers. Mr. Denison suggested that he find out more about those opinions before expressing his judgment of them.

Other members of the committee asked similar questions, but Mr. Marsh did not know just how the opinion that the farmers were for government ownership was arrived at except by general knowledge. Chairman Esch asked him if he did not have any letters from opponents of government ownership, because the epistles that Mr. Marsh had put in the record were in reply to a questionnaire he had sent out. Mr. Marsh said he had a few from New England, but that they did not discourage him. Mr. Esch suggested that it would be fair to file both kinds of letters. When the letter from the president of the Washington State Grange was reached Representative Webster asked if that man were not under indictment for sedition. Mr. Marsh said he had been indicted as a result of a Wall Street conspiracy because he had said that the war was a "rich man's war," but that the indictment had been quashed. When Mr. Marsh challenged the committee to investigate Mr. Plumb's charges, Representative Rayburn said they merely represent an effort to "re-open old sores that have been agitated in the newspapers for 50 years with a view to reviving the prejudice against private management."

Automatic Train Control Devices

A number of witnesses interested in automatic train control devices appeared before the committee at the request of Chairman Esch, who has long been especially interested in railroad safety legislation and who recently made a personal inspection of the train control device on the Chesapeake & Ohio near Charlottesville, Va.

J. W. Williams of Spokane, Wash., representing the General Safety Appliance Company, discussed the need for automatic train stops at considerable length and urged legislation providing for the appointment by the President of a committee of five members, only two of whom should be railroad men, to investigate the subject of automatic train control.

On September 20 George W. Stevens, federal manager of the Chesapeake & Ohio, and Charles Stephens, signal engineer of the road, described the installation of the American Train Control Company's system on their line from Gordonsville to Charlottesville, Va. In reply to questions by Chairman Esch, Mr. Stevens admitted that railroad men and engineers were inclined to be slow to approve of new devices, but the Chesapeake & Ohio had been sufficiently convinced of the practicability of automatic train control, to adopt it. Mr. Esch referred to the objection often made that automatic devices tend to cause inattention or carelessness on the part of the engineer. Mr. Stevens did not think this objection had much force because he said the device made it possible for the officers to check up on the enginemen and to hold them to an accounting. He estimated the cost of the device as about $400 to $500 a mile for the track equipment and $600 to $700 a mile for the engine equipment. Mr. Esch asked whether the saving resulting from freedom from accidents would offset the cost. Mr. Stevens replied that train control devices would not prevent all classes of accidents, but that they would prevent collisions, and that the Chesapeake & Ohio had had no collisions on its line where the device is installed since its installation. During the first winter, he said, some trouble was experienced as a result of ice and snow, but during the second winter the difficulty had been remedied. The forthcoming winter would constitute a more conclusive test.

Charles Stephens went more particularly into the description of the device, which was described in the *Railway Age* of March 28 and was enthusiastic regarding its practicability; but he said that legislation would be necessary to compel railroads to adopt automatic stops.

Mr. Esch put into the record a letter from Calvin W. Hendrick, president of the American Train Control Company, in which he gave a list from the Interstate Commerce Commission reports of accidents which he said could be prevented by the use of automatic train stops and also described his device in glowing terms. The letter included the following statement: "It is as marketable as it is remarkable; it is elastic in its adjustability; provides absolute and permissive block movements; affords entire protection; it has been extensively tried and is now declared a perfect system and stands unchallenged in the field of safety and economical operation.

"Unsolicited approval of these experts in the science of railway transportation who have written editorially in the Railway Review, *Railway Age* and the Railway Signal Engineer of what they saw demonstrated on the Chesapeake & Ohio is convincing and leads me to believe that the public is forcefully getting behind a movement exacting just such protection to passengers and freight as the American Train Control System affords."

Mr. Hendrick also submitted a letter from Federal Manager Stevens to him, saying in part: "After testing the system out under service conditions nearly a year, working under weather conditions when the stop shoe was entirely encased in ice, the signal engineer has reported that trains have been stopped when the following dangerous conditions prevailed—open switches—block occupied by train—cars fouling the main line—broken rails—on three occasions. This would seem to justify the cost of installation."

D. P. Moore, a patent attorney who said he had long been interested in automatic stops and had examined many installations, told the committee that the time is now about ripe for legislation to compel their adoption by the railroads. There are several devices that have proved their practicability, he said, and are in a more advanced stage than automatic signals were when they were first adopted. He said that officers of the Chicago, Rock Island & Pacific were enthusiastic about a device he was interested in that has been installed on that line and that can be used without roadside signals; and that enginemen are anxious to have their engines equipped. He said that automatic stops are not yet 100 per cent perfect, but thought that railroad officers are gradually getting more interested in their practicability.

Theodore Perry Shonts

THEODORE P. SHONTS, president of the Interborough Rapid Transit Company, died at his home in New York city on the morning of September 21, at the age of 63.

Mr. Shonts had been a leading figure in the railroad and engineering world for nearly 40 years. He was best known as superintendent, general manager, and president of the Indiana, Illinois & Iowa, where his service extended from 1882 to 1902, and as head of the subway and elevated lines in New York city, which position he had held for the last 12 years; but he had figured in many other important enterprises. His character embodied a combination of progressiveness and conservatism which made him a leader in any line which he entered; and his abounding physical and mental energy gave him a remarkable command of details.

He was born in Crawford country, Pa., May 5, 1856, son of Dr. Henry D. Shonts. In his boyhood the family moved to Iowa, and there he was brought up; and in 1876 he was graduated from Monmouth College, Monmouth, Ill. He received his degree of M.A. three years later, and then studied law for two years. While still young he became a partner in the law office of Drake & Baker; through this firm he became interested in railroad building. Having given some attention to civil engineering while in college he soon made his mark in railroad construction, his first railroad work being that of superintendent of the Iowa Construction Company.

T. P. Shonts

In 1882 he was appointed general superintendent of the Indiana, Illinois & Iowa; in 1886 general manager, and in 1898, president. In conjunction with Paul Morton, second vice-president of the Atchison, Topeka & Santa Fe, he acquired control of this road. Later, this was sold to the Vanderbilt interests; and in 1904 Shonts was elected president and general manager of the Toledo, St. Louis & Western.

Having been recommended by Paul Morton to President Roosevelt, Shonts was, in 1905, appointed chairman of the Isthmian Canal Commission, in which position he became president of the Panama Railroad. He spent two years on the Isthmus where he cleansed the cities of Panama and Colon, organized a sanitary force, and did much other preparatory work.

Mr. Shonts was made president of the Interborough-Metropolitan Company in February, 1907, being at the same time president of the Chicago & Alton and of the Toledo, St. Louis & Western; but his New York work gradually absorbed the whole of his energies.

The management of the New York city railways during these dozen years has been a unique task. Mr. Shonts came to it with a fund of general experience and a reputation as an organizer; but the specific problems encountered were in many respects new. With the growth of the city the subway lines have been greatly extended, both above and below ground, and express tracks have been built on the earlier elevated structures. These improvements have cost hundreds of millions. The enormous train movement has had to be kept going constantly, while the changes were being made, with scarcely an hour's intermission on any track, day or night. The financial burden of these improvements has been borne mainly by the city; but the negotiations between the operating company and the officers of the city and of the state have demanded constantly the talents of an astute diplomat. The newspapers, day in and day out, have furnished the general criticism, (sometimes aided by the city officials); and the state, through the legislature and the Public Service Commission, has criticised details of management and operation. Through all this, the cars have had to carry a traffic constantly over-taxing their capacity; yet the trains have been run with a speed and punctuality really wonderful; and this has been done with a degree of safety which affords quite reasonable justification for the Interborough's claim to be the safest railroad in the world.

Mr. Shonts continued as a director in a number of railroads including the Chesapeake & Ohio, the Iowa Central, the Kansas City, Mexico & Orient, the Minneapolis & St. Louis, the Pittsburgh & Shawmut and the Toledo, St. Louis & Western; and in numerous other corporations.

The strike of commercial coal dock workers at the coal docks at the head of the Great Lakes has for some time tied up coal traffic at that point and has resulted in increased demand being made from many points in the northwest, which is practically dependent upon the coal passing through the head of the lakes for its winter supply, for cars with which to move coal from this point to distributing centers and smaller towns. The Northwestern Regional Director, in response to these complaints, has been moving from 800 to 900 cars daily from the coal storage docks at the head of the lakes to northwestern points and loading these cars for the return trip with grain. In addition to complaints made concerning the lack of coal cars in the Northwestern Region, lumber interests in the Puget Sound district and grain shippers in the northwestern states have been requesting more cars. Insofar as the lumber loading is concerned the car shortage is more the result of a heavier production of lumber due to the resumption of building throughout the United States rather than to an actual car shortage for the loading of this commodity. Insofar as the grain car shortage situation is concerned, it is cited that in 1918 at the opening of the grain shipping season, 38,000 cars were stored, inspected and ready for the grain traffic in the grain producing states, whereas this year there were only approximately 3,000 cars for this seasonal movement. In addition, the general car shortage in the Northwestern Region is ascribed to the heavy increase in the miscellaneous freight loading, due probably to the resumption of activity in many of the smaller industries.

Labor Makes Protest Against the Cummins Bill

Plumb Hints at a French Revolution Unless His Plan is Adopted. Samuel Gompers and Warren S. Stone Testify

GLENN E. PLUMB, author of the Plumb plan for turning the railroads over to the railroad employees at government expense, Warren S. Stone, and other labor leaders, appeared before the Senate committee on interstate commerce on Tuesday and Wednesday of this week to protest against the Cummins bill and especially against that part of it which makes it a misdemeanor for railroad employees to strike pending the settlement of their disputes with railroad managements by arbitration. Mr. Plumb was the first witness called and began his testimony with a general economic discussion of the usefulness, significance, etc., of strikes, discussing the question, as he expressed it, from the point of view of the student of economics and not as a representative of organized labor. Following the general discussion of the constitutional right of any man to quit employment which he found distasteful, Mr. Plumb expressed the opinion that it was not within the power—constitutional power—of the legislature to take away by law this inherent constitutional right, and later in his testimony he expressed unqualifiedly the belief that what an individual had a constitutional right to do, individual employees had a constitutional right to do collectively.

He said that strikes had, up to within the last year, been caused by one or both of two reasons, a desire on the part of working men for higher wages or a demand for the recognition of the union. Now, however, conditions have changed. Whenever the strike for higher wages had been successful the capitalists had merely added the wage increase to the cost of the product of labor and thus passed along to the consumer, which included labor, this additional cost. Thus an apparent increase in wages gained by means of a strike did not reduce profits of capitalists, but was taken out of the pockets of all consumers, including labor, through the higher cost of living. Labor, according to Mr. Plumb, now realized that it must attack and cut down the profits of capitalists, that wages, if advanced, must not be passed along as a burden on the consumer, that the laboring class could increase railway wages most effectively by cutting down the high cost of living and, to do this, profiteering on the part of capital must be stopped. Now, therefore, according to Mr. Plumb, we may expect a new type of strike, a strike which shall benefit all consumers. Labor heretofore had struck only to benefit itself as a worker, not as a consumer, but now labor might be expected to, and, in his opinion, would strike against the profiteering of capital.

As an illustration and purely as a hypothetical case, Mr. Plumb suggested the possibility of a strike on the part of railroad labor against the paying of the "exorbitant" rental for the railroads. He was asked whether the contracts which the government had entered into with the owners of the railroads were valid contracts and could be repudiated. This question he did not answer directly, although acknowledging in general that it would not be legitimate for a minority to force upon the government a relinquishment of actual responsibilities. Yet he pointed out that only about 80 of the contracts with the railroad companies had been signed and that more than 100 still remained to be signed. Again and again he returned to the point that the strike could, and, in his opinion, would, in the future be used as a means of cutting down illegitimate profits of capitalists and that, therefore, were Congress to pass a law which would make it a misdemeanor for railroad men to strike, it would not only be unconstitutional, but would tend to continue indefinitely the increased cost of living.

He pointed out that the transportation was the one essential element which entered into the cost of every product bought by the consumer whether or not such product was transported "a single yard" by railroad. He was asked: "Does not a strike limit production?" and answered: "There would be a temporary loss in so far as production for the time was curtailed on account of strike, but if the strike was successful this loss would more than be made up to the consumer by the gain which would result from the reduction in profit of capitalists." In answer to another question along the same lines, Mr. Plumb said that, in his opinion, labor now, if never before, realized its interests as a consumer. This realization is part of the progress of economic life. To take away, therefore, the power of railroad employees to strike would be a direct interference with progress and a step backward in economic and industrial life.

Mr. Plumb was asked whether or not, while fighting the causes of a contagious disease, the patients suffering the disease were not quite properly quarantined. He acknowledged that they were, but he said that the Cummins bill quarantined labor, whereas it should have quarantined capital; that it was not quarantining a patient to jail 2,000,000 railroad employees because they would not work under the conditions prescribed by capital. He said the Cummins bill made no provision to compel capital and railroad managements to meet the demands of labor under penalty of a jail sentence pending the finding of a tribunal, whereas it imposed a jail sentence on labor for its refusal to work until its demands had been satisfied.

Mr. Plumb was asked whether a strike to enforce the adoption of the Plumb plan would be justified. He was most emphatic in his denial and denied equally emphatically that he or other representatives of labor had ever claimed a strike for such a purpose to be legitimate.

He was asked whether or not labor had threatened to strike unless the legislature passed the Adamson law. He denied again emphatically that this was the case and said that the Adamson law had been urged by the administration. One member of the committee told Mr. Plumb that in this contention he was entirely wrong, that he and other members of the committee at present were members of the committee when the Adamson law was under discussion and that he and other members of the committee understood plainly that the brotherhoods threatened to strike unless this passing of legislation was enacted immediately.

The Use of Force a Possibility

Mr. Plumb was asked whether there was no legal way to prevent strikes. He said that he would not go so far as that. He intimated that the way to avoid strikes was to go to the root of the trouble and to enact into legislation the Plumb plan. He likened himself and other leaders of organized labor to the conservatives just prior to the outbreak of the French Revolution. If the progress of evolution was blocked by legislation which would make a strike of railroad employees illegal, revolution would follow. Mr. Plumb talked vaguely and rather guardedly about the seething unrest in the masses, which for the time being labor leaders were generally able to control, although recently, as in the case of a strike of the machinists, the power of the leaders might be overthrown. Asked whether he thought there would be a revolution or not, he said that an industrial revolution was a possibility, although he firmly believed in the ability of

the conservatives, meaning himself and other labor leaders, to control and prevent such a catastrophe by preventing the government from adopting a policy which would further oppress the laboring man. He acknowledged, however, under cross-questioning, that an industrial revolution might be the worst sort of revolution and that he thought the use of force was a possibility.

Asked again whether he deemed it legitimate for railroad employees to strike against the enactment of the Cummins bill into law, he said that it would be illegitimate, but he did not believe it was possible for a law to be enacted and to become effective which would take away the constitutional rights of employees to strike. He acknowledged that the law might legally be passed but he expressed the opinion that it could not and would not be made effective. Pressed to say whether or not a strike would be legitimate if the law were enacted and actually made effective, he said that he did not believe that it could be made effective, but that if it were made effective then his reasoning was wrong. He was asked what he considered a fair return to capital. He said that he thought 6 per cent on the money actually invested and employed in the private operation of railroads was fair and that 4 per cent was ample under a government guarantee. One of the Senators pointed out that the government itself had had to pay 4¾ per cent on the last issue of government securities, notwithstanding the fact that these securities were exempt from many classes of taxation, especially state taxation. He answered this question by remarking that the bonds he had bought only bore 4¼ per cent interest or less and when pressed for direct answer as to whether railroads should be made exempt from state taxation he said that, of course, if railroad securities were free from taxation they ought to bear a lower interest rate.

Deficit Due to Exorbitant Rental

Mr. Plumb was asked whether in the face of the present large deficit from government operation freight rates would not have to be increased. Senator Cummins was appealed to to express an opinion as to what the deficit would be and said that he thought it would be about $650,000,000 for the two years. Mr. Plumb said that he thought that the rental was too high by $300,000,000 to $400,000,000, although he did not make it perfectly clear whether he meant $300,000,000 to $400,000,000 per year or $300,000,000 to $400,000,000 for the two years. He thought, however, that the way to increase revenues and thus wipe out the deficit was to lower freight rates, not to increase them. He expressed the belief that if freight rates were to be increased now it would increase, not decrease, the deficit.

Again he returned to the Plumb plan. He said that no one had questioned the constitutionality of his plan; that what he and the other labor leaders proposed to do was to get at the cause of the present labor difficulty by constitutional means, but that if such means were not adopted, it was possible that some other means, unconstitutional, would be adopted by a radical minority.

Testimony of Samuel Gompers

On Tuesday afternoon Samuel Gompers appeared before the committee and protested against Section 29 of the Cummins bill, which provides that "if two or more persons enter into any combination or agreement with the intent substantially to hinder, restrain or prevent the movement of commodities or persons in interstate commerce; or enter into any combination or agreement which substantially hinders, restrains or prevents movement of commodities or persons in interstate commerce such persons so combining and agreeing shall be guilty of a conspiracy and shall be punished by a fine not exceeding $500 or by imprisonment not exceeding six months."

Mr. Gompers said that this took away the right of railroad labor to strike, to collectively quit its job. The essential difference between a freeman and a slave is the right which the freeman has and which the slave lacks of refusing to work under conditions which are distasteful. Mr. Gompers pointed out that any law, whether called compulsory arbitration act or something else, which took away the right of labor to collectively quit its job made a slave of the laboring man. He said he had had broad experience with the working of various laws to compel arbitration. He cited the New Zealand compulsory arbitration act, which when it was first proposed was hailed as the remedy which would do away with the bitterness of war between labor and capital. But even in New Zealand, where it would seem that conditions were especially favorable for the carrying out of such a law as this, the law proved a failure, Mr. Gompers said. He cited the case of a dispute in the boot and shoe trade. The dispute went to arbitration and was decided in favor of the working men. Whereupon, the manufacture of boots and shoes in New Zealand was stopped and shoes were imported from England. Nor was there anything in the law which could reach this situation. This was only one of many proofs of the unsatisfactoriness of the law and its enforcement virtually had to be abandoned. Mr. Gompers said the Canadian arbitration law had proved entirely unworkable. It exists, but it does not prevent strikes.

"Would labor have entered so full-heartedly into the war if such a law as Section 29 of the Cummins bill had been in effect at that time?" asked Mr. Gompers. "Why should labor, which proved itself unqualifiedly loyal during the war, now be driven into slavery?"

Mr. Gompers pointed out that Congress, if it should enact this Cummins law, would go against all its own precedents, that Congress had reversed the decision of the Supreme Court of the United States in passing the seamen's law, and in passing Section 6 of the Clayton bill Congress had specifically given railroad employees the right to strike.

"Have the railroad men proved traitors?" asked Mr. Gompers. He said that three weeks before the war the American Federation of Labor had unreservedly pledged itself and its members to the support of this country. He said that once a meeting of inter-allied labor leaders was held in London without the attendance of representatives of the American Federation of Labor, a resolution was passed petitioning the Allies to seek a negotiated peace, but later, in September, when another meeting of the same delegates, with the exception of the addition of five American delegates, was held in London, the petition was withdrawn and a new resolution was passed urging the Allies to fight until the soldiers of the Central Empires had been driven from the countries that they had invaded and until the governments of the Central Empires had been overthrown. The American delegates numbered five out of the total of 87 inter-allied labor representatives, but it was the work of these delegates alone, Mr. Gompers implied, which so rapidly changed the attitude of this labor conference before the war.

"Is it a fair reward for labor to now be confronted with this law?"

"You propose to turn the railroads back to private owners, but the railroad workers are to be hand-cuffed."

Again Mr. Gompers returned to the impossibility of enacting any compulsory arbitration act. He said that Carranza of Mexico had issued an order making people who aided a strike liable to the death penalty, but no one was put to death.

"I have done my share to prevent unnecessary strikes, but Americans will never surrender the right to quit work. I don't want to live a minute after this right has been taken away from them," said Mr. Gompers. "There are no strikes in China or in India," said Mr. Gompers, "but in every free country the strike is a necessary part of the freedom of labor.

Labor must have the right to quit work just as Congress must hold the purse-strings of the nation.

"The effect of this bill would not be to prevent strikes. I would strike if necessary even if this law were enacted," said Mr. Gompers. "There is nothing in the law," he said, "to prevent the president or the directors of a railroad corporation from resigning."

At this point the chairman, Senator Cummins, interrupted to tell Mr. Gompers that on this point he was mistaken, that the bill provided that any two persons, officers or directors or anybody else, who combined in the manner prescribed in the bill, were liable to imprisonment. Mr. Gompers brushed this aside as theoretical. The president and the directors and the executive officers could act behind closed doors. The law could not reach them. On the other hand, labor had to act in the open. They were at the mercy of the law.

Mr. Gompers was then excused because of an engagement which he had made earlier, but promised to answer questions of the committee later.

Warren S. Stone Testifies

Warren S. Stone, chief of the Brotherhood of Locomotive Engineers, then appeared before the committee. He disclaimed any intention of being offensive, but he said he believed in straight from the shoulder talk. He said first that he wanted to correct a statement that had been made in the morning session by one of the committee in the cross-examination of Mr. Plumb. Mr. Stone said that it was not true that the Adamson law was forced through Congress by representatives of labor. It was forced through Congress, if forced at all, by the President of the United States; that neither he, Stone, nor any other labor leaders had approached any member of Congress in order to urge the passage of the Adamson law. He said that he and the other representatives of the Big Four had approached the President of the United States and laid before him the demands of the Big Four for an eight-hour day and time and a half for overtime and that finally, at the request of the President, they had withdrawn the request for time and a half for overtime. Mr. Stone was asked whether or not this withdrawal was conditional on the passage of the Adamson law. He acknowledged that it was. He was asked by Senator Robinson whether or not there would have been a strike if the Adamson law had not been passed. He said that there would have been a strike had the law not been passed. Senator Robinson pointed out that the statement made earlier that the Adamson law was passed under compulsion was not a mistake but was a statement of fact. This point was then dropped.

Mr. Stone said that he was a chief executive officer of the Brotherhood of Locomotive Engineers, but he had no power to call a strike, but that he had absolute power to veto a strike and absolute power to call off a strike. He was then asked whether, if a strike was called because of the passage of the Cummins bill or a similar bill, he would veto such a strike. He virtually refused to answer this question on the ground that he did not believe such a strike would be called.

He then took up the Cummins bill, section by section, and found it vicious and impossible. He characterized it as the most retroactive step which had ever been proposed and wound up by saying that he had only had six hours to study the bill so that the specific objections to it which he made were probably not all the objections which he could with more study make. He said the proposed Cummins bill limited the power of the Interstate Commerce Commission; it repealed the Adamson law; it made the transportation board a court of last resort which could deny the granting of wages to labor and from the decision of which there was no appeal but on which board labor had no representation. He said the law throttled the short lines. He said that the section which provides: "Any other indebtedness of any such carrier to the United States which may exist after settlement of accounts between the United States and the carrier shall be evidenced by notes payable on demand, with interest at the rate of 6 per centum per annum," is simply an excuse for higher rates. He characterized Section 10, which provides for the consolidation of roads, as a great gap full of possibilities for graft. He said that the sections dealing with the issue of securities were full of jokers; that the ability of roads to issue short term notes without the consent of any government body opened the door wide to over-capitalization and resulting higher rates; that Section 24, which prescribed the methods under which new securities could be issued, was a joker. Section 25, which provides for sharing excess earnings with employees, he characterized as vicious and a sham; Section 26, which creates a committee of wages and working conditions as a mere bluff; and Section 29, which is the one making conspiracy to interfere with interstate commerce punishable by imprisonment, as "frankly vicious."

In cross-questioning Mr. Stone was asked again and again to say whether or not any tribunal could be created which could arbitrate the differences between capital and labor, and again and again he evaded the direct question or said it was "doubtful." Asked whether it was defensible to tie up the entire transportation system of the country and so bring about conditions of starvation in the cities, he answered that it was wrong for all the railroads of the country to be controlled by a little group of about 12 men on one short block in Wall Street.

He said that, in his opinion, the representation of labor on the board of directors of the railroads, as provided for in the Cummins bill, was of no advantage at all to labor. He was asked whether he wanted a majority representation, then, on the board. He said "No," but reiterated the statement that the representation provided for by the bill was useless.

In the course of the discussion, one of the committee remarked that the government was now operating the railroads.

"Oh, no, it isn't," replied Mr. Stone. "The government is only paying the bill."

Mr. Gompers, continuing his testimony Wednesday afternoon, said that he would rather see his country put to the inconvenience of a general strike than see the workmen made slaves by the Cummins bill becoming a law. He said that there was nothing that Congress could do to prevent the possibility of a general strike of railroad labor, but that in his opinion, no such strike would ever occur. He said that if the Adamson law had not been passed there would have been no strike because the railroad managements were prepared to give in to the brotherhoods.

He thought that a labor representative on the railroad board of directors would be helpful to all concerned. He wound up by saying that the labor leaders could now control the radical elements in the ranks, but that he could not answer for labor if Congress passed such a law as this.

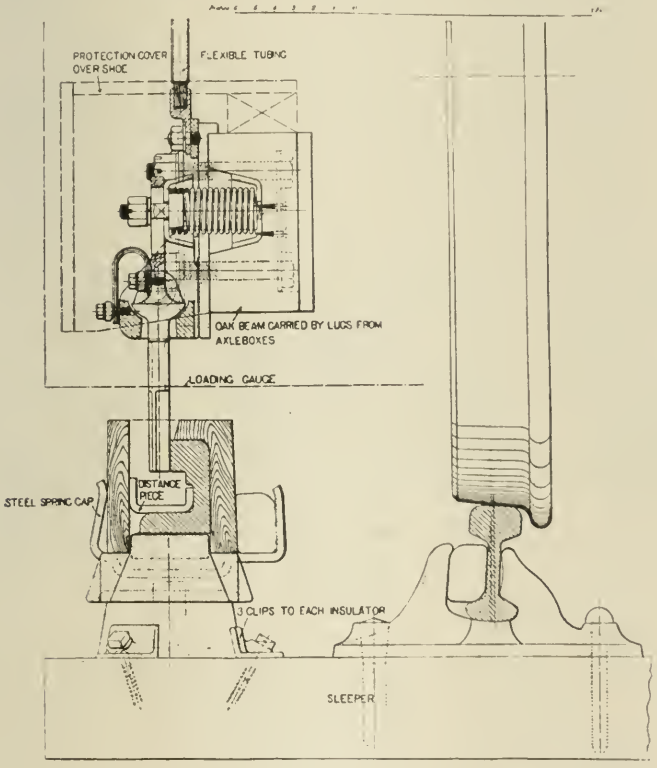
Charles O. Roberts, former ticket agent at the La Salle street station, Chicago, through his attorney, has filed three suits in the Circuit and Superior courts, seeking redress for malicious prosecution and libel against the American Surety Company of New York and officers and agents for the Chicago, Rock Island & Pacific Railroad Company, who caused his arrest recently charged with embezzlement. The suits aggregate $75,000. Mr. Roberts was accused of taking $500 of government railway money on August 31. When arraigned before United States Commissioner Mark A. Foote, he testified that, being called home suddenly, he carried the money with him because the relieving agent refused to accept responsibility for it and that on his way to his home he was held up by robbers who stole the money. Witnesses of the robbery testified to the fact and Roberts was discharged by Commissioner Foote on September 23.

Multiple Unit Equipment for English Railway *

Description of All-Metal Cars Offers Opportunity for Interesting Comparison with Similar American Rolling Stock

THE PROBLEM of the designers of multiple unit equipment for the Manchester-Bury section of the Lancashire & Yorkshire Railway was that of designing all-steel electric cars for operation from a 1,200-volt third rail. The maximum grade on the line is 2.04 per cent, and the result of tests made with a train consisting of one motor coach and one dynamometer car weighing 54 and 32.6 tons respectively showed a maximum speed of 40 miles an hour and a maximum acceleration of 2.52 ft. per second.

The contact shoes, which collect the 1,200-volt current from the live rail are directly connected to the main trolley cables running along each side of the car. These trolley



Cross Section Through Conductor Rail Showing Contact Shoe

cables are paralleled, and connections are taken through the main knife switches and fuses, then through the circuit breakers to the contactors, resistances, motor cut-outs, reverses, brushes, and finally to the motors, returning to the earth by a connection on the field frame. Another connection from the trolley cable through a knife switch and fuse to the starting switch of the rotary transformer supplies an auxiliary current at 100 volts for the operation of the contactor, pump-motor, lighting and auxiliary apparatus on the car, with the exception of the heating, the latter being taken direct from the trolley-cable. The heating units are protected by grounded metal covers.

Contact-Shoes and Protective Devices

Each contact shoe is secured to a beam fixed between the axle-boxes of the motor trucks. The kind adopted, which is illustrated, bears upon a rail known as the Aspinall full protected side-contact live rail. The shoe is pivoted horizontally and parallel to the center line of the cars and is allowed to move freely between stops. A pressure of 25 lb. is maintained on the rail by a spring placed between the top of the shoe and the shoe beam.

An effort was made to find suitable means for isolating the main trolley cable from the contact shoe, either by a fuse in the connecting cable between the shoe and the trolley cable, or a switch of the circuit breaker type. After a thorough investigation it was decided that any such method would be useless, because if fuses were used, four would be required on each car, and at some period it would be possible for the whole of the current for the train to be carried by one shoe, which would necessitate each fuse being capable of withstanding the whole of the current for the train without fusing.

Owing to the fact that the current at starting is about 2,000 amp. it would be more than likely that the substation circuit breaker would open before the shoe fuse was blown. In addition to this, the blowing of a fuse at 1,200 volts is attended by an explosion which, unless the fuse is well protected, might set up an arc between the shoe or its connecting leads and some grounded portion of the truck. Similar reasons apply to the use of the circuit breaker and in addition the housing for the circuit breaker would require a compartment 3 ft. by 3 ft. by 2 ft. in size, which, to be satisfactory, would have to be quite close to the contact shoe.

Trolley-Cable

In order that the car be "all metal" in every sense of the term the question of housing the trolley cable gave rise to considerable investigation, and much effort was made to find a substitute for Jarrah† timber, which has been used for some years quite successfully on the Liverpool-Southport 600-volt section of the Lancashire & Yorkshire Railway.

Exhaustive tests were made with various kinds of housing materials, but it was found that Jarrah fulfilled all of the conditions most successfully. It is an additional insulation, it will not burn with a flame and it smothers an arc when formed.

Couplers

The electrical connectors used between cars are of the plug and socket type and are so located that when a train is made up the plug of one car is directly opposite the socket of the car next to it. The high-tension couplers are connected directly to the 1,200-volt cable running along each side of the car. A cross-sectional diagram of one of these couplers is shown in one of the drawings. The plug portion is fixed to the car and the contact consists of a copper rod which is split by four saw cuts. Tension is maintained by the small springs B; C is the socket which is a part of the loose portion of the coupler; D and E are the connectors to the main trolley cable; F and G are fiber insulating tubes, and H is a mica insulation wrapped around the block forming the socket C.

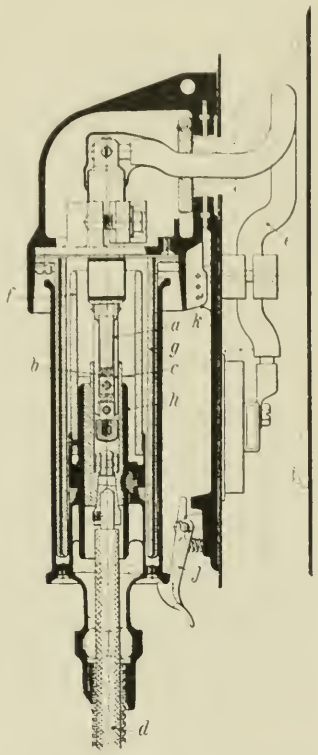
When the plug and socket are in position, as shown in the drawing a spring catch, J, comes into operation, which makes it impossible for vibration to cause the plug to fall

*The substance of this description was taken from a paper presented by George Hughes before the Institution of Civil Engineers.

†The mahogany gum tree of Southwestern Australia.

out of the socket. The plug portion fixed to the car is hinged and held in a vertical position by a small pin, *K*.

There are two low-tension couplers similar in construction to the high-tension couplers except that they are smaller and each coupler contains a number of contacts. One set of the low-tension couplers is connected with the 100-volt cable from the rotary transformer and the other low-tension set is connected with a multicore cable which controls the con-



Arrangement of High Tension 1200-Volt Coupler

tactors. When the loose portion is not in position it is held up by a dummy holder. The low-tension connecting cables between cars are covered with rubber tubes as a protection from weather.

In connection with the bell-circuits, which are worked from a battery of accumulators, there is also a small coupler in the center of the car.

The rotary transformer is located under the car and is attached to the underframe. It is a compound-wound machine of 10-kw. capacity and has a single armature with two commutators, one at each end. There are two windings on the armature, a high-tension winding being placed in the same slot with and above the low-tension winding. This machine is operated on the high-tension motor side by an automatic control-switch and is protected by a knife switch and fuse.

It has been found necessary to equip the rotary transformer with an automatic starting device because when short trains are in use there may be gaps in the live rail at junctions and cross-over roads. In such cases the current will be cut off for a short period and would cause the motor portion of the rotary transformer to flash over and give trouble if it were not so equipped.

A compartment, which is on the opposite side to that of the motorman, contains all of the 1,200-volt portion of the control equipment. It completely isolates the whole of the high-tension equipment from the remainder of the car by sheet-metal walls and door. All apparatus in this compartment can be operated manually from outside, and the door of the compartment is interlocked with the main isolating switch so that it is impossible to open the door when current is on.

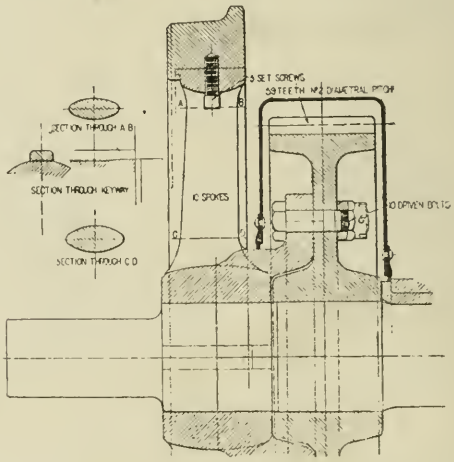
There are two main circuit-breakers on each car. They are of the magnetic shield type, insulated for 1,200 volts, and are so designed that they can be set or reset from the motorman's compartment.

Electrical Control Equipment

The control equipment is of the shunt multiple-unit type, the contactors being operated from a 100-volt circuit supplied by the rotary transformer. Either automatic or manual operation may be used at will in the forward position, and manual only in the reverse. A supplementary field control is used for higher speeds.

When the controller handle is placed in the series or parallel notch the main contactors operate automatically in sequence until the series or parallel running positions are reached. The automatic operation is controlled by means of relays which are governed by the main motor circuit and so arranged that no succeeding contactors come into operation until the motor current has dropped to a predetermined value. The current sequence of operation of the contactors is controlled by electrical interlocks.

Automatic control is installed to prevent the motorman from exceeding the normal acceleration current by operating the controller handle too quickly. It is not a unit saver. Its adoption makes necessary the use of relays and a large number of interlocking secondary contacts. Experience has shown that much attention is required to keep these in effective working order, and the maintenance of relays and extra



Section of Wheel and Gear

contacts tends to exceed that of the main contacts. The question of additional motor maintenance, however, due to overloading, is minimized in motors of modern design, especially when the motormen become efficient.

Each motor and each trailer car is provided with two master controllers. There are nine positions of the controller handle, four series notches, four parallel notches, and one for supplementary field control.

There are four positions of the reverser handle: ahead manual control, ahead automatic control, off, and reverse control. Two reverses are fitted in each motor car and each reverser controls two motors.

Each motor car is fitted with two motor cut-outs. Each cut-out controls two motors and is manually operated. It consists of two fixed mica-insulated bars supporting contact-fingers, with a movable contact-barrel between them. Connections from the contactors and motors are made through the contact fingers, and when the contact-barrel is in the normal position both motors are in circuit. When the barrel

is moved to the right, one motor is cut out, and when it is moved to the left, the other motor is cut out.

Motor Trucks

A side elevation of one of the motor trucks is shown. The frames are built of 12-in. by 4-in. by 0.6-in. angle for sole bars (side frame) and transoms.

The greatest advantage claimed for the built-up frame is low maintenance cost. The truck is stiffly gusseted at the top, and horn-plate ties take the place of any necessary trussing. The design is the result of the development of the built-up frame truck, and is calculated to withstand vibration and inertia stresses due to starting and stopping and centrifugal forces at curves.

The gear wheels are pressed on to the axles and also bolted to flanges cast on the running wheels, as shown in one of the drawings. This relieves the axle of a considerable portion of the torsional stress. The wheels are of the standard locomotive spoke pattern, having 10 spokes designed of sufficient strength to withstand the pressure due to tire shrinkage and the shock caused from the fact that a considerable portion of the weight of the motor is carried directly on the axle. The wheels are 3 ft. 7 in. in diameter.

The bolster rests on two sets of four helical springs, and is of the box-girder form, being built of 8-in. by 3-in. channels and ½-in. plates; the rubbing-blocks are fitted with detachable case-hardened plates for renewal purposes. The bolster has a lateral movement of 1½ in. each way. The swing links are of forged steel and of ample proportion. The upper ends are bushed with case-hardened steel ferrules.

Laminated type of bearing springs are used which have auxiliary helical and rubber springs at the ends. The helical springs have an entire absence of friction, and are very responsive in their movement, while the laminated springs are slow moving; hence a combination of these two gives good riding qualities and minimizes oscillation.

The wheel base is 9 ft., which allows room for the large motor and for a long spring base. A double brake-block arrangement is fitted, thus eliminating unequal stresses in the axle. The outside brake hangers are cranked, so as to leave free access to the adjusting turn-buckles. The standard English practice of attaching the brake block direct to the hangers is adopted. The mechanical advantage of the brake is 8 to 1, giving a total block pressure of 65 per cent of the total weight of the car.

Each truck is equipped with two 200-hp. motors, mounted and geared to the axle through spur gearings, the ratio being 59 to 25. The usual type of nose suspension of the motor has been adopted so that half of the weight of each motor is supported by three sets of concentric rubber springs, and the other half is borne directly on the axles. Thus half of the weight of the motors is spring-borne. This method of suspension was adopted because of its simplicity. The motors are built with solid steel frames and interpoles. The field coils and interpole coils are enclosed in brass cases and solid mica insulation is used in the armature coils.

The vacuum type of brake equipment is used, and the vacuum is maintained by a pump having a swept volume of 90.8 cu. ft. per minute, capable of releasing the brake in 12 seconds. There is a brake valve in each motorman's compartment, which is connected to the trainpipe. The brake valve includes vacuum-pump control switch and "dead-man's handle."

The motorman is compelled to retain his hold on the handle when running; should he release it, the handle rises, the vacuum brake is applied, current is cut off from the main motors by a tripping switch below the valve body, and the pump motors are stopped should they happen to be running. The handle has a range of movement without tripping actually occurring, which enables the motorman to move his wrist slightly from time to time and thereby rest his hand without danger of setting the brakes.

Wiring

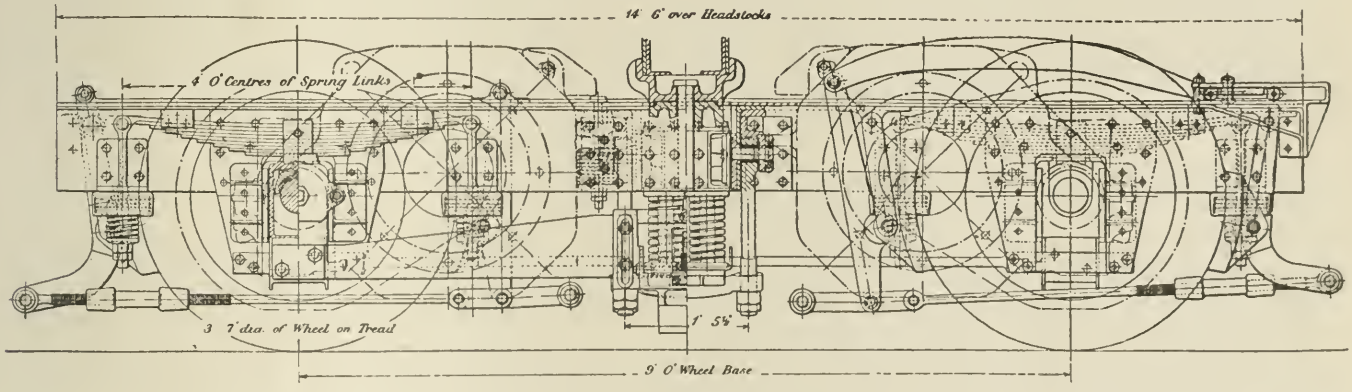
The high tension 1,200-volt cables are kept separate and distinct from the low-tension 100-volt cables, the former being placed in Jarrah troughing well below the car floor and the low-tension cables immediately under the car floor.

Code signals between the guard of the train and the motorman are communicated by means of bells, one of which is in each motorman's compartment, with pushes suitably placed for easy access by either the guard or motorman. Current for these bells is supplied by batteries of accumulators, 14 motor cars being fitted with "Ironclad-Exide" cells, and 14 with Edison cells. There are 6 "Exide" cells to a battery, having a discharge capacity of 150 amp. in 5 hours. They are built up in lead-lined wooden boxes and supplied in two crates with three cells in each crate, the crate being fitted with outside terminals. There are 10 Edison cells to a battery, and these also have a discharge capacity of 150 amp. in 5 hours. These cells are supplied in two crates with five cells in each crate, the two crates of cells being placed in a sheet-iron case, which is suspended from the underframe of the car. This case is also pivoted on one of the suspending arms, so that when the cells require recharging they can be removed quite easily.

Six spare batteries of each type are kept fully charged or on charge, so that exchange of batteries can be effected in a very short time whenever a car is in the repair shop. A battery can also be used for emergency lighting in case of failure of the lighting circuit.

The lighting is taken from the 100-volt circuit supplied by the rotary transformer. Each motor car is lighted by thirty-three 35-watt lamps.

Power for heating is taken directly from the 1,200-volt trolley cable, and there are 20 heaters arranged in series in



Side Elevation of Motor Truck

each car. Each heater has a voltage drop of 60, and the current consumed is 7 amp. per heater. Each heater contains 77 ft. of No. 17 S. W. G. high-resistance wire, enclosed in a perforated metal cover. The heaters are arranged along the side of the car between the seats.

Maintenance of Equipment

The operation of the train is so arranged that the vital parts of the electrical equipment, motors and motor trucks are looked over twice a week. During this inspection, the rotary starting switch, contacts, circuit breakers and contact fingers are cleaned if necessary. A weekly examination is made of the controller, reversers, motor cut-outs, motor brushes and the commutator. The brake rod, springs and oil arrangements on the motor trucks are also examined.

The cars are given a general overhauling every six months, at which time the car bodies are removed from the motor trucks, the motors taken out, the armature removed, the commutators examined, turned up and the mica undercut if necessary, the brush gear overhauled, the armature windings cleaned, blown out and varnished, the steel frame cleaned and connections examined, the motor trucks inspected, the wheels turned up if required, and the bearings adjusted. The electrical equipment is thoroughly overhauled, every individual piece of apparatus being inspected and the necessary parts repaired or adjusted and the wiring of the car inspected and put in order.

Once every twelve months the equipment is overhauled, the contactors are taken down, the fingers being taken off and renewed where necessary, and the controller and all other equipment is dismantled and renewed, cleaned and adjusted. According to the author, this periodical examination has contributed materially to efficient service.

Doings of the Railroad Administration

WASHINGTON, D. C.

DIRECTOR GENERAL HINES has authorized the following statement, asking the further co-operation of shippers and receivers of freight in promoting freight car efficiency to avoid a serious shortage of transportation facilities:

"During the war no one was more patriotically helpful than the American shipper. With zeal and efficiency he did his part in the common cause. The Railroad Administration had excellent opportunity to observe this attitude during the war, and has appreciated heartily the subsequent continued co-operation of the great majority of the shippers.

"The time has now come for renewed efforts by both the Railroad Administration and the shippers and receivers of freight so that the nation's transportation service may be rendered with the greatest satisfaction possible under the circumstances. An unusually heavy grain and coal movement, deferred repair and the construction of public highways in all sections of the country and the concentrated requirements of suddenly reviving business, combined with the usual transportation requirements at this time of the year, threaten a serious lack of transportation facilities unless all parties interested co-operate in securing the greatest possible utility from the existing limited transportation facilities.

"In this connection attention is invited to the following extract from a recent public statement of the President:

" 'We have now got to do nothing less than bring our industries and our labor of every kind back to a normal basis after the greatest upheaval known to history, and the winter just ahead of us may bring suffering infinitely greater than the war brought upon us if we blunder or fail in the process. An admirable spirit of self-sacrifice, of patriotic devotion and of community action guided and inspired us while the fighting was on. We shall need all these now, and need them in a heightened degree, if we are to accomplish the first tasks of peace.'

"The Railroad Administration will do its full part. The Car Service Section in Washington and the various regional organizations are striving earnestly to secure a fair and just distribution of the existing equipment as well as to meet the requirements of individual shippers. Of the 100,000 new freight cars which the Railroad Administration ordered constructed, 59,409 had been completed on September 13 and are now in service, and this number is being increased at the rate of over 900 each working day. Instructions have been issued to all regional directors to bend every effort to speed up road and yard movements, to secure heavier loading of equipment, to establish and maintain complete and accurate yard checks, to reduce the number of bad order cars, to make prompt delivery to connections, to effect early deliveries at freight houses and team tracks, to reduce the number of freight cars used in the transportation of company material and to expedite the movement of grain cars in terminals. The hours of labor of car shop employees have been increased and every effort is being made, both in railroad shops and in the shops of private concerns to whom the work is being let out, to reduce the number of bad order cars.

"I earnestly urge all shippers and receivers of freight to redouble their efforts to promote freight car efficiency.

"Shippers of freight can assist—

"1. By loading all cars to full visible or carrying capacity.

"2. By prompt loading and release to the carrier.

"3. By ordering cars only when actually required.

"4. By eliminating the use of railway equipment in trap or transfer service when tonnage can be handled by motor truck or wagon.

"5. By reducing the diversion and reconsignment of cars to a minimum.

"Receivers of freight can assist

"1. By prompt unloading of cars and notice thereof to the carrier.

"2. By ordering goods in quantities representing the full safe carrying capacity of cars and disregarding trade units.

"3. By ordering from the nearest available source.

"4. By pooling orders so as to secure full car loads.

"A resumption of intensive loading will not merely reduce the number of cars under load, but will also relieve congested terminals where it is a question of track room.

"With a strong concerted effort on the part of the Railroad Administration and the shippers and receivers of freight, it is hoped that during the period of abnormally heavy traffic with which we are now confronted the nation's transportation needs may be met with reasonable satisfaction to all parties.

"I earnestly ask the continued and even more effective co-operation of all shippers and receivers of freight."

Director General Hines also authorized a statement that the new cars ordered constructed by the Railroad Administration continue to be placed in service in increasing numbers. During the week ended on September 13, 5,341 of these cars, being at the rate of 890 per working day, were placed in service.

The total number of these cars in service on September 13 had increased to 59,409. The next week, he said, should show still further progress in the number of cars placed in service.

An Imperial Mineral Resources Bureau has been established in London, charged with the duties of collecting information regarding the mineral resources and metal requirements of the British Empire. The bureau is to be directed by a board of governors, comprising one appointed by the home government, one by each of the five self-governing dominions, one each by the government of India and the secretary of state for the colonies, and six representatives of the mineral, mining and metal industries.

Unrest Growing Among Maintenance Men

Survey Shows Increased Wages, Eight-Hour Day, Exodus of Foreigners and Shortage of Labor Complicates Situation

WHAT HAS BEEN the net effect of all of the revolutionary changes in the labor situation during the past 18 months? Has the coming of peace relieved the labor shortage? Is the present supply of men adequate? Have the eight-hour day, the increase in the pay check, and union working conditions made any marked change, for better or for worse, in the efficiency of the employee? These are all-important questions which every supervisory officer has asked himself again and again in the last six months. The signing of the armistice on November 11 was taken by many people to mark the end of most of our war-wrought ills. With the transition from war to peace activities, the return of soldiers and the closing of munition plants, many expected a marked relief from the labor shortage, if not an actual labor surplus. Others, however, maintained that the shortage would continue and even become more aggravated as time went on. Which idea was correct?

With a view to gaining some first-hand, authentic information on this subject a questionnaire was addressed to a number of maintenance of way officers in various parts of the country, soliciting replies to eight questions listed below, covering matters of actual fact and expressions of personal opinion regarding labor problems.

(1) The number of men employed now as compared with a year ago and normal pre-war times.

(2) The effect of the higher wage rate in increasing the efficiency of the existing forces, in attracting a better supply of labor, etc.

(3) The effect of the eight-hour day on increased efficiency, the ability to secure and hold men, etc.

(4) The effect of the reported exodus of foreign labor.

(5) The adequacy of supply of skilled and unskilled labor.

(6) The dissatisfaction with wage scales for men and foremen in the various branches of work.

(7) The general unrest among laborers.

(8) General comments regarding other influences.

The information thus obtained which may be taken as representing conditions on August 1, has been analyzed from the standpoint of the number of men employed, the available supply, the reasons for an appreciable shortage, and the relation of this shortage to the increased wages, the eight-hour day and the exodus of the foreign laborer. The subject of efficiency was studied with respect to the effect of the increased wages, the eight-hour day, organized labor and the matter of general unrest. The results of this analysis are submitted below.

Shorter Hours Reduced Output of Work

The number of men now employed in maintenance of way work is about the same or somewhat less than in years past. Some roads reported more men than were at work last year, but not as many as in normal times. Several roads are suffering a real shortage of men. One has only 40 per cent of the normal number; another lacks 13 per cent. One northern road has a normal track force but is short 20 per cent in its bridge carpenter gangs. The foregoing figures supplied by one of the granger roads for the years 1913 to 1919, inclusive, are probably typical of conditions the country over.

Year	No. of men
1913	17,422
1914	15,321
1915	16,402
1916	14,497
1917	15,389
1918	15,254
1919	16,569

However, figures such as these must be considered with one point clearly in mind, namely, that this year's figures are for men generally on an eight-hour day, while the totals for the other years are in nearly all cases for a ten-hour day. Thus, while the total number of men employed this year may not vary to an appreciable extent from previous records, the number of hours worked is at least 20 per cent less. In taking this into account, it must be noted that the dead time spent in getting out the gang car, riding to and from work, unloading and loading tools, etc., is practically the same under an 8-hour day as with a 10-hour day. Consequently the reduction of working time is more than 20 per cent. Some roads have made a definite effort to compensate for this deficiency in working time by employing a larger number of men.

Another factor closely related to this, is the new rule that traveling to and from work should be done during the regular working hours, in contrast to the old rule under which the men should travel in one direction on their own time. One railway officer estimates that this accounts for an additional loss of effective working time of at least one-half hour per day per man.

As a matter of fact, this deficiency in the actual hours of work is compensated for in part by the fact that the roads are doing much less improvement work this year than normally. This, of course, affects also the labor charge for maintenance. As one railway officer expresses it. "Were we able to do the same amount of work done in pre-war times, we would have to have at least 1,000 more men, due to the reduction in working hours per day for the same period." The policy of the Railroad Administration to restrict maintenance of way expenditures has also had an influence, and there is no question but that the large cut in forces made by some of the railroads in June had a pronounced effect on the number of men at work and the relation of the demand to the supply.

A Shortage of Labor Exists

On the general question of labor supply the consensus of opinion seems to be that there is a shortage, especially in the industrial districts. One man refers to it as "normal summer shortage." The dearth of men would seem to be more serious with regard to skilled labor than for unskilled forces, but one report indicates the reverse of this. Territories depending on negro and Mexican labor seem to fare much better than those depending entirely on white men. One peculiar manifestation is the reluctance of the hobo to go outside of the large labor centers where he is now in demand as a strike breaker at attractive wages.

The exodus of the alien is beginning to have a pronounced effect in most districts where he has been a chief factor of the supply. As is now well known, a large number of men of foreign birth, most of them Italians and Greeks and a large number of Poles, have returned to their native lands and many others have applied for passports. Just what their motives are is not well known, although it is assumed to concern the restoration of family ties broken by the war and it is not clear whether these men expect to return to this country or not. However, if this movement continues

unabated without such a compensating return, it will soon be a serious matter. One of the replies received does not take this so seriously and for a rather novel reason, it says "The effect of the absence of foreign labor is not serious, as the efficiency of this class has dropped to a point where, generally speaking, it is the least desirable."

Opinions on the efficiency of wage advances in holding the supply of labor or attracting a better class of men seem to be divided. The question reduces to one of competition. Where the railroad rate is better than that offered by other employers the effect has been good, but in large industrial centers where the men have opportunity to get better paying jobs, the railroad work reverts to the old status in which it attracts only the least desirable class. In rural districts, on the other hand, the class of men now employed is better than it has been for several years. Thus, in the Middle West in particular, the railroads have been able to employ local native help to the almost entire exclusion of the foreigner. This return to old-time conditions has been very welcome, for it not only serves as a compensation for the increasing scarcity of the alien class, but gives the roads a more intelligent and agreeable type of workman to deal with and largely removes the need for camps and commissary facilities.

Eight-Hour Day Not Favored

No discussion of the influence of the increased compensation in attracting men is complete without adequate consideration of the eight-hour day. What a man can earn in his day's work depends not only upon the rate of pay per hour but also upon the number of hours he works. This simple problem in arithmetic is not overlooked by even the most thick-headed workmen in comparing the relative merits of two jobs, and it is the experience of most railway officers replying to the questionnaire that the *net daily rate* of pay as well as the *hourly rate* has an influence where competition for labor prevails. Thus, one report states, "We are paying 40 cents per hour and are getting no better men than we formerly obtained at the old rate. Our men claim that they cannot maintain their families at the rate we are now paying, namely—$3.20 per day for 8 hours work. If we could work our men 10 hours per day straight time at 40 cents per hour, I am sure we could secure a large increase in our forces." Another says, "The majority of the men prefer to work 10 hours and many of them are insistent on doing so. It requires careful watching to avoid the practice of working overtime, especially among extra gangs." Still another says, "The men would prefer to work 9 or 10 hours a day instead of 8. This would give them more money for their day's toil." The chief engineer of a western line states, "Practically all gangs have made numerous requests for the privilege of working 10 hours, and on portions of the line where industrial competition is keen, it has been necessary to increase the working hours to 10 hours in order to hold the men." Only a few instances were reported where the men indicated a preference for the 8-hour day."

Changes Have Not Increased Efficiency

Considering the changes that have taken place in the status of the maintenance of way employee, during the past year, it is of particular interest to ascertain whether he is any more efficient than formerly. In other words, whether the employer has benefited by the advantages accruing to the workman. Chief among the changes were the large increase in the wage rate and the eight-hour day, but these two factors cannot be discussed intelligently without taking other considerations into account, namely, the advance accorded to other railway employees and those in outside industries, the circumstances under which the advances were granted, the relation of supply and demand in the labor market, and most of all—the growth of the union labor idea.

Only one road reported a definite improvement in the class of men employed together with some advance in the standard of efficiency. In all other cases the reports indicate a feeling that no such increase in efficiency has taken place, and while the higher rate has attracted a better class of men in some cases, the general observation is that the efficiency has been lessened. One railway officer reports an improvement which he believes has resulted from the shorter working period, but the remaining statements report no improvement if not a definite retrogression. Several replies give good reasons for this. One states, "Regular track men now have longer hours for leisure, for cultivation or for other occupations and for pleasure. In consequence, they are less fit to give a full day's work by the physical exhaustion of these additional occupations." Another says of the Mexicans that the shorter working day gives them more time to get into trouble.

Present Influences Are Detrimental

To obtain increased output from any man it is necessary to provide an incentive, therefore in a study of the present labor situation it is necessary to determine what agencies influencing the workmen in maintenance of way service would tend to produce such an incentive or have the reverse effect. There are two prime motives that will tend to make a man work harder. First, the desire to hold his job and, second, eagerness for better pay. The first of these motives is entirely ineffective during any labor shortage, for as soon as a man knows there is no one to take his place, he is not going to worry much about his job. Labor has been scarce so long in this country that the indifference of the laborer as to the opinion of his boss has become almost insolence.

The second motive can be utilized to get more effort out of the men only when there is some relation between the increased effort and the rate of pay and this fact must be clear to the men. There has been no recognition of this in the entire history of the wage advances by the Railroad Administration. Arrangements for increased rates to experienced or leading workmen as provided for in the wage schedules are totally inadequate to provide such an incentive. The wage schedules also automatically suspended the only attempts at bonus systems in use on American railways. The feeling of the men based on their experience is that the force and effectiveness of their representations before the Board of Wages and Working Conditions are infinitely more important in obtaining a raise than any extra effort which they put into their work.

Influences tending to destroy efficiency are much more in evidence than those designed to promote it, but these in general have to do with the feeling of unrest noted in nearly all classes of labor, and are discussed under that heading.

So much has been said about labor unrest in the last six months that it is, in a sense, a trite subject. However, the character of the replies received to the questionnaire is such as to supply much information on which to base a definite analysis of the matter as relating to maintenance of way employees. This current unrest has been ascribed to several agencies, chief among which has been mentioned (1) dissatisfaction with wage increases as affected by the high cost of living, (2) the organized labor movement and (3) the spread of anarchistic doctrine. From the information obtained the importance of these influences, at least insofar as they concern maintenance of way employees, is about in the order named with the third of minor or very slight importance in most cases.

The most natural expression of unrest is manifested by a dissatisfaction with the wages, a subject closely allied to the cost of living. Six of the reports received point to the increased cost of living, or the decreased value of the dollar, as the most serious cause of trouble. As one officer expresses it, "The men feel the effects of high prices charged

for living expenses, and the large increases granted them last year do not improve their actual living conditions as much as might be thought when comparing their present rate with what they received in 1917."

Another evidence of unrest is traced to the feeling among maintenance of way employees that they have not been treated fairly as compared to the men in other branches of the service. In other words, they feel that Supplement No. 4 was more generous in its provisions than Supplement No. 8. This is explained in one report as follows: "This has been due mostly to the fact that every order or supplement issued gives a different effective date and the various interpretations and instructions as between the different classes of employees and supplements were more or less conflicting with a natural tendency to cause dissatisfaction." As is well known, this constituted the principal grievance of the recent agitation for an increase in the wage scale.

The Effect of General Organization

Necessary as any organization of workingmen may be to secure recognition of their contentions and grievances, it is an unfortunate fact that the formation is not conducive to increased effort on the part of the individual. In the case of the maintenance of way employee, this has not been caused so much by agitation on the part of the organizer as by the policy of the Railroad Administration in dealing with the men. For instance, one report states that the foremen "have been more or less dissatisfied for the reason that the men know that their immediate superiors have little or nothing to do with the increases and there has been a natural tendency not to respect the foreman or officers."

One officer describes the condition as follows: "I believe that well over 50 per cent of the men are decidedly against any wage trouble, but on account of the Administration policy of forcing all men to organize and deal only with organized units many of the more stable classes of men have been forced into the organization and are now dominated by force and fear of the radical element."

There has been but limited evidence of agitation of the anarchistic type. Only one report refers to this condition, which is undoubtedly a local manifestation. "This in my opinion is due to the radical teachings and writings of irresponsible men, in a large proportion foreigners, who have no property of their own, many of them without families, and who personally prefer troubled conditions to peaceful conditions. * * * At the present time the country is dominated, both in the skilled and unskilled branches of labor, by the irresponsible, traveling-about younger class of men, who are comparatively a small proportion of the total men employed in this district. Many of our better class of men, married and with families, are unable to do much toward stabilizing conditions, although with assistance by business management, I believe they would soon improve conditions."

Among minor sources of disquiet mentioned in the reports is prohibition. The hobo has not yet adapted himself to the new era and it takes him longer to spend his money. This hobo tendency to lay off because of surplus money has also been noted in other classes.

While the supply of labor is more nearly adequate than during last year, it is not large enough to afford a sufficient force of good workmen. Conditions would be much worse if the railways were employing enough men to compensate for the short working day, or if they were doing as much work as in normal years. The present wage rates, coupled with the eight-hour day, do not afford a daily wage sufficient to attract the best men, while the conditions of employment and the plan of compensation do not encourage efficiency. Unrest is largely the result of the high cost of living influenced to an appreciable extent by the development of labor organizations under government sponsorship. Owing to the great increase in wages, the cost of maintenance work per unit of work done has increased enormously so that money spent is no measure of the work done. At the same time, a decrease in the percentage of effective working time per hour of time paid for and the decreased efficiency of the men, as compared to the "test period," makes it apparent that the man-hour unit can not be considered a true measure of the work accomplished.

Orders of the Regional Directors

EXPORT BILLS OF LADING.—Supplement 7 to Circular 240 of the Southwestern regional director states that through export bills of lading should not be issued for freight via North Atlantic ports destined to Central and South America, Africa, the East Indies, Straits Settlements, Australia and New Zealand.

Protection of Cotton from Fire.—Order 237 canceling Order 73 of the Southwestern regional director calls attention to the necessity for taking measures to protect cotton from loss and damage by fire and to certain rules already promulgated to prevent fires of this nature. The Central Western regional director issued a similar order September 10.

Grain Embargo—Primary Markets.—Supplement 13 to Circular 83 of the Northwestern regional director states that permit regulations have now been modified to include maize, kaffir corn, and feteria, and they should be handled the same as other grain insofar as permits are concerned. The Southwestern regional director issues similar instructions in Supplement 1 to Circular 247.

Export Bills of Lading via Pacific Ports.—Circular 248 canceling Circular 241 of the Southwestern regional director contains revised instructions for the issuance of through export bills of lading via Pacific ports.

Car Loading—Company Material.—Circular 249 of the Southwestern regional director states that the maximum loading of cars in the transportation of material is particularly important now. Cars containing ties are reaching destination not loaded even to minimum capacity. The circular calls particular attention to shipments of lumber.

Apprentices in Car Shops.—Order 238 of the Southwestern regional director requests that, effective at once, an apprenticeship system be established in the passenger car and freight car departments for both regular and helper carmen apprentices, making the ratio of apprentices to mechanics in the car department the same as that for machinists, boilermakers and other craftsmen.

National Safety Council.—The Northwestern regional director, file 8-1-89, recommends that the chief safety officer of each line attend the annual session of the National Safety Council at Cleveland, Ohio, October 1 to 4 inclusive.

Employees Holding Two Positions and Working 16 Hours.—The Northwestern regional director, file 42-1-99, calls attention to several cases where employees are working an eight hour trick on one railroad and an eight hour trick either in a similar capacity or some other position on another railroad. The rule prohibiting employees from filling two jobs on the same railroad or upon two different railroads must be made universal in the Northwestern region.

Interchange Records.—Circular 250 of the Southwestern regional director contains suggestions for the improvement of car records. Since per diem settlements were discontinued apparently the feeling has prevailed on some railroads that interchange reports are not of the same importance as before; and some inaccuracy is complained of.

Freight Car Distribution.—Freight Car Distribution Notice 15 of the Northwestern regional director orders that all shippers of newsprint paper be given full car supply for shipments of that class of paper.

The Steel Strike

The strike of the organized steel mill workers which began Monday, September 22, has succeeded to the extent that it has tied up steel plants in the Chicago district, in the Mahoning Valley district of Ohio, at Cleveland, in the upper Monongahela Valley (Monessen and Donora) and in various other places, but it has failed in that it has not interfered seriously with operation of the mills in the Pittsburgh district which is held to be the strategic center in the situation. Conflicting reports have made it difficult to determine how many men are on strike or to how great an extent the steel industry has been tied up. It early became evident, however, that the strikers were composed largely of the unamericanized and uneducated foreign element and that even those plants whose operation was impeded most severely were handicapped principally by the walk out of their unskilled labor. Many of the workers, apparently, have not reported for work because they were intimidated and feared violence on the part of the strikers, rather than because they were on strike themselves. It is notable in the situation that in those districts, such as Pittsburgh in particular, where the protection on the part of the state constabulary has been at its best, the strike has proved the least effective.

There has been violence and shooting in a number of places, notably at New Castle, Pa., Buffalo, N. Y., Farrell, Pa., and McKeesport, Pa., but here and at other places where the constabulary was on hand the situation was quickly put under control.

The reports on Wednesday did not show any decided change in the degree in which the various districts were tied up or otherwise, except that in such places where the mills were operating the men were gradually beginning to return to work.

The district that seems to be tied up the worst is the Mahoning Valley district of Ohio. At Youngstown, three plants were compelled to suspend operations Monday and on Tuesday practically all the Mahoning Valley plants were idle. The secretary of the strikers' committee for the district claimed that there were 30,000 men idle in the city and 60,000 idle in the district.

In the upper Monongahela Valley, the plants at Donora and Monessen are closed and some 15,000 men are idle.

Reports Tuesday night showed that some 8,000 workmen in the Sharon-Farrell district of the Shenango valley were idle but officers of the steel plants expressed their opinion that only 1,000 were strikers, the rest being out of work through the shortage of unskilled labor and the resulting cessation of work. The Farrell works of the Carnegie Steel Steel Company, however, are reported as running 100 per cent. There has been rioting in both Farrell and Sharon.

Cleveland is another district that has ceased operation to a large extent. Only two independent steel manufacturing concerns were reported in operation Wednesday, these being protected by contracts with the Amalgamated Association of Sheet and Tin Workers. The last of the Steel Corporation plants closed Thursday.

At Buffalo, it was reported that four plants affected by the strike had closed. The Lackawanna Steel plant closed Tuesday morning and the Donner Steel Company, Tuesday afternoon.

At Johnstown, some 15,000 men were reported out of work. The Cambria Steel plant is entirely idle, but the Loraine Steel Company is operating at about 85 per cent.

The mills at Coatesville are reported to be showing improvement as the men who were originally intimidated are returning to work. Operations in the open hearth departments of the Midvale Steel Company and the Lukens Steel Company were impeded at first but each company reported Tuesday night that it had succeeded in putting three additional open-hearth furnaces in operation.

The redeeming feature in the entire situation, however, is the Pittsburgh district. That center thus far has not been nearly as seriously affected by the strike as the other sections. Some men were out from the various plants, but not enough to impede operations seriously and there has been some disorder. By Wednesday, moreover, the situation had begun to improve and many of the plants reported that their men were gradually returning to work. The Edgar Thomson works of the Carnegie Steel Company at Braddock was able to blow in one blast furnace which had been banked and was operating at nearly 100 per cent although there was a shortage of unskilled labor. The Homestead works was also operating all its departments, although 25 per cent of the men were absent, these being mostly foreigners. The Duquesne plant and the Carrie furnaces at Rankin were also operating nearly at normal. The American Steel and Wire Company mills at Braddock, however, were idle and some 10,000 men out of work. At McKeesport, the National Tube and other plants were operating in part and some reported a gradually increasing personnel.

The Chicago District

Practically all of the big steel mills in the Chicago steel producing district, with the exception of those in Hammond, Indiana, have been closed down as a result of the strike. According to estimates prepared by officers of the steel workers' unions, between 75,000 and 80,000 men in this district are on strike and the walk-out has completely tied up the steel industry in the Chicago district. At the Gary, Ind., mills, the strikers, on leaving the plant banked the furnace fires but left some of the fluid steel in the furnaces which if the fires are allowed to go out will completely ruin them and may cost the steel companies one million dollars or more for repairs. The steam and operating engineers who have not been directly involved in the strike have declared their intention of remaining out as individuals although the international organization of their union has declared their strike unauthorized and has threatened to take away the charter of the local organization.

In South Chicago practically all mills have been closed and only small crews have appeared at the mills and at Joliet, Ill., it is reported that 95 per cent of the men have left their work.

Newspaper reports compiled from various steel producing points in the western territory indicate that plants have been closed at Anderson, Ind.; De Kalb, Ill.; Cleveland, Ohio; Columbus, Ohio; Canton, Ohio; Steubenville, Ohio; Denver, Colo.; Pueblo, Colo. In practically all of these places, however, the cessation of work was not general, some plants remaining in full blast and others operating in part.

The strike, being but a few days old, has not as yet affected the railroads to any extent. It is believed by many railroad officials that enough steel is on hand at the present time to fill the requirements of the railroads until the end of the strike and that no serious difficulty will be encountered because of the curtailment of the production of rails. Although officials of the railroad brotherhoods have given no indication of their attitude toward the strike, it is possible, according to some reports, that sympathetic action may be taken, insofar as handling supplies to mills affected by the strike is concerned. The car building plants and railway supply companies engaged in the manufacture of steel materials for the railroads have been variously affected by the strike, the Hammond plants of the Standard Steel Car Company, the American Steel Foundry Company, the Illinois Car & Equipment Company, the Keith Railway Equipment Company and others reporting that all of their men are at work and that production has not been curtailed. On the other hand the South Chicago plant of the American Brake Shoe & Foundry Company and the Indiana Harbor, Ind., plant of the American Steel Foundry Company has been closed.

Report on Railway Mail Pay in Canada

The Commissioners Recommend a Payment of 34.7 Cents Per Car Per Mile for Mail Car Service

By J. L. Payne

THE BOARD OF RAILWAY COMMISSIONERS has just handed down a report in the appeal of Canadian railways for an increased allowance for the carriage of mails. The matter had been at issue for seven years. In 1912 the primary demand was made, and in the year following a general adjustment was made by the post office department. This was not satisfactory to the railways, and, while accepted for the time being, the government was asked, if better terms could not be offered, to have the whole case referred to the railway commission for investigation and report. The outbreak of war occurred in 1914, and because of the resulting disturbance, as well as for other reasons, a hearing was not arranged until March last. In order that the case may be understood in all its bearings, it is necessary to pause for a moment or two and get the situation clearly in mind as it existed at that time.

In 1912 the railways appealed to the post office department for an advance of rates. At that date a somewhat mixed schedule was in operation. To the trunk lines was paid an allowance of from $130 to $160 per mile per annum. The branch lines were paid at the rate of 8 cents per car mile. In 1913 the post master general put the whole service on a uniform basis of 16 cents per car mile for full postal cars. Half cars were allowed 9 cents. For baggage car service, when over 30 feet of space was used, the maximum rate of 16 cents was granted; for from 15 to 30 feet 9 cents, and for less than 15 feet 4 cents. While accepting these new rates ad interim the railways, as I have said, put in a vigorous plea for increases on the broad ground of inadequacy. This was done by the Canadian Pacific and Grand Trunk specifically; but, of course, it was clearly understood that all railways were as directly concerned. In February last, on the recommendation of the post master general, the privy council referred the appeal to the railway commission "to determine as to the accuracy of the claims made by the railway companies, and, if it is found that the present rates are inadequate, to determine, as the result of evidence to be submitted by both parties, what would be fair rates of payment for the service." Those were the terms of the reference.

In order that a fair comparison may be made as between the rates in dispute in Canada and the rates which prevail in the United States, it is necessary to make clear the character of the service rendered by Canadian railways in return for the payments to which allusion has been made. This can be done in few words. Speaking broadly, and omitting only minor and relatively unimportant details, the railways provide the cars and keep them clean and in repair. The post office department does everything else, including practically all of the transfer work at terminals. The receiving of mails at depots and their carriage to post offices, and so on, are responsibilities which rest wholly on the department.

The Canadian Pacific led in the attack at the hearing, and W. J. Moule, assistant comptroller of that company, was the principal witness. He was effective. His command of data was excellent, and to this he added a modest and moderate attitude. There is a good deal in the character and bearing of witnesses, as I can say from a considerable experience as stenographer and reporter in court practice. The railways rested their case on the advanced cost of operation since 1912, and submitted an arbitrary segregation of operating expenses as between passenger and freight service. At the bottom of this course was the contention that, inasmuch as the postal car was a part of passenger trains, it should earn its full ratio of operating cost per car mile. In support of this argument a considerable mass of data was presented, based on operating results for the preceding year. A summary of the facts thus introduced will be interesting, and must suffice for the purposes of this judicial statement of what took place.

For the statistical year 1918 the operating expenses of the Canadian Pacific were segregated as between passenger and freight service, and to each account a definite percentage was assigned. These ratios were moneyed out and reduced to a car mile basis. It would take up a good deal of space to give the statement in its entirety, and that is perhaps unnecessary. Mr. Moule, however, brought it down in the final analysis to 33.10 cents per passenger car mile. From this he made certain deductions, as for example in the case of maintenance, train supplies and so on, amounting in all to 2.52 cents, leaving the sum at 30.58. It was argued that to this should be added a certain percentage for taxes, fixed charges, dividends and common stock, having a total of 8.93 cents. The final sum would thus be 39.51 cents per car mile, or 38.25 in case the allowance of 2 per cent for common stock should be eliminated. It was the broad contention of Mr. Moule—and this constituted the essence of the case for the railways—that all the services in connection with passenger business should be considered as in effect, since advantage of the whole passenger service was taken by the mail service.

Mr. Moule did not, however, stop there. He showed that the cost of passenger service had been materially increased for that part of the statistical year 1919 for which definite information was then available. His calculations on the 1919 basis carried the operating cost per car mile to a figure well beyond 40 cents, and he maintained that heed should be given to the facts in that regard in the ultimate reckoning of a fair allowance for postal service, looking to the future.

In rebuttal, the department relied in large degree on the testimony of the writer. [Mr. Payne is comptroller of statistics for the government railway department.] Here again the practical aspects of the case do not call for an attempt to present even an epitome of the mass of statistical data which was introduced. He suggested that all calculations based on a segregation of operating expenses, as between passenger and freight services, should be received with reserve. They contained an obvious element of purely arbitrary assignment, as to which expert railway accountants were far from being agreed. The Association of Railway Accounting Officers, he pointed out, had definitely declared that an accurate separation of accounts on such a basis was impracticable. If, however, Mr. Moule's formula and deductions should be accepted, there still remained large ground for debate as to what subtractions should properly be made because of the manifestly special character of the service given by mail cars. For example, the outlay under the divisional head of traffic had no bearing whatever on postal service. A large number of other items attaching quite clearly to passenger train service had no connection with the mail car. Other accounts applied only in degree. No one knew or could know what volume or per-

centage of total operating expenses should be legitimately assigned to the postal service rendered by railways. He made a hypothetical summary of all accounts as to which doubt might exist and showed that they reduced Mr. Moule's calculation by 18.50 cents per car mile.

The witness went further. He showed that the postal car made large earnings at the prevailing allowance; that it was actually more profitable than some other passenger train cars, and that relatively it gave a higher net return than any car. He did not assent to the loose contention sometimes heard that earnings from mails were largely in the nature of velvet to the railways; but he did insist that it would be a mistake to charge postal cars with the measure of operating cost which might properly be assigned to some other passenger train cars. He could not say what deduction should be made on that account, but he argued that it was quite material.

The board, in deciding as between Mr. Moule and the comptroller of statistics, put a higher appraisement on the calculations and arguments of the former; for their report and finding followed pretty closely his estimate of what the allowance for postal service should be. The commissioners were unanimous in suggesting that 34.7 cents per car mile should be paid by the post office department. "Giving due consideration to the averages involved," they say in their report, "and the element of judgment concerned in dealing with the question as to the proper participation of the mail service in general cost, it would appear not unreasonable that the rate accepted by the board for the kindred express service in the general express judgment should be adopted; that is, a rate of 34.7 cents for a full mail car mile. It would appear also not unreasonable that the charges for the other services set out in the order-in-council, as contained in the references to the board, should be increased in each case by the same percentage as the 34.7 cents rate represents over the 16 cent rate."

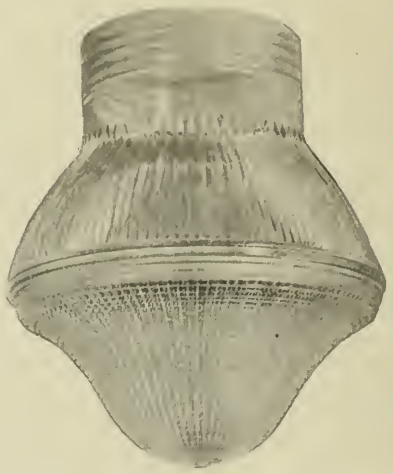
To this was added a memo to the effect that 34.7 cents per car mile should be regarded as the maximum rate, "subject to all bonus or statutory deductions." This latter qualification calls for a word or two of explanation. Practically all railways in Canada, except the Hill roads in the West, have received government aid in some form. In a number of instances the subsidy paid was made subject to certain services "if required by government," and to reservations for the carriage of mails. The matter is not clear, at all events not to me, and it may be that the railway commission will be asked for an interpretation.

What does this report by the railway commission mean? In the first place, it does not necessarily mean that this is the end of the matter. The board was asked to make a report and not to give a judgment; and that report is not binding on the post office department. I have, from a sense of what would be proper, refrained from offering a single syllable of comment on the merits of the case as I have here presented it in this brief form, and I shall not presume to indulge in surmise as to what should or may be done; but I may at least state one or two facts relating to the effect of the recommendation made by the commission. If it is accepted, it, in the first place, means an increase of 117 per cent in the allowance now paid by government for the transportation of mails. In the second place, the monetary aspect of that increase carries with it an additional outlay by the post office department of several millions of dollars per annum. The railways of Canada earned $3,288,734 from mails in 1918, and this sum would be more than doubled if the new rate of 34.7 cents per full car mile is given effect. To that extent the railways would add to the volume of their earnings. The significance of these figures is accentuated when it is pointed out that the revenues of the post office department from all sources for the last fiscal year were $21,602,712, as against an operating cost of $19,273,583. An addition of $3,800,000 on railway postal service account would create a deficit under present conditions.

Reflector Globes for Vapor-proof Lighting Fixtures

MANY LIGHTING FIXTURES in railroad buildings are subjected to gas and moisture conditions that call for the use of moisture and vapor-proof fittings. It has been standard practice in the past to equip vapor-proof lighting fittings with clear glass globes and in order properly to direct the light, it has been necessary to place a reflector over the glass globe. This procedure, however, did not produce a highly efficient lighting unit.

A combined vapor-proof globe and reflector has been designed by the Holophane Company, New York, in which



Globe Can Be Used with Any Standard Vapor Proof Fitting

it has used the well-known prismatic construction. Reflecting prisms are on the upper portion of the globe to redirect the light in downward directions and refracting and diffusing prisms are on the lower surface to distribute the light in different directions in the desired proportions, so that the resulting illumination of the work will be uniform. Tests show that the illumination is increased by 75 per cent over that given by an ordinary clear vapor-proof globe.

The globes are for use in connection with the standard vapor-proof fittings now on the market, including the standard Navy thread, and are made for the 40 and 60-watt type *B* lamps and for the 75, 100 and 150-watt type *C* nitrogen lamps.

Engineer Casualties Third Highest.—Only the infantry and the Signal Corps suffered heavier battle casualties in the war than the Engineer Corps, according to recent figures compiled by the War Department. Among each 1,000 enlisted men in the infantry reaching France there were 270 killed or wounded. Among each 1,000 in the Signal Corps the casualties were 50, and in the Engineer Corps 43.

Want Canal Service Restored.—Upon the opening of the Panama Canal regular steamer service was established between Atlantic and Pacific ports. This service was interrupted by slides, and has not since been regularly resumed. The California Manufacturers' Association now demands the resumption of this important service which, it claims, would tend to reduce rail rates on raw material.

Economic Span Lengths for Simple-truss Bridges*

Showing the Fallacy of the Old Criterion of Equal Superstructure and Substructure Costs

By Dr. J. A. L. Waddell
Consulting Engineer, Kansas City, Mo.

UP TO THE PRESENT TIME the general knowledge possessed by the engineering profession concerning economic span lengths for bridges has been rather crude and unsatisfactory. Until three decades ago the only data available on this subject were covered by the broad statement that the greatest economy in a bridge layout exists when the cost of a span is equal to the cost of a pier. In his pamphlet on "General Specifications for Highway Bridges of Iron and Steel," issued in 1888, the author pointed out the fact that the then popular impression concerning this question was incorrect, because the cost of the floor is constant, and hence the adjustment is one between cost of substructure and cost of metal in trusses and laterals. Three years later he gave, in a paper published by "Indian Engineering," a mathematical demonstration of the theory of the economics of bridge layouts, showing that the greatest economy will exist when the cost of a pier is equal to one-half of that of the trusses and laterals of the two spans which it helps to support. This demonstration was based upon the assumption that the piers rest on hard material and that, in most cases being of minimum size, they would not vary in dimensions or total cost for small changes in the span lengths.

This principle, though, is not applicable to the case of piers resting on sand or on piles, because the cost per lineal foot for substructure is often nearly constant for all moderate span lengths, while that for the superstructure augments; and this fact is not at all generally recognized by bridge designers. It has become evident of late to the author that there is needed by the profession a systematic investigation to determine in an authentic manner the economic span lengths for simple truss bridges to support the different kinds of live loads by piers resting on various types of foundation at all practicable depths, and to conform to changing market prices for materials in place.

The author has computed the actual costs of both substructure and superstructure for over two hundred cases of bridge layouts covering the following combinations: Railway, highway, and combined railway and highway bridges on concrete pier shafts overlying caissons or cribs resting on sand, bed-rock, or piles, and reaching to depths below low water of 50, 100, 150, 200, and 250 ft.; also for low, medium, and high conditions of the material market.

The following are some of the assumptions and conditions precedent adopted for the series of calculations:

Character of Structures

The different classes of bridges covered are double-track railway, single-track railway, standard highway, and combined double-track railway and highway, all metal being carbon steel (excepting in one set of estimates where nickel steel was employed), the railway floors being open, the highway floors being paved with creosoted blocks resting on a reinforced concrete base, the footwalks being slabs of reinforced granitoid, and the handrails being of steel.

All pier-shafts are of plain concrete. All caissons founded on sand are of timber with concrete filling having steel bases and cutting edges. In the pile piers the piles are 75 ft. long and project 60 ft. below the bases, which are assumed to be 20 ft. high, the piles being spaced three feet center to center. The character of the materials passed through during the sinking is assumed to be the ordinary mixture of silt, quicksand, soft gumbo, and other river deposits, overlying either coarse sand, suitable for foundations, or bed-rock. The methods assumed for sinking the caissons are those of open dredging and the pneumatic process, the former being employed when the bases are to rest on sand and the latter when they are to reach bed-rock. In the case of pile piers, the open box is first to be sunk by dredging to the required depth, then the piles are to be driven inside of it, and finally the remaining space is to be filled with concrete.

The specifications for the designing of superstructure are those given in Chapter 78 of the author's "Bridge Engineering," and those for the designing of substructure are to be found in Chapters 39 to 43, inclusive of that treatise.

Unit Prices of Materials in Place

The following table gives the unit prices for materials in place assumed for the purpose of this investigation:

Materials	Condition of Market Low	Medium	High
Structural steel, per lb.	4 cents	6 cents	8 cents
Concrete shafts of 20 ft. average thickness, per cubic yard	$9.00	$12.00	$15.00
Mass of caissons, including all materials, for a width of 30 ft. and a height of 150 ft., sunk by open-dredging, per cubic yard	15.00	20.00	25.00
Mass of cribs, including enclosed pile-heads, per cu. yd.	15.00	20.00	25.00
Portion of long piles projecting below base of crib, per lin. ft.	0.75	1.00	1.25

For the "Medium Condition of Market," the price per cubic yard of the shafts and for mass of caissons was modified by addition or subtraction from the price, depending on the width of the structure and the price of caissons was modified slightly for increases in height. Without these modifications of unit prices for substructure, the investigation would be not only illogical, but incorrect.

The prices per cubic yard for caissons sunk by the pneumatic process under medium market conditions, have been made two dollars greater than those for caissons sunk by open-dredging. This is due primarily to the more rapid sinking by open dredging, but also to the fact that the pneumatic caissons are generally filled solid, while the open dredging caissons often have their excavating wells only partially filled.

The price used for nickel steel superstructure in place for medium market conditions has been taken as 8½ cents per pound; for the reason that the last ante-bellum figures on structures, designed partially with that alloy, quoted to the author made the price of the nickel steel portion 2½ cents per pound higher than that of the carbon-steel portion.

Method of Determining the Economic Span Lengths

In making each of the cost estimates there was assumed a structure of indefinitely great length and unvarying profile, so that the sum of the cost of the steel work in a span and

* Abstracted from a paper presented before the Western Society of Engineers at Chicago on September 15, 1919.

the cost of a complete pier divided by the horizontal distance between adjacent pier centers gives the comparing cost per lineal foot of structure, although, as before indicated, not the *complete* cost thereof.

In the following table is given a résumé of the results of nearly all the cost computations that were prepared:

RÉSUMÉ OF RESULTS OF COMPUTATIONS

Character of structure	Character of Foundations	Depth of caisson footings, ft.	Economic span lengths, ft.	Remarks
Low-level Combined	sand	100	275	
Low-level Combined	sand	150	300	Shaft batter 1 in. to 1 ft.
Low-level Combined	sand	200	325	
Low-level Combined	sand	250	350	
Low-level D. T. R. R....	sand	100	275	
Low-level D. T. R. R....	sand	150	310	Shaft batter 1 in. to 1 ft.
Low-level D. T. R. R....	sand	200	360	
Low-level D. T. R. R....	sand	250	430	
High-level Combined	sand	100	275	
High-level Combined	sand	150	300	Shaft batter ¾ in. to 1 ft.
High-level Combined	sand	200	325	
High-level Combined	sand	250	350	
Low-level Combined	rock	50	250	
Low-level Combined	rock	100	300	Pneumatic caissons.
Low-level D. T. R. R....	rock	50	275	
Low-level D. T. R. R....	rock	100	325	Pneumatic caissons.
High-level Combined	rock	50	300	
High-level Combined	rock	100	350	Pneumatic caissons.
Low level S. T. R. R....	rock	50	250	
Low-level S. T. R. R....	rock	100	300	Pneumatic caissons.
High-level Combined	piles	20	175	Pile piers.
Low-level Highway	sand	100	300	
Low-level Highway	sand	150	350	Shaft batter ½ in. to 1 ft.
Low-level Highway	sand	200	400	
Low-level Highway	sand	250	450	
High-level Highway	sand	100	325	
High-level Highway	sand	150	350	Shaft batter ½ in. to 1 ft.
High-level Highway	sand	200	375	
High-level Highway	sand	250	400	
Low-level D. T. R. R....	sand	100	350	
Low-level D. T. R. R....	sand	150	385	Nickel-steel superstructure.
Low-level D. T. R. R....	sand	200	425	
Low-level D. T. R. R....	sand	250	470	
Low-level Highway	sand	100	275	
Low-level Highway	sand	150	350	Shaft batter 1 in. to 1 ft.
Low-level Highway	sand	200	425	
Low-level Highway	sand	250	500	
Low-level D. T. R. R....	sand	100	290	
Low-level D. T. R. R....	sand	150	330	Low-market unit-prices.
Low-level D. T. R. R....	sand	200	375	
Low-level D. T. R. R....	sand	250	425	
Low-level D. T. R. R....	sand	100	275	
Low-level D. T. R. R....	sand	150	325	High-market unit-prices.
Low-level D. T. R. R....	sand	200	375	
Low-level D. T. R. R....	sand	250	425	

From a study of the preceding table there can be drawn the following deductions:

For all types of bridges the economic span length increases with the depth of foundation, though not necessarily in the same proportion.

The lighter the superstructure and the live load it carries, the greater generally is the economic span length, and the greater the variation of the latter with the depth of foundation.

For sand foundations there is not much difference in the economic span lengths for low level and high level bridges of the same type.

Structures with piers founded on bed rock generally have economic span lengths somewhat greater than those of the corresponding structures founded upon sand.

Single-track railroad bridges have economic span lengths a little less than those of the corresponding double-track structures.

Pile piers for high-level bridges involve, for economic considerations, rather short spans; and for low-level structures they usually necessitate such short ones as to require the adoption of plate girder superstructures.

In highway bridges having very deep foundations on sand, increasing the batter of the shaft augments the economic span length.

Using nickel steel instead of carbon steel in the superstructure increases materially the economic span length.

The assumed variations in unit prices with changing market conditions make very little difference in the economic span lengths. There would have been no difference at all had the prices of all the materials used been assumed to vary in the same proportion; but the superstructure steel, erected, ordinarily changes in value somewhat more rapidly than does the substructure of the bridge.

There are not many irregularities to be found in comparing the diagrams or the tabulated results of the calculations; and what few exist are small. They are generally due to the adoption of a minimum weight limit for sinking to great depths instead of figuring upon employing temporary loading, as shown, for instance, by the substructure curve of Fig. 15.

The costs on which this table is based provide a check on the correctness of the old methods of determining economic span lengths, and from the variations between cost per foot of superstructure and cost per foot of substructure thus obtained, it is evident that the former rule for determining the economic span length is not reliable, especially for foundations at great depths; hence its use should be discontinued.

International Railway Association

UNDER THIS NAME the International Railway Congress is to be reorganized. The executive committee of the American Railroad Association has approved the plans for the new association, so far as these have been defined, and has voted to continue the membership of the A. R. A. in the international association. Mr. L. Weissenbruch, of Brussels, Belgium, the long-time secretary of the organization, has sent letters to the members throughout the world, in which he expresses the expectation that a date and place for a general congress will soon be settled upon by the Permanent Commission.

The International Railway Congress had its headquarters in Brussels. It is of many years' standing, but its life was in some degree dependent on a Royal Decree of September 22, 1911, under the terms of which the Belgian Government now holds that the organization must be dissolved. German occupation of Belgium forced the complete suspension of the activities of the officers, and suppressed the publication of the Bulletin of the Congress.

The property of the old association will be distributed among the members pro rata, according to their respective contributions during the last six years of the life of the Congress.

With the approval of a large proportion of the members of the Permanent Commission, an outline of the proposed new constitution, signed by V. Tondelier, president, and L. Weissenbruch, general secretary, has recently been sent to all members.

At the time of the suspension of activities the association included railroads in the following countries: Argentina, Belgium and Colony, Brazil, Bolivia, Chili, China, Costa Rica, Cuba, Denmark, Dominican Republic, Egypt, Ecuador, Spain, United States of America, France, Algeria, Tunis and Colonies, Great Britain and Ireland, India, Protectorates and Colonies, Greece, Haiti, Italy, Japan, Luxemburg, Mexico, Nicaragua, Norway, Paraguay, Netherlands and Colonies, Rumania, San Salvador, Serbia, Siam, Sweden, Switzerland, and Uruguay.

In many of the countries the railroads belonging to the association are wholly or largely government-operated, but the membership includes non-government companies in France, Great Britain, Italy and the United States; in France about 25 companies; Great Britain, 43; Italy, 19 (including tramways); United States, 56. There are also independent companies in Canada, India, Spain and Sweden.

The last list of officers shows 37 members of the Permanent Congress. Among the names are Stuyvesant Fish, E. J. Chamberlin, F. A. Delano, Theodore N. Ely (deceased), Fairfax Harrison, L. F. Loree, E. P. Ripley, Sir Guy Granet and Sir Frederick Harrison.

Hugh M. Wilson

Hugh M. Wilson, formerly associated with *The Railway Age*, and for several years its owner, and from 1910 to the early part of 1917 first vice-president of the McGraw Publishing Company, died Sept. 19.

Hugh M. Wilson

Mr. Wilson was in journalistic work during practically his entire business life. He was born at Jacksonville, Ill., and his first experience was as city editor of the Jacksonville Daily Journal, after which he was a reporter on the Minneapolis Evening Star. In 1889 he entered the technical paper field on the staff of the Mississippi Valley Lumberman. From that beginning and with but one brief interruption he devoted his energy and abilities to the object of developing trade and technical papers. He soon entered the railway field and became an associate editor of the Northwestern Railroader. When that publication was shortly after consolidated with *The Railway Age*, at Chicago, he was made secretary-treasurer of the new organization. He subsequently became manager of *The Railway Age*, meanwhile continuing as secretary-treasurer, and was elected president of the company in 1899.

In these years, although busily engaged in the business department of the paper, he found much time for editorial work, particularly on news matters relating to the purchase of equipment and supplies. His familiarity with this branch of railroad work soon made him an authority and fitted him for the work he did as secretary of the Railway Supply Manufacturers' Association from 1897 to 1902.

His energy was perhaps best displayed by the publication during the International Railway Congress at Washington, in 1905, of a daily edition of *The Railway Age*, which was designated as the official journal of the congress. Supplementing the praise showered on him by both American and foreign delegates for the success of this enterprise he was created a chevalier of the Order of Leopold by the King of the Belgians.

In 1906 the Wilson Company, with Mr. Wilson as the controlling owner, was organized, taking over *The Railway Age* and the Street Railway Review, which had just then been purchased and which was changed shortly to the Electric Railway Review and from a monthly to a weekly publication.

Two years later Mr. Wilson sold both papers. *The Railway Age* was consolidated with the Railroad Gazette to make the present *Railway Age Gazette*, while the McGraw Publishing Company purchased the Electric Railway Review and consolidated it with the Street Railway Journal under the name of the Electric Railway Journal.

Mr. Wilson immediately went abroad for an extended trip, and on his return in June, 1909, was elected vice-president and a director of the Barney & Smith Car Company, Dayton, Ohio. He continued with the Barney & Smith Car Company until 1910, when he was elected first vice-president of the McGraw Publishing Company, which position he retained until January, 1917.

News of the death of Hugh M. Wilson will shock and sadden many persons in the railway and railway supply fields. While Mr. Wilson had not been identified with the steam railroad and railroad supply field for over eleven years, he had a very wide circle of acquaintances and many warm friends in it who still remember favorably the work that he did in it.

He was distinctly a man among men. He was always bubbling with enthusiasm and overflowing with energy. It was impossible for anybody to come in contact with his bluff and magnetic personality without liking him. He was primarily a publisher, but as a publisher he was always interested in, and exercised a great influence over, the work of the editorial department. He always encouraged his editors courageously and outspokenly to advocate honest and public spirited policies, regardless of whether this course seemed adapted to increase or to diminish the prosperity of his papers. He advocated a vigorous policy of government regulation of railroads at a time when the desirability, and even necessity, of government regulation was by no means as generally recognized in the railroad field as it is now. As a publisher he was distinctly a builder, always being in favor of issuing the best papers practicable from an editorial and typographical point of view, even though this involved expenditures which might yield no immediate return, and, indeed, might never yield any return at all. He was in all respects one of the highest grade men who have ever entered the business paper publishing field in the United States. Both as president of the Wilson Company, and later as vice-president of the McGraw-Hill Publishing Company, he exerted an influence which has tended to raise permanently the ideals and improve the policies followed in the business paper field.

Mr. Wilson had a bad breakdown while he was connected with the McGraw-Hill Company. He went abroad and took a long rest and seemed to have largely recovered when he was struck by an automobile and seriously injured. While his breakdown and the automobile accident occurred some years ago, they undoubtedly produced the condition which ultimately resulted in his sudden death.

Photograph from Underwood & Underwood, N. Y.

Scenes from Foreign Ports. A View of Port Arthur, Manchuria

Efficient Maintenance and Operation of Locomotives

Traveling Engineers Consider Methods of Handling Power on the Road and Care at Terminals

An account of the early sessions of the Traveling Engineers' Association convention was published in the *Railway Age* of September 19, pages 581-585. The papers presented at the later meetings are given in part below:

The Advantages of Stokers on Modern Locomotives

Heretofore, in considering the application of mechanical stokers to locomotives we have thought in terms of the present only. In our opinion, however, the time is now at hand when we must consider future needs. Man power and wage costs are the dominating factors, and for economical operation we must use machinery to do the work that at one time could profitably be performed by hand. The economical rating of a locomotive is no longer the greatest tonnage it can drag over a division regardless of time, but the greatest tonnage it can haul over a given distance in a given time. This time has been fixed at eight hours for one hundred miles in freight service, which on account of delays en route may call for a speed considerably in excess of 12½ miles per hour.

The ever-increasing cost of wages makes it necessary to get more work out of the machines, and we can therefore no longer limit the capacity of the modern locomotive to the capacity of the fireman to shovel coal, but must by mechanical means overcome the physical limitations of the man.

In the first place, the advantage to be gained by the application of stokers is the realization of maximum boiler capacity, not only through sustained periods, but at any time when needed. The necessity for using mechanical devices wherever possible arises, not only from a humanitarian standpoint, but more particularly where it is necessary to develop 100 per cent efficiency in each individual, and as this factor enters into the effectiveness of the locomotive more than any other part of railroad operation, it would seem that the human element with which we have to contend, if for no other reason, would be the strongest recommendation for the installation of mechanical stokers on all power that is kept in road service.

Years ago the capacity of the firemen at times governed the amount of work performed and not the capacity of the locomotive. There were two reasons for this: First, it is impossible to educate any two men up to a point where they will fire a locomotive exactly the same under all conditions and look ahead to be prepared for any emergency; second, the physical capacity of men to perform the work. The stoker makes it possible to have every engine 100 per cent effective. Of course the stoker is not automatic and it takes a certain amount of intelligence to operate it properly, but there can be no question but that there is a much larger field for fuel economy in its use than there has ever been in hand firing, regardless of what our method has been in educating our firemen in the past or how careful our supervision has been.

Every railroad officer has had practically the same experience in the work of firemen; namely, that in some instances it is possible to get full capacity out of the locomotive, while in other instances, even with experienced men, it is not. Therefore it is only fair to assume that the amount of work performed by any given number of locomotives in any given territory will be based on the average poorest firemen on that division rather than on the average best firemen. With the engines equipped with mechanical stokers, receiving proper attention at terminals and by the men on the road, each will give identically the same service.

Steam chest temperatures in connection with superheated engines should receive much more attention than they have had in the past and there is no question but that a scientific job of firing largely affects steam chest temperatures when using superheated engines. On some tests conducted on a superheated engine it was demonstrated that it was possible to increase the steam chest temperatures from 20 to 50 deg. by expert firing, as compared with the work of the regular fireman on the job. Uniform temperatures in the fire-box, together with perfect combustion, will give the highest steam-chest temperatures possible to obtain, and as it takes a given amount of air to produce perfect combustion from a given amount of coal, and as the admission of air to the fire-box can only be regulated by the depth of the fire on the grate, it can readily be seen that in firing an engine by hand where the fire-door has to be opened to admit of the fuel charges, that the admission of air to the fuel bed through the grate must be intermittent, either too much when the door is closed or not enough when the door is open.

The stoker also makes it possible to carry the water at a lower uniform level than is possible with a hand-fired engine, for the reason that the steam pressure can be maintained at any time even though the engine is being worked to its maximum capacity through any sustained period.

In all the comparative tests that have been made between the stoker and hand-fired engines no one seems to have come to the same definite conclusion regarding fuel consumption, but from our experience we have found that in using the same grade of coal with the stoker and hand-fired engines, the boiler capacity of the engine not only is increased to a great extent as far as handling tonnage is concerned, but that it makes it possible materially to reduce the running time between terminals; therefore, with the present stoker in its perfected form, it should not only show much greater efficiency than a hand-fired engine, but also effect a very material reduction in fuel consumption, based on the consumption per ton mile per hour.

There seems to be considerable stress placed on the stack losses of some stoker-fired engines due to the extremely fine quality of coal necessary to use on them. While it is true that in the past considerable loss occurred from this source, with the present perfected stoker and the brick arch extending well back to the door sheet, the stack losses can be reduced to a point nearly as low as is done by using run of mine coal hand fired. In some large Mikado type engines, where originally they used six bricks in the arch, the arch was extended two bricks further back, bringing it up to within about seventeen inches of the crown-sheet. This not only has made a saving in stack losses, but has almost entirely eliminated the smoke, and we believe that with an arch of this kind and a large combustion chamber it would be possible with careful manipulation to burn 98 per cent of all fuel in the fire-box.

Today the firemen are presenting a demand for another increase, and in addition to this are requesting that all engines above a certain limit be equipped with mechanical stokers, and all under that limit be equipped with mechanical coal passers and grate shakers. Considering the cost of the mechanical coal passer and grate shaker, it would seem that

it would be much better to take the money expended in this way, apply it to the stoker and equip all engines kept in road service with a stoker.

While committees reporting on this subject in the past have never been able to secure reliable information in regard to stoker maintenance cost, records for the past five years show our maintenance cost to have been a little under $10 per thousand miles. As to the miles per engine failure due to stoker trouble, the record of the El Paso & South Western show an average of 61,556 miles per stoker failure. The application of stokers on this line has entirely eliminated the stereotyped engineers' report of "engine not steaming." While as a rule the size of nozzles has not been increased, it has been possible to adopt a standard front end and make all engines give a uniform service as far as steaming is concerned without any complaint from engine crews. It was never possible to get any class of engines to steam alike when hand fired. One fireman will want a bridge in the nozzle, while another wants it out; one would want the draft-sheet 15 in. from the bottom of the arch, while another wanted it 21 in.; one would want the petticoat adjusted one inch above the nozzle, while another man would want it six inches. With the stoker, however, practically no work on front ends is necessary by the roundhouse force except to make regular inspections.

Let us not forget that the fireman of today is the engineer of tomorrow, and owing to the constantly increased coal burning capacity of the locomotive, the application of a mechanical means of supplying the fuel is the only thing that will make the work sufficiently attractive to enable us to get and keep the right kind of men on our engines.

The report was signed by E. Gordon, chairman, J. A. Cooper, A. N. Willsie, J. O. Clendenen and J. R. Bissett.

Handling Locomotives to Secure Efficiency and Fuel Economy

The essential requisites to locomotive efficiency are proper design, proper operation and proper maintenance of power, the matter of fuel economy always being closely related to any of the three. The matter of proper design should start with having the boiler and grate area designed of ample proportion to furnish enough steam to develop the maximum cylinder horsepower of the cylinders at all times. Some of the older boilers are of rather low capacity for the cylinders of the engine, but in late years there has been a decided tendency toward having 100 per cent boilers. Every modern locomotive should be equipped with superheater, brick arch and power fire-door; all of which are fuel-saving and capacity-increasing devices. The combustion chamber also makes for fuel economy and is now in successful use on most large locomotives. The mechanical stoker should be applied to all large engines, and although the conditions under which the engine is to operate would govern, generally speaking, engines with over 50,000 lb. tractive power ought to be stoker fired.

Air compressors and headlight turbines of modern and most economical design should be used on new power, and on some old power it will be found in the interest of economy to replace existing auxiliaries with the more economical outfits. There are some as yet undeveloped sources of fuel economy for locomotives, one of which, the feed water heater, while still in the experimental stage, will undoubtedly soon be perfected and put in more or less general use.

In designing the engine, front end, grates and ash-pan should be given plenty of attention. It is necessary to keep the air out of the front end, and yet admit it in plenty to the ash-pan, which means ample ash-pan air openings and all joints tight around the front end. The effect of front end leaks and also insufficient ash-pan air opening has been made the subject of circulars recently issued by the United States Fuel Section, which have brought out very plainly the losses due to these two causes. The exhaust nozzle should be made as large in diameter as possible, so as to reduce back pressure and yet furnish the draft required to produce proper action on the fire. The grates should have ample air opening and the grate rigging should be such as to permit shaking freely by the fireman, which cannot be done if too many sections of grate are carried on one shaker.

Essentials for Proper Operation

The proper operation of locomotives covers many phases and only a few of them will be touched on here. It is recognized that where locomotives are pooled they are not so well maintained, as the engine crew does not take the same interest in an engine that they may not see again for a month; and they do not make the lighter repairs, nor the thorough inspection and report of defects occurring en route which they do in a case of the regularly assigned engine. Although it may be more economical in general to use pooled engines, particularly when business is heavy, there are instances where regularly assigned engines could be used, and it is preferable to do so when consistent.

Locomotive performance is affected to a considerable extent by the terminal facilities. Terminal facilities may often include various fuel or labor-saving appliances, but these are not always installed in co-ordination with other appliances at the same terminal. Proper terminal layout should be such as to get the quickest movement into and out of the engine-house of engines arriving at and departing from terminals. Considerable fuel is lost, the expense of handling the engine is increased, and there are many delays due to improper design of terminals. In the past we have been rather short-sighted as regards designing locomotive terminals with a view of handling increasing sizes of power.

One question in the operation of trains and locomotives that is very important and is not as a rule given much attention is the matter of proper water supply. Wherever it is possible to change an existing water supply for one of better quality, it should be done, providing the cost of the change is not prohibitive, and then, having obtained the best available water, every water should be given the necessary treatment to prevent scale formation and corrosion within the boiler. We are all familiar with the many troubles that result from using hard waters. Fuel lost from having scaled heating surfaces is a large expense; boilers operate at reduced efficiency when scaled up; engines fail and give up trains on account of flues leaking, and the cost of boiler maintenance is much higher on account of frequent flue, stay-bolt and fire-box renewals. Most all this can be avoided. Engine failures due to leaking can be reduced to practically nothing; stay-bolt trouble can be reduced to a minimum, and considerable fuel will be saved with the proper treatment of all waters. This should be done on every railroad, and the steam user who does not adopt some method of water treatment to avoid incrustation is unprogressive and is losing money.

Maintenance of Machinery and Boiler

Proper maintenance depends first on proper inspection and then on getting the defects corrected which are brought out by this inspection. The pooled locomotive can be run successfully and efficiently if there is adequate terminal inspection and repair. Not infrequently the officer in charge of the terminal is under the impression that the only inspection necessary is searching for loose nuts, missing parts of machinery, cracks, hot bearings, etc., and consequently uses rather low-grade men for this purpose. The best man on the job is none too good for inspection, as a locomotive ought to be tested for steam blows, pounds and such defects as

cannot be observed by the eye alone. Steam blows, such as are caused by defective cylinder packing, valves and valve rings, go further toward reducing the efficiency of the locomotive, and waste a great deal more coal than is generally realized.

If the inspection and repair of locomotives were carried out in accordance with federal inspection laws, pretty good results would be secured; but even though the spirit is to comply fully with these laws, it is unfortunate that there is still at times considerable neglect or rather inefficient inspection and repairs. All repairs found by the inspector ought to be made, and when possible a check should be made before the engine leaves to see that all work has been done.

A few items of maintenance, or shop practice, that might be mentioned are care in laying out shoes and wedges, and proper maintenance of binders, tramming of engine trucks, drivers and tender trucks, and the fastening of valve bushings so that they cannot move, making it possible to use standard rings for all engines of a class. It will frequently be found that the steam distribution is not correct for engines of the same class, due to slight differences in the position of the valve bushing and size of valve rings used.

Perhaps one of the most important items of maintenance is the proper care of superheaters and superheater flues. The superheater is the greatest fuel-saving device, and as the saving in fuel depends on the amount of superheat, it follows that any obstruction which prevents free passage of the hot gases around the superheating units will result in a reduction in superheat and a corresponding reduction in the efficiency. It does not take many trips for superheater flues to become stopped up and unless constant attention in the way of blowing them out in roundhouses is given superheaters will be found only saving perhaps 50 per cent of what they should when properly maintained.

Fuel Department Organization

Although fuel economy depends on proper design, proper operation and proper maintenance of power, it is necessary in order to get real results to have a separate fuel organization. This should consist of a general staff officer, in charge of fuel conservation, who should devote his entire attention to the conservation of fuel on locomotives, in shops, at terminals, water stations and for all miscellaneous purposes. He should also have jurisdiction over the quality, preparation and uniformity of coal furnished. It is important that the cleanest grade of coal should be obtained from each mine in the district from which the fuel supply comes, and a vigorous inspection should be maintained to see that the railroad gets what it is paying for in this respect. Mine weights should, of course, be checked at certain prescribed intervals to know that accurate weights are being obtained.

To carry out his plans, the general fuel officer should have divisional fuel supervisors, who should be assigned a certain territory for all the various details of fuel economy, but whose principal duty should be the education of firemen in the economical firing of engines. The fuel organization should have enough clerical assistants to keep up-to-date records of fuel performances by individual engine, by engineer and by fireman, so that performances on any division can be known and examined at any time. These records give means of locating the cases where an engine or an engine crew is operating wastefully, and they also show what progress is made in saving fuel.

Co-operation with the operating department is, of course, very important. Monthly divisional fuel meetings should be held with the superintendent, master mechanic, divisional officials and such employees as can consistently attend. At these meetings progress reports are made, conditions are analyzed and suggestions invited from all present as to where improvements in engine or train operation can be obtained. General fuel officials should attend these division fuel meetings as often as possible, but the superintendent should be the chairman of the divisional fuel committee and conduct the meetings, as this brings about a more thorough and more uniform understanding of the importance of various matters effecting fuel economy by operating officials who otherwise might overlook some of the details and leave it up to the mechanical department. The minutes of these fuel meetings should be furnished to the general manager, general superintendent, superintendent of motive power, general fuel official, division superintendent, and master mechanic.

Any progressive movement must be backed by educational efforts and great stress is laid on the necessity of constant education of enginemen particularly, as they, of all employees, are most responsible for the coal pile, and also of all others who in any way may be concerned in the use or waste of fuel.

The report is signed by J. B. Hurley (Wabash), chairman; Robert Collett (U. S. R. A.); F. P. Roesch (U. S. R. A.); B. J. Feeny (U. S. R. A.); and G. E. Anderson (Gt. Nor.).

Discussion

W. G. Wallace (American Steel Foundries) emphasized the importance of having a record of the coal consumption immediately available at the end of each trip. If this information is given to the train dispatcher at the end of the run, it makes it possible to check up the coal consumption, taking into account all the conditions surrounding the trip. This helps greatly in fixing the responsibility for excessive fuel consumption, whether it is due to the operating conditions, the mechanical condition of the power or the quality of the coal. E. Hartenstein (C. & A.) mentioned the losses due to slow orders and unnecessary stops. He also touched on the qualifications of locomotive inspectors and stated that men who had received their training in road work were often better qualified than men from the shop. V. C. Randolph (U. S. R. A.) called attention to the important part which the locomotive engineer must play in securing economy in the use of fuel, and advocated that these men should be taught how to operate the engines at the greatest efficiency. Among the common wasteful practices he mentioned especially working the locomotive harder than is necessary. H. C. Woodbridge (U. S. R. A.) stated that irregular action of reverse gears was often responsible for excessive fuel consumption and expressed the opinion that it is necessary to make improvements in these devices. A. G. Kinyon (Fuller Engineering Company) advocated a fuel department organization reporting to the chief executive officer. He brought out that instruction must be supplemented by adequate supervision to get the best results. B. J. Feeny (U. S. R. A.) stated that too much attention is given to accounting for oil and far too little attention to fuel records. He also emphasized the fact that the responsibility for saving fuel extends to all departments.

Caring for Locomotives at Terminals to Secure Efficiency and Increased Mileage

Assuming that the locomotives come from the shops in a condition to readily develop the state of efficiency for which they are rated, the efficiency that can thereafter be maintained and the mileage obtained, will depend largely upon the thoroughness of the work done upon the locomotive during general overhauling periods. The limited facilities of the average terminal plant should neither be required nor expected to make good the shortcomings of the general repair shops.

Increased mileage is but another term for maintenance of a high efficiency, as it pre-supposes less delay along the line due to locomotive troubles, quicker turning at terminals for

service and a greater number of trips between shoppings. The efficiency of the practices in use at terminals, the extent of the facilities available for doing work and the excellence of the work done will in a general sense determine the measure of efficiency that can be expected to be maintained at such places. It follows that a constant striving for the betterment of practices, of facilities and of workmanship, are the essential needs at terminals to maintain locomotives in an efficient state and to increase the mileage obtainable. The traveling engineer should be of valuable assistance to those in charge of terminals in bringing these betterments about.

The question as to what are the best methods of caring for locomotives at terminals is synonymous with, what constitutes good roundhouse practice?

Studied from any angle, these two questions constantly intermingle and seemingly resolve themselves in every case into the same identical set of fundamental requirements which, in turn, constitute equally the basic principles of good roundhouse practice and the essential necessities of locomotive maintenance.

These requirements are: Caretaking inspection of the locomotive by competent locomotive inspectors as soon as possible after arrival at terminal; the obtaining of an intelligent report from the incoming engineer as to the conditions noted during his trip which were detrimental to the efficient operation of his locomotive; the proper cleaning of the fire, ash-pan and front end, and attention to the fire and water while lying at the terminal; a careful inspection by competent workmen of the troubles and defects as reported by the engineer and locomotive inspectors and the making of the necessary repairs and changes in an efficient manner; the furnishing of the proper engine tools and the necessary supplies for the outgoing trip, which will include filling of lubricators and rod cups; frequent riding of the locomotives by the traveling engineer, especially in cases of trouble, the cause of which is in doubt and usually due to a combination of adverse conditions.

With the exception of the last mentioned point, these requirements are incidental to every trip in either direction where inspection and repair facilities are provided for at each terminal. The maintaining of the least reasonable condition of efficiency demands that these requirements must be provided for and carried out at least at the end of each day's work, and is required by the Interstate Commerce Commission rules.

In addition to the points already mentioned, provision should be made for periodical inspections not usually covered in work reports, which will include boiler washing, boiler inspections and inspections of the operating parts enumerated later on; for the carrying in stock of needed supplies of all kinds for making the repairs and for renewals, and for shop equipment and tools necessary for reasonable running repair maintenance.

Engineer's Reports

Inasmuch as there are certain troubles and defects which may have an important bearing on the efficient operation of the locomotive, such as steam blows, pounds, and conditions affecting the steaming properties, which are only discernable when the locomotive is working, an intelligent report from the engineer as to the detrimental conditions noted while running, is of the greatest importance in connection with good maintenance.

There is scarcely a way in which the traveling engineer can be of more use to the mechanical department and be of greater aid in assisting to keep locomotives in an efficient condition than in seeing that engineers' work reports are made out in such a manner as to clearly indicate the part complained of, the nature of the defect to be corrected, the cause of trouble experienced, and in cases where a definite cause cannot be given that the report describes just what takes place.

Locomotive Inspection

The Locomotive Inspection Bureau of the Interstate Commerce Commission has issued rules governing the inspection of locomotives which embrace practically every feature of importance requiring either daily or periodical attention, and including limitations of wear permissible for certain parts. These rules are based upon the practical experience of both the Federal Inspectors and representatives of the most important railroads of the country, and failure to live up to them constitutes a violation of the law.

Carried out in the spirit intended, they stand for good maintenance. Where observed, however, only within the letter of the law, a high state of efficiency is not necessarily indicated, as many of the rules do not cover the best conditions obtainable, but rather the poorest allowable, and the limitations below which it is not permissible to go. The efficiency obtained will therefore depend upon the spirit in which these rules are followed out. The inspection should be thorough and painstaking, inasmuch as defects that result in delays, breakages and failures, are frequently discernable only under the closest scrutiny.

In addition to those parts to which attention is called by the rules referred to, every part subject to wear that would interfere in any way with the efficient working of the locomotive and all parts subject to severe strains, breakages, or loosening effects, including nuts, keys and cotter pins, as well as the condition of all safety appliances, should receive attention. It is a good plan to have an outgoing inspection, covering conditions of air brakes, injectors, electric headlight, and power reverse gear, and for the examination of such parts of the locomotive as were reported for shop attention.

Where for any reason the fire is dumped at the terminal, suitable provision should be made for the inspection and testing of steam and air-operated devices, such as the air brakes, injectors, electric headlight, power reverse gear and similar devices, while still under sufficient steam pressure to operate such parts. This guards against defective conditions in such parts, gives opportunity for repair if any defects are found, and in the case of air brakes, provides for the testing and adjusting of piston travel within proper limits.

All locomotives should be cleaned in order to facilitate the work of inspectors and shop men.

Shop Facilities and Tools

Where the facilities of a general or so-called back shop are not readily accessible, adequate means for doing light repair work of a reasonable nature should be provided in the way of a small machine and blacksmith shop. This should contain at least a lathe, a small shaper, a drill press, a press for pushing bushing in and out, a blacksmith forge and a grind-stone. Such a plant is almost invaluable, providing, as it does, for both quicker and better work as well as assisting in cutting down the cost of maintenance. Arrangements should also be made for a liberal supply of tools in everyday demand, such as drills, taps, reamers, dies, files, wrenches, pipe fitters' and boilermakers' tools and others of like nature not usually provided by the workmen themselves.

The building of larger and heavier locomotives and the increased weight of various parts which have to be handled, demand the more or less constant use of portable cranes, jacks and block and fall, and the same should be provided for quick and safe work. An electric or other type of welding machine has also become practically a necessity in terminals of any size.

Supervision, Qualification and Methods

Competent supervision over mechanical activities at terminals is a most important factor in efficient locomotive

maintenance. Men for these positions should be chosen with particular regard for their general fitness in reference to experience, good judgment, foresight and resourcefulness, as well as for their ability to handle men. Frequently located at points distant from any large terminal through which immediate assistance could be procured, often with poor facilities for doing work and none too competent help, their success or failure depends largely upon their own capabilities and they find a constant demand for the exercise of each of the qualifications mentioned.

Resourcefulness is constantly in more or less demand in devising ways and means to meet the varying conditions incidental to running repair work and in overcoming the unexpected requirements and emergencies that are constantly arising. It may well be added that the interest taken in the work by the supervision will be a dominating feature in the results achieved. Not only should the methods of the workmen be generally watched to prevent loose methods and bad practices creeping in, but the completed work should be frequently examined as a guard against poor work and carelessness.

Turning Power

It must not be overlooked that features other than the maintaining of an efficient locomotive enter into the matter of increased mileage and that insofar as they have to do with the care of the locomotive while at terminals, they must be given due consideration in connection with terminal work.

Increased mileage necessarily implies a greater number of trips to be made between shoppings than previously averaged.

Conditions at terminals which interfere with the promptness with which locomotives may be reached for the purpose of making needed repairs and for being otherwise prepared for a quick return to service, tend to prevent increased mileage.

It is usual to consider the cleaning of fires, the obtaining of coal and water and the turning of the locomotive as adjuncts to the maintenance and care of power. The extent of the provisions made for doing this work and the ease with which the locomotive can reach the points where the work is to be done, is most important in the quick turning of locomotives, and as a means of bringing about increased mileage. Lack of adequate provisions in this respect slows up terminal movements, hinders getting at the locomotive promptly to make the needed repairs, tends to hurried repairs and to work being left undone. If frequently leads to badly congested conditions and serious delays, and fosters carelessness in the various stages of preparing the locomotives for return to service on account of the necessity of crowding them through the terminal in order to turn them with any degree of promptitude, and in general results in poor conditions and delays, neither of which is conducive to increased mileage.

Poor facilities in this respect are especially troublesome at terminal points where more or less severe winter weather is experienced and where during such periods they may be the cause of power conditions becoming very serious.

In this connection it may, therefore, be pointed out that the trackage about terminal plants insofar as it provides for prompt and free movement of the locomotive in conjunction with cleaning fires, obtaining coal and water, getting to and from the turntable and in reaching and departing from the shop, is important in giving more time for the making of repairs and lessening the time required for preparing the locomotive for despatching. In a like manner the adequacy of the provisions made for cleaning the fires, for inspection purposes and for coaling, have an important bearing on the time required in doing such work and on that necessary in getting the locomotive otherwise ready for service.

Responsibility of the Traveling Engineer

The duties of the Traveling Engineer are of such nature as to place upon him a considerable share of the responsibility for the maintenance of the locomotive over which he has nominal control. Being in constant touch with all the conditions that enter into their handling both at the terminals and on the road, he cannot well evade such responsibility.

In various ways as through casual inspection of methods used and work being done when he is around terminals, through riding the locomotive, through investigation of delays and failures and through his contact with the locomotive crews, it is within his power to know just what conditions are prevailing with reference to maintenance. He has the means of knowing whether his engineers are making intelligent reports or not by occasionally looking over their work reports. He has the means of knowing by personal observation and by information gained from delay and failure reports whether inspectors are competent and painstaking in their work or not. Being around terminals for a time at least, daily, he should know whether or not fire, ash-pan and front end cleaning is being done properly, and the locomotive cared for in a proper manner while laying over. He should know by the results obtained as well as by the complaints of the locomotive crew, by his personal experience in riding and by results of investigation of delays and failures whether the work being reported is being properly done or neglected. He can easily ascertain what is done in reference to boiler inspection during boiler washing periods and to other parts during periodical inspection.

In the extent to which he avails himself of this information which is always at his command, and the use to which he applies it in assisting to maintain efficient conditions, or in aiding to bring them about, where such are not of the best, will lie the measure of his share of the responsibility for the conditions which exist. It is scarcely sufficient that he is able to say in explanation of poor conditions, delays and failures, that the work required to better conditions was reported. To be relieved of his share in the responsibility for poor conditions he must be able to show that he made use of all the means within his power to bring about a betterment of conditions. It comes well within the scope of his authority to take up, consult and advise with those in charge of terminals as to conditions which come within his observation that are detrimental to maintenance and efficiency and in regard to which improvement may seem possible.

He will almost invariably find that the information and advice that he can offer as the result of his observations and experience will be most gladly received. As a rule the terminal authorities are more given to complaining of the lack of assistance given them by the traveling engineer than in regard to his insistence on better conditions. He who offers friendly advice and assistance is ever more welcome than he who criticises without offering a remedy.

The traveling engineer should take particular interest in the prevention of operative practices which tend to decrease locomotive efficiency, such as moving engines without opening the cylinder cocks, with its ill effects on cylinder and piston rod packings and the slipping of locomotives in starting them, with its general racking strains.

The report is signed by T. F. Howley, chairman, Joseph Keller, B. J. Feeny, C. W. Corning and J. W. Burrows.

Discussion

W. H. Gallagher (M. K. & T.) advocated a method of adjusted tonnage rating as a means of securing greater efficiency from locomotives. E. R. Boa (N. Y. C.) brought out the necessity for co-operation between the traveling engineer and the roundhouse foreman. F. L. Pierce (C. & A.) described a method of inspection of outgoing engines by traveling engineers which had brought good

results. E. F. Boyle (Sou. Pac.) spoke of the damage to locomotives resulting from improper operation by hostlers, who often moved the engines when the cylinders were filled with water. B. J. Feeny (U. S. R. A.) stated that while good facilities were necessary to secure the best results, a fair degree of efficiency could be secured by giving attention to simple matters which required no elaborate equipment, such as blowing tubes and cleaning grates, as these matters have a great influence on the operating results secured with the engines. W. L. Robinson (B. & O.) mentioned the abuse of locomotives by incompetent hostlers, and stated that traveling engineers should have authority over these men and should instruct them in the proper method of handling engines.

E. S. Boyle (Sou. Pac.) stated that, as a rule, if all the work reported by the enginemen is done, the motive power will be kept in fairly good condition. It is, however, necessary for the traveling engineer to see that the men do not fail to report necessary work. He advocated occasional joint inspection by the traveling engineers, general foremen and master mechanics to check up the engineers' reports.

A resolution was passed stating that it was the opinion of the association there should be responsible engine inspectors and night roundhouse foremen at all engine terminals.

Other Business

At the session held on Friday, the report of the committee on amalgamation with the American Railroad Association was received and discussed. The committee stated that in view of the fact that the duties of the traveling engineer were not strictly mechanical work nor transportation work, but a combination of the two, it believed that the best results would not follow from amalgamation as a division of either the operating section or the mechanical section, but by the creation of a separate section to take over the activities of the Traveling Engineers' Association. This course had been suggested to the officers of the American Railroad Association, but no answer had been received, and in view of this situation the committee was continued.

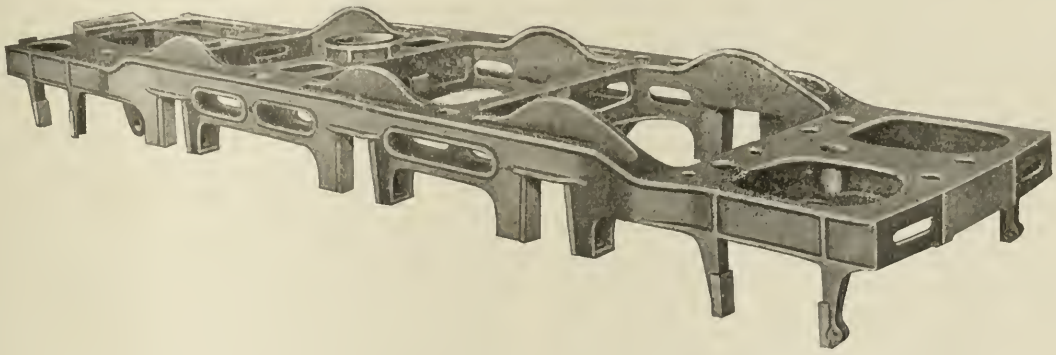
The by-laws of the association were amended to leave the selection of the place of meeting entirely in the hands of the executive committee.

The following officers were elected: President, G. A. Kell, Grand Trunk; first vice-president, W. E. Preston, Southern; second vice-president, L. R. Pyle, Railroad Administration; third vice-president, E. Hartenstein, Chicago & Alton; fourth vice-president, J. H. DeSalis, New York Central; fifth vice-president, E. F. Boyle, Southern Pacific; secretary, W. O. Thompson, New York Central; treasurer, David Meadows, Michigan Central; members of executive committee, F. P. Roesch, Railroad Administration; B. J. Feeny, Railroad Administration; J. Keller, Lehigh Valley.

One-Piece Cast Steel Frames for Electric Locomotives

A NOTABLE EXAMPLE of the large and intricate parts which are successfully made of cast steel is the bed casting for the latest order of electric locomotives built for the New York, New Haven & Hartford. In designing this locomotive, the weight of the built-up frame was found to be so great that the total weight would exceed the allowable limit. For that reason the Commonwealth Steel Company, St. Louis, Mo., was asked to submit a design. The general plan for such a casting had been worked out by the company's engineering department, but the 10 beds for the New Haven locomotives were the first to be made.

The locomotive bed is 32 ft. 4 in. long, weighs 17,000 lb. and is probably the most difficult casting of its kind ever attempted. This single unit replaces a very large number of parts, greatly reducing the weight and increasing the strength. Numerous bolts and nuts have been eliminated that become loose and allow play, especially at the pedestals. This will result in a considerable saving in the cost of maintenance and repairs. This locomotive bed strikingly illustrates the adaptability of cast steel to certain types of construction. It not only provides an irregular contour of members for clearance without sacrificing strength, but also facilitates securing various cross sections of all members, correctly proportioned in size to correspond with various stresses, at the same time providing the required flexibility in the structure.



One-Piece, 17,000-Pound Steel Bed Casting for New Haven Electric Locomotive

Photo Copyright by Underwood & Underwood, N. Y.

Women Section Hands Working on Railroad Line on the Mumansk Front

I. C. C. Recommends Consolidated Classification

Decision Follows an Extensive Investigation. Dissenting Opinion by Commissioner Woolley

IN A REPORT signed "by the commission," the Interstate Commerce Commission recommends to the director general of railroads a consolidated classification to be adopted in place of the present official southern and western classifications by railroads under federal control. The commission finds that this consolidated classification is also reasonable for application by roads not under federal control. The commission says in part:

In our annual reports to Congress we have from time to time mentioned our efforts to stimulate work in the direction of greater uniformity in freight classifications. Early in 1918 it was apparent, in view of the progress already made, that a complete unification of the rules and descriptions of articles in the official, southern, and western classifications was possible at a not distant date, and we accordingly inquired of the carriers why they could not by January 1, 1919, or sooner, effect a consolidation of the three general classifications into one volume containing one set of uniform commodity descriptions with three rating columns, one for each territory, subtended, and with one set of general rules. Shortly thereafter the director of traffic of the railroad administration, after conference with us, appointed a special committee of experienced classification men to carry out the work he had in mind. This committee prepared and submitted a volume entitled "Proposed Consolidated Freight Classification No. 1," which accomplishes the consolidation and uniformity sought, and, in addition thereto, proposes many increases and reductions in ratings, most of which, however, have no necesary connection with the work assigned to the committee. The volume was not filed with us as a tariff schedule.

The director general requested that we make an investigation and give him our recommendations relative to the advisability of adopting it for application by carriers under federal control. We accordingly instituted this proceeding of inquiry and investigation into the reasonableness and propriety of its provisions. We made respondents all of the carriers subject to the act and which were not under federal control, in order that the same classification might, if that course were found advisable, be prescribed for their use also. The special committee distributed about 14,000 copies of the volume among carriers, state commissions, interested shippers and shippers' organizations throughout the country, each copy accompanied by a notice of this proceeding. Hearings were held at Boston, Mass.; New York, N. Y.; Chicago, Ill.; Omaha, Neb.; Portland, Ore.; San Francisco, Cal.; Denver, Colo.; Fort Worth, Tex.; New Orleans, La.; Atlanta, Ga., and Washington, D. C. Nearly 15,000 pages of testimony were taken and over 800 exhibits were filed. The evidence of objectors or protestants was generally confined to the proposed increases, changes in the nature of increases, and new items. In other words, objections to a particular item were not heard unless the item proposed to put some new or added burden upon shippers. Most of the evidence relates to the increased ratings. The consolidation of the classifications and the unification of the rules and descriptions, generally speaking, were received with favor.

As we understand it, the consolidated classification was proposed as a general standard classification to supersede not only the existing issues of the official, southern, and western classifications, but also all state classifications, and at the request of the director of traffic we have received evidence as to the general effect of canceling the various state classifications. That evidence will be referred to later in the report. We were advised by the director of traffic that he had under consideration also the advisability of canceling the exceptions to all classifications, but that commodity rates might be established in lieu thereof in proper cases. That matter, however, has not been referred to us for investigation and recommendation.

The consolidated classification is not a uniform classification in the full sense of the term, because all the ratings are not uniform. In a majority of the items, the ratings are the same as now. The consolidated classification would preserve the identity of the official, southern, and western classifications, and, as finally amended, is intended to be filed with the Commission, with a separate I. C. C. number for each territory. In other words, from a legal or technical standpoint, it is to be three classifications in one volume. It is not much larger and is no more complicated than any one of the three general classifications now in use.

The consolidated classification is the result of effort toward uniformity extending over a long term of years, and since uniform rules and descriptions are necessary before uniformity in ratings is possible, it marks an important step toward a uniform classification. Definite action in the direction of uniformity was taken about 10 years ago, when the carriers created their committee on uniform classification, to which was assigned the duty of working out a common set of rules and descriptions for the three general classifications. This committee made disappointingly slow progress, largely because of technical considerations and the disposition of the carriers in each territory to force their views and measures of expediency upon the carriers in the other territories. It was abolished shortly after the proposed consolidated classification was prepared.

The special committee which prepared the consolidated classification consisted of the chairman of the committee on uniform classification, the chairman of the Official and Western Classification committees, a member of the Southern Classification Committee, now its chairman, and our classification agent. In consolidating the classifications and unifying the rules and descriptions the members of the special committee are understood to have been guided largely by their own ideas. They were not of one mind in respect to some of the changes they have proposed in the rules and descriptions. Numerous concessions were made and some long standing and deep rooted controversies growing out of territorial or local traffic policies were cast aside. There are instances in which the existing rules as to a given situation and the descriptions, even of like articles, differ widely in the three classifications, and in respect of certain items some radical changes were necessary in order to accomplish the desired uniformity.

As stated, the consolidated classification also proposes many changes in ratings. The special committee was not directed, however, to change ratings where that was not necessarily or reasonably incident to changes in descriptions. The task assigned to the special committee was merely the completion of the work begun years ago by the committee on uniform classification, which committee had nothing whatever to do with ratings. The changes in ratings were proposed, not by the special committee as a body, but by the representatives of the respective territorial committees, individually and on their own initiative. The representative of each classification committee undertook a realignment of the ratings in his

own classification, in accordance with what he conceived to be proper principles and considerations. Our representative on the special committee had no voice in fixing any of the proposed ratings. There was no concerted effort to make the ratings uniform, but the desirability of uniformity seems to have been kept in mind, and as to a number of items where there were considerable differences in the existing ratings in the three classifications, changes were proposed which effected a greater degree of uniformity, particularly in the higher classes. Changes proposed for the purpose of attaining a greater degree of uniformity have more of an upward than a downward trend.

The table below, showing the nature and number of changes and new items proposed, was prepared by the special committee and submitted with its report to the director of traffic:

Nature of changes	Number of changes in the classifications			
	Official	Southern	Western	Total
Increase in ratings	890	2,574	393	3,857
Reduction in ratings	478	898	464	1,840
Carload ratings eliminated*	136	1	4	141
Increases in minimum weights	342	599	194	1,135
Reductions in minimum weights	229	73	61	363
Carload minimum weights to which rule 34 is added, subjecting them to the graduate scale	39	49	132	220
Additions or new items	1,144	1,665	425	3,234
Total	3,258	5,859	1,673	10,790

*The number of carload ratings established does not appear, but they are included in the reductions.

A Uniform Classification

We have stated that the consolidated classification marks an important step toward a uniform classification. Our hitherto most important case in which the matter of classification uniformity was considered was the *Western Classification Case,* 25 I. C. C., 442, decided December 9, 1912. In that proceeding the lines parties to the western classification sought to establish a large number of changes, including revised rules and descriptions which had been recommended by the committee on uniform classification. We there discussed classification matters rather fully and stated that in our opinion a uniform classification was practicable, but that there were great difficulties to be overcome, particularly in so far as uniform ratings are concerned. In the instant case several traffic organizations, one or two state commissions, and a number of the shippers who would be adversely affected by the changes proposed in the consolidated classification as a result of efforts toward uniformity went on record as being opposed to, or at least not advocating, a uniform classification, contending that there are such wide differences in conditions in the various parts of the country as to make a uniform classification impracticable and undesirable. We are now, as formerly, fully convinced that a uniform classification, with such exceptions or commodity rates as may be necessary in special cases, is practicable and desirable, and practical uniformity should not be unnecessarily delayed. Naturally there must be both increases and reductions, which may adversely or advantageously affect individual shippers and carriers, but a broad view of the situation justifies the statement that carriers and shippers alike will be amply repaid in the end by the benefits which will accrue from uniformity. The fact that a uniform classification would be of convenience is a consideration of relatively minor importance; we have advocated uniformity because it is an essential part of the general scheme which contemplates greater consistency in rate making and elimination of discriminations and inequalities.

Placing the ratings in juxtaposition in three parallel columns opposite the descriptions impresses us as never before with the great lack of consistency that exists among the three classification territories. Many of the inconsistencies are due to considerations of minor importance and could be removed without changes in rate scales and, in our view, without serious effect upon any one, particularly in so far as less-than-carload ratings are concerned. In large part different ratings in the three territories are not due to actual or substantial differences in circumstances and conditions, but are the result of mere differences of opinion and the natural inclination of traffic officials to give expression to their respective theories of classification. For instance, on furniture in less than carloads, the chairman of the official committee, following a practice of long standing in his territory, proposes the same rating for the articles wrapped as for the articles boxed or crated. The chairmen of the southern and western committees in some instances do the same thing; in others they do not, but propose ratings one or two classes higher for articles wrapped than if boxed or crated. Moreover, the proposals of the three chairmen, even as to one and the same article of furniture, are in some cases directly opposed to each other.

General Observations

As we have pointed out, most of the increases proposed have no necessary connection with the work of consolidating the rules and descriptions. None of them, except such as were necessarily or reasonably incident thereto, were contemplated by us when we suggested a unification of the rules and descriptions, and, as we understand it, were not in the mind of the director of traffic when he appointed the special committee. When the case was assigned for hearing we did not realize that there was such a vast number of changes that had no necessary connection with the work required of the special committee.

The director general did not intend that the consolidated classification should be a revenue measure, and the chairmen of the classification committees disclaim any purpose on their part to make it such. While in fact it would yield the carriers some additional revenue, the record is convincing that, in the main, the proposed increases reflect conscientious efforts to bring about a proper relationship of ratings and to fairly distribute transportation expenses over the various articles of traffic.

A study of the changes in ratings proposed by the classification chairmen disclosed inconsistencies in each territory which apparently we could not endorse. We therefore made a comprehensive analysis of the existing and proposed ratings to ascertain whether or not we could properly recommend, with modifications, the somewhat general revision of ratings proposed, or an amplification of those proposals. We find that we can not properly recommend either for the reason that many and important changes as to which interested shippers have had no notice or opportunity to be heard would be included.

Our analysis of existing and proposed ratings was made with a view of also ascertaining what changes in existing ratings other than those proposed would, in the judgment of our classification and general traffic experts, formed without fully hearing shippers or carriers that would be affected thereby, be proper to propose in any general revision of ratings having for its principal purpose attainment of a higher degree of uniformity. The results of this analysis appear in Appendix No. 6, and constitute practically a uniform classification so far as the first four classes are concerned. The results of this laborious work are thus preserved. They will be available and valuable in the future as efforts in the direction of uniformity progress. They must be understood to be the tentative views of our expert assistants who heard the case and in no sense as findings or conclusive suggestions by us. However, the suggestions in this appendix, so far as they affect descriptions, packing specifications, and minimum and estimated weights are adopted as recommendations by us without prejudice.

We can not recommend the increased ratings as proposed,

nor can we recommend, with modifications, those proposed unaccompanied by many others that have not been proposed and as to which no opportunity for hearing affected parties has been afforded. We shall not recommend any changed ratings except as the establishment of new items may indirectly effect changes, and such changes as may be a necessary part of the establishment of uniform descriptions of articles, uniform minimum weights, or uniform packing requirements. Our recommendations as to such changes will not prejudice any complaint that may be filed as to individual changes that are believed by complainant to result in unreasonable rates or in undue prejudice.

Commissioner Woolley, dissenting in part, said:

At the close of the majority report, 54 I. C. C., 1, 72, I reserved the privilege of announcing separately my views on this subject. The course this proceeding has taken and the conclusions announced by the majority lead me to the conviction that our administrative functions have been pressed into the background by a seemingly nice, yet in my judgment a wholly unwarranted, judicial finding, which unhappily prevents expedient and effective progress toward a result urgently sought by the commission itself for more than a score of years.

The Congress was first apprised by the commission in 1897 of the desirability of a uniform classification, and 10 years later, 1907, was informed that the carriers then had taken definite steps to establish it. Also in this latter year the National Association of Railway Commissioners unanimously adopted a resolution requesting the Congress to "enact a law requiring the Interstate Commerce Commission at once to proceed to make a uniform classification * * *." Since then in nearly every annual report for the past 10 years the commission has informed the Congress of the progress—rather lack of progress I would say—made by the carriers toward the end sought. Apparently the theory was that the task should primarily be left to the carriers to work out, and that course was followed. After at least 10 years' endeavor real results were still in the promising stage, and it was not until the properties and operations of the carriers fell under federal control that the commission finally succeeded in having brought forward suggestions for greater uniformity in the concrete form of a consolidated classification. Judging from previous progress this was possible only because the railroads of the country were being operated as a unit under a single directing head.

The director general did not seek by independent action to give effect to the proposed classification; he did not assume the responsibility of filing the classification pursuant to the regulating statute, but simply sought our recommendations as he was authorized to do under section 8 of the federal control act, and we so reported the situation to the Congress. I mention these facts merely to emphasize the status in which the classification reached us and to make it plain that the recommendations sought could be given as a matter of course without adversely affecting the legal rights of shippers. Their day in court could not be taken from them in that way.

Presumably, in the light of the commission's inquiry as to the possibility for complete uniformity of "rules and description" by January 1, 1919, and the fact that the consolidated classification contemplated an even greater and more important degree of uniformity in the sense that it proposed greater uniformity in ratings and numerous other changes, the director general was disinclined to file it as a classification without first obtaining the recommendations of the commission. Be that as it may, the form of presentation left us free to bring into play our administrative functions unhampered by technical legal strictures. There was no issue presented for trial and no judicial finding to be reached under the act to regulate commerce, unless, technically, the commission itself raised such an issue by making respondents the comparatively few short lines not under federal control, which are sustained largely by their share of trunk line rates governed by the three principal classifications now in force. As I view the situation, however, we were asked only for recommendations, and were free to give them, in an administrative sense, both as to the carriers under federal control and the remaining few that had been relinquished, without prejudicing the rights or interests of either shippers or carriers.

Based upon the same deep study followed by the experts on the several classification committees and the special committee created by the Railroad Administration, and after a wide field of inquiry and hearing, the combined judgment of our attorney-examiner and classification agent was not only to sustain in a large measure the suggested changes in ratings but to advocate the immediate adoption, as shown in Appendix No. 6 of the majority report, of almost complete uniformity with respect to the first four classes as well as the partial uniformity suggested in the remaining classes. With commendable prudence they worked over the mass of detail and out of it marshalled a real approach toward the result the commission has sought for more than a score of years. The parts of the work which proposed substantial uniformity in ratings, and likewise the parts of the work of the several committees which proposed desirable changes —I refer to the proposals and suggestions that reach beyond uniformity of "rules and description"—are passed to the director general by the commission, not with recommendations, but, as I read the majority report, with the suggestions that these parts be merely laid upon the shelf labeled "preserved for future reference." In course of a few years we may again hear of this work, but is it not likely then to be labeled "obsolete"?

There has thus been another move in what may be likened to a game of chess commenced in 1897; the director general passed to the commission the question of changed ratings and the commission passed it back. The reason assigned for declining to make recommendations in respect of ratings is "that many important changes as to which interested shippers have had no notice or opportunity to be heard would be included." To my mind this means about the same as sustaining a demurrer to a dilatory plea in an ordinary lawsuit, rather than the exercise of an administrative function. We have ample authority under section 15 of the act to prescribe reasonable classification ratings and rates, and in my judgment the commission will not accomplish the uniformity in classification which for years it has been seeking, and which it evidently believes would be reasonable, until we affirmatively exercise our administrative functions in that direction.

In the recommendations made I concur only because they are a step in the right direction; but I am unwilling to acquiesce in declining recommendations in respect to uniform ratings upon the ground that changes are suggested of which shippers have had no notice or have not been heard, when the rights of such shipper are amply protected by the statute.

In expressing this view I do not wish to convey the impression that I favor, either in the form of uniform classification ratings or otherwise, substantial increases in rates for revenue purposes. I am opposed to that course and have been since the beginning of this proceeding; moreover, the presentation of the proposed classification was accompanied by an express disavowal that it was intended as a revenue measure. The point I wish to emphasize is that recommendations looking toward uniform ratings and the prompt establishment of a uniform classification could have been made without, in a legal sense, approving or authorizing increased rates. If any unwarranted and unjustifiable rate increases resulted such shippers as found themselves adversely affected promptly could seek and secure relief under the provisions of the regulating statute.

General News Department

The Seaboard Air Line has decided to use oil fuel in the locomotives on its lines south of Hamlet, N. C., and has contracted for a supply of oil from Mexico.

The Mechanical Section of the American Railroad Association has given notice that the Rules of Interchange as revised in June, 1918, will be continued in effect until November 1, 1919.

The House of Representatives has passed a bill taking away from the President the power to change rates without the approval of the Interstate Commerce Commission. The House bill amends a bill already passed in the Senate and now goes to conference.

The Brotherhood of Railway and Steamship Clerks, Freight Handlers', Express and Station Employees has been ordered to take a strike vote to enforce demands made to the Railroad Administration by the Brotherhood on August 18, according to statement accredited to J. J. Forrester, president of the brotherhood.

W. Merrifield, lately sergeant in the British army, but now a fireman on the Algoma Central & Hudson Bay, was invited to board the royal train when the Prince of Wales passed over that line, and was invested by the prince with the Victoria Cross. Sergeant Merrifield won this decoration at Cambrai in October, 1918.

The Sandusky (Ohio) Chamber of Commerce has instituted a campaign for the early realization of the project to build a bridge across Sandusky Bay with available tracks for the Northwestern Ohio, thereby giving it an entrance to Sandusky. A general committee of bankers, manufacturers and merchants has been appointed to push the project to completion.

The city of Youngstown, Ohio, has applied for a writ of mandamus to force the Erie to proceed at once with grade separation work in that city. The application claims that the road has not proceeded with due diligence to acquire land needed for the elimination of a number of crossings and in the meantime property values have advanced, which will mean a loss to the city, as it is responsible for 35 per cent of the expenses.

Several hundred claims against the American Railway Express Company, for goods lost, were the subject of a conference of merchants in Philadelphia last week, the claims being for packages which were collected from shippers by a thief, disguised as a truck driver for the express company. Whether or not the claims have been presented to the company is not stated. The merchants are going to demand payment for their losses on the ground that the express company is responsible for failure to prevent the unauthorized use of its drivers' uniform.

"Fire-Prevention Day," October 9, is to be converted, this year, in Chicago, into a "fire and accident prevention day." The Chicago Association of Commerce has promulgated this title, and has urged all residents of the city to co-operate in the reduction of accidents and in the prevention of fires. October 9 is the anniversary of the Chicago fire, and public exercises are to be held. The circulars issued in this campaign refer repeatedly to the success of the Railroad Administration in conducting its "no-accident week" and similar campaigns.

Sir Alfred W. Smithers, chairman of the board of directors of the Grand Trunk Railway of Canada, has agreed to submit to arbitration the question of the terms on which the Grand Trunk System shall be transferred to the Dominion Government, the decision of the arbitration tribunal to be accepted as final by both sides. The Government has offered the directors an annual rental of $3,600,000, this amount being based on the average earnings of the last ten years. The directors asked $5,800,000, basing their demand on the net receipts in 1913.

At the threshold of bankruptcy, is the present position of the railroads of America, according to Robert F. Maddox of Atlanta, Ga., president of the American Bankers' Association. The statement was made in the course of an address before the Illinois State Convention of the American Bankers' Association, held recently at La Salle, Ill. The cause, Mr. Maddox declared, was that the nation's roads never had been able to convince the federal rate making body of their financial need. His address also included a plea for a solution of the present railroad problem that would be free of all political consideration.

Six and a half miles is the latest airplane altitude record; made near New York on September 18, by Roland Rohlf. The exact indicated height was 34,610 ft., and it is officially reported. This is 5,610 ft. higher than the highest peak of the Himalayas, the highest mountain in the world. At about 17,000 ft. the airplane became invisible from the earth and was out of sight for an hour. The aviator wore an oxygen mask, and began inhaling oxygen when he was at a height of 20,000 ft. For twenty minutes he was in a temperature of 43 degrees below zero. The management of the machine in the rarefied air above 31,000 ft., was very difficult. On the following day Rohlf rose from the ground to a height of 2,000 ft. in ten minutes.

A train robbery on the Canadian National, near Harlaka, a short distance from Quebec, on the morning of September 18, is said to have netted the robbers $100,000. The train was the Ocean Limited, eastbound. Five masked robbers appeared in the mail car, while the train was in motion, having smashed in the rear door of the car; and after intimidating the mail clerks, and taking the money, which was in coin, in bags, they jumped off the train while it was approaching the next station, St. Thomas; the robbery was not discovered, however, until the train had run about 25 miles farther, to Cap St. Ignace, where the conductor became suspicious at the silence in the mail car. He went in, and found the five clerks bound with ropes.

Dr. John D. Robertson, health commissioner of the City of Chicago and head of the Smoke Prevention Bureau, recently declared, in connection with a smoke prevention drive he is now conducting, that smoke from locomotives in the city of Chicago must be eliminated. Just how this can be accomplished Dr. Robertson is not quoted as saying. A recent newspaper statement quotes him as saying: "I don't care how the railroads end the smoke nuisance. They can use smokeless coal, change their boilers or do anything they desire, but the smoking engines must stop. No excuses will go." Railway executives, master mechanics, and locomotive firemen and engineers were called into conference in Dr. Robertson's office and plans were formulated for reducing the smoke nuisance insofar as the railroads entering Chicago are concerned.

The United Mine Workers of America, in convention at Cleveland, Ohio, in addition to advocating an alliance with the railroad brotherhoods, have further co-operated with the latter in opposition to the clauses in the Cummins bill, now pending in the Senate, prohibiting strikes in the railroad industry. In addition, they have formulated a demand for a 60 per cent increase in wages, a limit of six hours upon the lay's labor underground, a five-day week with time and a half for overtime and double time for work on Sundays and holidays. A joint wage scale conference is to be held with

the operators of the central competitive district at Buffalo, N. Y., at which a new agreement will be discussed. Should no agreement be reached at this conference in time to be ratified by the convention, which will be reconvened at Indianapolis for that purpose, a general strike of all bituminous coal miners in the United States will automatically ensue on November 1.

A shortage of labor, housing and storage facilities has led to a congestion of freight at the Detroit (Mich.) terminals and as a result an embargo on less than carload freight has been considered as a means of eliminating this congestion. The terminal warehouses are full of household goods, in addition to which there is a large accumulation at the present time in cars on the terminal tracks that is unable to reach the terminal warehouses. In addition many families arriving in Detroit with their household effects have been forced to reship them to their former homes because of the congestion. Efforts are being made to force consignees to remove their shipments at the end of the three-day storage period allowed them and it is hoped by this means to eliminate the congestion to a certain extent. It is believed by railroad operating officers at Detroit that if freight can be moved from the terminal warehouses within the three-day time limit, much of the present trouble will be eliminated and the railroads will be able to handle the situation without placing an embargo in effect.

Florida is the latest state to be advertised by the Railroad Administration. Its advantages as an agricultural state are presented in an illustrated booklet issued by the Division of Traffic, Agricultural Section. P. H. Rolfs, dean of the Florida Agricultural College, who extends a welcome to homeseekers, says that the opportunities offered by Florida are unsurpassed in any part of America; and America is the best of the world. "Florida is a land of undeveloped opportunity, as well as a land of almost unlimited agricultural possibility. It is a land in which agriculture is new, giving an opportunity for the largest range of imagination and constructive ability. . . . Nature has done almost everything to make this an ideal land for agricultural development. The cold is rarely severe, even in northern Florida, and the hottest summer days are comparatively mild, sunstroke being unknown. The educational advantages of the state are second to none. . . ." Ralph N. Greene, State Health Officer, writes about health conditions. Dependable information is given regarding the state's farm production, transportation facilities, markets, roads, schools, churches and living conditions.

Meeting of Western Chief Special Agents

Chief special agents and heads of special service departments of all roads in the Central Western Region attended a meeting at Chicago on September 12, called by Hale Holden, regional director of the Central Western Region, at the request of R. S. Mitchell, chief of the Secret Service and Police Section of the United States Railroad Administration, to form a permanent regional organization of chief special agents and heads of special service departments for co-operative work of material benefit for the protection of property. Emmett Gregg, chief special agent of the Atchison, Topeka, & Santa Fe, with office at Topeka, Kans., was elected president of the new organization; H. A. Koach, inspector in the Secret Service and Police Section of the Railroad Administration, was appointed inspector at Chicago, and James Dahlman, also an inspector in the Secret Service and Police Section, was appointed inspector at Omaha, Nebr. The new association will appoint a committee having among its members representatives from railroad centers throughout the region. It will be the duty of this committee to appoint other committees at the smaller terminals or junction points. The chief special agent of the line having the most business at these points will designate his special agent as chairman of these subcommittees. Mr. Mitchell has also appointed an advisory committee of chief special agents, one from each region in the United States, who will meet with him to further direct the work. T. E. Pratt, chief special agent of the Chicago, Burlington & Quincy, with office at Chicago, will represent the Central Western Region on this committee.

Pullman Conductor's Pay Further Increased

A readjustment of the wages of sleeping and parlor car conductors has been made by the Railroad Administration which gives these men, numbering about 24,000, a further increase of from $10 to $15 a month, retroactive to May 1, 1919. This increase is in addition to the general raise of $25 which was granted under general order No. 27 (April 14, 1919). That increase was based on incorrect data concerning working conditions, and the Pullman conductors did not receive an increase on a par with other railroad employees. The Railroad Administration calls attention to the fact that the present is not a further increase resulting from the demands of employees, but merely a readjustment to correct an error.

Safety on the Southern Pacific

In announcing the National Railroad Accident Prevention Drive, R. J. Clancy, in charge of this work for the Southern Pacific, Lines South of Ashland, calls attention to the fact that during the last 12 years the Southern Pacific has transported approximately half a billion revenue passengers (19,000,000,000 revenue passenger miles) with such a high degree of safety that, relatively, a passenger may travel on the Southern Pacific the equivalent of seven hundred and sixty thousand times around the world without danger of loss of life in a train accident. One of the safest places in the world is on a Southern Pacific train. "We have demonstrated ability to safeguard the traveling public, but what about safeguarding each other? Are we manifesting the same degree of interest and care in safeguarding ourselves? Our record in this respect is good, but we can make it better."

American Legion on the Pennsylvania

Employees of the Pennsylvania Railroad, at the general office in Philadelphia, who have been in the military or naval service, number over 1,400, and "Pennsylvania Railroad Post, No. 204," of the American Legion has just been formed. Over 500 men attended the first meeting, and were enrolled as charter members. Twelve such posts have been started on the lines of the Pennsylvania, east of Pittsburgh, and it is expected that the national body will approve of the wish of the employees to call these, permanently, Pennsylvania Railroad Posts. Altogether, on the eastern lines of the Pennsylvania, over 18,000 employees entered the military or naval service in the World War. Among those who have joined Post No. 204, are Brigadier General W. W. Atterbury, Colonel H. C. Booz, Colonel C. M. Bunting, Lieutenant-Colonel J. W. Study and Lieutenant-Colonel I. A. Miller. The president of Post No. 204 is Claude Liddy and the Secretary, J. M. O'Brien.

The President's Labor Conference

President Wilson has announced a list of 22 men whom he has invited to represent the general public at the conference to be held at Washington, October 6, to discuss relations between capital and labor. Twenty-two representatives of labor and an equal number of employers are also to be selected. The President's list is as follows:

Bernard M. Baruch of New York, former chairman of the War Industry Board; Robert S. Brookings of St. Louis, former chairman of the Price Fixing Committee of the War Industries Board; John D. Rockefeller, Jr.; Elbert H. Gary, chairman, United States Steel Corporation; Dr. Charles W. Eliot, president Emeritus of Harvard; Charles Edward Russell, of New York; John Spargo, of Vermont; O. E. Bradfute, Xenia, Ohio, president Ohio Farm Bureau Federation; Ward Burgess, Nebraska; Fuller R. Callaway, La Grange, Ga., cotton manufacturer; Thomas L. Chadbourne, New York; Charles G. Dawes, president Central Trust Company, Chicago; H. B. Endicott, Milton, Mass.; Edwin F. Gay, dean graduate School of Business Administration, Harvard University; George R. James, Memphis, Tenn.; Thomas D. Jones, Chicago; A. A. Landon, Buffalo; E. T. Meredith, Des Moines, Iowa, editor Successful Farming; Gavin McNab, San Francisco; L. D. Sweet, Carbondale, Col.; Louis Titus, San Francisco.

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF JULY, 1919

Name of road.	Average mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
Peoria & Pekin Union	19	$211,066	$27,206	$681,733	$122,393	$264,442	$5,905	$340,020	$37,472	$970,333	142.33	—$288,601	$66,500	—$355,101	—$225,967
Pere Marquette	2,232	14,107,838	3,181,708	18,699,576	2,276,316	3,672,601	195,722	7,930,819	501,958	14,645,491	78.31	4,054,085	360,628	3,691,670	1,636,032
Philadelphia & Reading	1,127	31,816,985	6,122,298	40,252,121	4,189,301	10,621,789	257,380	20,251,329	918,099	36,354,467	90.31	3,897,654	1,002,597	2,894,964	—4,531,256
Pittsburgh & Lake Erie	224	13,260,132	1,446,346	16,023,307	3,077,482	4,686,007	103,065	5,707,283	305,868	1,388,714	86.64	2,140,593	528,500	1,611,860	—2,955,408
Pittsburgh & West Virginia	63	588,533	67,664	747,572	417,610	277,481	8,680	364,486	36,962	1,151,034	153.96	—413,463	82,033	—495,600	—483,042
Philadelphia, Bethlehem & N. E.	71	.....	.....	473,354	56,541	88,515	2,207	291,061	7,802	446,128	94.24	27,228	9,483	17,745	—107,415
Pittsburgh & Shawmut	103	590,485	29,845	630,084	222,587	291,781	11,277	244,553	21,342	791,539	125.62	—161,455	6,789	—168,244	—202,084
Pittsburgh, Cincinnati, Chic. & St. Louis	2,383	34,416,976	12,412,161	51,999,624	6,499,984	15,719,963	588,753	23,779,950	1,207,869	48,278,409	92.84	3,721,215	1,669,189	2,050,362	—573,677
Pittsburgh, Shawmut & Northern	204	538,695	40,748	600,687	162,478	329,853	6,869	254,043	47,322	800,592	133.27	—199,906	12,854	—212,777	96,378
Port Reading	21	890,313	.....	1,457,128	118,366	88,439	110	713,420	7,565	927,898	63.67	529,230	63,000	466,230	226,404
Richmond, Fredericksburg & Potomac	81	2,280,818	2,057,022	4,701,293	390,400	602,553	30,769	1,524,897	91,629	2,708,645	57.61	1,992,649	87,958	1,904,616	641,681
Quincy, Omaha & Kansas City	255	380,323	173,775	591,996	240,498	104,322	1,685	307,201	9,839	661,185	111.68	—69,189	21,278	—90,531	—804
Rutland	415	1,435,543	725,025	2,622,129	443,829	658,604	50,093	1,274,713	79,012	2,510,578	95.74	111,551	131,146	—21,630	8,669
St. Joseph & Grand Island	258	1,256,749	300,300	1,643,166	535,174	237,532	12,734	906,554	80,355	1,579,323	96.11	63,843	64,721	—942	—73,765
St. Louis, Brownsville & Mexico	548	1,948,497	873,929	2,987,985	498,617	504,568	38,558	892,549	110,985	2,044,976	68.43	943,009	70,000	872,647	438,894
St. Louis Merchants Bridge Terminal	9	.....	4,302	1,557,089	393,825	297,057	5,231	1,231,870	41,990	1,969,972	126.51	—412,883	56,000	—468,892	463,424
St. Louis-San Francisco	4,761	28,023,850	12,058,094	42,231,843	6,847,215	8,655,999	364,851	16,582,595	1,247,816	33,569,461	79.48	8,662,382	1,658,141	6,988,173	1,633,897
St. Louis, San Francisco & Texas	134	676,601	99,112	830,135	146,969	138,825	11,455	458,528	42,014	797,791	86.10	32,344	10,641	21,573	—152,008
St. Louis Southwestern	939	5,687,587	1,175,068	7,158,918	1,244,987	1,666,934	118,039	2,310,142	268,513	5,653,018	78.96	1,505,900	305,029	1,198,912	—1,128,149
St. Louis Southwestern of Texas	814	2,484,020	810,693	3,515,927	945,416	1,257,543	55,556	1,872,588	163,966	4,285,885	121.89	—769,958	147,600	—917,601	—826,059
San Antonio & Aransas Pass Ry.	732	1,569,878	620,358	2,341,350	666,602	726,415	42,129	1,308,280	118,870	2,859,631	122.13	—518,281	105,000	—623,809	—392,104
Seaboard Air Line	3,563	14,367,233	7,630,072	24,056,037	3,457,346	5,050,592	422,722	11,516,884	749,278	21,385,562	88.89	2,670,475	945,000	1,722,027	—1,103,758
St. Louis Transfer	6	.....	.....	572,307	80 703	83,854	1,371	285,585	15,148	466,661	81.54	105,646	700	104,946	37,591
South Buffalo	11	250,308	.....	636,667	32,112	112,340	2,065	361,673	12,906	521,095	81.84	115,572	25,667	89,905	—150,903
Southern	6,982	43,513,506	21,473,463	70,372,555	12,750,633	15,744,683	851,859	31,385,108	1,844,118	63,102,936	89.66	7,269,619	2,270,647	4,954,998	—11,460,534
Southern Ry. in Mississippi	278	572,257	313,559	951,226	253,654	138,219	15,995	546,875	28,779	983,519	103.39	—32,293	63,000	—95,444	—58,616
Southern Pacific	7,049	60,517,056	23,558,694	90,736,529	15,831,922	18,454,644	777,636	35,253,200	1,618,303	73,676,815	81.19	17,059,714	4,368,718	12,673,700	—1,384,374
Spokane International	156	451,337	109,577	578,013	115,513	53,224	11,563	201,221	30,565	410,431	71.00	167,582	32,006	135,576	—31,502
Southern Pacific Steamship Lines	...	5,160,635	324,305	5,802,195	68.829	1,534,558	83,069	4,407,517	175,246	6,269,220	108.04	—467,025	81,049	—548,074	—682,880
Spokane, Portland & Seattle	554	2,775,900	991,220	4,062,019	729,445	609,622	40,529	1,418,615	135,371	2,948,186	72.57	1,113,833	414,400	699,129	—800,103
Staten Island Rapid Transit	23	580,223	542,587	1,291,413	178,831	180,304	6,860	691,605	62,307	1,120,907	86.79	170,506	87,000	83,464	74,369
Tennessee Central	293	1,027,801	326,477	1,441,666	551,646	369,477	19,919	698,452	46,458	1,685,146	116.88	—243,480	35,945	—279,567	—455,358
Terminal R. R. Assn. of St. Louis	36	.....	23,505	2,101,324	508.095	398,446	5,487	973,897	40,489	1,950,614	92.83	150,710	185,705	—35,004	—137,919
Texarkana & Ft. Smith	87	599,928	116,340	792,147	142,238	141,506	7,560	373,481	22,594	682,653	86.17	109,493	46,518	62,919	—82,100
Texas & New Orleans	469	2,950,080	1,157,246	4,462,343	837,032	1,238,647	33,414	1,646,112	100,606	4,028,786	90.28	433,558	149,490	280,419	—786,152
Texas & Pacific	1,946	13,150,078	5,232,816	19,329,545	2,788,012	4,059,745	173,688	9,076,886	502,435	16,748,049	86.64	2,581,495	609,823	1,968,803	—281,429
Toledo & Ohio Central	435	4,189,885	441,340	4,899,442	867,973	1,576,275	44,979	2,123,095	116,202	4,745,716	96.86	153,726	224,633	—70,949	—264,041
Toledo, Peoria & Western	247	526,670	337,075	912,019	196,071	262,637	15,157	484,256	39,052	994,733	109.06	—82,714	59,500	—142,214	—48,008
Toledo, St. Louis & Western	454	3,646,328	270,382	4,116,245	760,214	901,174	38,957	1,798,409	81,599	3,578,742	86.94	537,504	182,000	355,400	—374,313
Trinity & Brazos Valley	368	518,601	134,924	686,157	265,081	306,951	12,042	408,444	51,508	1,044,029	152.13	—357,871	40,002	—397,944	—196,642
Ulster & Delaware	128	354,442	100,829	583,945	99,147	131,274	9,849	445,307	32,031	721,104	123.48	—137,159	33,600	—170,812	—125,940
Union R. R. of Pennsylvania	40	.....	.....	4,453,655	536,192	124,937	1,845	2,397,232	52,751	4,211,902	94.57	241,753	50,282	191,471	267,192
Union Pacific	3,614	41,330,082	12,338,183	58,516,716	8,793,537	10,866,626	319,140	17,117,144	1,638,745	40,114,613	68.55	18,402,102	1,619,868	16,777,380	1,200,298
Utah	98	603,493	3,786	614,507	80,713	145,251	1,499	128,246	14,095	369,803	60.17	244,703	26,547	218,156	—145,686
Vicksburg, Shreveport & Pacific	171	1,165,696	527,239	1,818,445	318,368	405,439	19,506	692,371	57,715	1,509,264	82.99	309,182	71,393	237,510	—12,194
Virginian Ry.	522	5,153,987	387,844	6,140,977	1,046,958	1,486,603	33,421	2,369,391	114,948	5,044,393	82.14	1,096,584	254,000	842,576	—438,635
Wabash	2,504	19,564,833	5,643,983	26,945,568	4,074,700	5,025,307	375,276	13,987,277	794,829	24,408,333	90.58	2,537,234	752,592	1,780,890	—952,090
Washington Southern	35	939,441	1,407,121	2,793,408	243,506	279,181	17,704	835,286	44,257	1,450,123	51.91	1,343,286	45,983	1,297,266	529,596
West Jersey & Seashore	361	1,948,700	3,941,339	6,319,190	1,443,446	1,260,390	56,612	3,265,098	148,936	6,210,275	98.27	108,915	321,971	—213,539	174,543
Wichita Falls & N. W.	328	814,032	260,525	1,129,058	321,765	178,411	8,498	624,314	48,987	1,181,976	104.68	—52,919	65,543	—118,739	128,507
Western Maryland	704	6,720,530	588,652	7,968,386	1,528,965	2,640,124	123,201	3,297,081	299,895	7,969,019	99.98	1,368	302,400	—301,032	—147,051
Western Pacific	1,011	5,233,280	967,343	6,455,186	1,693,314	1,272,934	84,574	2,176,956	159,904	5,509,008	85.34	946,178	324,811	620,671	—907,502
Western Ry. of Alabama	133	818,476	574,563	1,496,746	185,934	304,322	20,414	570,826	44,568	1,150,081	76.83	346,666	52,500	294,165	—4,216
Wheeling & Lake Erie	511	6,050,101	362,360	7,089,877	1,361,405	1,618,165	42,457	2,863,796	18,016	6,081,752	85.78	1,008,125	383,400	623,889	—238,657
Yazoo & Mississippi	1,382	9,534,523	2,900,564	13,004,067	2,185,561	2,859,653	106,997	5,090,701	338,466	10,416,783	80.10	2,587,284	409,485	2,175,997	60,383
Northern Alabama	112	521,253	90,020	633,157	152,385	38,963	9,051	424,359	13,147	637,760	100.72	—4,604	24,100	—28,704	—188,058

REVENUES AND EXPENSES OF RAILWAYS

SEVEN MONTHS OF CALENDAR YEAR 1919

Name of road.	Average mileage operated during period.	Operating revenues — Freight.	Operating revenues — Passenger.	Operating revenues — Total (inc. misc.)	Operating expenses — Maintenance of — Way and structures.	Operating expenses — Maintenance of — Equipment.	Operating expenses — Traffic.	Operating expenses — Transportation.	Operating expenses — General.	Operating expenses — Total.	Operating ratio.	Net from railway operation.	Railway tax accruals	Operating income (or loss)	Increase (or decr.) comp. with last year
Alabama & Vicksburg	141	$1,040,620	$425,409	$1,566,344	$301,840	$383,398	$12,367	$635,205	$60,712	$1,425,331	90.99	$141,013	$77,418	$63,435	—$91,789
Alabama Great Southern	312	4,165,183	1,387,698	5,853,541	808,757	1,526,425	93,325	2,381,251	129,171	4,977,592	85.03	875,949	168,795	706,243	—100,277
Ann Arbor R. R.	301	1,829,454	390,883	2,347,685	400,359	393,029	34,637	1,133,730	77,909	2,040,167	86.90	307,519	109,700	197,452	163,122
Arizona Eastern	377	1,745,577	311,791	2,204,806	546,024	337,083	15,381	711,506	56,619	1,692,119	76.74	512,687	113,973	398,518	—396,002
Atchison, Topeka & Santa Fe	8,640	63,334,307	25,238,659	93,250,467	13,510,703	22,195,138	993,332	34,717,643	1,796,536	72,938,130	78.21	20,312,337	3,825,789	16,464,407	—7,713,334
Atlanta & West Point	93	741,481	651,694	1,550,968	191,628	289,489	20,675	590,674	44,987	1,154,023	74.40	396,945	59,500	337,406	—19,066
Atlanta, Birmingham & Atlantic	639	2,160,513	519,001	2,853,192	809,909	918,737	48,050	1,717,716	86,331	3,581,312	125.51	—728,120	112,000	—841,373	—590,145
Atlantic City	177	881,974	1,486,788	2,496,594	304,855	338,763	10,035	1,215,101	9,669	1,879,087	75.26	617,512	84,000	533,512	213,607
Atlantic Coast Line	4,859	23,851,628	11,358,870	37,471,601	5,422,163	7,982,723	413,335	16,461,665	777,603	31,270,877	83.45	6,200,724	1,460,000	4,728,999	—1,395,753
Baltimore & Ohio Chicago Terminal	90	....	3,053	1,006,790	231,260	310,124	7,827	852,740	64,660	1,499,776	148.96	—492,986	196,465	—690,007	—59,384
Baltimore & Ohio	5,151	69,900,053	18,866,284	96,080,418	14,965,843	31,215,554	1,110,935	43,993,577	2,690,827	94,717,604	98.58	1,362,814	2,575,845	—1,221,346	—2,564,668
Baltimore, Chesapeake & Atlantic	87	533,455	268,989	830,067	105,684	318,110	7,277	519,540	24,145	974.757	117.43	—144,690	22,120	166,810	139,562
Bangor & Aroostook R. R.	632	2,279,256	508,764	2,930,855	596,728	804,866	28,085	1,160,165	90,008	2,719,251	92.78	211,604	147,000	62,707	—120,286
Beaumont, Sour Lake & Western	118	515,382	168,006	718,350	190,345	140,389	12,448	335,184	36,026	714,392	99.44	3,957	18,900	—15,020	—280,565
Belt Ry. Co. of Chicago	31	....	....	1,943,229	174,431	363,802	2,540	1,232,107	53,418	1,826,298	93.98	116.931	108,062	8,870	—24,230
Bessemer & Lake Erie	217	6,702,140	237,160	7,122,065	765,218	2,218,742	77,203	2,314,589	136,130	5,483,976	76.99	1,638,089	101,500	1,536,496	—134,081
Bingham & Garfield Ry	37	626,154	14,386	669,221	273,906	268,324	9,427	194,884	30,035	791,135	118.21	—121,914	47,294	—169,207	—1,030,426
Birmingham Southern R. R	29	257,355	....	347,453	28,451	44,879	4,861	158,590	22,732	259,513	74.67	87,940	12,305	74.709	—49,557
Boston & Maine	2,258	22,491,170	12,054,620	38,564,067	5,479,633	7,749,452	286,818	21,443,716	1,187,478	36,376,365	94.32	2,187,702	1,229,638	957,321	—69,175
Buffalo & Susquehanna R. R. Corp	252	1,115,154	49,012	1,231,096	291,667	609.890	12,175	429,880	53,283	1,396,895	113,46	—165,798	22,750	—188,548	—230,705
Buffalo, Rochester & Pittsburgh	589	6,570,066	874,385	7,733,140	1,321,585	2,788,116	103,195	3,946,813	229,737	8,404,469	108.68	—671,328	189,000	—860,849	—1,099,689
Canadian Pacific Ry. Lines in Maine	233	1,253,060	364,823	1,703,390	340,616	399,745	18,264	1,119,911	25,642	1,904,178	111.78	—200,788	77,000	—277,788	—51,534
Carolina, Clinchfield & Ohio	282	3,016,748	225,580	3,306,195	533,516	849,661	33.264	1,044,158	92,833	2,553,043	77.21	753,151	11,400	638,971	159,773
Central New England	301	3,320,258	167,325	3,651,731	879,029	692,219	18.554	1,738,886	101,026	3,436,356	94.10	215,374	112.000	103,149	—109,491
Central of Georgia	1,918	7,318,524	3,613,015	12,034,783	2,290,646	2,480,843	239,133	5,297,820	409,720	10,709,974	88.99	1,324,808	413,597	906,439	—1,301,626
Central Ry. Co. of New Jersey	685	18,095,473	4,599,142	24,549,468	2,880,094	6,282,296	166,903	11,675,454	613,631	21,723,804	88.48	2,825,664	1,102,153	1,723,345	—1,275,614
Central Vermont Ry	411	2,310,593	567,054	3,162,567	616,870	823,632	53,169	2,015,966	123,092	3,640,580	115.11	—478.013	121,800	—599,939	—325.569
Charleston & West Carolina	342	1,270,829	353,843	1,699,008	299,656	306,056	30,120	862,386	38.753	1,537,071	90.46	161,937	59,500	102,437	—144,036
Chesapeake & Ohio	2,501	30,230,472	8,855,094	41,443,383	6,533,614	9,060,101	255,830	16,224,730	776,540	33,070,926	79.79	8,372,457	1,185,241	7.183,424	802,729
Chicago & Alton	1,050	9,895,492	3,593,052	14,301,866	2,390,583	3,925,742	179,127	6,145,204	344,494	13,053,327	91.27	1,248,539	394,054	853,239	—422,429
Chicago & Eastern Illinois	1,131	9,945,191	2,732,402	13,664,945	2,154,897	5,146,174	155,496	6,071,924	330,911	13,899,804	101.71	—234,859	556,592	—794,401	—1,553,908
Chicago & Erie	269	4,652,016	689,160	5,807,846	703,528	1,015,018	75,298	3,037,592	197,332	5,048,331	86.92	759,515	211,608	547,820	818,387
Chicago & North Western	8,090	50,050,590	19,439,781	75,871,922	11,623,970	15,837,880	506,444	34,978,638	1,701,832	65,225,575	85.96	10.646,347	3,325.000	7.316.026	2,657,739
Chicago, Burlington & Quincy	9,372	56,253,062	19,124,578	81,553,471	12,984,795	16,451,140	610,417	32,710,164	2,213,440	65,814,853	80.70	15,738,618	3,126.296	12,592,800	685,003
Chicago Great Western	1,496	7,416,025	3,409.953	11,669,630	1,995,939	2,134,172	182,429	5,275,362	311,058	10,588,289	90.73	1,081,341	403,543	676,397	241,386
Chicago, Indianapolis & Louisville	657	4,474,258	1,585,094	6,656,402	797,193	1,613,192	96.550	2,634,606	186,245	5,589,212	83.96	1,067,190	255,731	810,900	339,214
Chicago Junction Ry.	12	....	....	2,013,876	496,646	345,488	745	1,601,271	52,011	2,496,162	123.94	—482,285	16,359	—498.645	—375,782
Chicago, Milwaukee & St. Paul	10,647	57,467,802	17,024,600	81,710,902	12,196,829	24,190,049	647,127	38,583,335	2,175,774	78,070,883	95.54	3,640.020	3,659.337	—36,334	—473,142
Chicago, Peoria & St. Louis	247	679,209	167,971	905,171	263,048	454,533	20,118	578,995	62,360	1,379,047	152.35	—473,876	50,466	—524.357	—355,977
Chicago, Rock Island & Gulf	474	1,834,472	576,050	2,551,097	452,765	507,153	48,748	1,193,632	82,249	2,291,376	89.81	259,721	92,084	167,331	—409,907
Chicago, Rock Island & Pacific	7,594	38,415,452	17,073,793	58,930,132	9,571,789	13,883,378	709,165	26,110,755	1,410,703	51,935,138	88.13	6.994,993	2,448,924	4.542,364	—586,424
Chicago, St. Paul, Minneapolis & Omaha	1,749	9,789,009	4,179,224	14,992,392	2,131,542	2,802,033	141,357	7,201,832	416.522	12,789,520	85.30	2,202,872	724,442	1,475.744	457,568
Chicago, Terre Haute & St. Louis	374	1,980,300	148,904	2,186,490	372,556	1,033,386	22,824	875,125	59.678	2,374,284	108.58	—187,794	101.500	—289,312	—292.716
Chicago, Indianapolis & Western	321	1,128,414	360,655	1,647,858	332,107	507,245	34,975	921,138	92,313	1,892,291	114.83	—244,433	71,720	—316,153	—280,419
Cincinnati, Lebanon & Northern	76	458,969	49,616	607,316	111,331	127,745	9,315	350,397	6,420	605,209	99.65	2,108	30,250	—28.143	—65,758
Cincinnati, New Orleans & Texas Pacific	337	6,843,178	2,167,727	9,472,091	1,180,324	3,039,228	162,362	3,525,306	220,780	8,184,595	86.40	1,287,496	269.119	1,014,624	—293,060
Cincinnati Northern	251	1,489,627	123.527	1,654.383	266.296	372,072	15,867	590.187	34,470	1,278,891	77.30	375,492	58,500	316.840	220.526
Cleveland, Cincinnati, Chic. & St. Louis.	2,395	26,275,285	9,312,766	38,560,155	5,036,681	7,807,979	537,584	16,090,292	778,522	30,561,098	79.25	7,999,057	1,295,000	6,698.600	464,201
Colorado & Southern	1,100	5,584,507	1,313,129	7,285.090	1,170,831	1,688,734	60.641	2,766,638	250,802	5,982,575	82.12	1,302,516	329,000	971,075	—344,693
Colorado & Wyoming Ry	41	167,253	8,486	653,418	72,079	124,303	1,035	299,375	26,669	523,460	80.11	129,959	28.000	101.959	—33,746
Cumberland Valley	163	2,465,970	478,120	3,144,829	571,322	747,828	45,954	1,300,757	80,225	2.751.269	87.48	393,560	61,199	332,081	—498,138
Delaware & Hudson Co	875	16,468,085	1,636,018	19,197,558	2.481,836	5,468,062	128,825	8,681,561	757,569	17,730,263	92.35	1,467,295	420.000	1,040,119	1.215,400
Delaware, Lackawanna & Western	955	29,426,270	6,841,400	40,504,367	3,972,574	8,489,020	288,397	17,359,092	782.472	31,299,315	77.27	9,205,051	2,175,721	7.015.245	—770,442
Denver & Rio Grande R. R	2.614	12,469,713	3,477.416	16,939,257	2.726,866	4,436,418	136,995	5,984,613	479,591	14,055,953	82.97	2,883,305	730,000	2,150,311	—298,519
Denver & Salt Lake R. R	255	1,228,493	224,701	1,499,910	518,635	602,592	6,648	896,145	34,270	2,058,290	137.22	—558,380	63.000	—621.436	—284,971
Detroit & Mackinac	381	621,206	213,026	881,205	143,617	248,787	22,462	448,102	79,287	941,965	106.89	—60,759	52,533	—113.293	—122,403
Detroit, Toledo Shore Line	61	1,297,837	....	1,330,672	130.284	127,343	6.848	372,403	27,562	663.852	49.88	666,820	69.496	597,317	171,610
Detroit, Toledo & Ironton	456	1,810,792	84,641	2,029,978	610,529	700,580	18,683	984,388	90,578	2,404,759	118.46	—374.781	—57,074	—432,165	16,494
Duluth & Iron Range	292	4,187,659	157,701	4,658,573	552,810	634,344	3,104	1,238,596	97,763	2,527,717	54.25	2,130,857	233,899	1.896.393	282,144
Duluth, Missabe & Northern	410	10,995,542	304,465	11,642,917	1,039,422	918,556	15,142	2,054,485	128,317	4,164,922	35.77	7,477,995	398,957	7,079,038	2,326,411
Duluth, South Shore & Atlantic	599	1,808,284	655,080	2,626,733	547,974	472,075	42,178	1,311,482	66,314	2,473,479	94.16	153,255	143,003	10,134	31,240
Duluth, Winnipeg & Pacific	178	908,641	164,575	1,113,163	206,700	219,054	17,251	509,321	55,116	1,013,886	91.08	99,277	58,175	41.101	—675
East St. Louis Connecting	3	....	....	676,557	99,647	174,720	2,015	443,148	23,613	743,487	109.89	—66.931	17,111	—84.042	—43,629
El Paso & South Western	1,027	5.522,818	1,246,146	7,135,586	1,086,672	1,411,176	67,601	2,055,539	176,186	4,848,507	67.94	2,287,079	381,082	1,905,561	—1,269,305
Elgin, Joliet & E.	827	10,282,541	34	11,953,463	1,041,273	2,929,329	47,791	4,574,538	177,632	8,770.041	73.36	3,183,422	38,254	2,800,987	699,257
Erie R. R.	1,989	37,454,576	7,714,471	49,700,458	5,999,354	16,485.109	431,665	25,283,062	1,403,651	49,880,155	100.36	—179,698	1,781,622	—1,974,591	2,971,987
Florida East Coast	764	3,499,414	1,933,114	6,094,263	1,002,416	1,095,623	55,913	2,823,165	111,383	5,160,704	84.68	933,559	258,033	674.551	—1.086,308
Fonda, Johnstown & Gloversville	88	226,980	448,519	703,491	76,105	62,769	4,326	276.253	35,131	454,583	64.61	248,908	34,300	214,608	2.730
Ft. Smith & Western	253	601,016	176,112	834,116	165,719	209,555	25,593	310,843	44,853	759,849	91.09	74,267	35.000	38,460	11,116

The Condition of the Cotton Belt

The tracks of the St. Louis Southwestern, in Texas, are unsafe for normal operation, according to a telegram given out at Austin by the chairman of Texas Railroad Commission, the telegram being signed by J. M. Herbert, president of the railway company. The telegram, as printed in Texas papers, reads:

"Undoubtedly portions of the St. Louis Southwestern tracks in Texas have reached a point through failure and neglect of maintenance by Railroad Administration of unsafe condition for normal operation, as evidenced by accidents killing and injuring employees and others, traceable directly to inadequate inspection and maintenance. In my opinion it is the duty of your commission to make an immediate inspection with view of having conditions improved. If you desire any assistance or further information from me shall be glad to respond."

The commission replied to Mr. Herbert with a request for detailed information, promising to make inspections where necessary.

The St. Louis Southwestern is in the Southwestern Region, B. F. Bush, regional director, and the federal manager is William N. Neff.

Public Ownership Conference

With the railroad question and the Plumb Plan solution of the railroad problem "the first and most important subject on the program," a public ownership conference will be held under the auspices of the Public Ownership League of America in Chicago on November 15, 16 and 17. The general purpose of the conference, as stated in the announcement "is to study the problems of public ownership, to get the ideas of the most careful and competent utility experts in America, to hear the methods and plans of those who have made a success of public ownership in this and other countries and to devise ways and means for the advancement of the public ownership, efficient operation and democratic control of public utilities." Glenn E. Plumb, author of the Plumb Plan for government ownership of the railways and their operation by the railway employees, will speak, and may, according to the announcement, enter into a debate on the subject, the negative side of which will be taken by a representative selected by the United States Chamber of Commerce, provided, of course, this organization accepts the invitation which has been extended to it. Lawrence B. Finn, chairman of the Kentucky State Railroad Commission, W. L. McKenzie King, leader of the Liberal Party in Canada and Frank P. Walsh, formerly of the War Labor Board will also speak on the railway problem.

National Agreement with Shop Unions

Heretofore the shopmen have had local agreements with the railroads being operated under the United States Railroad Administration. For some time the representatives of the shopmen and of the Railroad Administration at Washington have been working on a national agreement which should supersede the local agreements. Such an agreement has now been worked out and, in general, agreed on between the representatives of the Administration and the shopmen. It is expected that this agreement will be signed in the near future. In general, it does not change existing agreements materially, but simply incorporates the provisions of these agreements into a comprehensive national agreement. The scale of wages is not raised, it is understood, but the shopmen are left free to apply for higher wages on account of the increased cost of living and, in general, the form of agreement is like that entered into between the four brotherhoods and the Railroad Administration.

Pennsylvania's Relief to Soldiers; $257,454

E. B. Hunt, superintendent of the Pennsylvania Railroad Voluntary Relief Department reports that from the time of the outbreak of the trouble on the Mexican border in 1916, to August 1 of this year, he has paid to the beneficiaries of those employees who were members of the Relief Fund and who were killed or died from other causes, while in military or naval service, $182,000; to members incapacitated on account of sickness or accident while in military or naval service, $44,130, and to dependent members of the families of these men $31,324.

At the outbreak on the Mexican border the directors of the railroad company granted furloughs to employees who entered military or naval service and a special fund was created to provide financial assistance for these employees, as well as their families, in case of necessity. In April of the following year when the United States declared war on Germany, it was decided to continue the same arrangement during the world war, and employees who were members of the Relief Fund and who were disabled while in military or naval service, have regularly received the benefits provided by the rules. A special bureau was established in Philadelphia, which kept in touch with the military authorities; and the Voluntary Relief Department made prompt payment of benefits accruing to employees in the same manner as though they had been in the service of the railroad at the time.

Steel Strike Situation

The strike in the steel mills in the Chicago district, after continuing for almost two days without serious clashes between police, mill guards and strikers, resulted, on September 24, in fighting between strikers and workers leaving the plants. At the Indiana Harbor, Indiana plant of the Mark Manufacturing Company eight or ten men were badly beaten and others slightly injured in clashes between the loyal workers and members of the unions which are on strike. Very little change is recorded in the strike situation in the Chicago district. Union officers and company officers have issued statements concerning the situation which do not agree. The Elgin, Joliet & Eastern Railway, which is owned by the Steel Corporation and handles much of tonnage to the steel producing districts near Chicago, has not experienced any serious trouble so far and is handling regular tonnage already fabricated. However, the traffic from the cement plant to the steel mills has been practically eliminated because of the closing down of many of the furnaces. No action has been taken in the Chicago district by members of the railroad brotherhoods in regard to the strike.

Senator Hoke Smith Denounces Plumb Plan

Senator Hoke Smith of Georgia recently stated his position in regard to the Sims bill, in which is embodied the Plumb plan for government ownership of the railways and their operation by the employees, in a letter to Atlantic Coast Line Shop Federation officers in reply to a letter requesting him to aid in the passage of this bill. Senator Smith's letter in part is as follows:

"I desire to answer you with entire frankness. I am opposed to the 'Plumb Bill,' and do not believe it will receive considerable support in Congress. I feel sure it should not receive such support. I have had a number of letters from my constituents with reference to it, and all, except railroad men directly interested in the bill, have protested against its passage. I do not believe the railroad men will urge it when they fully understand it.

"As you perhaps know, for many years I have earnestly sought to help the men employed in the railroad service to better their conditions. I have insisted that the owners of the roads should not be permitted arbitrarily to fix the pay of the men, or to fix the conditions under which they were to work, and that the men were entitled to a hearing, and that finally, if the men and the owners could not agree, impartial arbitration should settle their disputes. This was the position of the brotherhoods for many years, and the right of arbitration was contested by owners of the properties.

"It is proposed in the 'Plumb Bill' that these properties bought by the Government shall be operated by the National Railway Operating Corporation, which is to be a corporation without capital stock; the Board of Directors, Official Employees and Classified Employees to constitute the corporation. The bill provides that the corporation is to be operated by fifteen directors, five named by the President and confirmed by the Senate, and five by the Classified Employees and five by the employees other than classified. But the employees, without putting up a dollar, are to have ten of the directors and control the corporation.

"The 'Plumb Bill' therefore proposes that one hundred and ten millions of people buy eighteen billions of dollars worth of property and turn it over to be controlled by a Board of Directors, two-thirds of whom are selected by the employees of the railroads.

"The proposition is so unreasonable it scarcely deserves serious discussion.

"Again, how could you obtain the railroads by issuing the

bonds. The owners would not be compelled to sell except for money. It would probably be necessary to go into the markets and sell the bonds. We know the difficulty with which we sold Liberty and Victory bonds. It required the patriotic enthusiasm of the entire people to absorb them. It created a vast quantity of credit, and to a substantial extent, disorganized the business of the country. To put eighteen billions more of bonds upon the market would be most unwise.

"Furthermore, if such a course was justified as to railroads it would be justified as to all other industries. It would be justified as to farms. The amount of the bond issue would reach a fabulous sum. It would be to substitute Russian conditions for our own.

"Now, let me say to you a word which comes from my sincere regard for you, and my earnest desire for your welfare.

"Last year the payroll of the employees of the railroads was increased approximately one billion dollars. It may be that this amount was not equally distributed among the employees. If so, adjustments should be made. But this one billion dollars increased the cost of living of all the people. It went to increase freight rates and increased passenger rates. The necessities of life became more expensive as a result of this increased compensation to the railroad employees. This one billion dollars is carried by the farmer, by the man in town, and by the man in the city. Not only did the railroad employees receive their increase in pay, but they received approximately five hundred millions of dollars in back pay.

"Be wise and be reasonable. Do not allow yourselves to be persuaded to adopt extreme measures. You have won the confidence of your fellow citizens. In years past you have enjoyed their intense sympathy. You cannot afford to lose it. You cannot afford to put yourself in the position of seeking to force discriminatory advantages.

"When you were opposed I fought for you, and now I beg of you not to take action which will place you in the position of seeking to do injustice to others."

Shortage of Automobile Cars

On account of the acute shortage of automobile box cars in the Michigan-Ohio territory, R. H. Aishton, regional director of the Northwestern Region has issued instructions to suspend the loading of automobile cars at all points within 500 miles of Chicago and expedite these empty cars east through Chicago. The only exception to this order is actual automobile loading within the restricted territory.

Master Car and Locomotive Painters' Convention

The Master Car and Locomotive Painters' Association met at the Hotel LaSalle, Chicago, on September 9, for its forty-eighth convention, with J. F. Gearhart, foreman painter, of the Pennsylvania Railroad at Altoona, Pa., presiding. The association was welcomed by a representative of the Chicago Association of Commerce, following which the president addressed the convention and the secretary-treasurer presented his report. The association then proceeded to the consideration of technical papers.

At the Wednesday morning session the question of amalgamation with the American Railroad Association was considered and it was voted unanimously to join as a division of the Mechanical Section.

Roadmasters' Association Elects Officers

At the closing session of the thirty-seventh annual convention of the Roadmasters' and Maintenance of Way Association in Chicago on Thursday of last week the following officers were elected for the ensuing year: President, J. W. Powers, supervisor, N. Y. C., Rochester, N. Y.; first vice-president, W. P. Wiltsee, principal assistant engineer, N. & W., Roanoke, Va.; second vice-president, L. M. Denny, supervisor, C. C. C. & St. L., Indianapolis, Ind.; secretary, P. J. McAndrews, roadmaster, C. & N. W., Sterling, Ill., (re-elected); treasurer, Coleman King, supervisor, L. I., Jamaica, N. Y. (re-elected). Directors: J. B. Baker, supervisor, general manager's staff, Penn. R. R., Philadelphia, Pa.; R. J. Vaughan, general roadmaster, U. P., Green River, Wyo.; T. E. White, roadmaster, A. C. L., Sumter, S. C.

Traffic News

All previous records for the handling of livestock cars were shattered at the South Omaha, Nebr., yards on Monday, September 15, when the receipts of stock cars totaled 1,337 cars. Again on Friday night, September 19, a record for the month of September was established for the loading of live stock cars at the same yards, a total of 475 cars being loaded and moved.

Thomas J. Lipton, Inc., London, Eng., has established a traffic department in Chicago with A. C. Hedlund as western traffic manager. Mr. Hedlund was formerly connected with the Chicago office of the Southern Pacific for fifteen years, holding various positions. He was foreign trade agent of the Southern Pacific at Chicago previous to the closing of that office by the Railroad Administration. Since that time he has been connected with the Trans-Oceanic Company, with office in Chicago.

The United States Grain Corporation recently announced that it is paying country grain dealers thousands of dollars each week under the terms of an agreement that any dealer unable to ship at least 20 per cent of his holdings within a given week is entitled to 3½ mills a bushel a week from the corporation to cover interest and insurance charges. The shortage of cars for shipment of grain has resulted in many claims being made for such allowances and these are being paid by the Grain Corporation.

Dracos A. Dimitry, traffic manager of the New Orleans & South America Steamship Company, New Orleans, La., has been placed in temporary charge of that concern's new office in Chicago. Mr. Dimitry was for a number of years connected with the traffic departments of the Southern Pacific and the New Orleans & North Eastern, with office at New Orleans, La., and before serving in the war as an army aviator he was traffic manager of the Great Southern Lumber Company at Bogalusa, La.

The Traffic and Transportation Bureau of the Tacoma (Wash.) Commercial Club and Chamber of Commerce, believing that shippers should express their views on the question of proposed railroad legislation, has adopted a plan for the solution of the railroad problem. This plan is based largely upon the plan adopted by the Chamber of Commerce of the United States, but with a number of changes. Copies of the plan have been forwarded to members of the Senate and House committees on interstate commerce for their consideration.

The Railroad Administration's report on export traffic for the week ending September 17 shows 6,899 cars of commercial export freight received at North Atlantic ports, as compared with 941 cars for the same week of 1918, an increase of 5,958 cars or 621 per cent. At South Atlantic and Gulf ports there were 8,925 cars of export freight on hand on September 16, as against 8,621 cars one week previous, an increase of 304 cars. For the week ended September 17 there were 14,885,043 bushels of grain in elevators at North Atlantic ports and at South Atlantic and Gulf ports 9,211,442 bushels. The elevators at Port Arthur were empty.

Macon (Georgia) Prepares for Railway Strike

The Macon (Ga.) Chamber of Commerce, fearing the possibility of a general railroad strike, has organized a fleet of 500 motor trucks to haul freight to and from Macon in event threats of the leaders of the railroad unions to call a nation-wide strike of employees should materialize. Furthermore, the motor truck division of the transportation department of the Chamber has organized a force of drivers and adopted plans for conserving supplies of gasoline and lubricating oil. This motor transportation plant was formed primarily to insure an adequate food supply coming from the rural

districts around Macon, but it could also carry merchandise to farms and country towns.

Also, the Chamber of Commerce has adopted resolutions advocating amicable settlement of the differences between the railroads and their employees, opposing any steps that may constitute a surrender of the carriers to bolshevistic tendencies.

Civic and commercial organizations of Georgia have been informed of the action taken and their cooperation requested. It is proposed to establish motor express lines, paralleling the railroads and connecting with each other.

Refrigerator Car Shortage

Some interesting facts on the production and movement of perishables have been compiled by William Sproule, district director of the United States Railroad Administration at San Francisco, Cal. His view of the car shortage situation, insofar as California perishables are concerned, is as follows:

"The fruit and vegetable crops throughout the United States have been very large and shipments heavy. Every car that could be had anywhere has been pressed into this national service. The fruit is carried in special trains and returning refrigerator cars have preference over every kind of freight except livestock. The production of fruit was greatly stimulated during the war, but no refrigerator cars could be built. This stimulation is still felt and it naturally creates an acute demand for each refrigerator car in this year when the crops requiring such cars are heavy everywhere from California to Georgia, and from Florida to the Pacific Northwest. It is a crop surplus rather than a car shortage. For the past three months shipments from California were about 50 per cent above the same period last year. During the first twelve days of the current month, the Pacific Fruit Express alone furnished 71 per cent more cars for fruits and vegetables in California than during the same days in 1917, and 66 per cent more than during the same days in 1916. For the five months, June to October, inclusive, the increase in shipments of fruits and vegetables this year will probably be about 45 per cent and possibly 50 per cent above last year."

Terminal Committees to Expedite Car Movement

The traffic managers at Kansas City, Mo.; Omaha, Nebr.; Peoria, Ill.; Des Moines, Iowa; Davenport, Iowa, and Alton, Ill., and the chairmen of the local operating committees at Denver, Colo., and St. Joseph, Mo., have been instructed by Hale Holden, regional director of the Central Western Region, to create a special committee at once to specialize in the handling of all equipment matters at terminals under the jurisdiction and supervision of the terminal managers and chairmen of the local operating committees. The purpose of these committees will be, in general, to expedite the handling of equipment at terminals in order to relieve, as far as possible, the present acute car shortage. A study of methods of speeding up road and yard movement, securing heavier loading equipment, establishing and maintaining complete and accurate yard checks, reducing the number of bad order cars, making prompt delivery to connections, effecting earlier deliveries at freight houses and team tracks, preventing delays and abuse of equipment loaded with company material and expediting movement of grain cars in terminals will be made. In addition the committees will give particular attention to the service to and from industries and to interchange between lines. It is believed by means of this study and work that much lost motion in the delivery of cars to industries, either loaded for unloading or empty for loading, and in taking away such cars promptly when they are ready to move, either as loads or empty, will be taken up. The men selected by the terminal managers and the chairmen of the local operating committees to serve on the special committees are to belong to the terminal organizations and be carried on the payrolls of the present employing road. In addition, as many outside inspectors as are necessary to make the committee's work effective are to be employed and the committee will function as a separate department of the terminal organization.

Commission and Court News

State Commissions

The Railroad Commission of California has received from Tehama County an appeal that the Commission compel the Southern Pacific to proceed with the construction of a subway under its tracks near Red Bluff. The county officers declare that the plans for the subway have been approved by the county, the highway commission and the railroad and that the county is ready to proceed with its share of the work. It is asserted in the application that eight months ago the railroad sought delay due to the fact that labor and material were increasing in cost, that furthermore this condition is likely to continue and that therefore no further delay should be tolerated.

Nebraska is again suffering from the seasonal shortage of grain cars, according to a bulletin issued by the Nebraska Railway Commission. This shortage bids fair to be as severe as that of 1916 with a difference that at the present time the price of grain is fixed, whereas in 1916 the price was steadily rising. After considering the matter carefully, the commission decided that it would make no efforts this fall to see that cars were equitably distributed between railroad stations and between shippers at stations. This position was taken because, under the decisions of the Supreme Court, the federal government has supreme power in handling the railroads during the period of government control and state commissions cannot attack its jurisdiction.

Personnel of Commissions

Simon J. McLean, whose appointment as assistant chief railway commissioner of the Board of Railway Commissioners of Canada was announced in the *Railway Age* of September 12, was born on June 14, 1871 in Quebec, Que., and was educated at private and public schools in that city. He was graduated from the University of Toronto in 1894 and from 1894 to 1897 he was a graduate student in economics at the Universities of Toronto, Columbia and Chicago. From 1897 to 1902 he was professor of economics and sociology at the University of Arkansas, in addition to which he served as an expert on railway commission legislation and as a special commissioner on railway rate investigations for the Department of Railways and Canals of Canada. From 1902 to 1905 he was associate professor of economics and social science at the Leland Stanford Jr. University, California. In 1903 and 1904 he served as expert in charge of railway valuation in the Rocky Mountain states for the Bureau of the Census and the Interstate Commerce Commission. From 1906 to 1908 he was associate professor of political economy at the University of Toronto and in 1908 was appointed a member of the Board of Railway Commissioners of Canada. He was re-appointed for a second term in 1918, in which capacity he served until his recent promotion.

Court News

"Stop, Look, Listen"

The Pennsylvania rule as to the traveler's duty to stop, look and listen before attempting to cross a railroad is somewhat more stringent than in the majority of the states. It is an absolute and unbending rule that a traveler must stop, look and listen before he crosses any tracks. If he has done this and then proceeds, the question whether or not he has thereafter exercised proper care and whether it is necessary for him to stop again, is held a question for the jury. The fact that the first track was a siding on which cars impeded the traveler's view did not, the Pennsylvania Supreme Court holds, relieve him from the obligation of the rule. It has also been held that when a driver stops at a point where an

obstruction prevents a proper view of the railroad, he must descend from his vehicle, and, if necessary, walk to a point where the prospect is clear.—Benner v. Philadelphia & Reading (Pa.), 105 Atl. 283.

The Alabama Supreme Court holds that a person attempting to cross a railroad track on which cars and locomotives are liable to be passing cannot recover for simple negligence of the railroad unless he stops and looks in both directions and listens; and this duty is absolute at any railroad crossing, whether in a city or the country, or whether the track crossed be the main line or a side track, and regardless of the frequency of passing trains.—A. C. L. v Jones (Ala.), 80 So. 44.

Employers' Liability Act

An employee was injured while riding to work on an engine provided by his employer. His regular work consisted in cleaning fires and coaling locomotives, part of which were engaged in interstate commerce. The New York Appellate Division holds that he was at the time of injury engaged in interstate commerce within the act.—Lindstrom v. New York Central, 174 N. Y. Supp. 224.

Fires from Sparks

In an action for damages from fire from a locomotive, the Connecticut Supreme Court of Errors holds, Gra. Rock Spring Co., v. Central New England Ry. Co., 105 Atl. 350, that evidence of other fires, and of the emission of sparks, and of the finding of cinders, should be limited in point of time and place to facts having some probative value in establishing the probable cause of the particular fire in question. The admissibility of such evidence is a matter of judicial discretion.

Intrastate Shipments—Limitation of Liability

Where rates for intrastate shipments are based on the value of the property as set out in the contract, the Kansas Supreme Court holds that a provision thereof limiting the carrier's liability to that amount is valid, even with respect to loss occasioned by its negligence. In the absence of evidence to the contrary, it will be presumed that the tariffs in use by a carrier have been properly filed with the utilities commission.—Kennedy v. Atchison, T. & S. F. (Kan.), 179 Pac. 314.

Burden of Proof of Non-Delivery

The burden rests upon the shipper, in an action against a railroad, to establish the fact of nondelivery of freight. The New York Appellate Division holds that the mere fact that the goods were receipted for at destination by a third party was no evidence of nondelivery to the consignee, in the absence of proof that such party was not authorized to accept the goods on his behalf; nor was hearsay evidence of an assertion by the consignee that he had not received the goods.—Hirsch v. L. V., 174 N. Y. Supp. 68.

Refusal of Train Men to Extinguish Timber Fire

The Pennsylvania Supreme Court has repeatedly held that where a railroad company takes the necessary precautions and employs a proper mechanism to prevent the escape of sparks from its engines, there can be no recovery of damages for any injury which results simply from the throwing of sparks, provided the mechanism is in proper condition. A somewhat different question arose in a recent case. A fire started on land contiguous to a railroad's coal branch, but not on its right of way, and not from any negligent operation of its trains. The fire extended to land beyond and set fire to timber thereon. In an action for the destruction of the timber the negligence alleged was that of the train men in not extinguishing the fire. It was held that the railroad was not liable for the refusal of the train men to leave their train and extinguish the fire, as this duty was not within the scope of their employment.—Genter v. Pennsylvania (Pa.), 105 Atl. 824.—Decided January 4, 1919.

Foreign Railway News

Exports of Locomotives in July

Only a few locomotives were exported during July. The following figures compiled by the Division of Statistics of the Bureau of Foreign and Domestic Commerce shows a total of only 17 valued at $322,775.

Countries.	Number.	Dollars.
France	4	170,450
Canada	1	3,000
Mexico	2	25,000
Brazil	1	11,100
Chosen	2	18,300
Philippine Islands	7	94,925
Total	17	322,775

French Canals Opened

Water communication between Belgium and the liberated regions along the old battlefront may be considered as reestablished, according to a report made to President Poincare by M. Clavelle; Minister of Public Works and Transport. The report states that navigation is almost normal once more along the Aire, Deule, Sensee, St. Quentin and Somme canals; that since the armistice approximately 350 miles of double track railroad and 300 miles of single track line have been reconstructed and only 29 railroad stations remain to be opened to traffic. Among other works completed, it is stated, are 367 bridges which were destroyed during the war.

Electrification of Railway from Christiania to Drammen

The Norwegian Government, writes Consul General Marion Letcher of Christiania, Norway, has recently accepted the bids submitted by three Norwegian firms for the electrification of the railway from Christiania to Drammen. The three companies are: A/S Norsk Electrisk & Brown Boveri; Norsk Maskinindustri, A/S; A/S Per Kure.

The bids include 18 standard gage electric locomotives, which are to be built at Thunes Mekaniske Verksted at Christiania. This is the first definite step to be taken in the plan for the electrification of the entire Norwegian railway system. The power is to be obtained from the Hakavik power station, which is located not far from Kongsberg, Norway, where can be produced about 25,000 horsepower.

Bolivia-Argentina Line to Be Pushed

Announcement is made, says a press despatch from Buenos Ayres, that the Bolivian Legation has concluded preliminary arrangements with the Argentine Government which are calculated to expedite work on the proposed railroad from Formosa, Argentina, to Cochabamba, Bolivia. The line as now planned will have 500 kilometers in Argentina and 850 in Bolivia. English engineers are already at work on the survey and construction is expected to begin as soon as the railroad material market shall have returned to normal.

This line when finished will open up the rich forest lands of the Bolivian and Argentine Chaco, development of which has been anxiously waited for many years. It will also place the Bolivian montaña in easy communication with Buenos Ayres via the extension from Formosa to Embarcacion and will be of great advantage to Santa Cruz, an important city of eastern Bolivia. In addition, this line will provide another transcontinental railroad, for at Cochabamba, a junction will be effected with the Antofagasta Railroad.

Sweden is to get 5,000,000 tons of coal annually from America under an agreement reached with American exporters, according to press despatches from Stockholm. The freight charges on the coal will be about $25 a ton. Sweden is beginning to feel the lack of coal, due to British restrictions on its shipment from Germany.

Equipment and Supplies

Locomotives

MITSUI & Co., LTD., 65 Broadway, New York, is inquiring for ten Consolidation type locomotives, and six ten-wheel locomotives for the Hankow-Canton Railroad.

THE IMPERIAL KARAFUTA GOVERNMENT has ordered, through Mitsui & Co., Ltd., 65 Broadway, New York, two light locomotives from the American Locomotive Company.

THE PENNSYLVANIA EQUIPMENT COMPANY, 1420 Chestnut street, Philadelphia, Pa., is in the market for a second-hand standard gage, consolidation type locomotive, with wheel centers of from 44 to 48 in., cylinders 20 in. by 24 in. or 26 in., a steam pressure of 180 lb., wheel base not over 23 ft., and a tractive power of not less than 26,000 lb.

Freight Cars

THE TREMONT & GULF is inquiring for 10 flat cars.

THE ATLANTIC COAST LINE has renewed an inquiry for 100 50-ton phosphate cars.

THE WESTERN MARYLAND is asking for prices for repairs on about 700 freight cars.

THE MEDART PATENT PULLEY COMPANY, St. Louis, Mo., is inquiring for one flat car.

THE BOSTON (MASS.) ELEVATED RAILWAY COMPANY is inquiring for 2 double-truck snow sweepers.

THE CHESAPEAKE & OHIO is asking for prices for repairs on between 2,000 and 3,000 freight cars.

THE FORKS COAL COMPANY, Portage, Pa., has ordered 25 mine cars from the American Car & Foundry Company.

THE PENNSYLVANIA COAL COMPANY, New York, has ordered 200 mine cars from the American Car & Foundry Company.

THE PITTSBURGH & LAKE ERIE is inquiring for 1,000 hopper car bodies and is also asking prices for repairs to freight cars.

THE CROWN OIL & REFINING COMPANY has ordered 300 40-ton 8,000 gal. tank cars from the American Car & Foundry Company.

THE ESTATE OF JOHN MURRIN, Carbondale, Pa., has ordered 25 mine car bodies from the American Car & Foundry Company.

THE CUBAN CENTRAL has ordered 200 30-ton box cars from the Pressed Steel Car Company and 200 flat cars from the Standard Steel Car Company.

WILLITS & PATTERSON, San Francisco, Cal., have ordered twenty 8,050-gal., 50-ton tank cars, equipped for the shipment of edible oils, from the Standard Tank Car Company, Sharon, Pa.

THE PENNSYLVANIA EQUIPMENT COMPANY, 1420 Chestnut street, Philadelphia, Pa., wants to lease 15 8,000 to 10,000 gal. tank cars, with coils, for one year from October 15, and will buy or lease 35 acid tank cars.

THE UNITED RAILWAYS OF HAVANA are inquiring for 25 40-ton hopper cars. This company has also ordered 300 30-ton box cars from the Pressed Steel Car Company and 300 flat cars from the Standard Steel Car Company.

Passenger Cars

THE SOUTHERN PACIFIC has ordered 15 baggage cars from the Pullman Company.

Supply Trade News

S. B. Andrews, mechanical engineer of the Seaboard Air Line with office at Portsmouth, Va., has resigned to become vice-president and general manager of the Union **Iron Works, Inc.**, at Berkley-Norfolk, Va.

George A. Cooper, of the sales and advertising department of the United States Graphite Company, Saginaw, Mich., has been appointed advertising and export manager of the **Detroit Lubricator Company**, Detroit, Mich.

The Pollak Steel Company, Cincinnati, Ohio, has appointed the **Lake Shore Engine Works**, Marquette, Mich., as its agent for the upper peninsula of Michigan and the **E. R. Hensel Steel & Copper Company**, Security building, St. Louis, Mo., agents for the St. Louis district.

E. McCormick, treasurer of the **Railway Steel Spring Company**, New York, has been appointed assistant to the president. **H. S. Banghart**, assistant treasurer, succeeds Mr. McCormick as treasurer and B. C. Dunn has been appointed assistant treasurer; all will have their headquarters at New York.

The Carborundum Company, Niagara Falls, N. Y., has opened a branch office and warehouse in the Burkhardt building at Second and Larned streets, Detroit, Mich. This branch is under the management of **Anthony Dobson**, who will have charge of the Detroit sales district.

John F. Schurch, operating vice-president of the T. H. Symington Company Lincoln Park Works, Rochester, N. Y., has been elected vice-president of the same company in charge of all western sales, with headquarters in Chicago. Mr. Schurch graduated from the University of Minnesota in 1893. He entered the service of the Minneapolis, St. Paul & Saulte Ste. Marie the same year, serving consecutively in the office of the auditor, and of the general superintendent and in the transportation departments, resigning in 1905 after having obtained the position of chief clerk to the vice-president. From 1905 until 1914 he was associated with the Railway Materials Company of Chicago. In February, 1914, he was elected vice-president of the Damascus Brake Beam Company with office in Cleveland, Ohio, and in June, 1914, he was elected president of the same company which position he resigned the same year and was elected vice-president in executive charge under President C. H. Symington of the Symington interests in the production of 75 m.m. guns, shells and forgings. The Symington interest included the Symington Anderson Company, the Symington Machine Corp., the Symington Forge Corp., with office in Rochester, N. Y., and the Symington Chicago Corp., with office in Chicago. In August, 1918, in addition to these offices he was made operating vice-president of the T. H. Symington Lincoln Park Works. Mr. Schurch is also vice-president of the Railway Supply Manufacturers Association.

J. F. Schurch

Lawrence A. Rowe, mechanical inspector on the Atchison, Topeka & Santa Fe, with headquarters at Chicago, has been appointed general manager of the **Universal Packing & Service Company**, with office at Chicago. **The Universal Packing**

& Service Company was organized recently to manufacture and sell spring journal box packing and in addition will maintain a service department.

Joel B. Ives of the engineering and contracting department of the **American Steel Export Company,** New York, has just sailed for Italy where he will confer with M. Ferrarris & Co., Italian agents of the company, as to the means and methods for insuring a continuance of the company's sale service in that country.

Louis W. Ulmer, has been appointed eastern railway sales representative of the Detroit White Lead Works, with office in Philadelphia, Pa. Mr. Ulmer has recently been released from his duties in the United States Marine Corps. Mr. Ulmer was connected with the Detroit White Lead Works before he entered the military service.

E. G. Buckwell, secretary and manager of sales of the **Cleveland Twist Drill Company,** Cleveland, Ohio, has just returned from a three-months visit to England and the Continent, where he has made a thorough trade investigation in conjunction with the Cleveland Twist Drill Company of Great Britain, Ltd., London, the European branch of the Cleveland Twist Drill Company.

The American Car & Foundry Company has purchased two pieces of property adjacent to its plant in Chicago at a consideration of approximately $90,000, with an encumbrance of $15,000. One of the properties is 361 ft. by 240 ft. and the other 100 ft. by 240 ft. The company contemplates the building of an addition to the present plant which, together with the rebuilding of the old plant, will cost approximately $2,000,000.

John D. Rogers has received his discharge as captain of engineers in the office of the director general of military railways in Washington, D. C., and is now in the foreign sales department of the **Baldwin Locomotive Works** at Philadelphia. Prior to entering the army, Mr. Rogers was shop superintendent on the Virginian Railroad, having previously served on the Chesapeake & Ohio, the Pere Marquette, and the Union Pacific railroads.

The Vanadium Corporation of America, New York, has bought the property and rights of the American Vanadium Company, and has elected officers as follows: **J. Leonard Replogle,** president; **Merrill G. Baker,** vice-president; **Lawrence E. Diffenderfer,** treasurer and **Edward F. Nickerson,** secretary. The directors are **Chas. M. Schwab, J. Leonard Replogle, E. R. Tinker, Allan A. Ryan, Ledyard Cogswell, T. Coleman du Pont, Harry Payne Whitney,** and **Joseph D. Wyckoff.** J. Leonard Replogle was born in Bedford county, Pa., on May 6, 1876, and was educated in the public schools of Johnstown. He entered the employ of the Cambria Steel Company as office boy at the age of 13, and served successively as clerk, shipper, assistant superintendent of the axle department, superintendent of the forge, axle and bolt departments, assistant to the assistant general manager, superintendent of the order department, assistant general manager, assistant to president, and in September, 1912, was elected vice-president and general manager of sales. In February, 1915, he resigned from the Cambria Steel Company to become vice-president and general manager of sales of the American Vanadium Company, and subsequently became president and general manager of sales of the same company. He is also president of the Wharton & Northern Railroad, and chairman of the board of directors of the Wharton Steel Company. Mr. Replogle, during the war also served as director of steel supplies for the War Industries Board and had conferred upon him recently by the French Government the decoration of Chevalier of the Legion of Honor in recognition of the service he rendered for the Allied cause.

J. L. Replogle

The Dunbar Manufacturing Company, Chicago, has appointed **W. C. Irwin** as district sales representative in St. Louis and the southwest, with offices in the Frisco building, St. Louis, Mo. Mr. Irwin has been in the railway supply business for several years and at present is district representative for the Boss Nut Company, Chicago, the Railroad Supply Company, Chicago, and the Woven Steel Hose & Rubber Company, Trenton, N. J. During the war Mr. Irwin was captain in the Engineer Corps of the United States Army.

Grading and tracklaying have been started at the Niles, Ohio, plant of the Youngstown Steel Car Company, Haselton, Ohio. Erection of the superstructure of the first unit of the plant, 80 ft. by 400 ft., will begin in the immediate future. The erection of the first building is to be followed by a second of the same size. The new plant will be used for repairing cars for railroad companies and private owners. Industrial cars of smaller dimensions than standard rolling stock will be built early in 1920. It is said the complete new plant will be in operation in January, 1920.

F. H. Crawford, sales manager of **F. H. Niles & Co., Inc.,** Woolworth building, New York, has been appointed secretary, and J. E. Haetten, assistant sales manager, has been appointed sales manager. **G. P. Goodman,** who for several years has represented the Hisey-Wolf Machine Company, Cincinnati, Ohio, in the East, will become associated, on October 1 with the F. H. Niles & Co., Inc., in charge of its portable tool department. This company handles in the east the Hisey-Wolf line of electric machine tools, and the Canton pneumatic hammers and drills made by the Pittsburg Pneumatic Company, Canton, Ohio.

Otto A. Ruemelin, second vice-president and manager of production of the **Pawling & Harnischfeger Company,** manufacturer of traveling electric cranes, Milwaukee, Wis., died on September 1 after a long illness. Mr. Ruemelin was born in Milwaukee in 1872. He joined the Pawling-Harnischfeger interests as an apprentice in 1889. After several years as journeyman, he was made a foreman, serving in various departments. Later he was appointed assistant superintendent and after several years, superintendent. In 1912 he became works manager and later was elected to the second vice-presidency, in which position he served until two weeks prior to his death.

L. R. Custer, formerly development engineer for the Midvale Steel & Ordnance Company has been elected a vice-president of the **Cambria Steel Company.** He was born in Altoona in 1873, and graduated from Cornell University in 1902. His first work was as a machinist for the Pennsylvania Railroad. He later was in the employ of the Baldwin Locomotive Works, and then served as a draftsman for the Jones & Laughlin Steel Company, Pittsburgh. He entered the service of the Homestead Steel Company as a construction foreman and in 1914, was made superintendent of the armor plate department. During the early part of the war he developed the ordnance department of that company. Shortly before the close of the war he left the Homestead Company to go with the Midvale Company.

Trade Publications

STORAGE BATTERY CARS.—Typical installations of Edison equipped railway storage battery cars are shown in Bulletin 106, consisting of 16 pages and issued by the Edison Storage Battery Car Company, New York. Illustrations show cars in service in various parts of the United States, Central and South America, Mexico and Alaska. A short analysis is included of the relative costs of storage battery and steam operation on the Long Island Railroad and the Edison nickel-iron-alkaline storage battery is described.

Railway Construction

ATCHISON, TOPEKA & SANTA FE.—This road has awarded a contract for the building of a 15 mile line from Porterville, Cal., to Ducor, to the Sharp & Fellows Contracting Company, Los Angeles, Cal.

BALTIMORE & OHIO, WESTERN LINES.—Sheesley & Janney, contractors, Johnstown, Pa., have been awarded the contract for the construction of a 38 ft. concrete arch bridge over Kellogg Creek, one mile south of Painesville, Ohio.

CHICAGO, ROCK ISLAND & PACIFIC.—Preparations are being made to extend the Chattanooga (Okla.) branch southward 15 miles to Grandfield, Okla., on the Wichita Falls & Northwestern. This branch connects with the Enid-Waurika line at Lawton, Okla.

DAVENPORT, SPRINGFIELD & SOUTHERN.—The company has applied to the Public Utilities Commission of Illinois for authority to construct and operate an electric railroad from Rock Island, Ill., to Metropolis, with branches from Pinckneyville and East St. Louis and other short spurs.

CHICAGO & EASTERN ILLINOIS.—Work has been started on a combined passenger station and freight house at Salem, Ill. It is to be a one-story structure, 28 ft. by 108 ft., and will cost approximately $20,000. The contractor is T. S. Leake & Co., Chicago, who expect the work to be completed by December.

CANADIAN PACIFIC.—A new station is to be built at Trois Rivieres, Que. The building is to be in the French chateau style of architecture and of fireproof construction. The exterior facing is to be of trim brick, with cut stone of Deschambault or similar limestone. The floors will be of marble and terrazo tile, and the inside walls finished with marble wainscoats with Caen stone or marble above.

GRAND TRUNK PACIFIC.—The Board of Railway Commissioners for Canada has ordered this company to file plans with the board for a station at Prince George, B. C., and to complete and place the proposed station in operation on or before December 31, 1919. Owing to the exigencies of the war and the state of the railway company's finances, the requirements of a similar order issued in November, 1914, were not enforced.

CHICAGO UNION STATION.—Work on the Chicago Union Station, which has been delayed by building trades union strikes for some time, has been resumed. Completion of the viaducts at Twelfth, Taylor, Polk and Harrison streets and of the headhouse at Canal street, is now being rushed and it is expected that contracts will be let in the near future for the erection of the superstructure of the Harrison street and of the Twelfth street viaducts.

ATCHISON, TOPEKA & SANTA FE.—This road is constructing a branch road from its main line at Shattuck, Okla., to Spearman, Tex. Seventy miles of the 84 miles of new construction have been completed. The line is through the extreme upper part of the Panhandle and affords a transportation outlet for a wide stretch of wheat producing territory that was formerly 50 to 75 miles from the nearest railroad point. It is not expected that the line will be extended beyond Spearman for some time.

HONEST LABOR THE REMEDY.—It is not by demands of higher wages for a shorter day's work, by the threat of strikes and by strikes, by wild plans for the nationalization of industries and increased inefficiency of workers at the expense of the taxpayers, that workmen will help themselves and the public. So far as these methods are successful, they cripple production and swell the cost of living. There is but one way to diminish that cost. That is, for every workman to do an honest and a hard day's work. The best labor of every member of the producing community must be given without interruption. The high cost of living can be lowered in that way, and in no other.—*New York Times.*

Railway Officers

Railroad Administration

Operating

S. B. Andrews, mechanical engineer of the Seaboard Air Line, has resigned from railroad service.

Harry D. Mudgett, formerly trainmaster on the Northern Pacific at Livingston, Mont., has recently been released from military service and has resumed his former position, succeeding J. J. Sexton, transferred.

W. G. Curren, special agent of transportation at New York City, has been appointed superintendent of transportation of the Baltimore & Ohio, Eastern Lines, with office at Baltimore, succeeding **H. B. Voorhees,** promoted.

H. B. Voorhees, general superintendent of transportation of the Baltimore & Ohio, has been appointed manager of the Staten Island Rapid Transit, the Staten Island, the Baltimore & Ohio, New York Terminals, and the Baltimore and New York, with offices at New York City, succeeding **J. M. Davis,** resigned to accept service elsewhere.

Traffic

J. O. Adams has been appointed general eastern freight agent of the Grand Trunk, Lines in Canada, with office at New York City, vice **S. E. Dewey,** deceased.

W. C. Douglas, assistant general freight agent of the Michigan Central, with office at Detroit, Mich., has been transferred to Chicago, succeeding **F. J. Parker,** who has resigned to become assistant cashier of the First and Old Detroit National Bank, Detroit. **E. W. Brunck,** chief clerk to the general freight agent of the Michigan Central at Detroit, has been appointed to succeed Mr. Douglas.

V. C. Williams has been appointed division freight agent of the Pennsylvania at Pittsburgh with jurisdiction over: Pittsburgh division, main line and branches, Conemaugh to Pittsburgh inclusive except Southwest branch and Youghiogheny branch; Conemaugh division Cedar Point and Blairsville Intersection to Butler and Karns, to Allegheny, inclusive; Monongahela Division, Pittsburgh to Allenport, inclusive; Cresson division, Josephine only. **J. T. Wray** has been appointed division freight agent at Erie, Pa., with jurisdiction over: Renovo division, Buffalo division. Glade to Ridge View, Sand Co., inclusive. Allegheny division, David Ready to Oil City, inclusive and north of Oil City to Corry, inclusive. Other appointments have been made as follows: **C. T. Mackenson, Jr.,** division freight agent at Pittsburgh with jurisdiction over: Allegheny division, Oil City exclusive, to Kiskiminetas Junction Red Bank to Mix Run, inclusive. Conemaugh division, Pittsburgh to Kiskeminetas Junction, inclusive. **Joseph Weed,** division freight agent at Uniontown, Pa., succeeding Mr. Mackenson, with jurisdiction over: Pittsburgh division, Southwest branch and Youghiogheny branch. Monongehela division south of Allenport.

Engineering and Rolling Stock

Lawrence A. Rowe, mechanical inspector of the Atchison, Topeka & Santa Fe, has resigned to become general manager of the Universal Packing & Service Company, with office at Chicago.

F. C. Hohn, division engineer of the maintenance of way department of the Pennsylvania division of the Delaware & Hudson at Carbondale, Pa., has resigned, effective September 1. Mr. Hohn has been succeeded by **J. C. Dorsey,** division engineer of the Saratoga division of the Delaware & Hudson at Albany, N. Y.

L. R. Wink, general foreman of shops on the Galena and Wisconsin divisions and the Chicago terminals of the Chi-

cago & North Western, has been appointed assistant superintendent of the car department, with headquarters at Chicago, and **C. J. Nelson** has been appointed general foreman, succeeding Mr. Wink.

R. B. Johnson, assistant engineer on the Montana division of the Oregon Short Line has resigned to enter private practice at Idaho Falls, Idaho, and **A. H. Hoult,** has been appointed his successor. **R. B. Reasoner,** formerly division engineer on the Oregon Short Line with headquarters at Pocatello, Ohio, has recently been released from military service and has resumed his former duties.

G. A. Carroll, formerly divisional engineer of the El Paso division of the Chicago, Rock Island & Pacific, recently discharged from military service has been appointed division engineer of the same road at Eldon, Mo., succeeding **W. A. Wallace,** who is appointed division engineer of the Nebraska division with headquarters at Fairbury, Neb. **A. G. Bradley,** formerly division engineer of El Reno, Okla., also discharged from military service recently, has been reappointed to the same position, succeeding **G. H. Pash,** assigned to other duties.

John Edward Fanning, whose appointment as chief engineer of the Gulf & Ship Island and the Mississippi Central with office at Hattiesburg, Miss., was announced in the *Railway Age,* September 5, page 490, was born at Okolona, Miss., on August 13, 1885, and was educated at the University of Mississippi. He entered railway service in 1905 with the Gulf & Ship Island and was successively transit man, assistant engineer and supervisor of track. In 1910 he was appointed assistant engineer, in which capacity he served until 1917, when he went to the Illinois Central.

C. H. Paris, assistant engineer on the Chicago & North Western, with office at Huron, S. D., has been transferred to Winona, Minn., succeeding **R. D. Anderson,** promoted. **L. B. Dodge,** assistant engineer, Galena division, with office at Chicago, has been transferred to Huron, S. D., succeeding **C. H. Paris. C. H. Wells,** assistant engineer in the valuation department, has been transferred to the Galena division, succeeding **L. B. Dodge. R. D. Ransen** has been transferred from the federal manager's office in Chicago as assistant engineer to the valuation department, succeeding **C. H. Wells.**

C. J. Wymer, sales representative of the Grip Nut Company of Chicago, has been appointed superintendent of the car department of the Chicago & Eastern Illinois, with headquarters at Danville, Ill. Mr. Wymer entered railroad service in 1891 with the Atchison, Topeka & Santa Fe. He later became connected with the car inspecting department of the Chicago & Eastern Illinois, resigning as general car inspector in 1912. He was then appointed general car foreman on the Belt Railroad of Chicago. In May, 1916, he was appointed sales representative at the Chicago office of the Grip Nut Company, in which capacity he served until his recent appointment. Mr. Wymer's appointment places him in entire charge of the car department of the Chicago & Eastern Illinois and is the first appointment of this nature made by that road.

Leonard L. Sparrow, whose appointment as principal assistant engineer of the Atlanta Coast Line, with headquarters at Wilmington, N. C., succeeding **T. L. Morton,** deceased, was announced in *Railway Age* of September 5th, was born in November, 1872, at Philadelphia, Pa. Mr. Sparrow is a graduate of the University of Tennessee. In 1895 he entered the employ of the Baltimore & Ohio as rodman on the Philadelphia division and the next year was transferred to the second division with headquarters at Martinsburg, W. Va. From 1899 to 1904 he was assistant engineer and resident engineer on surveys and grade reduction work on that road and in May, 1904, he left the Baltimore & Ohio to take charge of the construction of terminals at Jacksonville, Fla., for the Atlantic Coast Line, remaining in that position until 1907 when he was appointed engineer of roadway, first division, with headquarters at Rocky Mount, N. C., being transferred in August, 1908, to the third division with office at Jacksonville, Fla., in charge of maintenance of all lines in Florida. In September, 1917, he was appointed office engineer in the office of the chief engineer at Wilmington, N. C., which position he held at the time of his recent appointment.

Purchasing

T. C. Hopkins has been appointed local storekeeper of the Baltimore & Ohio at Cleveland, Ohio, succeding **L. F. Ryan,** resigned.

J. M. Strong has been appointed division storekeeper of the Schuylkill division, Pennsylvania Eastern Lines with headquarters in Reading, Pa.

J. A. Laughlin and **Henry Stephens** have been appointed assistant general storekeepers of the New York Central, Lines West of Buffalo, with headquarters at Collingwood, Ohio. Mr. Laughlin has been storekeeper at Elkhart, Ind.

Corporate

Engineering and Rolling Stock

H. K. Morrison, resident engineer on the Superior division of the Canadian National Railways, with office at Hornepayme, Ont., has been appointed division engineer, a newly created position, with the same headquarters.

F. S. Rosseter, assistant superintendent of the Sudbury division, Altoma district, of the Canadian Pacific, with office at Sudbury, Ont., has been transferred to the Toronto terminal division, Ontario district, with headquarters at West Toronto, Ont., succeeding **W. J. Stinson,** who has been transferred to the Trenton division, Ontario district, with headquarters at Havelock, Ont. Mr. Stinson succeeds **R. de B. Girouard,** who has been transferred.

Obituary

Hon. Francis Cochrane, former Canadian Minister of Railways and Canals, died at his home in Ottawa, Ont., on September 22, at the age of 67. Mr. Cochrane was born in Clarenceville, Que. He had been connected with the government for about 15 years, and in 1905 was minister of lands and mines. He was appointed to the Ministry of Railways in 1911.

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Scenes from Foreign Ports. Loading Hides at Maracaibo, Venezuela

Railway Age

EMERGENCY BULLETIN

PUBLISHED BY THE SIMMONS-BOARDMAN PUBLISHING COMPANY
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October 6, 1919

Special Strike Bulletin.

As stated in the editorial "Another Strike!" on page 603 of the September 26 issue of the *Railway Age*, we have suspended publication indefinitely because of a strike called for the reason that we refused to meet the arbitrary and unreasonable demands of certain printing trades' unions who flatly refused to arbitrate and whose members deserted the presses in the face of existing contracts.

And as promised in that editorial, it is our purpose to make certain that both subscribers and advertisers are kept informed of happenings in the railway field which seem to us of special interest to each.

Hence this, the first of a series of bulletins which will be published at least once a week during the suspension of the paper, and more frequently, if necessary.

Organized Labor Versus Organized Society!

The entire civilized world is today following with intense interest the railroad strike in Great Britain and the steel mill strike in the United States. This is the case because the civilized world is keenly alive to the fact that these strikes do not involve merely the wages and working conditions of working people, but are tests of the relative strength of organized labor and organized society in the two leading Anglo-Saxon countries.

This is more clearly true of the railroad strike in Great Britain than of the steel strike in this country. In Great Britain the Government is operating the railroads. The employees made certain demands which the Government refused to grant and almost without warning the strike order was put into effect. Premier Lloyd George has leaned toward the workers in almost all their disputes with capital. Nevertheless, he has denounced the railroad strike. The "precipitancy" with which it was entered upon "caused the impression" he declares, "of a deliberate and mature intention on the part of some individuals to seek a quarrel at any cost."

There is no doubt in the mind of any intelligent observer as to the reason for seeking a quarrel. Organized labor in Great Britain is dominated by radicals who are trying to bring about syndicalism—that is, government ownership of industries and their management by, and primarily for the benefit of, the employees. These radical leaders have been calling one great strike after another since the war ended in an effort to force the adoption of syndicalism. The recent strike in the British coal mines, which also were being operated by the Government, was ordered by the same element for the same purpose.

The steel mills of the United States are not being operated by the Government. The strike in them has been brought about, however, by the same kind of leaders who have caused the coal and railroad strikes in Great Britain, and for the same general purpose. The principal organizer of the steel workers and promoter of the strike was formerly an organizer for the I. W. W. and has been preaching syndicalism for years. Samuel Gompers and other leaders of organized labor who have claimed to be, and have been regarded as, conservative, deny that the steel strike has any revolutionary purpose. But it is evident that, for the present at least, men such as Gompers have lost control of the organized labor movement in the United States. Mr. Gompers has opposed the espousal of socialism by the American Federation of Labor; but recently the United Mine Workers of America and the railway labor brotherhoods have begun advocating what would be practically syndicalism on the railroads and in the coal mines. The character of the men who are leading the steel strike is evidence enough that if they should succeed in making organized labor as strong in the steel mills as it is on the railroads and in the coal mines, it would be but a short time until we should be confronted with demands for syndicalizing the steel mills similar to those which already have been made with respect to the railroads and the coal mines.

The situation in Great Britain and the United States raises two vitally important questions. The first is as to whether the people of these countries want the syndicalistic or Bolshevistic system of industry substituted for the system of private ownership and management. That is an economic and political question which is open to argument. If organized labor, by ordinary political methods, can get a majority of the people to favor the syndicalist system, it has a right to do so. The syndicalist system might work well or ill, but if a majority of the people want it, it ought, on democratic principles, to be established.

The second and more important question which the present situation in Great Britain and the United States raises is whether the system of syndicalism is going to be imposed upon the public by force, regardless of whether the public want it or not. It is idle to say that no attempt to impose it by force will be made. Such attempt actually is being made in Great Britain right now. The railroad strike in that country is an obvious and audacious attempt to starve the public until it will compel the Government to yield to the demands of the strikers. That may not be exactly the use of force, but if the Government attempts to operate the railroads with non-union men the strikers undoubtedly will interfere with, and try to maim and even kill the "scabs," and there is no doubt that this would involve the use of force.

It may be said, and truly, that the leader of the steel strikers has offered to arbitrate. But the railroad labor brotherhoods used to demand and insist upon arbitration. When, however, they thought they had become strong enough to enforce their demands by strikes and threats of strikes they began absolutely to refuse to arbitrate. Experience seems to show that, under the kind of leadership it now has, organized labor will submit its claims to arbitration only when it seems practically certain that it cannot win by the strike. But if syndicalism is to be established or any other great change in our industrial or political system is to be

made, not by political methods but by force, then those who have become able by the use of force to effect the change have overthrown the Government and have substituted their sovereignty for that of the people.

The first question to be settled, therefore, is whether organized labor is going to be able, by the use of the strike, to bring about an industrial and political revolution—or is even going to be allowed to try to bring it about—by force. If organized labor wins in such struggles as that of the railroad workers with the Government in Great Britain and that of the steel workers with the steel companies in the United States, there undoubtedly will be an increase in the use of the strike and of strike violence for revolutionary purposes until either the present industrial and political system is overthrown or organized society rises in its full strength and subjects organized labor to some form of control which will make the use of the strike for revolutionary purposes impossible.

In this great crisis it is essential that the people should clearly understand the issue presented and align themselves accordingly. Organized labor, under radical leadership, is trying to impose its will upon organized society by force. The avowed ultimate object of its radical leaders is the overthrow of the present industrial and democratic political system, and the establishment of an industrial and political autocracy of the proletariat. As long as organized labor submits to such leadership, and uses the methods its radical leaders favor, the rest of the people, however friendly their attitude toward organized labor may have been in the past, must, as a matter of self-protection, take a united stand against organized labor.

Relation of Freight Charges to Commodity Values

The argument has been made by some persons in high official positions that freight rates ought not be advanced, even though an advance may be necessary to prevent a railroad deficit, because an increase in the freight rate would increase the cost of living. A most striking demonstration of how little influence freight rates have upon the cost of living is made in a letter which Julius Kruttschnitt has written to Chairman Esch of the House committee on Interstate and Foreign Commerce. Briefly, Mr. Kruttschnitt shows that in 1914 the average value per ton of freight carried on the railroads of the United States was $56 and that the average rate on it was $2 per ton, which was 3.6 per cent of the value of the freight. In 1919 the average value of a ton of freight is $119 and the average freight charge on it only $2.80, which is but 2.4 per cent of the value of the freight. Between 1914 and 1919 the average value of a ton of freight increased $63, while the average charge on it increased only 80 cents. Therefore, the increase in the average freight charge per ton was only 1.3 per cent of the increase in the value of the freight. Mr. Kruttschnitt shows that between 1899 and 1900, when commodity prices in general advanced, freight rates were unchanged; between 1907 and 1908, when there was a fall in prices, freight rates were declining; that between 1915 and 1916, when there was a further increase in prices, freight rates were still declining; in 1916 and 1917, when prices were higher than at any time in 19 years, freight rates were lower than at any time in 19 years. He also shows that the sharp advance in freight rates in 1918 was followed by a decline in prices. The explanation, of course, is that the freight charge is so very small in relation to the average value of commodities that it would take a relatively enormous change in rates to affect prices. It is a notable fact that in 1914 the freight charge was 3.6 per cent of the average value of commodities, while in 1919 it was only 2.4 per cent, which demonstrates that if freight rates were advanced at the present time exactly 50 per cent they would be made only as large relatively to the value of commodities as they were five years ago.

Agreement Entered Into With the Shop Employees

For the first time the railroads of this country, through the Railroad Administration, have entered into a national agreement with the shop crafts as represented by the Railway Employees' Department of the American Federation of Labor and its affiliated organizations of the Mechanical Section and Divisions 1, 2 and 3 thereof, including the International Association of Machinists, International Brotherhood of Boilermakers, Iron Shipbuilders and Helpers of America, International Brotherhood of Blacksmiths and Helpers, Amalgamated Sheet Metal Workers' International Alliance, International Brotherhood of Electrical Workers and the Brotherhood of Railway Car Men of America.

The agreement includes 186 rules. The first section covers general rules applying to all trades and is followed by special rules for the machinists, boilermakers, blacksmiths, sheet metal workers, electrical workers and carmen. The wages have been raised to put them on an equal basis with wages paid to other railroad employees. The rate for mechanics who have been receiving 68 cents an hour has been increased four cents an hour; steel car workers and other mechanics in the car department who were receiving 63 cents an hour have been increased four cents an hour; other mechanics in the car department who were receiving 58 cents an hour will be increased nine cents an hour. In all cases these increases are effective as of May 1, 1919. Apprentices, helpers and other classes of workmen covered by Supplement 4 to General Order 27 have been increased four cents an hour, effective May 1, 1919, except for linemen and others, ground men, coal pier elevator operators and coal pier electric hoist operators, who are covered by special rules.

Hearings Before the House Interstate Commerce Committee

Interstate Commerce Commissioner Edgar E. Clark appeared before the House Committee on Interstate Commerce on September 25 and 26. He denied that regulation of railroad rates had operated to reduce revenues, and thought that the only thing that could be done with the weak roads was to put them through a reorganization.

A. P. Thom, general counsel for the Association of Railway Executives, introduced a letter from Charles E. Hughes, formerly Justice of the Supreme Court of the United States, expressing an opinion on the provision of the Cummins Bill which would take away all of the profits of a successful road above a certain fixed percentage. Justice Hughes' opinion, in brief, is that if rates which produce so-called excess earnings are just and reasonable rates, as they are presumed to be when fixed and regulated by a public authority like the Interstate Commerce Commission, then the earnings from those rates are the property of the railroad companies. They may be taxed, but they cannot be taken away. This would be confiscation.

Mr. Thom took up the question of the relation of state rates to interstate rates. He thought that it was absolutely essential that one federal body should be given jurisdiction over the rates on every interstate carrier, whether the carrier itself was wholly within one state or not, and whether the haul was wholly within one state or not. He said, however, that if at this time Congress did not wish to go so far as to make a specific declaration of this scope, there should be an amendment made to the Esch Bill to provide (1)

that the carrier should have the right to complain to the Interstate Commerce Commission against the state rate, (2) that not only discrimination but unequality and undue burden on other rates could be complained of in regard to a state rate, and (3) to confer power on the Interstate Commerce Commission to suspend intrastate rates and to grant reparation in respect to such rates.

June Mechanical Conventions

The General Committee of the Mechanical Section of the American Railroad Association held a meeting at the Hotel Traymore, Atlantic City, N. J., on October 23 and 24, at which, among other business, the plans for the next convention were laid. A joint conference was held with a committee of the Railway Supply Manufacturers' Asscoiation and the Hotel Men's Association of Atlantic City, and it was decided to hold the 1920 and 1921 conventions on Young's Pier. The dates selected for the 1920 convention are June 9-16. The first three days of this period will be devoted to papers on locomotive subjects and the last three to car subjects, consolidated committees reporting on Monday, June 14. An invitation was extended to Section VI, Purchases and Stores, to hold its convention simultaneously with Section III, in order that the members might avail themselves of the opportunity to visit the extensive exhibit. A number of new committees were appointed and important changes were made in the personnel of others.

The Railway Supply Manufacturers' Association will hold its usual exhibit. The following committee appointments have been made by the executive committee of that association: Chairman exhibit committee, J. G. Platt, Hunt-Spiller Manufacturing Corporation, South Boston, Mass.; chairman entertainment committee, W. K. Krepps, Crucible Steel Company of America, New York; chairman enrollment committee, C. H. Gayetty, Quaker City Rubber Company, Philadelphia, Pa.; chairman finance committee, George A. Cooper; chairman transportation committee, John C. Kuhns, Burden Iron Company, Troy, N. Y. John D. Conway was re-elected secretary-treasurer of the association. The management of the Young's Pier at Atlantic City has agreed to enlarge the seating capacity of Convention Hall from 600 to 850.

Railway Business Association on Railroad Problem

Alba B. Johnson, president of the Railway Business Association, has sent to Senator Joseph S. Frelinghuysen a letter commenting on and comparing certain vital points in the Frelinghuysen and Cummins bills. These comments relate particularly to the transportation board, consolidation of roads, regulation of security issues, the adequacy of revenue and the dangers involved in the six per cent return. President Johnson has also sent a letter to Congressman John J. Esch, chairman of the House Committee on Interstate and Foreign Commerce, emphasizing certain recommendations of the Railway Business Association and commenting upon the testimony of Guy M. Freer, president of the National Industrial Traffic League.

President Rea Addresses Bankers

Samuel Rea, president of the Pennsylvania Railroad Company, made an address on "Our Railroad Problem" before the Savings Bank Section of the American Bankers' Association at St. Louis, Mo., on October 1. He outlined the plan of restoring the railroads as advocated by the Association of Railway Executives and went into a very thorough discussion of the Cummins bill, particularly in relation to the objectionable features from the standpoint of the railway executives.

A Great Railroad Strike in Britain

The railways of England, Scotland and Wales were paralyzed on Friday, September 26, by the most complete strike in their history, and all the business of the country was disorganized for several days; but as we go to press it seems certain that the strike will fail. Sir Eric Geddes, in control of the railways for the Government, took a firm stand from the outset, and was vigorously sustained by the Ministry; people and press condemned the strikers with substantial unanimity. The two largest unions joined in the strike, the National Union of Railwaymen, and the Society of Engineers and Firemen. The stoppage of suburban traffic and of all trains on the London underground railways caused extensive curtailment of activities in shops and offices in London and to a less extent in other cities. No serious violence was reported. David Lloyd George, prime minister, declared that the leaders were striking against society, and were seeking a quarrel at any cost; he was convinced that a vast majority of union labor was opposed to the movement, which he described as an anarchist conspiracy.

It was estimated that the strikers numbered about 600,000. The Government at once suspended the demobilization of the military forces and prepared to run trains with volunteers. By Monday, the 29th, it was said that the Government had the situation well in hand. Automobiles were brought into use by the thousands for the transportation of food, and the Government proceeded as it would have done in case of an invasion by a foreign enemy. Airplanes were used extensively to carry mails. Over 80,000 private motors were offered to the Government. Making use of the services of volunteers, the principal railways ran some passenger trains on Monday, all train movements being made at long intervals because of the signalmen being on strike. Partial train service was resumed on two underground lines on Monday evening. Along the coast the Government used naval vessels to carry mails.

Passenger service was first restored for suburban travel; but by Tuesday most of the main lines ran a few through trains, and the Great Western declared that its service was almost normal. The airplane mail service between London and Paris, which had been running three times a week, was at once put on a daily timetable.

On Wednesday, October 1, the Ministry of Transport announced that the number of passenger trains run on that day was about 2,000, or double the number in service on the preceding day. This was exclusive of the London underground service, which was much improved. Of the large numbers of men at work on the trains the reporters were unable to decide what portion was made up of volunteers and what of returning strikers.

Though the Government made continual prorgess, there was, of course, much disorganization, and even on Wednesday the large London newspapers printed only four pages each.

Obituary

John J. Reardon, superintendent of the Litchfield & Madison, died at his home in Edwardsville, Ill., on September 19, at the age of 57.

John B. Brownell, formerly assistant general auditor of the Deleware & Hudson, died suddenly at his home in Altamont, N. Y., on September 12.

Eugene Chamberlain, who recently retired from the position of manager of the Equipment Clearing House of the New York Central Lines, died at his home in Mount Vernon, N. Y., on September 30, after a long illness, at the age of 70.

Frank H. Clark Goes to China

Frank H. Clark, consulting engineer, New York city, and formerly general superintendent motive power of the Baltimore & Ohio, is shortly going to Peking, where he will temporarily act as technical adviser to the Ministry of Communications of the Republic of China.

International Trade Conference

This conference, which was called by the Chamber of Commerce of the United States to meet at Atlantic City the first week in October, has been postponed until Monday, October 20. This was necessary because of delays in the departure of delegates from Italy, France and Belgium.

Fiftieth Anniversary of the Westinghouse Air Brake Company

Over 800 veterans of the Westinghouse Air Brake Company and its subsidiary companies in Milwaukee, St. Louis, California, Pittsburgh and Canada met at the William Penn Hotel, Pittsburgh, Saturday evening, September 27, to celebrate the fiftieth anniversary of the formation of the Westinghouse Air Brake Company.

Official Changes

Charles H. Markham, director of the Allegheny region, has resigned from the Railroad Administration to return to the presidency of the Illinois Central; he is succeeded by L. W. Baldwin, heretofore operating assistant to Mr. Markham.

H. M. Adams has resigned as traffic assistant to the regional director of the Southwestern region, and has been appointed vice-president of the Union Pacific, in charge of traffic, with office at Omaha.

C. B. Porter has been appointed acting purchsaing agent of the Texas & Pacific and allied lines, with office at Dallas, Tex., R. I. Irwin, purchasing agent, having been granted leave of absence.

J. M. Rosevear, general auditor of the Grand Trunk, has been appointed controller, in place of W. H. Ardley; and J. B. McLearn, auditor of revenue, succeeds Mr. Rosevear.

W. A. Parker, division engineer of the Kansas division of the Union Pacific, with office at Marysville, Kans., has been promoted to assistant engineer, maintenance of way, with headquarters at Omaha, Neb.

William H. Menner, road foreman of engines of the Erie, with headquarters at Jersey City, N. J., has been appointed supervisor of locomotive operation, succeeding E. Salley, deceased.

A. G. Miller, chief travelling auditor of the Nashville, Chattanooga & St. Louis, has been appointed auditor of disbursements, succeeding J. H. McEwen, deceased.

W. C. Dorsey, senior accountant for Clink, Bean & Co., accountants, San Francisco, Cal., has been appointed auditor of expenditures on the Chicago, Milwaukee & St. Paul, with office at Chicago, succeeding F. G. Allen, resigned.

Supply Trade News

The Buda Company has opened branch offices in Buenos Aires, Brazil; London, England; and Paris, France.

C. N. Replogle has resigned as general manager of the Ralston Steel Car Company, Columbus, Ohio, to become general manager of the new plant of the Timken Roller Bearing Company, Canton, Ohio.

The Boston & Maine has ordered 360 tons of steel from the American Bridge Company, for bridges to be built at Winchendon, Mass., and at Webb, N. H.

Fred J. Holden has been promoted to sales manager of the Railway Division of the B. N. Jones Company, Inc., with office at 192 Chambers street, New York City.

The Canadian Pacific has awarded a contract to the Union Switch & Signal Company, Swissvale, Pa., for the complete installation of two Saxby & Farmer interlockings at Brantford, Ont.; one of 24 levers and one of 20.

The Canadian National has awarded a contract to the Union Switch & Signal Company, Swissvale, Pa., to remodel the mechanical interlocking at the Grand Trunk crossing, Elm street, Port Colborne, Ont.

Mitsui & Co., Ltd., 65 Broadway, New York, has given an order to the McClintic-Marshall Company, New York, for 2,100 tons of steel for bridges, to be built on the South Manchurian Railroad. There will be 32 spans, varying in length from 65 feet to 110 feet each.

The United States Railroad Administration has placed an order for 200,000 tons of steel rails. This has been allocated between the United States Steel Corporation, the Bethlehem Steel Corporation, and the Lackawanna Steel Company. The exact division of the rail order has not yet been announced.

Freight Car Inquiries.—Morris & Co., Chicago, is inquiring for 400 refrigerator cars. The Oklahoma Iron Works, Tulsa, Okla., is inquiring for one special 36-ft. 30-ton flat car. Charles E. Sharp, St. Louis, Mo., is inquiring for 50 steel cane cars for export to Mexico. The American Industrial & Development Company, Inc., New York, is inquiring for two special flat cars for export to France.

Freight Cars Ordered.—The American Car & Foundry Company has received the following orders: 50 mine cars, from the Hillside Coal & Iron Company, Scranton, Pa.; twenty-five 40-ton tank cars from the Sterling Oil & Refining Company; twenty-five 40-ton tank cars from John H. Witte & Sons, Minneapolis, Minn.; twenty-five mine cars from the Pennsylvania Coal Company.

Locomotive Deliveries.—New locomotives shipped by manufacturers to railroads under federal control are reported, for the week ending September 13, as follows: By the American Locomotive Company, to the Atlantic Coast Line, 6 engines, U. S. R. A., Pacific. By the Lima Locomotive Works to the Missouri Pacific, 5, U. S. R. A., Mikado. By the Baldwin Locomotive Works to the Pennsylvania Lines West, 3, and to the Lehigh Valley 5 Santa Fe type; to the Norfolk & Western, 1, and to the Wheeling & Lake Erie, 1, U. S. R. A., Mallet; and to the Seaboard Air Line, 1, U. S. R. A. Santa Fe type. Total shipments, 22 locomotives.

Railway Construction.—The Portland, Astoria & Pacific is constructing a 32-mile railroad from Wilkesboro, Oregon, to Keasey. The Chicago, Milwaukee & St. Paul has begun work on additions to its yards at Sioux City, Iowa. The Cisco Banking Company, Cisco, Tex., is constructing a road from Cisco into the oil fields of Stephens county, a distance of about 35 miles, to be known as the Cisco & Northeastern. Articles of incorporation have been approved by the Attorney General of Texas for the Panhandle Short Line; construction will start in the near future between Dalhart, Tex., and Lubbock; the financial and purchasing agent is S. M. Porter, Caney, Kan. Jake L. Hamon of Ardmore, Okla., and Frank Kell, of Wichita Falls, Tex., are constructing a railroad from New Castle, Tex., to Dublin, through Breckenridge and Ranger; the project comprises the construction of 105 miles of main line, to be known as the Wichita Falls, Ranger & Fort Worth.

Railway Age

EMERGENCY BULLETIN

PUBLISHED BY THE SIMMONS-BOARDMAN PUBLISHING COMPANY
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October 13, 1919

This is the second issue of our Emergency Bulletin. Labor difficulties still persist in the printing industry in New York City and we are unable to predict when the RAILWAY AGE will resume publication.

Roads Will Be Returned January 1

Director General Hines has sent a letter to Chairman Esch of the House Committee urging early legislation to determine the status of the railroads in order to avoid uncertainty and consequent demoralization of service. If such a bill is not passed before the end of the year he indicates that it would be impracticable for the Government to retain the roads and he says that the corporations will be greatly hampered in their plans for next year unless legislation is enacted.

'Longshoremen's Strike at New York

Freight traffic at the port of New York has been seriously disturbed since October 1 because of suspension or congestion of ocean commerce. Because of the railroad strike in England, the Shipping Board cancelled all sailings for Great Britain, and the Railroad Administration was obliged to put a partial embargo on shipments from the interior for export; that is to say, the permit system was revived and no shipments were accepted until it was certain that vessel room would be ready. Before this difficulty was removed, following the settlement of the English strike, many thousands of 'longshoremen at New York left their work; and on Wednesday, October 8, all permits for shipments of freight to New York, either for export or for coastwise vessels, were suspended. This will stop a movement amounting normally to about 6,000 cars a day. The grain movement, to a large extent, was not affected. The strike is not authorized by union leaders and the situation is confused but an early settlement is hoped for. But by the 11th, the trouble had spread to other ports and at New York the railroad passenger ferries stopped running.

Railroad Legislation Still in Doubtful Stage

Observers of the progress of the two Congressional committees that are wrestling with the railroad problem are becoming increasingly doubtful as to whether any comprehensive railroad legislation is to be expected at this session of congress, which Congressional leaders are now talking of adjourning possibly by the first part of November. At the same time it is realized that to throw the railroad question into the regular session which begins in December would be to give little chance for the passage of a bill before January 1.

It is not believed that the Congressmen more directly interested in railroad legislation are planning to postpone action. On the contrary, members of the interstate commerce committees of the two houses are working hard in the effort to prepare bills that can be passed before any question can be raised as to the return of the roads to their owners on the date announced by the President; but many of their colleagues think it is not possible to reach an agreement in the time available and have already begun speculation as to whether that state of affairs would cause a change in the president's plans. The Railroad Administration, however, is proceeding on the assumption that the roads are to be returned as the President has stated and reiterated, and is making various preparations to that end, although with a realization that probably a considerable part of its organization will be needed for some time after the actual relinquishment of federal control to wind up its affairs and adjust the numerous problems that will remain to be straightened out. The administration does not desire to retain control of the roads for an uncertain tenure and is understood to believe that it would be better to relinquish them even without legislation than to continue the uncertainty.

The House committee concluded its hearings on reconstruction railroad legislation on September 26, although it held another hearing on October 4 to give the labor representatives another chance to object to compulsory arbitration. A sub-committee, consisting of Chairman Esch and Representatives Winslow, Hamilton, Sims and Barkley, was appointed to draft a bill for consideration by the full committee and has since been busily engaged on its work in executive session. The Esch-Pomerene bill representing the Interstate Commerce Commission's ideas as to needed amendments to the act to regulate commerce is still being taken as the basis, but it had long been apparent to most members of the committee that something more fundamental would have to be added to it; and much consideration is being given both to the problem of assuring adequate revenues and to some basis for adjusting labor controversies without strikes. Chairman Esch has indicated that he is in favor of strengthening his bill so as to assure adequate revenues and credit to the carriers, and Commissioner Clark, who represented the commission at the hearings and who admitted from the start that the Esch-Pomerene bill did not attempt to cover the whole ground, finally took the position that it would be desirable to have a recognized standard of measurement of railroad return, fixed by Congress as a matter of public policy rather than by an administrative body, and said that of various plans proposed for establishing such a standard he would prefer the Warfield plan.

The Senate committee, which has been holding frequent sessions on the Cummins bill, has indicated a hope that it would be able to report a bill by the middle of this month. Its principal struggle has been with the provisions intended to establish an adequate basis of rates and while the original bill left the fixing of the standard return with the Interstate Commerce Commission the committee has recently come around to an effort to establish a standard itself.

The work of the committee is still in a tentative stage but considerable progress has been made during the past two weeks and it is understood that the original provision for an absolute limitation of railway return has been definitely abandoned and that a tentative agreement has been reached

on a provision for a rate basis to produce 6 per cent. and for a division of the earnings above that requirement, the proportion to be retained by the company decreasing as the amount above 6 per cent. increases. The committee has also adopted a provision giving the Interstate Commerce Commission a power of suspension over State rates during the five months' period of readjustment provided in the bill. In spite of the protests of the labor leaders, the Senate committee has decided to retain the anti-strike provision in the bill.

Hearings Before the House Interstate Commerce Committee

Samuel Gompers, president of the American Federation of Labor, testified before the committee on October 4 in opposition to any provision that may be inserted in the Railroad bill providing for compulsory arbitration. Arbitration, he said, must be voluntary or it cannot be successful, and labor must always have the right to strike. Mere discussion of such legislation is likely to produce serious consequences by giving the radical element the means of undermining the more conservative element.

W. N. Doak, vice-president of the Brotherhood of Railroad Trainmen, also opposed any kind of compulsory arbitration and said that Congress ought not to "start anything" that would further alienate labor and capital. He said a get-together conference between railroad operators and employees is probable after the railroads are given up by the Government and that voluntary agreements without additional legislation will prove more satisfactory.

S. Davies Warfield, president of the National Association of Owners of Railroad Securities, has filed with both the Senate and House committees on interstate commerce an opinion by Elihu Root, John G. Milburn, John S. Miller, Hugh L. Bond, Jr., and Forney Johnston, advisory counsel of the association, that Congress has the constitutional power to regulate excess earnings of railroads over and above a fair return upon the value of their property. The opinion takes decided issue with that recently furnished by Charles E. Hughes, and states that such excess earnings are the result of rates made to meet the actual necessities essential to the preservation of the life of the transportation system of the country.

Director General Suggests That Railroad Companies Prepare for Rate Advance

Director General Hines has disposed of various rumors of an impending general advance in freight rates by announcing in a letter to T. De Witt Cuyler, chairman of the Association of Railway Executives, that it will be impossible for the Government to establish any general readjustment of rates prior to January 1, 1920, the date set for the return of the roads to their owners, but that if the corporations desire to make progress at this time with preparations for an advance he will assist them by placing the traffc organizations of the Railroad Administration at their disposal for a study of the problem to determine what tariffs they think ought to be proposed.

Mr. Hines is thus passing to the railroad companies the responsibility for proposing a rate advance to meet the increase in railroad expenses that has occurred during federal control, but in his letter, dated October 7, he states the reasons why he considers that such a step is necessary. He has long made it plain that he did not consider the earnings of the first half of this year to afford a proper measure for the advance to be made, but shippers and others have felt so certain that an advance was being contemplated that both Houses of Congress have passed the Cummins bill to take out of his hands the war power to order increases without the approval of the Interstate Commerce Commission. The bill restoring the commission's suspension power was passed by the House with amendments to the Senate bill and, therefore, required a conference to reconcile the differences, but the conferees have agreed and their report only awaits final passage, which was expected possibly this week, and at any rate could certainly be passed before the director general could get out a rate order.

Capital and Labor in Conference at Washington

The conference of representatives of employers, employees and the public called by President Wilson for the purpose of reaching, if possible, "some common ground of agreement and action with regard to the future conduct of industry" and "means of bettering the whole relationship of capital and labor" began its sessions at Washington on October 6 but spent the first three days in getting started. After organizing and adopting rules to govern its procedure which required that any proposal to be made to the conference should first have the assent of one of the three groups, the conference adjourned on Wednesday morning until Thursday in order to give the groups an opportunity to hold meetings.

Franklin K. Lane, Secretary of the Interior, was elected chairman and Lathrop Brown and J. J. Cotter secretaries. A general committee was chosen consisting of five representatives of each group which is to pass upon all proposals made to the conference which have first received the assent of the group in which they originate, and voting is to be by groups, while a majority vote in each of the three groups is a prerequisite for any expression or conclusion by the conference, although one-third of any group may express itself in a minority report. The plan of group voting operates against a possible combination of the public group with that representing either the employees or labor and the manner in which the rules were adopted indicated the greatest caution on the part of both the labor and the employers' group to prevent any action by the conference to which they could not assent.

The members of the conference were not selected with reference to particular industries but after the railroad labor organizations had demanded and had been given more direct representation than that of the delegates selected by Mr. Gompers, two delegates were appointed by the President to represent the railroads, R. H. Aishton, regional director of the Northwestern region of the Railroad Administration and Carl R. Gray, president of the Western Maryland, who was director of the Division of Operation during 1918. L. F. Loree, president of the Delaware & Hudson, is also a member of the employers' group as one of the five selected by the National Industrial Conference. Fifteen labor delegates were selected by Mr. Gompers but the railroad organizations demanded a representative for each of their 14 organizations. By a compromise suggested by Director General Hines, the train service brotherhoods were invited to select four representatives and Bert M. Jewell, acting president of the Railroad Employees' Department of the American Federation of Labor, was named as one of the public representatives by the President.

For a time the brotherhoods threatened to stay away but when the roll was called they were found represented by H. E. Wills, vice-president of the Brotherhood of Locomotive Engineers; Timothy Shea, acting president of the Brotherhood of Locomotive Firemen and Enginemen; L. E. Sheppard, president of the Order of Railway Conductors and W. G. Lee, president of the Brotherhood of Railroad Trainmen.

The public group consists of 25 members, including 3 women; the employers' group includes 17, including 5 selected by the Chamber of Commerce of the United States, 3 by farmers' organizations, 2 by the Investment Bankers'

Association, 5 by the National Industrial Conference, and the 2 railroad executives appointed by the President. The organized labor group includes 15 chosen by Mr. Gompers and the 4 brotherhood representatives, but the representatives of the miners and the carpenters were not present. However, the public group includes several members who would naturally be classified in the other groups, ranging from E. H. Gary and J. D. Rockfeller, Jr., to John Spargo and C. E. Russell, socialists, while Mr. Jewell, representing 10 organizations of railway employees, is also a member of that group.

Thomas L. Chadbourne of New York, was elected chairman and Frank Morrison and John J. Raskob secretaries of the general committee. The chairmen of the groups were chosen as follows: Public, B. M. Baruch, of New York; employers, H. A. Wheeler, of Chicago; labor, Samuel Gompers, of Washington.

National Railroad Accident Prevention Drive

The safety supervisors of all the principal railroads are now actively engaged in preparations for the campaign, to be conducted for two weeks, October 18 to 31, to reduce the personal injury record. Marcus A. Dow, of the New York Central, is leader of a "safety squadron" which will conduct a 23-day campaign holding rallies in 23 cities on the lines of that company.

The British Railroad Strike

The strike of railroad employees in England, Scotland and Wales, was suddenly ended on Sunday afternoon, October 5, by an agreement between the Government and representatives of the employees' unions. It was agreed that work should be resumed immediately; that negotiations should be resumed and be completed before January 1; that wages should be stabilized at the present level until September 30, 1920, though at any time after August 1, next, they may be reviewed in the light of circumstances then existing; that no adult employee should receive less than 51 shillings a week while the cost of living is 110 per cent. above the pre-war level; strikers are to work harmoniously with those who had returned to work, or who had not struck; arrears of wages to be paid on resumption of work.

The last clause refers evidently to the fact that wages due to the employees on the pay day which occurred soon after the beginning of the strike were not paid.

Important Railway Club Meetings

Frank McManamy, assistant director, Division of Operation, United States Railroad Administration, will make an address on Shop Efficiency at the meeting of the New England Railroad Club at the American House, Boston, on Tuesday evening, October 14.

W. C. Kendall, manager, Car Service Section, Division of Operation, United States Railroad Administration, will make an address on the Utilization of Freight Car Equipment at the meeting of the New York Railroad Club, Engineering Societies Building, New York, on Friday evening October 17.

L. K. Sillcox, master car builder, Chicago, Milwaukee & St. Paul, will make an address on Principles in Connection with the Economics of Freight Car Maintainance and Operation, at the meeting of the Western Railway Club, to be held at the Hotel Sherman, Chicago, Monday evening, October 20

Railway Financial News

Eugene Davis, Eureka, Nev., has purchased the Eureka Nevada from Mrs. Whitelaw Reid and Ogden Mills, of New York, and George Whittell, of San Francisco, for approximately $1,000,000; the road runs between Palisade, Nev., and Eureka, 84 miles.

The Chicago, Rock Island & Pacific has sold to the Central Union Trust Company and the National Bank of Commerce, New York, $5,500,000 one-year, six per cent. collateral trust notes, secured by its first and refunding bonds.

The Sacramento Northern has applied to the California State Railroad Commission for an order authorizing capital expenditures to the extent of $436,380, and for an authority to apply to that amount funds in the hands of the company received from the sale of bonds.

Railway Construction

The Central Texas Electric Company has been incorporated with $500,000 capital; the principal office is to be at Temple, Tex., and the road is to build about 70 miles of interurban electric lines between Temple and Waco, and Temple and Marlin.

The Erie Railroad has given a contract to the Arthur McMullen Company, New York, for building the sub-structure of a bascule bridge over the Passaic river at Newark, N. J.; bids will be asked for in the near future for the steel work of the superstructure.

The Cleveland, Cincinnati, Chicago & St. Louis has awarded a contract to the Walsh Construction Company, Davenport, Iowa, for building a second track on its lines between Ansonia, Ohio, and Houston; the work involves realinement and grade reduction, 50,000 cu. yd. of grading per mile and the construction of 11 concrete bridges.

Official Changes

Brigadier General William W. Atterbury has resumed his former position as vice-president in charge of operation of the Pennsylvania Eastern Lines, with headquarters at Philadelphia.

Charles Donnelly, general solicitor of the Northern Pacific, has been appointed executive vice-president, with headquarters at St. Paul, Minn., succeeding Thomas Cooper, who has been granted leave of absence.

Wilbur C. Fisk, president of the Hudson & Manhattan, has been elected chairman of the board. Oren Root, vice-president, has succeeded Mr. Fisk as president.

W. G. Curren has been appointed general superintendent of transportation of the Baltimore & Ohio, with headquarters at Baltimore, Md.

J. K. Savage, assistant general superintendent of the Canadian Pacific, Eastern Lines, has been appointed acting general superintendent.

H. G. Griffin, manager of the National Bridge Company, Montreal, Quebec, has resigned to become general superintendent of the car department of Morris & Co., Chicago.

A. J. Devlin has been appointed master mechanic of the St. Louis-San Francisco Western division, with headquarters at Enid, Okla.

W. E. Harmison, master mechanic of the Erie with office at Kent, Ohio, has been appointed shop superintendent at Galion, Ohio.

Frederick H. Murray has been appointed master mechanic, Erie Railroad, New York division, with headquarters at Jersey City.

C. E. Perkins, freight traffic manager of the Missouri Pacific, has been appointed general traffic manager, with office at St. Louis; this position has been newly created.

W. A. Rambach, assistant freight traffic manager of the Missouri Pacific, has been appointed freight traffic manager of that road, with headquarters at St. Louis, Mo.

H. S. Clarke has been appointed division engineer of the Pennsylvania division of the Delaware & Hudson with headquarters at Carbondale, Pa.

J. D. Irving, assistant engineer of the Chicago & North

Western, has been promoted to division engineer of the Madison division with headquarters at South Pekin, Ill.

J. C. Wrenshall, Jr., has returned to the position of division engineer of the Philadelphia & Reading at Spring Garden St., Philadelphia.

Obituary

Walter H. Graves, formerly chief engineer of the Oregon Short Line and president of the Oregon Society of Civil Engineers, died suddenly at Salinas, Cal., September 26.

William R. Hudson, general manager of the Atlanta, Birmingham & Atlantic, Charleston & Western Carolina, Augusta & Summerville, Atlanta & West Point, Western Railroad of Alabama, Georgia Railroad, Augusta Union Station, Atlanta Terminal and Augusta Belt, with headquarters at Augusta, Ga., died September 25.

Lewis S. Smith, federal treasurer of the Texas & Pacific, died October 1 at his old home in Franklin, La.

Supply Trade News

Horace S. Wilkinson, of Syracuse, N. Y., has been elected chairman of the Crucible Steel Company of America, Pittsburgh, Pa., to succeed Herbert Du Puy, resigned.

H. H. Gilbert, assistant manager of sales at Chicago of the Pressed Steel Car Company and the Western Steel Car & Foundry Company, has been promoted to manager of sales, succeeding J. H. Mitchell, assigned to other duties.

Harry M. Giles has been appointed general superintendent of the South Philadelphia Works of the Westinghouse Electric & Manufacturing Company, Pittsburgh, Pa., succeeding the late Oscar Otto.

A. C. Allshul, in charge of the Milwaukee, Wis., district office of Joseph T. Ryerson & Son, Chicago, has been appointed branch manager of its new warehouse plant at Buffalo, N. Y.

Lieut. Vernon S. Henry, who served prior to the war in an engineering capacity with the Safety Car Heating & Lighting Company, New York, has re-entered the service of that company and is now connected with the Philadelphia office as sales representative.

The Bucyrus Company, South Milwaukee, Wis., has moved its southern sales office from New Orleans, La., to Birmingham, Ala., room 212, Jefferson County Bank Building.

The American Brake Company, St. Louis, Mo., is planning on erecting a four-story machine shop, at an estimated cost of $225,000.

L. A. Muttart, railroad salesman for the Western Electric Company, Inc., Chicago, with headquarters in that city, has been promoted to manager of the Chicago railroad sales department of that company.

E. L. Chollman, formerly with the Southern Locomotive Valve Gear Company, has been made vice-president and sales manager of the Paxton-Mitchell Company, Omaha, Neb.

T. W. Holt, assistant general manager of the Curtain Supply Company, Chicago, has been elected a director and secretary, in place of William S. Estell, resigned.

Charles H. Small and George F. Shade have established an office in the Monadnock Building, San Francisco, Cal., as agents for the Sargent Company, Chicago, auxiliary locomotive device manufacturers. They will also act as agents for other manufacturers of railway specialties.

The statement in the *Emergency Bulletin* for October 6, that the United States Railroad Administration has placed an order for 200,000 tons of steel rails is incorrect. The Railroad Administration has been giving consideration to such an order for several weeks but has not yet placed an order.

Locomotives Ordered

The Imperial Karafuta Government (Japan) has ordered two Prairie type locomotives from the American Locomotive Company.

The Cordoba Central Railway (Argentine) has ordered six Mikado type locomotives from the American Locomotive Company.

Mora & Mendoza (Cuba) has ordered one four-wheel switching locomotive from the American Locomotive Company.

The Trinidad Government Railways have ordered three freight and three switching locomotives from the American Locomotive Company.

The Jamaica Government Railway has ordered three locomotives from the Baldwin Locomotive Works.

Freight Car Inquiries

The Skinner Packing Company, Omaha, Neb., is inquiring for 100 refrigerator cars.

Mitsui & Co., Chicago, exporters to Japan, are inquiring for 500 freight car trucks for export.

Perin & Marshall, 2 Rector street, New York, are inquiring for eighty 50-ton freight cars; these will include 50 flat cars, 20 coke and 10 self-dumping gondolas, some of which are for export to India.

The Belgian State Railways are inquiring for 2,000 twenty metric ton gondola cars.

The Peking Sui Yuan Railway, China, is inquiring for five hundred 40-ton gondola cars.

The Pennsylvania Lines West are inquiring for 200 cabin-car underframes, and for options on an additional 250.

Freight Cars Ordered

The Atlantic Coast Line has ordered one hundred 50-ton phosphate cars from the Standard Steel Car Company.

The Pennsylvania Coal Company, New York City, has ordered 25 mine cars from the American Car & Foundry Company.

The Jamaica Government Railway has ordered 12 flat and 30 cane cars from the Magor Car Corporation.

The Cuban Central has ordered 50 narrow gage 15-ton cane cars from the Gregg Company.

The United Fruit Company has ordered for its railway lines in Cuba four 5,000-gal. tank cars and four 8,000-gal. tank cars from the Pennsylvania Tank Car Company.

The Tela Railroad, Honduras, has ordered through the United Fruit Company, fifty 30-ton fruit cars from the Magor Car Corporation.

The Trinidad Government Railways has ordered 70 cane cars from the Magor Car Corporation.

The Sterling Oil & Refining Company, Wichita, Kan., has ordered twenty-five 40-ton tank cars from the American Car & Foundry Company.

The Acme Petroleum Company, Chicago, has ordered ten 8,000-gal. and ten 10,000-gal. tank cars from the General American Tank Car Company, East Chicago, Indiana.

Passenger Car Inquiries

The Atlantic Coast Line is inquiring for four dining cars.

Passenger Car Orders

The United Railways of Havana have ordered eight first-class and six third-class passenger cars from the Wason Manufacturing Company, and six baggage cars from the Osgood-Bradley Car Company.

The Cuban Central has ordered six third-class passenger cars from the Wason Manufacturing Company and six baggage cars from the Osgood-Bradley Car Company.

The Cuba Railroad has ordered six passenger cars from the Pullman Company.

The Atlantic Coast Line has ordered four six-wheel dining cars from the Pullman Company.

Railway Age

EMERGENCY BULLETIN

PUBLISHED BY THE SIMMONS-BOARDMAN PUBLISHING COMPANY
WOOLWORTH BUILDING, NEW YORK

October 20, 1919.

The labor situation in the printing industry of New York City is still such that we are unable to publish the RAILWAY AGE. This is the third Emergency Bulletin which has been sent out since the RAILWAY AGE of September 26 was published. For convenient reference and in order to provide for the binding and indexing of the Bulletin with the regular issues, we have allowed page numbers for the two previous Bulletins and are numbering the pages of this one. Preserve your Bulletins in order to keep your files complete.

Baseless Charges Regarding Railroad Capitalization

One of the most remarkable hallucinations about business which ever obsessed the minds of any intelligent people is the hallucination of probably a majority of the people of the United States that the railways of this country as a whole are enormously overcapitalized. That some railways have been greatly overcapitalized everybody knows, and from this the conclusion has been drawn that all railroads are overcapitalized. The facts that there are numerous important roads, such as the Pennsylvania, the Burlington, the Lackawanna and the Santa Fe, which it is possible to demonstrate are, measured by any standard, greatly undercapitalized, and that not a few railroads which have been overcapitalized such as the Rock Island, have reduced their capitalization to a normal basis, do not seem to be known to many people.

The railroad labor brotherhoods within recent years, in order to array public opinion against private management of railroads, have carried on a widespread propaganda on the subject of overcapitalization, the obvious purpose being to convince the public that it is the return paid upon watered capitalization, and not the increased wages of labor, which is making necessary advances in railway rates.

The *Railway Age* repeatedly has exposed the fallacy, and even the falsehood, of many of the charges made. Glenn E. Plumb, on behalf of the labor brotherhoods, recently made a sweeping and indiscriminate attack upon the financial management of American railroads and demanded that his charges should be investigated before the roads were returned to private operation. The *Railway Age* showed that in the period to which he referred—that from 1900 to 1919—the operating income of the railway companies had increased only 98 per cent while the wages of the employees had increased 391 per cent. Doubtless this is the reason why when Mr. Plumb and Warren S. Stone recently appeared before the House Committee on Interstate Commerce to urge again the investigation of Mr. Plumb's charges, they complained to the House Committee that the *Railway Age* had been "abusing" the railway labor organizations and based upon this alleged "abuse" the allegation that the railway companies are trying to prevent investigation of their charges.

The *Railway Age* hopes that Congress will order an investigation of their charges. An investigation would be beneficial to all concerned, and especially the railway companies.

The principal charge the spokesmen of the brotherhoods are now making is that the railways are overcapitalized, and that their book cost of road and equipment account is padded to the extent of $8,000,000,000 to $10,000,000,000. The book cost of road and equipment is larger than the net capitalization and therefore we will examine this charge as applied to it.

In the year 1916, the latest for which complete statistics are available, the total book cost of road and equipment as reported by the railroads to the Interstate Commerce Commission, was $17,525,576,908. Prior to 1907 this account on many roads undoubtedly was made higher or lower than the actual investment, since the companies up to that time kept their accounts as each thought best. Since 1907, however, the companies have kept their accounts as required by the Interstate Commerce Commission and therefore it must be assumed that all additions made to the book cost of road and equipment since 1907 represent actual investment. The increase in book cost of road and equipment between 1907 and 1916 was $4,495,232,580. Meantime the increase in the railroad mileage of the country was 24,299 miles.

Let us now go back to 1907. We find that at that time the total book cost of road and equipment was reported as $13,030,344,328. The number of miles of railroad in the country was 229,951. If, as is alleged, the book cost has been padded to the extent of $8,000,000,000 to $10,000,000,000, all this padding was prior to the end of the fiscal year 1907. If we assume that the padding up to 1907 was, as alleged, $8,000,000,000 to $10,000,000,000, then we must conclude that up to that time the railway companies had built approximately 230,000 miles of railroad for from $3,000,000,000 to $5,000,000,000. If we assume that the "watering" amounted to only $8,000,000,000, we are obliged to conclude that the companies had built 230,000 miles of railroads for $5,030,000,000, or an avreage of less than $22,000 per mile.

The railroads of the United States in 1907 were good railroads, many of them with double or more tracks. Never in any country in the world was even a good single track railroad built and equipped for $22,000 a mile, or for any amount approaching this sum. In 1907 the cost of construction of the Government owned and operated railways of New South Wales and Australia, was reported as $60,000 a mile; the cost of construction of the government-owned Intercolonial Railway of Canada was officially given as $60,163 a mile; and the cost of construction of the government-owned railways of Germany, where the wages paid were half those paid in this country, was reported as over $107,000 a mile.

The charge that the railways of the country are overcapitalized to the extent of $8,000,000,000 to $10,000,000,000, or any other large sum, seems so absolutely preposterous to anybody who has a scintilla of knowledge regarding railroad matters as not to be worth a moment's notice and yet these outrageous charges regarding overcapitalization must be

answered again and again because, while as applied to the railways as a whole they have not the slightest foundation, they are made with such confidence and repeated so often that many people are led to believe them.

We should greatly regret to see the return of the railroads to private operation delayed in order that a Congressional committee might investigate a charge known to be false by everybody who knows anything about the railroad business. At the same time, we should like to see a thorough investigation and complete report upon the subject of railroad capitalization in the United States made by some such committee as the present House Committee on Interstate and Foreign Commerce. Such an investigation and report would demonstrate the baselessness of the charge of great overcapitalization and thereby do more than almost anything else could do to put the railway companies in good standing before the American public.

Railroads Will Be Returned January 1

Regardless of any congressional action which may or may not be taken before January 1, 1920, the railroads will be handed back to their owners December 31 by the Railroad Administration, according to a statement by Director General Hines at a conference of the officers of the Central, Western, Southwestern and Norwestern regions in Chicago, October 16. The director general said there has been no qualification whatever of the President's announcement made in a message to Congress last May that the railroads will be handed back to owners at the end of this year. The Railroad Administration is making all its plans to this effect, with the view of making the transfer back to private management at that date with the least possible disturbance to public service.

Regarding questions as to maintenance of railroads during federal control, and whether they will be in proper physical condition when turned back, Mr. Hines' judgement is that at December 31, the physical condition of the property will compare favorably with conditions when properties were taken over on December 31, 1917, and this is what the government's obligation contemplates. On some particular railroads it may turn out that less maintenance of a particular sort has been done, this being due to inability to get material during the war, but he believes that this will be more than offset by maintenance of other character which has been done, so that it is a fair general statement to say that the government will turn back the railroads in the condition required by the contract. In specific instances, there may have to be readjustment, some involving payments to the government, some involving payments by government.

Senate Railroad Bill Nearly Completed

The Senate committee on interstate commerce were engaged last week in putting the finishing touches on amendments to the Cummins railroad bill as drafted by its subcommittee and introduced in the Senate by Senator Cummins. At a meeting on Tuesday the committee reached an agreement by vote of 10 to 5 on a provision requiring the Interstate Commerce Commission to make rates which will produce a net operating income equal to an average of 5½ per cent on the value of the property of the railroads in a rate-making group, authorizing the commission to add ½ of 1 per cent to take care of non-productive improvements, and providing for a distribution of the excess.

Because of the objections of the labor leaders to any plan of profit-sharing, the committee has abandoned the profit-sharing provision contained in the original Cummins bill, but it has declined to be influenced by their objections to anti-strike legislation and by a vote of 14 to 1 the committee decided to report some such provision.

A provision tentatively agreed upon, authorizing the Interstate Commerce Commission to sustain state rates during the readjustment period was reconsidered and action on it postponed. The provision in the original Cummins bill for an absolute long and short haul clause has been stricken out of the bill. At a meeting on Wednesday the committee gave consideration to the method of providing for the indebtedness of the railroads to the government, but took no action, and Chairman Cummins and Senator Kellogg were appointed a sub-committee to consider the plans proposed by the Railroad Administration and the railroad companies. It was roughly estimated before the committee that the government advances to the railroads for capital expenditures would amount to approximately $1,200,000,000 and other advances might bring the total up to $1,500,000,000. The railroads have asked that indebtedness for capital expenditures be funded for a period of years, while the Railroad Administration wants to offset as large a portion of it as possible by the indebtedness of the government to the railroads on account of rental.

The Railway Executives and Higher Freight Rates

The Association of Railway Executives has written to Director General Hines that the Association is of the opinion that since higher rates are made necessary because of the increases made in expenses by the government, it is the duty of the government to itself make the necessary increases in rates. The Association therefore asks the director general to meet a committee to discuss the situation.

The committee appointed to confer with the director general is as follows: T. DeWitt Cuyler, Alfred P. Thom, J. H. Hustis, Howard Elliott, Samuel Rea, A. H. Smith, Daniel Willard, E. E. Loomis, S. M. Felton, C. H. Markham, Carl H. Gray, R. M. Calkins, E. N. Brown, Henry Walters, Julius Krutschnitt and Bird M. Robinson, president of the American Short Line Railroad Association.

Cross Ties for Next Year

The question of the procedure to be adopted in making purchases of ties and other railroad materials and supplies which will be needed by the railroads next year and which it is necessary to order several months in advance, is still under consideration by the Railroad Administration. The question is particularly acute in the case of cross-ties which must be ordered before the close of the year if an adequate supply is to be available for next year. This was considered at a meeting of the chairmen of the regional purchasing committees with officers of the Division of Purchases at Washington, but no decision was reached as to whether the Railroad Administration should place orders in the usual course and transfer the contracts to the railroads after the return to private management or whether the corporations should be asked to make their own purchases for next year in the same way that Director General Hines has suggested that they make their own arrangements, with the assistance of the Railroad Administration, for proposing such general advance in freight rates as they considered necessary.

Disastrous Strikes at New York City

The strike of longshoremen at New York City, reported in the Emergency Bulletin of last week, remains unsettled; though a considerable proportion of the men have returned to work, and the strength of the strike seems to be broken. The delays to ocean traffic have been very serious.

Since Monday the 13th, the business of the American Railway Express Company has been almost completely paralyzed in New York City, Jersey City and Hoboken,

by a strike of about 7,000 teamsters and helpers, the strike spreading on Wednesday to a number of suburban cities. The express company, like the railroads, succeeded in saving much perishable freight by diversion. The express strikers say that the United States Railroad Administration has been unreasonably slow in considering their claim for increases in pay; but the director general has written a letter explaining the impossibility of dealing promptly with all of the multitude of wage questions which come before the Board at Washington.

Strike at Altoona

A strike of engine house shopmen of the Pennsylvania Railroad at Enginehouse No. 3, Altoona, Pa., on Wednesday, October 8, spread on the 10th to the large shops, and by Friday night there was an almost complete stoppage of work, about 20,000 men having left their places; but by the following Monday the men had listened to the admonition of the director general of railroads, and his message that no grievances could be considered while the men were out, and they returned to work. The strike was started because an assistant foreman had been transferred from Hollidaysburg to Altoona in disregard, as claimed, of the seniority rule. The three engine-houses at Altoona employ about 1,900 men. The railroad company brought about 200 men from other shops, chiefly foremen, bosses and inspectors, and succeeded in keeping passenger trains running without interruption. The movement of freight was also kept up with a fair degree of success, although employees at Juniata, Hollidaysburg, Bellwood and Tyrone joined in the strike. This is said to be the first serious strike that has occurred at Altoona in forty-two years.

The Society of Railway Financial Officers

The Society of Railway Financial Officers held its annual meeting at the Waldorf Astoria, New York, on October 15, 16 and 17. On Wednesday afternoon, the question of what constitutes a good and sufficient reason for refunding payments on account of Liberty Loan subscriptions was introduced by H. R. Wheeler, federal treasurer of the Boston & Maine. The amount of bonds which are being taken by the railroad company either because the employee subscribing for them left the service or got into financial difficulties because of sickness or death in the family, varied from four per cent of the total amount subscribed for by employees of the company to nine per cent, with some instances of an even greater percentage. This means that when the roads are returned to their owners, the question of what shall be done with these bonds subscribed for at par by the Railroad Administration, and now selling below par, will have to be settled.

J. H. Ellis, federal treasurer of the Louisville & Nashville, introduced a discussion of the delivery of "order notify" shipments without the surrender of the bill of lading. It was generally agreed that General Order No. 25 of the Railroad Administration worked out unsatisfactorily and defeated the purpose of this kind of bill of lading and shipment since it prevented the consignor from getting payment on or before delivery of the goods to the consignee. It was suggested that if a bond were required upon the deposit of which a new bill of lading could be issued and deposited with the consignor's bank for collection, the difficulty would be overcome.

Industrial Conference

J. J. Forrester, president of the Brotherhood of Railway and Steamship Clerks, has been substituted as a member of the public group for Bert M. Jewell, acting president of the Railroad Employees' Department of the American Federation of Labor.

General News

The American Railroad Association will hold its regular meeting at the Blackstone, Chicago, on Wednesday, November 19.

The American Railway Bridge & Building Association will hold its annual convention at Cleveland, Ohio, on October 21, 22 and 23.

The National Industrial Traffic League will hold its annual meeting at Hotel Sherman, Chicago, on November 12, 13 and 14.

The Senate on October 14 adopted and sent to the House the Kellogg resolution postponing until July 1, 1920, the effective date of Section 10 of the Clayton Anti-Trust law requiring railroads to obtain competitive bids on purchases and other transactions with companies in which they have an interlocking interest.

The International Order of Railway Yardmasters has submitted a petition to Director General Hines, asking that yardmasters be given the benefit of several provisions of wage orders which have been allowed for employees, such as an eight-hour day and extra pay for overtime. They also ask more exact classification of grades of employees.

To study the expedition of the movement of freight cars, both loaded and empty, within terminals in order to overcome avoidable delays and thus increase the efficiency of the freight car equipment of the country, special terminal committees have been arranged for by the Railroad Administration at 70 of the principal terminals of the nation, each to be composed of local railroad representatives and a representative of shippers.

The question of supply of railroad fuel in the event of the coal strike which is threatened for November 1 has been considered by the Division of Purchases. It is understood that most of the railroads have not a reserve supply which would protect them for many days and that they were urged to do as much as possible in the way of accumulating a reserve without engaging in competitive bidding against each other for the available supply of free coal.

Early in the present year the Railroad Administration issued instructions that cars be loaded in the direction of home with a view to getting cars re-located on home lines to a larger extent. The conclusion has been reached that this policy will still further be aided by re-establishing the per diem rules whereby one railroad is required to account for per diem on cars used by it belonging to another railroad. A general order making this requirement has therefore been issued.

Hearings were held week before last at Washington before the Board of Wages and Working Conditions on the demands for increased wages presented to the Railroad Administration in August by the Brotherhood of Locomotive Firemen and Enginemen. Timothy Shea, acting president of the brotherhood, made the opening statement for the organization and was followed by other officers of the brotherhood, while the railroads were represented by a committee of operating officers appointed by the regional directors.

Official Changes

Ralph Budd, vice-president of the Great Northern Railway Co., has been elected president, succeeding Louis W. Hill who has resigned as president but retains office as chairman of the board of directors.

B. A. Wait, assistant engineer on the First Division of

the Chicago, Rock Island & Pacific with headquarters at Des Moines, Iowa, has been promoted to division engineer of the Cedar Rapids division with office at Cedar Rapids, Iowa, succeeding Garrett Davis, who has been assigned to other duties.

Obituary

Patrick Laden, district engineer on the Illinois Central, with office at Waterloo, Iowa, died at his home in Rockford, Ill., on October 13, following a stroke of apoplexy.

Supply Trade News

H. W. Ross has been elected vice-president of Templeton, Kenly & Co., Ltd., Chicago, manufacturers of Simplex jacks.

Mudge & Co., Chicago, has appointed the Canuck Supply Co., Montreal, Ont., as its Canadian sales agent.

The name of the Schroeder Headlight & Generating Co., Evansville, Ind., was changed to Sunbeam Electric Manufacturing Company on September 27, 1919.

James S. Hearons has become affiliated with the Gustin-Bacon Manufacturing Company, Kansas City, Mo., as railroad representative.

The Duncan Lumber Company, Portland, Ore., has been appointed the exclusive sales agent of the Luedinghaus Lumber Company, Dryad, Wash., and the Meskill Lumber Company, Meskill, Wash.

The T. Geo. Stiles Co., Arlington, N. J., designers and manufacturers of railroad signals, interlocking and third rail safety appliances and supplies, has appointed the C. H. Whall Co., 170 Summer Street, Boston, Mass., sales agents for its materials, in territory covering all railroads in the New England States.

K. C. Gardner, assistant manager of sales of the Pressed Steel Car Company and the Western Steel & Foundry Company, has been appointed manager of sales of the Central district with office at Pittsburgh, Pa., and Huntley H. Gilbert, assistant manager of sales, has been appointed manager of sales of the Western district with office at Chicago, vice J. H. Mitchell, assigned to other duties.

Extensions are contemplated by the Lima Locomotive Works, Lima, Ohio, which will increase the plant's capacity approximately 50 per cent and involve an expenditure of $1,250,000. Additions to the present plant include a new erecting shop with a capacity of 70 locomotives a month, and a superheater shop extension for the boiler and tank works. New machinery costing approximately $300,000 will be purchased.

Railway Construction

The Chicago & Alton has begun work on the second unit of a two-unit freight house at Chicago. The new building will be of steel construction, 165 feet by 460 feet.

The Chicago, Rock Island & Pacific will receive bids up to October 22 for the construction of a double track bridge across the Des Moines river at Eldon, Iowa; the bridge will consist of eight 93-foot and one 46-foot concrete arch spans, and two 44-foot deck plate girders with concrete decks.

Freight and Passenger Car Inquiries

The Arms Palace Horse Car Co. is inquiring for 25 horse cars.

The Bell Locomotive Works, New York City, is inquiring for 45 narrow gage flat, coal and tank cars.

Clark & Hutcheson, 80 Wall Street, New York City, are inquiring for a number of electric storage battery steel cars for export to South America.

The Detroit United Railway, Detroit, Mich., is inquiring for 25 express trailer cars and three interurban bodies.

The Eastern Steel Company, Pottsville, Pa., is inquiring for 33 hopper cars and 5 gondola cars; all of 50-ton capacity.

The National Enameling & Stamping Company, Granite City, Ill., is inquiring for 5 all steel 50-ton gondola cars.

The New York, Chicago & St. Louis is inquiring for 11 passenger cars.

The Pacific Car & Foundry Co., Seattle, Wash., is inquiring for steel underframes for passenger cars.

The Peking Sui Yuan has increased to 1,000 its inquiry through Mitsui & Co., New York, for 500 40-ton high side gondola cars.

The Standard Supply & Equipment Co., Philadelphia, Pa., is inquiring for one self-acting dump car.

Cars Ordered

The Ashford Coal Co., Ashford, W. Va., has ordered 30 wooden mine cars from the American Car & Foundry Co.

The Chelsea Refining Co., Ardmore, Okla., has ordered 50 8000-gal. tank cars from the American Car & Foundry Co.

The Eagle Refining Co., Wichita Falls, Tex., has ordered 50 8050-gal. tank cars, from the Pennsylvania Tank Car Company.

The Foco Oil Company, Franklin, Pa., has ordered 10 8050-gal. tank cars from the Pennsylvania Tank Car Co.

The Freedom Oil Works, Freedom, Pa., has ordered 50 10050-gal. tank cars, from the Pennsylvania Tank Car Co.

The H. C. Frick Coke Co., Pittsburgh, Pa., has ordered 100 mine cars from the American Car & Foundry Co.

The Holland Coal Co., Altoona, Pa., has ordered 50 low-vein pit cars from the American Car & Foundry Co.

Holmes, Bulkley & Wardrop, 61 Broadway, New York, have ordered 100 8050-gal. tank cars, from the Pennsylvania Tank Car Co.

The Lubrite Refining Co., St. Louis, Mo., has ordered 50 10000-gal. tank cars from the American Car & Foundry Co.

The Magnolia Petroleum Co., Dallas, Tex., has ordered 100 40-ton, 8000-gal. tank cars from the American Car & Foundry Co.

The Manila Railroad Co., New York City, has ordered 25 first-class coaches from the American Car & Foundry Co., for export to the Philippine Islands.

F. M. Pease, Chicago, has ordered 20 8050-gal. tank cars from the Pennsylvania Tank Car Company.

The Ranger Refining Co., Kansas City, Mo., has ordered 25 8000-gal. and 25 10000-gal. tank cars from the American Car & Foundry Co., and 20 10050-gal. tank cars, from the Pennsylvania Tank Car Company.

The Transcontinental Oil Co., Pittsburgh, Pa., has ordered 50 8000-gal. tank cars from the American Car & Foundry Co.

The United States Industrial Alcohol Co., 27 William Street, New York, has ordered 124 8050-gal. tank cars, from the Pennsylvania Tank Car Company.

Locomotives Ordered

The South Manchurian Railways have ordered 12 0-8-0 type locomotives from the Baldwin Locomotive Works.

The Steel & Tube Company of America, Indiana Harbor, Ind., has ordered 2 0-6-0 type switching locomotives from the Baldwin Locomotive Works.

Remember the "National Railroad Accident Prevention Drive!" October 18 to 31.

Railway Age

EMERGENCY BULLETIN

PUBLISHED BY THE SIMMONS-BOARDMAN PUBLISHING COMPANY
WOOLWORTH BUILDING, NEW YORK

November 6, 1919

Cummins Bill Cannot Be Passed By Jan. 1

The Senate Committee on Interstate Commerce on Wednesday practically decided that it was impossible to pass comprehensive railroad legislation before the end of the year; it tentatively decided to substitute for the Cummins bill a brief resolution providing for the return of the roads, January 1, with temporary extension of the guaranty. Some conferences are to be held to determine just what terms can be enacted without opposition and the committee is to meet again Friday.

The Printers' Strike

No Emergency Bulletin was issued last week—this for reasons beyond our control. We expect to resume publication of the *Railway Age* in a few days.

Just a few words about the strike. The employing printers had entered into an agreement with the international unions of the printing trades to give the men a 44-hour week beginning May, 1921. The pressmen and feeders union in New York City, whose local agreement expired September 30 last, insisted on an increase of $14 a week and also on the immediate adoption of the 44-hour week. The employing printers offered the men, who were already well paid, an increase of $6 a week. The men refused this offer and went on a strike. Their international organization, which is affiliated with the American Federation of Labor, insisted on the men returning to work and finally revoked the charter of the union and classed the men as "outlaws."

The compositors officially remained at work, but actually went on a "vacation strike" in sympathy with the striking pressmen and feeders. As their local agreement had run out and contained no continuing clause the international organization has been unable to revoke their charter—no agreement having been broken—and has had to content itself with advising the men to return to work. The binders and mailers have signed an agreement with the employers.

The international organization of the pressmen and feeders is trying to get the men back into its organization, but is determined to rid itself of the radical element, which it classes as bolshevists. After five weeks of idleness the men are beginning to realize that they have been misled by their local officers and are gradually taking out new international cards and returning to work. A few employers gave in to the local pressmen and feeders' union, but other unions affiliated with the American Federation of Labor regard their output as "struck work" and are boycotting them.

For the first three weeks of the strike the publishers, to protect the employing printers, decided not to take their work out of the city, even temporarily. This encouraged the men who realized that they could recoup their losses after the strike by overtime work. Recently many publishers have left New York City, temporarily or permanently, and periodicals are gradually coming out, most of them somewhat incomplete and unfinished because of lack of adequate facilities. These handicaps, it is expected, will shortly be overcome, if indeed the strike is not ended by a complete victory for the employers.

Enormous Increase of Travel—No Increase of Cars

The public is expecting that soon after the railways are returned to private operation there will be a great improvement of service and especially of passenger service. Doubtless there soon will be some improvement, but how difficult it is going to be and how long it is likely to take to make service as good as it was before government operation was adopted is indicated in a striking way by the statistics regarding the changes which have occurred in the amount of travel within recent years and in the number of cars which have been provided to carry passengers.

Between the years 1910 and 1916 the number of passenger cars in service increased from 47,095 to 54,774, or 16 per cent. Meantime, the increase in the number of passengers carried one mile, which is the measure of the total amount of travel, was 36 per cent.

After the United States entered the war in the spring of 1917 the railways, in order to enable them better to handle the country's war business, began sharply curtailing passenger service, and also in order to enable the manufacturing resources of the country to be devoted almost exclusively to war work they sharply curtailed the number of cars, including passenger cars, ordered. In 1917 the increase in the number of passenger cars in service was 1,167.

Government control was established at the beginning of 1918, and during that year the total passenger cars ordered for all the railroads was only 131, and in 1919 no substantial orders for passenger cars have been placed. In consequence, within the last two years there has been no increase in the number of passenger cars, and probably, owing to retirement of old cars, there has been some decrease.

Meantime there has been occurring an increase in the volume of passenger traffic which far surpasses all records ever made before. As already stated, the increase in travel in the six years from 1910 to 1916 was 36 per cent. In 1917 alone it was 14½ per cent. In 1918 the increase over 1917 exceeded 8 per cent. In the first eight months of 1919 the passenger business handled was 6.3 per cent greater than handled in the same months of 1918. These cumulative increases since 1916 aggregate 32 per cent.

The large increase in passenger traffic in 1917 and 1918 has been attributed chiefly to the movement of troops and to the traveling of their relatives and friends to and from the cantonments where they were located. Since 1918, however, there has been a very large reduction in the movement of troops, and yet the statistics of the Railroad Administration show that the amount of travel in July, 1919, was 12½ per cent greater than in July, 1918.

The relationship of passenger rates and this enormous increase of travel is very interesting. It always has been contended that reductions in passenger fares would increase travel, and that advances in passenger fares would reduce it. In June, 1918, passenger fares throughout most of the United States were increased 50 per cent. We do not know what was the increase in travel during the month immediately following, but we do know that within two months—that is, in August, 1918—the increase in travel over August, 1917, was almost 12 per cent; that in September, 1918, it was 14 per cent; and that the increase in in travel has gone on ever since, the volume of it in July, 1919, being, as we have already shown, 12½ per cent greater than in July, 1918. In other words, the largest increase in travel which probably ever took place in so short a time occurred immediately after the 50 per cent increase in passenger fares; and the amount of travel has continued rapidly to increase ever since then. The explanation doubtless is that the working people of the country are being paid higher wages than ever before and that they are doing more traveling than ever before.

There is no present reason for doubting that the present large amount of travel will continue, and even increase. If the railroads during the last three years had bought only as many passenger cars per year as they did in the preceding six years they would have bought in this three years at least 7,000 more cars than they actually did. But the increase in passenger business in the last three years has been almost as great as in all of the preceding six years together. Taking into consideration both the very small number of passenger cars that has been bought during the last three years and the enormous increase in passenger business which has occurred, it is safe to say that the railways after they are returned to private operation would have to have at least 8,000 and probably 10,000 more passenger cars than they actually will have in order to handle their passenger business in the same way that they handled it in 1916. But the largest number of passenger cars ever built in the United States and Canada together in one year was only 4,412. It is evident, therefore, that no matter how anxious the railways may be to give satisfactory service after the resumption of private operation it will take several years to make up for the deficiency of passenger cars which has accumulated during the last three years.

Cummins Bill Reported to Senate

The Cummins bill, providing for a reorganization of the system of railroad regulation and also for the gradual reorganization of the railroads into 20 to 35 competing systems, was reported to the Senate on October 23 in the form of a new bill, S. 3288, including the many important revisions which have been made by the Committee on Interstate Commerce since it was originally introduced on September 2 as the work of a subcommittee.

In submitting it to the Senate, Senator Cummins read his letter from Director General Hines urging early action on railroad legislation and also his reply to Mr. Hines stating his intention to do everything in his power to bring the bill forward for consideration by the Senate the moment it is free from the present involved subject of the peace treaty. He said that while there has been a movement in Congress for an early adjournment he intended to oppose it with all the influence he could command and that in his opinion two weeks of steady work ought to secure a final vote on the bill. He also stated to the Senate that he agreed with Mr. Hines that Congress ought to give its consideration to the bill to the exclusion of every other measure.

"I believe," he added, "that if the Senate were to adjourn before it has disposed of this question it would be subject to the condemnation of every right-minded man in America, for there is nothing that would be so disastrous to the commerce of America as a long delay in establishing a policy respecting the return of these vast properties to their owners." He promised to present a report on the bill within a few days. Senator La Follette announced that he would file a minority report expressing his dissent from the provisions of the bill and at the appropriate time would also propose a substitute measure.

The revised bill is a vastly different bill from that tentatively drafted by the subcommittee, which was outlined in the *Railway Age* of September 5, page 448. It is based on no single plan of the many that have been proposed but probably bears a closer resemblance to that proposed by the National Transportation Conference than to any other, as that plan itself represented the selection of ideas from the principal plans previously proposed.

The most important change made by the committee was the adoption of the idea of establishing a definite percentage of return for the guidance of the Interstate Commerce Commission in rate-making, with a provision for a division of net operating income above 6 per cent but not for distribution to the so-called "weak roads." In 1925 and every fifth year thereafter, however, the commission may revise the percentage basis in accordance with conditions. To meet the constitutional and other objections to the idea of taking from a prosperous or efficient road directly for the benefit of its less fortunate or less deserving neighbors it is provided that the contributions made by roads having excess earnings shall go into a general railroad contingent fund to be administered by a federal transportation board for common railroad purposes, which includes the possibility of loans to roads that need assistance. The provisions in the original bill providing for the use of half the excess earnings for the benefit of the employes were omitted because of the objections made before the committee by labor leaders.

The provisions dealing with the method of funding the indebtedness of the railroads to the government, and those relating to the settlement of labor disputes, have been entirely rewritten; the regulation of security issues is transferred from the Interstate Commerce Commission to the proposed new transportation board, and there are new provisions relating to the co-ordination of rail and water traffic and to the powers of corporations incorporated under the act. The provisions relating to control of telegraph and telephone systems were omitted. The revised bill contains no provision giving the Interstate Commerce Commission power to suspend state rates during the transition period after federal control although at one time the committee tentatively approved such a plan.

Rules for Competitive Bidding

The Interstate Commerce Commission has issued regulations governing the method of obtaining competitive bids on transactions by a common carrier and companies which have "interlocking" relationships, as provided by Section 10 of the Clayton law, but it is expected that Congress will have extended the effective date of the law before the regulations become effective on January 1.

General News

The Railroad Administration has ordered 40,000 tons of rail from the Bethlehem Steel Company.

The annual meeting of the National Industrial Traffic League will be held at the Hotel Sherman, Chicago, Ill., on November 12, 13 and 14.

An extra storage charge of $10 a car as an emergency measure, is now imposed on refrigerator cars not unloaded within five days; and on cars of lumber held for reconsignment, after two days. The National Bureau of Whole-

sale Lumber Distributors, has instructed its traffic committee, to seek a conference with Director General Hines to protest against this charge on emergency lumber.

Official Changes

Frank Hedley, vice-president and general manager of the Interborough Rapid Transit Company, New York, has been elected president of that company succeeding Theodore P. Shonts.

I. B. Tigrett, president of the Birmingham & Northwestern and the Meridien & Memphis, has been appointed president of the Gulf, Mobile & Northern with headquarters at Mobile, Ala., succeeding John W. Platten, resigned to become chairman of the board of directors. Mr. Tigrett will continue also as president of the two roads first mentioned.

LaRue Brown, assistant U. S. attorney general, has been appointed general solicitor of the Railroad Administration to fill the vacancy created by the recent appointment of E. Marvin Underwood as general counsel of the administration.

Benjamin B. Greer, assistant regional director of the Central Western region, has been appointed federal manager of the Chicago, Milwaukee & St. Paul, the Ontonagon and the Escanaba & Lake Superior, succeeding H. E. Byram, who has resigned to become president of the Chicago, Milwaukee & St. Paul Railroad Company, which office he held prior to his appointment under federal management.

C. R. Capps, traffic assistant at Philadelphia to Regional Director L. W. Baldwin, of the Allegheny region, has resigned to resume his former duties as senior vice-president of the Seaboard Air Line with headquarters at Norfolk, Va. William Hodgdon, traffic manager of the Pennsylvania, Western Lines, has been appointed Mr. Capps' successor.

F. E. Clarity, transportation assistant to the regional director of the Central Western region, has been promoted to assistant regional director succeeding B. B. Greer.

W. G. Curren has been appointed general superintendent of transportation of the Baltimore & Ohio, with headquarters at Baltimore, Md.

F. L. Johnson, general superintendent of the Missouri district of the Chicago, Burlington & Quincy, with headquarters at St. Louis, Mo., has been appointed assistant to the general manager, with office at Chicago, a newly-created position. M. L. Howard, assistant to the federal manager, with office at Chicago, has been appointed to succeed Mr. Johnson at St. Louis.

E. W. Hoffman, superintendent of the Ohio division of the Baltimore & Ohio, with office at Chillicothe, Ohio, has been transferred to the Chicago division, with office at Chicago, succeeding J. H. Jackson, who has resigned.

M. C. LaBertew, superintendent of the Great Northern, at Harve, Mont., has been transferred to the Kalispell division, succeeding J. L. Close, granted leave of absence; T. F. Dixon, trainmaster of the Great Northern at Great Falls, Mont., has been appointed acting division superintendent during the absence of Mr. LaBertew.

C. W. Crosby, trainmaster of the Piedmont & Northern at Greenville, S. C., has been promoted to superintendent in charge of the operating department with headquarters at Greenville, succeeding E. Thomson, general manager, who has resigned.

W. H. Oliver, division engineer on the Atchison, Topeka & Santa Fe, with headquarters at San Bernardino, Cal., has been promoted to engineer of the Grand division with headquarters at Los Angeles, Cal.

W. A. Wallace, division engineer on the Chicago, Rock Island & Pacific, at Eldon, Mo., has been transferred to the Nebraska division, with headquarters at Fairbury, Nebr., a newly-created position.

W. H. Lowther, division engineer of the Idaho division of the Oregon Short Line, has been appointed division engineer of the Kansas division of the Union Pacific succeeding W. A. Parker, whose promotion was noted in the Emergency Bulletin of October 6.

W. Malthaner, general master mechanic of the Northwest district of the Baltimore & Ohio, Western Lines, with headquarters at Cleveland, Ohio, has been appointed acting superintendent maintenance of equipment with headquarters at Cincinnati, Ohio. W. G. Johnston, master mechanic of the Newark division with headquarters at Newark, Ohio, has been appointed Mr. Malthaner's successor and F. E. Cooper, shop superintendent at Newark, Ohio, has been appointed to succeed Mr. Johnston.

J. S. Jennings, division master mechanic on the Michigan Central at Bay City, Mich., has been promoted to assistant superintendent of motive power with headquarters at Detroit, Mich., a newly-created position. J. O. Goodwin, road foreman of engines with office at West Bay City, Mich., has been appointed to succeed Mr. Jennings at Bay City.

W. F. Kiesel, Jr., acting mechanical engineer of the Pennsylvania, at Altoona, Pa., has been appointed mechanical engineer succeeding A. S. Vogt, retired; H. A. Hoke has been appointed Mr. Kiesel's successor; R. N. Miller, assistant engineer at Altoona, has been appointed acting assistant mechanical engineer, succeeding Mr. Hoke, and B. S. Brown is Mr. Miller's successor. J. V. B. Duer, assistant engineer at Altoona, has been made electrical engineer, and S. M. Viele assistant electrical engineer of the new electrical engineering department operated in conjunction with the mechanical engineering department at Altoona.

S. A. Schickedanz, chief draftsman of the Chicago & Eastern Illinois, at Chicago, has been promoted to mechanical engineer, at Danville, Ill., succeeding W. H. Hauser, who has resigned to become connected with the A. B. C. Transit Refrigeration Company, Chicago.

J. C. Brekenfeld has been appointed shop supervisor of the St. Louis-San Francisco, with headquarters at Springfield, Mo., succeeding A. J. Devlin, whose transfer was noticed in the Emergency Bulletin of October 13.

S. Lenzner, master car builder of the Michigan Central with headquarters at Detroit, Mich., has been appointed supervisor of passenger equipment, a newly-created position.

Supply Trade Notes

J. H. Mitchell, manager of sales of the western district for the Pressed Steel Car Company and the Western Steel Car & Foundry Company, with headquarters in Chicago, left recently for Havana, Cuba, to assume the position of executive vice-president of the American Steel Company of Cuba.

S. C. Amsden, advertising manager of Mudge & Co., Chicago, with headquarters in that city, has been appointed district manager of the southwestern territory, with headquarters at St. Louis, Mo.

The American Automatic Train Control Corporation, American building, Baltimore, Md., which has been organized as the successor of the American Train Control Company, announces that it is preparing to push activities on a large scale, with its own factories. The president of the corporation is Calvin W. Hendrick, and the vice-president is Finley J. Shepard, New York City, vice-president of the Missouri Pacific Railroad Company. The other members of the board of directors are John B. Ramsay, Morris Whitridge, M. M. Elkan (New York); T. R. Thomas, L. A. Cover, W. J. Donnelly, R. L. Williams and S. H. Lauchheimer, all of Baltimore except Mr Elkan.

C. W. Cross has been appointed manager of western railroad sales of the Chicago Pneumatic Tool Company, Chicago. Mr. Cross will have his headquarters in the Fisher building, Chicago.

The Ingersoll-Rand Company, New York, has established a branch office in the Sam Houston Life building, Dallas, Tex., in charge of R. H. Brown, Jr., as manager.

Jean K. Vanatta, service manager of Mudge & Co., Chicago, has been appointed district manager of the central territory with headquarters at Chicago.

The Railway Lock-Spike Company, Atlanta, Ga., has been chartered with $300,000 capital and the privilege of increasing to $1,000,000, to manufacture railway spikes and other railway supplies. H. E. Harris, W. E. Paschall and J. J. Casteel are the incorporators.

R. E. Trout has resigned as signal engineer of the St. Louis-San Francisco to become general sales manager of the primary battery division of Thomas A. Edison, Inc., with office at Bloomfield, N. J.

Locomotive Inquiries

The Hukuang Railway of China is inquiring for 25 locomotives.

The Pennsylvania Equipment Company, Philadelphia, Pa., is in the market for a second-hand, standard gage, four-wheel, saddle tank Baldwin or Porter locomotive, weighing not less than 10 tons, or more than 12 tons.

Locomotives Ordered

The Central Railway of Brazil has ordered five Consolidation locomotives from the American Locomotive Company. They will have 17-in. x 20-in. cylinders, with a total weight in working order of 93,000 lb.

The Chicago, Milwaukee & St. Paul is having repairs made to about 40 locomotives at the Baldwin Locomotive Works.

The Egyptian State Railways have ordered 50 locomotives from the Baldwin Locomotive Works. Thirty of these are of the 2-6-0 type and will have 21-in. cylinders, and 20 are of the 4-4-2 type, and will have 20-in. cylinders. The Egyptian State Railways are also said to be asking prices on 65 additional locomotives.

The United Fruit Company has ordered two Consolidation locomotives from the Baldwin Locomotive Works. They will have 17-in. by 24-in. cylinders, and are for use on its lines in Cuba.

The United Verde Copper Company, New York, has ordered two Mallet locomotives from the American Locomotive Company. They will have 23½ x 37 x 32-in. cylinders, and a total weight in working order of 448,000 lb.

Perin & Marshall, 2 Rector street, New York, have ordered five 2-6-4 type locomotives from the Baldwin Locomotive Works for the Mysore State Railways (India).

Freight Car Inquiries

The Famous Broadway Shows, Cincinnati, Ohio, is inquiring for five 60-ft. flat cars.

The Ford Motor Company, Detroit, Mich., is inquiring for fifty 50-ton flat cars and for twelve 50-ton high side, coke rack gondola cars.

Frazar & Company, 30 Church street, New York City, is inquiring for one 3-ft. gage freight motor car.

The International Railway Supply Company, New York, is inquiring for 100 low-side cane cars, for the Trinidad Government Railways. These cars are in addition to the 70 cane cars ordered recently by the International Railway Supply Company from the Magor Car Corporation for the same railroad.

The National Steel Car Company, Ltd., Hamilton, Ont., is estimating on 100 ten-ton drop side gondolas and 100 ten-ton box cars for the Morocco State Railways.

The Pennsylvania Equipment Company, Philadelphia, Pa., is in the market for eight second-hand steel underframe box cars, also for a second-hand well car.

Perin & Marshall, New York, are in the market for 40 all-steel ore hopper cars and 60 steel platform cars, 20 ft. long, for the Mysore State Railways (India).

The Tennessee Coal, Iron & Railroad Company is asking for prices on 30 coke cars of 70-ton capacity.

A. C. Torbert, Chicago, is inquiring for 50 gondola cars.

The United States War Department is asking for prices on 500 tank cars of 10,000 gal. capacity.

Freight Car Orders

The Brimstone Railroad & Canals Company, Sulphur, La., has ordered 25 hopper cars from the Pressed Steel Car Company, Pittsburgh, Pa.

The Cuyamel Fruit Company, New Orleans, La., has ordered 15 fruit cars from the Magor Car Corporation, for export to Honduras.

F. M. Pease, Chicago, has ordered thirty-five 8,050-gal. tank cars from the Pennsylvania Tank Car Company. This is in addition to the 20 cars recently ordered from the same company.

The Pekin-Suiyuan has ordered 100 forty-ton gondola cars from the General American Tank Car Company, and it is understood has given the same company an additional order for 500-forty-ton high side gondola cars.

Then Penn Coal & Coke Corporation, Cresson, Pa., has ordered 75 wood and 100 steel and wood mine cars from the American Car & Foundry Co.

The United Railways of Havana reported in the *Railway Age* of September 26, as inquiring for twenty-five 40-ton hopper ballast cars, have ordered this equipment from the Standard Steel Car Company.

The Wabash Railroad is having repairs made by the Pressed Steel Car Company to 300 of its wooden freight cars.

Passenger Car Inquiries

The Crownshield Trading Corp., 30 Church street, New York City, is inquiring for two passenger cars, one first and second class and one second class.

Dodwell & Company, 161 Water street, New York City, are inquiring for one kerosene motor coach for export to China.

Jardine, Matheson & Co., Ltd., New York City, are inquiring for two passenger coaches.

The Long Island Railroad is inquiring for 50 trailer cars, 30 steam coaches, and 20 motor cars, all to be 54 feet long.

C. E. Morfoot, Starkville, Miss., is inquiring for one combination sleeping and baggage car.

The Nashville, Chattanooga & St. Louis is inquiring for four 70-ft. coaches and for two 70-ft. partition coaches.

The Penn General Supply Company, Pittsburgh, Pa., is inquiring for from 30 to 40 steel railway velocipedes.

Perin & Marshall, 2 Rector street, New York, are in the market for steel underframes and trucks for five passenger cars and five baggage cars.

Ricardo, Gomez & Dietlin Co., 161 Maiden Lane, New York, is inquiring for 80 tramway chasses, for export to Italy.

The Stephensville & Desdemona Oil Railway Company, Stephensville, Tex., is inquiring for five narrow-gage wooden passenger cars.

The Texas & Pacific is inquiring for 69 miscellaneous passenger cars, including 50 coaches, 5 diners, 12 baggage and express and 2 mail cars.

The United Railways of Havana are in the market for three sleeping cars.

EDITORIAL

Railway Age

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Another Apology

FOR SEVEN WEEKS, since September 26, publication of the *Railway Age* has been delayed because of the strike of feeders and pressmen in New York City. The situation was fully outlined in our Emergency Bulletin for November 6.

The delayed issues will be published as rapidly as possible; the news articles in each issue will, however, be strictly up to date. While each number will bear the date of the delayed issue, it will be coupled with the actual date of publication in order that there may be no confusion in referring to the papers in the future. This method of handling is necessary because the railroads of this country are now passing through the most critical period in their entire history, and it is necessary to keep our readers fully and promptly informed as to the course of events.

Since September 26, the date of the previous issue, we have found it possible to publish four Emergency Bulletins which have briefly covered some of the more important developments and news items. These were dated as of the day of mailing and were allowed—and in the case of the last two bulletins actually carried—page numbers, so that they will be indexed and may be bound with the current volume.

We wish to take this opportunity of thanking both our subscribers and advertisers for the cordial and hearty support they have given to us in the emergency.

Libraries and those wishing to bind their numbers of the *Railway Age* to keep complete files, should preserve the Emergency Bulletins.

The Shop Craft Agreement

For the first time the railroads of this country have entered into a national agreement with the shop crafts. While the statement has been made that the increases in wages granted are insignificant and are only such as to bring the rates for the shopmen up to a basis comparable to that of other railroad employees, this is hardly borne out by a close study of the agreement. For instance, the rates of pay for mechanics who have been receiving 68 cents an hour have been increased 4 cents an hour, effective May 1, 1919; steel car workers and other mechanics in the car department who have been receiving 63 cents an hour have also been increased 4 cents an hour; while other mechanics in the car department who were receiving 58 cents an hour have been increased 9 cents, all these changes being effective May 1, 1919. Apprentices, helpers, and other classes of workers, except certain ones covered in a special rule, also received an increase of 4 cents an hour effective May 1, 1919. These increases may, to some, seem insignificant compared with the high rates which the men have been receiving, but they promise to make a very considerable addition to the expenses of the individual roads. One peculiar weakness in railroad organization is indicated by rule 34 of the agreement, which reads: "Should an employee be assigned temporarily to fill the place of a foreman he will be paid his own rate, straight time for straight time hours, and overtime for overtime hours, if greater than the foreman's rate. If it is not he will get the foreman's rate." If the former condition is true how much will the workman who is acting temporarily as foreman look up to or respect his immediate superior when he returns to his job as a mechanic? The foreman coming into intimate contact with the workmen should surely be placed on a much higher plane than this if the management expects real results. This shortcoming is not a development which has come about under federal control, although it may have been intensified by it. It is a "hangover" from pre-war days. One great weakness of American railroads is the lack of adequate supervision. The roads must invest their officers and foremen with real dignity and importance if the efficiency and effectiveness of the various departments are to be improved.

The High Cost of Living

Restricted production directly increases the cost of living. The *Railway Age* has pointed this out time and time again during recent months. A keen observer, thoroughly familiar with railroad mechanical departments and their practices and who has made several trips over the country in recent years, says that he was astounded, on a recent trip, to note the idleness on the part of railroad shop men, and their apparent lack of interest in their work. Tourists returning from their summer vacations tell of inattention, brusqueness and indifference on the part of station employees with whom they came in contact in buying tickets and in checking baggage. A professional man in a city which is largely made up of railroad employees (it has a large locomotive and car repair shop and terminal yards) tells of surprising extravagances on the part of railroad men. The habits of thrift which they cultivated in pre-war days have been succeeded by the most thoughtless and careless expenditures. These are not isolated instances; unfortunately they are too general. If this country is to take its real place among the nations of the world; if its citizens are to enjoy prosperity and comfort, these disturbing conditions which exist throughout our industries and railroads must be corrected. The coming winter promises distress and even suffering among the poor and less favored classes, and this not because of any failure in our natural resources, but largely because of restricted production at a time when the need was never so great, coupled with a spirit of extravagance. Fortunately, people are gradually awakening to the fact that those who hamper or restrict production are just as guilty as the profiteer. If this feeling on the part of the public can inspire the Administration or Congress to conduct a spirited campaign of education in economics relating to labor, production, money, wealth, etc., it will be most helpful. This will be particularly true if at the same time the labor leaders and the radical element in the ranks of labor will awaken to the fact that the public is sick and tired of strikes and threats of strikes and is in a mood no longer to tolerate restricted production.

Needed Railroad Development and the Cummins Bill

THE DEVELOPMENT OF THE RAILROADS may be five years behind that of the rest of the country. It is certainly not less than three years behind.

This is much the most important fact regarding the present railroad situation. It necessarily follows that so far as the welfare of the country is determined by the condition of the railroads the thing most vitally necessary to the promotion of its welfare is that measures should be adopted which will make sure that the development of the railroads will speedily catch up with the development of the country. The only way in which the development of the railroads can be made to catch up with that of the country is to cause an enormous investment to be made in new facilities. Railroad facilities are today utterly inadequate to the handling of the commerce of the United States. If they are to be made adequate within the next three years there must be invested in them within the next three years at least three times as much new capital as ever has been invested in them in any three years.

There never has been a time since the fall of 1915 when the railroads under either private or government management could handle all of the available traffic, and there never will be such a time again until billions of new capital have been invested in them.

While this condition of affairs exists Congress is trying to frame legislation under which the railways can be returned to private operation. It is considering especially what amount of return the railroad companies should be allowed to earn. It is aware that an increase of railroad facilities is needed and that this cannot be secured unless the railroad companies are enabled to earn larger net returns than they did under the old system of regulation. But does Congress, or even those of its members who are especially engaged in framing railroad legislation, fully realize how great is the existing shortage of railroad facilities, and how vast is the amount of new capital which must be raised and invested to remedy this deficiency? We fear not.

The most ambitious and constructive effort which has been made in Congress to frame a measure the adoption of which would provide railroad development has resulted in the production of the Cummins bill. In relation to the return which the railways should be allowed to earn, this bill provides, first, that the return allowed to be earned by the railways in each territory shall be based upon the combined valuation of their properties. This at once introduces an element of uncertainty because no investor knows, or soon will know, what the valuation of any group of railways is to be. Probably, however, this is unavoidable because it is doubtful whether, in case the return is to be measured by any specific standard, any basis except valuation could be taken which would be satisfactory to the country. Second, it requires that the rates of each group of railways shall be so made that they will be able to earn an average of 5½ per cent upon the valuation. Since bonds of the strongest railroad companies are now selling at prices which yield an average return of 5.8 per cent, it seems improbable that if the average return allowed should be only 5½ per cent, the railroad companies could even raise vast sums of capital by the issuance of bonds. Furthermore, their bonded debt already is so large that future financing should be done chiefly by the issuance of stocks. It is further provided, however, that the Interstate Commerce Commission "may in its discretion" permit an additional ½ per cent to be earned, to be used, however, solely for unproductive improvements which should not be capitalized. It is a well recognized principle that unproductive improvements should be made from earnings. If the railroad companies are to make any considerable amount of unproductive improvements from earnings they must have an average return of at least 6 per cent. Why, therefore, should it be left to the discretion of the Interstate Commerce Commission to determine whether the railways shall be allowed to earn this ½ of 1 per cent?

Third, under the Cummins bill if a railway earns over 6 per cent, one-half of the excess between 6 and 7 per cent must be paid into a general railroad contingent fund. It will be seen that up to this point no carrier would have a return of more than 5½ per cent, which it could pay out as interest and dividends upon its stocks. After a carrier had accumulated and was maintaining a reserve fund equal to 5 per cent on its property, if it earned in any year more than 6 per cent upon its valuation it could keep one-third of the surplus over 6 per cent and use it for its own purposes, and must pay the remaining two-thirds of the surplus into the general railroad contingent fund. Manifestly, however, if a company may pay into its reserve fund each year only one-half of its surplus earnings between 6 and 7 per cent and only one-fourth of its surplus earnings over 7 per cent, it will take even strong carriers a long time to build up a reserve fund equal to 5 per cent of the value of the properties. Meantime, according to our interpretation of the bill, no road will be able to use a net return of more than 5½ per cent upon its valuation with which to pay its dividends on its bonds and stocks.

The general railroad contingent fund "shall be invested or expended by the Board in furtherance of the public interest in railway transportation by carriers subject to the Act to Regulate Commerce in avoiding congestions, interruptions or hindrances to the railway service of the United States by carriers subject to the Act to Regulate Commerce, or in furthering the public service rendered by them, either by way of purchase lease or rental of transportation equipment and facilities to be used by such carriers wherever the public interest may require, or by way of loans to such carriers, upon such fair and reasonable terms and conditions, in either case, as the board may prescribe."

The first comment which an examination of this plan of providing and dealing with net earnings suggests is that it is extremely complicated and by no means clear. As the provisions stand today they are susceptible of different interpretations, and these different interpretations lead to different conclusions as to how much money a railroad earning a given return upon its valuation would have available for interest and dividends. Secondly, it does not afford sufficient incentive to the efficient operation of any railway which is able to earn 6 per cent. Everybody knows the excess profits tax law is a breeder of extravagance in the management of every business earning a large return. A railway company which was earning 9 per cent would not be able to pay out more than 6 per cent to its security owners until it had built its own reserve fund up to 5 per cent, which, apparently, would take five years. After that it would be able to pay out only 7 per cent, since it would have to pay into the general railroad contingent fund two-thirds of its excess earnings over 6 per cent. Third, it seems very doubtful whether under this plan any but the strongest roads would be able for a long time to finance improvements by the issuance of stocks. Fourth, altogether aside from the question of legality, it seems very doubtful whether, as a matter of principle, earnings should be taken by the government from some roads and used for the purpose of helping to finance other roads. It may be that part of the surplus earnings of the rich roads should be taken by the government for taxation, but it certainly seems very doubtful whether the government should advance money raised in this or in any other way to railroad companies. The government should make it possible for any well-managed railroad company to earn enough to finance its own requirements. Having done this it will have done its full duty, and if then an individual railroad is not able to finance its own requirements that fact

will show, not that the government should extend paternal aid to it, but that there should be some kind of change in the management of the road.

The most important question to be considered in relation to the provisions in the Cummins and other bills relative to railway net return is whether they are well adapted to enable the railway companies to raise about six billion dollars in new capital during the next three years. Railroad facilities are today wholly inadequate to the needs of the country, and unless six billion dollars or more is invested in new facilities within the next three years railroad facilities at the end of the next three years will still be inadequate to the needs of the country. The present provisions of the Cummins bill are a great improvement over the provisions it contained in the original draft, and their adoption would enable a majority of the railroads of the country to earn a larger net return than they earned before the adoption of government control. But it is very doubtful whether the return the existing provisions would allow to be earned and retained by the more prosperous roads would be sufficient either to cause the greatest efficiency in their operation or to enable them to raise as large a part as they ought to raise of the six billion dollars of new capital which ought to be invested in railroad facilities before the end of the year 1922.

Improvement in Financial Results Mainly Real, But Partly Nominal

TAKING THE STATISTICS for August at their face value, the railways in that month produced the best financial results that they have this year. The Class I roads, which are practically identical with the railways under government control, earned a net operating income of $92,397,000. The average net operating income earned in August of the three years on which the guaranteed return to the companies is based was $86,860,000. Nominally, therefore, the roads earned for the government a surplus of about $5,537,000.

These figures indicate a remarkable improvement since March. In that month the ratio of operating expenses to total earnings was 92 per cent and the net operating income was only 16 per cent of the government's guarantee for March. In August the ratio of expenses to earnings had declined to 76 per cent and the net operating income was 107 per cent of the government's guarantee for that month.

The real as well as the nominal improvement in financial results has been very great. Between March and August total operating revenues increased from $377,000,000 to $472,000,000, or 25 per cent. This increase of about $95,000,000 in earnings reflected a corresponding increase in the amount of traffic handled, and the increase in transportation expenses incurred in handling it was only $6,200,000, or a little over 3½ per cent. As we have often pointed out, a saving in transportation expenses is always a real and permanent saving, and this large increase in total earnings and the very small increase in transportation expenses with which it was accompanied indicate a great increase in operating efficiency between March and August.

But there is a fly in the ointment; in fact, more than one. The statistics indicate very strongly—indeed, we venture to state, conclusively—that during this time the expenditures being made for maintenance of equipment and maintenance of way were inadequate and that a large part of the improvement in financial results was secured by unduly holding down maintenance expenditures. The following table gives the percentages of increase or decrease between March and August, 1919, and March and August, 1917, the last year of private operation, in operating revenues, operating expenses and the three large classes into which operating expenses are divided:

Percentage of Increase (or Decrease) March to August, 1917, and 1918.

	1917.	1919.
Operating Revenues	15.2	25.2
Operating Expenses	7.6	3.4
Maintenance of Equipment	8.2	—4.4
Maintenance of Way	19.6	14.7
Conducting Transportation	4.4	3.6

It will be seen that between March and August, 1917, the increase in operating revenues was a little over 15 per cent. This was accompanied by an increase in expenditures for maintenance of equipment of 8.2 per cent and for maintenance of way of 19.6 per cent. There is no reason for believing that these increases in maintenance expenditures were, under the conditions, more than normal. An increase in the business handled puts an extra strain upon equipment and makes necessary more work on it to keep it in shape. There is normally a very sharp increase of expenditures for maintenance of way between March, when the large expenditures for this purpose begin, and August, when they ought to be at their maximum. On the other hand, however, between March and August, 1919, when the increase in total operating revenues was 25 per cent, there was an actual decrease of 4.4 per cent in expenditures for maintenance of equipment and an increase of only 14.7 per cent in expenditures for maintenance of way.

Careful consideration of these figures and other pertinent facts leads to the conclusion that, while nominally the Railroad Administration earned a surplus in August, actually it did not earn a surplus. Its expenditures for maintenance of equipment were $4,250,000 less than they were in March. In view of the present condition of equipment, and especially of freight cars, and also the increase in the business handled, they probably ought to have been increased at least $10,000,000 instead of being reduced $4,000,000. If they had been increased this much the Railroad Administration would have incurred a small deficit.

Furthermore, the statistics indicate that there ought to have been a substantially larger increase in expenditures for maintenance of way, and this conclusion is supported by the well-known deficiency in the tonnage of rail and ties that have been laid this year.

There is another point of some importance to be considered. The contracts with the railroad companies not only guarantee them the average return earned in the test years on investment which had been made up to the end of those years, but also a return upon all new capital invested by the companies since January 1, 1918. We do not know just what the investment made by the companies since the railways have been under control has been, but it amounts to several hundred millions of dollars, and the interest upon it must be added to the results disclosed by the statistics of the Interstate Commerce Commission and the Railroad Administration in estimating the total deficit being incurred.

The great improvement in financial results indicated by the statistics of the Interstate Commerce Commission and the Railroad Administration since March is in the main a real improvement and is highly gratifying. But it is partly nominal and reflects not only an increase in efficiency of operation, but also an excessive zeal on the part of the Railroad Administration in curtailing maintenance expenses. While the rate at which a deficit is being incurred by the Railroad Administration is being rapidly lowered, it undoubtedly would be still incurring a substantial deficit if it were adequately maintaining the properties.

In order to put the properties in good condition and render satisfactory service to the public the railway companies will have to increase expenditures for maintenance of equipment and maintenance of way after private operation is resumed, and this very important fact should not be overlooked in considering the question of what rates the railway companies will have to be allowed to charge.

Co-ordination of Railroads Under Private Operation

WHILE IT IS APPARENT that Congress will have great difficulty in passing needed legislation before that date, spokesmen of the administration continue to say without reservation that the railroads will be returned to private operation on January 1. The financial problem raised by the prospective return of the railroads is extremely difficult and important and much attention is being given to it, but hardly less difficult and important is the operating problem raised.

The American Railroad Association will meet in Chicago on November 19. It has been reorganized to bring into it as sections most of the other important railroad organizations. The association is now composed exclusively of railway officers who are in the service of the Railroad Administration, but a committee of executives representing the railway corporations has been appointed to co-operate with the executive committee of the A. R. A. in determining what methods which have been adopted by the Railroad Administration and what parts of its organization shall be retained after private operation is resumed. Our understanding is that the various questions raised have been referred to committees which will make reports to the meeting of the American Railroad Association in Chicago on November 19.

The necessity for some kind of co-ordination of the operation of the railroads of the United States after they are returned to private control cannot be too strongly emphasized. The body which should decide in what way this co-ordination shall be effected is the American Railroad Association, which, of course, should act with the advice and in harmony with the officers of the railroad corporations. Unless there is a radical change in plans it will be only a few weeks until private operation will be resumed, and therefore decisions must be made and action taken concerning this most important matter with the greatest possible expedition. There is much criticism of Congress because it is not making faster progress in the solution of the regulatory problem involved. Railway officers should not subject themselves to similar just criticism by being equally slow in solving the problem of future co-ordination of operation.

When the need for co-ordination of the operation of the railroads is emphasized, it does not follow that this means that unified operation as worked out under the Railroad Administration is desirable and should be continued. The fact is that the need for close co-operation regarding operating matters between the different railroads was recognized by the railroad corporations themselves when the war began in 1917, with the result that the Railroads' War Board was appointed and that a large organization which acted under its direction was built up. The need for some such organization as that of the Railroads' War Board existed because the traffic of the country had become larger and more complex than could be handled by the railways without closer co-operation than had previously existed. Even before the Railroads' War Board was created, however, there were numerous committees of different kinds in different sections of the country which had been formed to co-ordinate more or less the operation of the railroads in the different territories.

The adoption of government operation resulted in the destruction or absorption by the Railroad Administration of all the operating organizations which existed before. On January 1, with the cessation of government control, the entire organization of the Railroad Administration will automatically go out of existence. If, therefore, arrangements have not been made meantime for the creation of new organizations or for the continuance of the life of different parts of the Railroad Administration's organization, there will be no organization after January 1 through which the railroads can work together. The Car Service Section would go out of existence and there would be no commission or car service as there was before government control to handle the distribution of cars. The various officials who have been given charge of the joint operation of terminals in Chicago and other cities would lose their positions and the joint operation of terminals would suddenly be discontinued. The consolidated city ticket offices in the various cities would go out of existence, and there would be no individual city ticket office of the individual lines to take their place.

What would be the result? The result would be something very similar to chaos. We are told when the statistics are available it will be found that in October the railways handled more passenger and freight business than in any previous October in their history. In other words, the traffic which was moving at that time was larger than the traffic which was moving in 1917, the last year of private operation. But the railroads could not have handled the traffic in 1917 as they did if it had not been for co-ordinated operation under the Railroads' War Board. They could not have handled the railway traffic in 1918 as they did if it had not been for the co-ordinated operation under the Railroad Administration. The result of the Railroad Administration suddenly going out of existence without some organization or organizations being provided by the railroad companies to take its place would be necessarily a revival of the competitive rivalries of the individual roads, a reduction in the efficiency with which facilities in general were used, acute congestions of traffic at all the large terminals, and an enormous increase in the shortage of freight cars.

The demoralization which would ensue would not only be disastrous to the commerce of the country, but also to the prestige of private operation. The public now believes that private operation is greatly superior to government operation in efficiency, but if the return of the railroads to private operation should suddenly be followed by a great decline in the efficiency of operation, as it inevitably would be if the railway companies had not made suitable arrangements to co-ordinate their operations, there probably would be a sudden change of public sentiment on the question of government versus private operation which would be very harmful.

It is a rather astonishing fact that many persons who should be familiar with the existing conditions do not seem to realize the chaos which would come if the railroads should suddenly be returned to private operation without definite and complete preparations being made for the future control of the distribution of freight cars, for the continuance of unified operation of terminals in many large centers, and for many other matters of that kind. We fear that these persons have not given due consideration to the vast increase in passenger and freight traffic which has been taking place in this country within recent years, while there has been only a trifling increase in railroad facilities.

All the traffic now available cannot possibly be handled with the present facilities under any system of operation, and therefore it is absolutely essential that the very best use of the existing facilities shall be made. The best use of existing facilities cannot be made without the closest co-operation between the railroad companies. An immediate revival of competitive service, either passenger or freight, such as prevailed on our railroads prior to 1917 would be immediately disastrous. Some railroads might profit from it, but the roads as whole and the country as whole would suffer.

The operating problems which will be presented by the return to private operation ought to be very carefully and fully considered at the meeting of the American Railroad Association, and definite constructive action for solving them should be decided upon. That meeting will be the most important the association ever held, and it is easily conceivable that it may largely determine the future of railroad management in this country.

Cummins Railroad Bill Reported to Senate

Provides Legislative Standard for Percentage of Return and Division of Excess Earnings

THE RAILWAY AGE EMERGENCY BULLETIN of November 6, noted that the new Cummins Bill, S. 3288, was reported to the Senate on October 23, and the changes from the bill as originally introduced were commented on in a general way. The following is a summary of the provisions of the bill.

Summary

Section 1 provides for the repeal of the federal control act at midnight on the last day of the month in which the new act becomes a law and that the President shall then relinquish control of railroad and transportation systems. All rights and remedies, whether provided for by contract or by the terms of the federal control act, are preserved for the purpose of adjusting and closing up all matters, arising out of and incident to federal control. Proceedings based on causes of action growing out of federal control may be brought in any court which would have jurisdiction if the the cause of action were against the carrier and shall be brought against the United States.

The rights and interests of the United States acquired under the provision of the federal control act authorizing expenditures for the utilization and operation of waterways are transferred to the United States Shipping Board.

Rates, fares and charges and divisions of joint rates in force at the time the repeal of the former act takes effect shall remain in force until changed by competent authority.

Indebtedness to the Government

Section 2 provides that the indebtedness of any carrier corporation to the United States for additions or betterments or for advances to pay off indebtedness properly chargeable to capital account shall, at the request of the carrier, be extended for 10 years, or less, at the option of the carrier, with interest at 6 per cent, to be evidenced, if practicable, by the first mortgage bonds of the carrier, but if this is impracticable, in such form as shall be prescribed by the President. Any other indebtedness shall be evidenced by demand notes at 6 per cent.

The President may, in his discretion, apply upon any indebtedness to the United States any sum due the carrier from the United States as is permitted to be deducted currently under any contract now or hereafter made, or where no such contract exists, as would be permitted by the terms of the standard contract relative to deductions from compensation; but no application shall be made of any sum so due to the carrier unless there shall have been paid such sums due it as shall have been necessary to enable the carrier to pay the fixed charges as defined in the contract, dividends at the regular rate paid during federal control, and such sums as may be necessary to provide the carrier with working capital in amount not less than one month's operating expenses or due on account of material and supplies not returned in kind. If the President and the carriers or any of them shall enter into agreement for funding the indebtedness to the United States for equipment, such indebtedness shall not be refundable under the foregoing provisions.

All powers invested in the President by this act, except those relating to the appointment of the transportation board, may be executed by him through such officers, agents or agencies as he may from time to hime appoint, and the power of the President under the federal control act is confirmed and extended to authorize him, through such agencies as he may determine, to adjust, settle and close in a manner not inconsistent with the provisions of the act or this act, all matters growing out of federal control.

Section 4 provides that for the purpose of ascertaining the adequacy of rates, fares and charges in producing revenues as hereinafter provided, the commission shall, as soon as practicable, divide the country into rate districts, and the railway carriers into railway rate groups and shall have power to hear and determine upon complaints of the carriers or any one interested in transportation, or upon its own motion, apart from the question of rates upon particular commodities or for particular communities, the issue of the adequacy of the rates for any one district and the carriers therein as a whole; and the adequacy or inadequacy of rates, fares and charges in producing revenues for the rate district or rate group as a whole shall not be put in issue in controversies relating only to rates, fares and charges upon particular commodities or for particular communities.

Section 5 provides that schedules of rates, etc., filed with the commission within 60 days after federal control ceases shall become effective at the end of four months, with such changes and modifications as in the meantime may be ordered by the commission, and the commission within that time shall determine whether they or any of them are to be so modified or changed in order to make them just and reasonable rates for the service to be performed.

"Until the commission renders its decision in that regard, or until the expiration of the four months' period, this act shall constitute a guaranty to each carrier with which the President has entered into a contract for compensation under the act of March 21, 1918, of an operating income for the said period proportionate to the compensation so agreed upon. With respect to those carriers of which the President is in possession or control at the time this act takes effect, but with which he has not entered into contract fixing compensation under said act of March 21, 1918, and with respect to those carriers of which federal control was reliquished prior to July 1, 1918, as provided in the act of March 21, 1918, this act shall constitute a guaranty for the said period of a proportionate railway operating income, computed in the manner prescribed in the said act of March 21, 1918, for ascertaining what is commonly known as the standard return; and, in the case of carriers which did not earn an operating income in the test period, and therefore have no standard return which can be used as a basis, the guaranty in this act provided shall cover and include the deficit in actual operating expenses, including taxes, of any such road, and such deficit shall be determined and certified in the same manner as provided with respect to the standard return.

The commission shall as soon as practicable after the expiration of the period of such guaranty certify the amount of the actual railway operating income, showing the excess or deficit as compared with the guaranty and the board, or the secretary of the treasury if the board be not then organized, is directed to draw warrants in favor of the carriers upon the treasury of the United States for the amount of any deficit shown, provided however, that if the operating income of any carrier exceeds the guaranty it shall pay the excess into the treasury.

In computing the railway operating income for the purpose of this section, the commission shall not allow as operating expenses, for maintenance for any month of the period covered by such guaranty, more than the monthly

proportion of the amount fixed by the commission as the amount applicable for such maintenance under the provisions in Section 5 of the standard contract, but the cost of fire insurance may be included in such expenses. The commission may, in its discretion, make further allowances as operating expenses in accordance with a provision in the standard contract to the extent that in its judgment will be necessary so that the amount of the guaranty shall be the substantial equivalent, proportionately for the time being, of the standard return. If the commission shall find in the case of any carrier that charges to operating expenses other than maintenance are clearly abnormal for any month, it shall have the power to require the restatement of the operating expenses for the period in question to the extent necessary to make them reasonably applicable to that month.

Rule of Rate-Making

The rule of rate-making and the provisions governing the division of earnings are contained in Section 6 as follows:

"Section 6. In dividing the country into districts and the carriers into rate-making groups the commission shall have in view the similarity of transportation and traffic conditions therein. Rates of transportation shall at all times be just and reasonable and sufficient to produce a reasonable return upon the aggregate value of the property in each rate group used or held for the service of transportation.

"It being impracticable to establish a level of uniform rates and charges within competitive areas which will sustain sundry carriers indispensable to the communities served by them, without enabling more favorably situated carriers to receive revenue from such rates, negligibly as to each service but in the aggregate substantially and unreasonably in excess of the aggregate over a fair return upon their property, unless regulated in the interest of the commerce of the United States as a whole, it is hereby provided that, subject to the exceptions and conditions of this act, no carrier subject to the provisions of this act shall be authorized to receive and retain for the transportation services rendered such proportion of the rates and charges collected by it as may yield in the aggregate more than a reasonable return upon its property investment. In changing or modifying rates, fares, charges, and classifications from time to time in the manner provided in the act to regulate commerce, as amended, and in viewing them from the standpoint of their effect in producing revenue in any rate-making group as a whole, the commission shall initiate, modify, or adjust rates, fares, charges and classifications, as nearly as may be, so that the railway carriers as a whole allocated to each district and subject to this act shall earn an aggregate annual net railway operating income equal, as nearly as may be, to 5½ per centum upon the aggregate value, as determined in accordance with the provisions hereof, of the railway property of such carriers in the district held for and used in the service of transportation: *Provided,* That in this respect the commission shall have reasonable latitude in order to adjust any particular rate, fare, or charge which may be found unreasonably high or unreasonably low. And it may, in its discretion, add to the basis above mentioned one-half of 1 per centum upon the aggregate value of said property, to make provision, in whole or in part, as the case may be, for what are commonly known as nonproductive improvements, betterments, or equpiment, which, according to the custom heretofore prevailing, have been charged to capital account, but which, to the extent that such allowance for such purpose shall be reflected in the net operating income of the several carriers, to be determined by the commission, shall not be capitalized or used in any way as a basis for increased rates, fares, or charges by those carriers whose net operating income for the year exceeds 5½ per centum upon the value of their respective properties.

"In so changing or modifying rates, fares, charges, and classifications from time to time in the manner provided in the act to regulate commerce, as amended, the commission shall take into consideration the interests of the public, the shippers, the wages of labor, the cost of maintenance and operation, including taxes, the requirements for additional capital in order to enable the carriers to adequately perform their duties to the public, and the conditions under which the same can be secured; and shall, so far as practicable, adjust rates, fares, charges, and classifications that the net operating income of the several carriers shall bear the same relation to the value of their respective properties. For the purpose aforesaid, the commission shall from time to time determine the value of the property in each district and rate-making group so held for and used in the service of transportation, and lower or advance the rates, fares, or charges for transportation to produce, as nearly as may be, the net operating income above mentioned.

"If, under the above provisions, any carrier shall receive a net railway operating income in any year of more than 6 per centum, after allowance, as aforesaid, by the commission for nonproductive improvements, upon the said value of its property, one-half of such excess between 6 and 7 per centum shall be placed in a reserve fund established and maintained by such carrier, and the remaining one-half of such excess between 6 and 7 per centum, shall within the first four months of the succeeding year, be paid to and recoverable by the board for the purpose of establishing and maintaining a general railroad contingent fund, as hereinafter described. Of any such excess above 7 per centum, one-fourth thereof shall be placed in the reserve fund to be established and maintained by the carrier and the remaining three-fourths thereof shall, within the time aforesaid, be paid to and recoverable by the board as a part of said general railroad contingent fund.

"For the purpose of paying dividends or interest on its obligations, a carrier company may draw upon its said reserve fund whenever and to the extent that its annual net railway operating income shall fall below 6 per centum of the value of its property, determined as provided in this act.

"In any year in which the said income of a carrier company which has accumulated and is maintaining a reserve fund equal to 5 per centum of the value of its property, determined as provided in this act, exceeds 6 per centum of such value, such carrier shall pay, within the first four months of the succeeding year, two-thirds of such excess to the board as a part of such general railroad contingent fund and the remaining one-third shall be retained by the carrier for such lawful use or disposition as it may determine.

"The aforesaid general railroad contingent fund and accretions thereof shall be administered by the board and invested in obligations of the United States or deposited in authorized depositaries of the United States, subject to the rules promulgated from time to time by the secretary of the treasury relating to government deposits. And the said fund and all accretions thereof shall be employed or invested or expended by the board in furtherance of the public interest in railway transportation by carriers subject to the act to regulate commerce in avoiding congestions, interruptions or hindrances to the railway service of the United States by carriers subject to the act to regulate commerce, or in furthering the public service rendered by them, either by way of purchase, lease, or rental of transportation equipment and facilities to be used by such carriers wherever the public interests may require, or by way of loans, to such carriers, upon such fair and reasonble terms and conditions, in either case, as the board may prescribe.

"The commission shall prescribe rules and regulations for the determination and recovery of the excess earnings of the respective carriers subject to this act over and above the reasonable maximum provided for herein. To that end the

commission may, in addition to the exercise of its general powers, require such security or prescribe such reasonable regulations and conditions as it may find necessary.

"The provisions of this section shall not be construed as depriving shippers of their right to reparation in case of overcharges, unlawfully excessive or discriminatory rates, or rates excessive in their relation to other comparable rates, but no shipper shall be entitled to recover upon the sole ground that particular rates may reflect a proportion of excess earnings produced and to be recovered in the public interest under the provisions of this act: *Provided, however,* That in the year 1925, and in every fifth year thereafter the commission shall determine what, under the conditions then existing, constitutes a fair return upon the value of such railway property, and it may increase or decrease the 5½ per centum basis herein prescribed, or the basis for the determination of excess income."

Transportation Board

Section 7 provides for the creation of a transportation board of five members appointed by the President, with the advice and consent of the Senate, the chairman to be selected by the members of the board to serve as chairman during his term of office. Members of the board are to receive a salary of $12,000 per year. Not more than three members shall be appointed from the same political party and no member shall during his term of office hold any office or employment under any common carrier subject to the act to regulate commerce, or own securities thereof or be in any manner pecuniarily interested therein.

Section 9 declares it to be the policy of the United States that the railways of continental United States shall as soon as may be practicable be divided in ownership and for operation into not less than 20 nor more than 35 separate and distinct systems, each to be owned and operated by a distinct corporation organized or reorganized under this act. In the division into systems competition shall be preserved as fully as possible and wherever practicable the existing routes and channels of trade and commerce shall be maintained. The several systems shall be so arranged that the cost of transportation as between competitive systems and as related to the value of the properties shall be the same, as far as practicable, so that the systems can employ uniform rates in the movement of competitive traffic and under efficient management earn substantially the same rate of return upon the value of the railway properties involved in the comparison.

Section 10. Immediately after its organization the board shall prepare and adopt a plan for the consolidation, and when it has agreed upon a tentative plan it shall give the same due publicity and hear persons who may file or present objections. After the hearings are at an end the board shall adopt and publish a plan for such consolidations, provided that it may at any time thereafter upon its own motion or upon application reopen the subject for such changes or modifications as in its judgment will promote the public welfare. The voluntary consolidation hereinafter provided for shall be in harmony with the plan and the compulsory consolidations which are to ensue after the period hereinafter mentioned shall be in completion thereof. The general plan of consolidation into systems shall be submitted to the Interstate Commerce Commission and be subject to its approval. Street and interurban railways whose chief business is the transportation of passengers, plant trackage facilities owned by private industries, and terminal and other railways owned or controlled by industrial corporations and principally used for the transportation of their products shall not be included in the plan of enforced consolidation, but terminals, belt lines, tap lines and others short lines or lines owned and operated by distinct corporations and so situated or in such financial condition as to be practically incapable of consolidation may be excluded if in the judgment of the board it is for the public interest.

Among the duties of the board are the following:

"The board shall carefully and continuously make inquiry respecting the transportation needs and facilities of the whole country, and of each transportation situation as it may arise, the adequacy and efficiency of such transportation facilities and service, and when and how they should be enlarged or improved.

"It shall inquire into the state of the credit of all such common carriers subject to the said act to regulate commerce, as amended, and inform itself of the relation between the operating revenues, the operating income and the net operating income of such carriers.

"It shall inquire as to the new capital which the public interest may require the carriers or any carrier to secure in order that adequate and efficient transportation service and facilities may at all times be provided, and into the conditions under which said new capital may be secured. From time to time it shall certify to the commission its findings in these respects, and the commission shall accept such certificate or certificates as prima facie evidence in any hearing upon the matters to which such certificate or certificates respectively relate.

"It shall have the authority to lay before the commission, by petition or application, any matter within the jurisdiction of the said commission for action thereon, or make representations in the public interest and show such cause as it may, in the performance of its duties imposed by this act, deem proper and appropriate.

"It shall from time to time make reports to Congress, accompanied by recommendations of such measures and policies as in its opinion will promote and protect the interest of the public in respect of the efficiency of the transportation service and the adequacy of transportation facilities."

The following functions and powers now exercised by the commission are hereby transferred to the board:

(a) The functions and powers created and conferred by the act commonly known as the "car service act."

(b) The functions and powers created and conferred in the last paragraph of section 1 of the "act to regulate commerce," relating to the construction, maintenance and operation of switch connections and side tracks.

(c) The functions and powers created and conferred by the act of August 24, 1912, with respect to the matters contained in paragraph (a) in the publication of the "act to regulate commerce," as amended.

(d) The functions and powers created and conferred in what are commonly known as the "safety appliance acts."

(e) The functions and powers created and conferred by the act requiring carriers to make full reports of all accidents to the Interstate Commerce Commission and authorizing investigations thereof by the commission.

(f) The functions and powers created and conferred by "an act to promote the security of travel upon railroads engaged in interstate commerce, and to encourage the saving of life."

(g) The functions and powers created and conferred by the hours of service act.

(h) The functions and powers created and conferred by "An act to promote the safety of employees on railroads," approved May 30, 1908.

(i) The functions and powers created and conferred by "An act to promote the safe transportation in interstate commerce of explosives and other dangerous articles, and to provide penalties for its violation," approved Mar. 4, '09.

(j) The functions and powers created and conferred by the act compelling common carriers to equip their locomotives with safe and suitable boilers and appurtenances.

(k) The functions and powers created and conferred by

"joint resolution directing the Interstate Commerce Commission to investigate and report on block-signal systems and appliances for the automatic control of railway trains." approved June 30, 1906.

All bureaus, divisions, or departments heretofore organized for the discharge of the foregoing functions and powers, and the employees, books, papers, and records pertaining to such functions and powers, are likewise transferred, and shall hereafter be under the exclusive jurisdiction of the board.

To Encourage Water Transportation

It is declared to be the policy of Congress "to promote, encourage and develop water transportation, service and facilities in connection with the commerce of the United States, and to preserve in full vigor both rail and water transportation.

"With that end in view the board shall inquire into water transportation facilities both for internal and external commerce, and especially into the relations between carriers by land and carriers by water, and the best method of coordinating the two kinds of transportation, when the carriage is partly by land and partly by water; shall investigate the appropriate types of boats suitable for different classes of waterways, also the subject of water terminals both for water traffic and for through traffic by water and rail, including the necessary docks, warehouses, apparatus, equipment, and appliances in connection therewith and railroad spurs and switches connecting with such terminals with a view to devising the types most appropriate for different locations, and for the more expeditious and economical transfer or interchange of passengers or property between carriers by water and carriers by rail; shall advise with communities, cities and towns regarding the appropriate location of such terminals, and cooperate with them in the preparation of plans for suitable terminal facilities; shall investigate the existing status of water transportation upon the different waterways of the country with a view to determining whether such waterways are being utilized to the extent of their capacity, to what extent they are meeting the demands of traffic, and whether the water carriers utilizing such waterways are interchanging traffic with the railroads; shall cooperate with communities, cities and towns and established lines of water transportation in obtaining joint and proportional through rates on traffic carried partly by water and partly by rail; and shall investigate any other matter that may tend to promote and encourage water transportation.

"It shall also be the province and duty of the board to compile, publish, and supply from time to time such useful statistics, data, and information concerning transportation by water as may be of value to the commercial interest of the country, and make such annual recommendations to Congress for the regulation and improvement of transportation by water as it deems advisable."

Section II provides that the board shall also have the following powers:

(a) If it finds that a carrier can not, by reason of the congestion of its lines, properly handle its traffic it shall have power to require the distribution of such obstructed traffic over other lines upon such terms as it may find under the circumstances to be just and reasonable. If any traffic shall be diverted from a carrier which it is ready and able to handle properly, then such carrier shall be entitled to recover from the carrier to which such traffic shall be thus diverted, the revenue accruing in excess of the actual out-of-pocket cost of transporting the same; and if such revenue shall not be awarded by the board and duly and promptly paid, then such carrier shall be entitled to recover by suit or action against the carrier or carriers liable therefor.

With respect to traffic not routed by the shipper, to direct the route which such traffic shall take after it arrives at the terminus of one carrier and is to be delivered to another whenever practicable and a fair distribution of traffic and the public interest may require.

(b) If it finds it to be in the public interest and to be practicable, without impairing the ability or substantial convenience of such a carrier owning or entitled to the enjoyment of terminal or other facilities to handle its own business, it shall have power to require the use of any such terminal or other facilities including main-line track or tracks for a reasonable distance outside of such terminals of any carrier by another or other carriers on such terms and for such compensation as the carriers may agree upon, or, in the event of their failure to agree, as the board may fix as reasonable and just for the permitted use, to be ascertained on the principle controlling compensation in condemnation proceedings (which compensation shall be paid or adequately secured before the enjoyment of the use is entered on). If the carrier whose terminal or other facilities are thus to be used by others, is not satisfied with such requirement or with the terms fixed for such use, or if the amount of compensation is not duly and promptly paid, the carrier whose terminal or other facilities have thus been thrown open to use, shall be entitled to recover the damages growing out of such requirement and just compensation for the privileges awarded.

Consolidations

Section 12 provides that it shall be lawful for two or more railway corporations, common carriers and engaged in interstate commerce, to consolidate their properties or any part thereof into one corpoation for the ownership, management and operation of the properties under the following conditions:

The proposed consolidation must be in harmony with and in furtherance of the ultimate complete consolidation and must be recommended by the board and approved by the commission.

The corporation which is to become the owner of the consolidated properties must be either organized under the provisions of this act or must be reincorporated and become a federal railway corporation pursuant to the provisions of the act.

The capitalization shall not exceed the value of the consolidated properties as determined by the commission, including a reasonable working capital. The value shall be ascertained by the commission in accordance with the valuation act and it shall be its duty to proceed immediately to the ascertaining of such values for the properties involved in the proposed consolidation upon the filing of the application.

When a railway corporation proposes a consolidation it shall present its application to the commission which shall at once refer it to the board for a report and recommendation. The board having made its report, the commission shall notify the board, the authorities of the states in which any part of the properties is situated, and the railway corporations involved, of the time and place for public hearing. If after such hearing the commission shall find that the public interest will be promoted by the consolidation and that the conditions of this section have been or will be fulfilled, it shall enter an order authorizing the railway corporation so engaged in interstate commerce to acquire the properties to be consolidated and they may then be acquired in any lawful manner that will result in such consolidation and in single ownership and operation, the provisions of any state law to the contrary notwithstanding.

Section 13 provides that seven years after the passage of the act the commission and the board shall proceed to the completion of the plan of consolidation and if in any proposed system complete consolidation has not occurred it shall be the duty of the board to secure the incorporation of a

railway company under the provisions of the act, either by initiating its organization or by co-operation with other corporations in fully effecting the consolidation and reorganization. It shall have the power, subject to the approval of the commission, to make contracts with such existing corporations as will co-operate, providing for a guaranteed operating income pending the reorganization, provided the guaranty shall not exceed that authorized in the federal control act, with due allowances for subsequent additions for betterments and extensions. When the reorganization and consolidation provided for is complete the board shall be reduced to three members by omitting to appoint successors to the two members whose terms of office first expire.

Section 14 provides that "any railway corporation which now owns and operates any line of railway engaged in the transportation of interstate or foreign commerce, having been incorporated under the laws of any state or territory, is hereby authorized and empowered to reincorporate itself and become a corporation under the laws of the United States in the manner and subject to the terms and conditions herein provided."

Sections 15, 16, 17, 18, 19 and 20, prescribe the method of reincorporation under the laws of the United States and for the organization, powers and duties of such corporations. The board of directors of any such reincorporated company shall consist of not less than 11 nor more than 15 persons, and there shall at all times be two directors selected from the classified employees of the company and also two directors appointed by the transportation board. Upon all committees of the board of directors upon which power to act in any manner relating to the affairs of the corporation is conferred, there shall be one director selected from the classified employees and one appointed by the board. Each railway carrier corporation subject to the act to regulate commerce not reincorporated or organized under the new act shall after June 30, 1920, where practicable and consistent with the laws of the state creating such corporation, make provision for at least one director selected from the classified employees of not less than 10 years' service on the road, if available, or if not, from those senior in the service of the road, and at least one person appointed by the transportation board where the board of directors consists of less than 11 directors, and two such representatives of the public and two from the senior classified employees where such board consists of 11 or more.

Section 21 provides that five or more citizens of the United States, with the recommendation of the board, may incorporate themselves under the act for the ownership, maintenance and operation of one of the railway systems or for the construction, ownership, maintenance and operation of new lines or systems into which the railways are to be divided by the board. This capital stock shall be fixed by the commission and new stock shall be issued at par and only for money or property of equivalent value actually received. The corporation shall engage in no other business than that of constructing, owning, maintaining, operating, bettering or extending the system of railways, nor shall it become the owner of any property save that which is reasonably necessary for the performance of its duties and obligations as a common carrier. The new system companies incorporated under the act shall have as members of their boards of directors at least two selected from the classified employees, and two appointed by the board, and one director selected from the employees and one appointed by the board shall have place upon each committee.

Section 23 provides that the property of railway corporations organized or reincorporated under the act shall not be exempt by virtue of the act from taxation by the several states or other lawfully constituted taxing authorities, but all discrimination in the taxation of such property is prohibited. Nothing in the act is to be construed to affect the existing laws or powers of the states in relation to taxation or lawful police powers, including the power to make and regulate intrastate rates of transportation except as provided in the act.

Regulation of Securities

Section 24 provides for the regulation of security issues. From and after 90 days after approval of the act it shall be unlawful for any railway or water common carrier subject to the act to issue securities except for some lawful object within its corporate purposes and compatible with the public interest and with the approval of the transportation board, which shall have power to grant or deny the application as made or in part or with such modifications and upon such terms and conditions as it may deem necessary or appropriate. It may also make supplemental orders modifying the provisions of any previous order. The board is required to give notice of applications for authority to issue securities to the governor of each state in which the equipment of the carrier operates and the state authorities are given the right to make such representations as they deem just and proper for conserving the rights and interests of their people and the states involved.

Nothing in the act is to be construed to imply any guaranty or obligations as to such securities. The provisions relating to the regulation of security issues do not apply to notes maturing in not more than two years and aggregating not more than 5 per cent on the par value of the securities of the carrier then outsanding. The board shall require reports from the carriers issuing securities, showing the disposition of the securities and the application of the proceeds. After two years from the passage of the act it shall be unlawful for any person to hold the position of officer or director of more than one carrier subject to the act, except with the approval of the commission upon showing that neither public nor private interest will be adversely affected.

Adjudication of Labor Disputes

Section 25 provides for the settling of disputes and controversies, not adjusted under existing provisions of law or otherwise, between carriers and their employees, through a committee of wages and working conditions and three regional boards of adjustment. The committee of wages and working conditions is to consist of four representatives of labor and four representatives of the carriers, appointed by the board for terms of four years, on nominations of the various railway crafts and of the carriers. The committee of wages and working conditions shall have jurisdiction over controversies respecting wages and working conditions and to hear and determine cases on appeal from the regional boards. It shall be its duty to consider all complaints respecting wages and working conditions submitted by representatives of employees or of the carriers and to make decisions by majority vote as promptly as practicable, which shall be certified to the board and take effect when approved by the board. If it shall be evenly divided the matter in dispute shall be referred to the board, whose decision shall be final. The board shall certify to the commission all decisions of the committee of wages and working conditions when approved by said board or decisions by the board itself in cases referred to it, and its certificate shall be conclusive evidence before the commission of the matters so determined and certified.

Section 26 provides that wages and salaries, hours of labor and other conditions of employment shall be fair, just and reasonable. In determining the fairness, justness and reasonableness of wages and salaries, the committee and the board shall take into consideration, among other relevant circumstances, wages paid for similar work in other indus-

tries, the relation between wages and cost of living, hazards of the employment, training and skill required, degree of responsibility and the character and regularity of the employment.

Section 27 provides for regional boards of adjustment, located at such places, and having jurisdiction over such territory, as the transportation board may determine. They shall consist of six members each, three representing labor and three representing carriers, and shall be empowered to hear and determine complaints, grievances, matters and disputes, including questions of discipline and controversies arising in ordinary railway operations, other than controversies relating to wages and working conditions, where the officers of a railroad corporation and the accredited representatives of an employee or group of employees fail or are unable to reach a satisfactory settlement, it being the intention to encourage the voluntary settlement of disputes between carriers and their employees.

All decisions other than those relating to personal discipline shall be filed with the committee of wages and working conditions, which for the purpose of securing uniformity of practice shall have power within 30 days to review and to amend or disapprove the same. In the event a regional board is evenly divided either party to the controversy may have the proceedings transferred to the committee for its decision. The committee and the boards are authorized to subdivide into sections for the hearing of cases and to hold hearings at any point within the United States. Members of the committee are to receive a salary of $7,500 and of the boards a salary of $5,000 per annum. It is provided that nothing in the act shall be held to repeal the Adamson law of September 3, 1916, nor to authorize the committee or the boards to make any rule, regulation or decision contrary to any law of the United States.

Section 29 provides that any carrier or any officer thereof knowingly refusing to obey the decision of the committee after it has been approved by the board or of the board in cases referred to it, shall be guilty of a misdemeanor and open conviction shall be punishable by a fine not exceeding $500 or by imprisonment not exceeding six months or by both.

Anti-Strike Provisions

The anti-strike provisions are as follows:

"Section 30. It shall be unlawful for two or more persons, being officers, directors, managers, agents, attorneys, or employees of any carrier or carriers subject to the act to regulate commerce, as amended, for the purpose of maintaining, adjusting, or settling any dispute, demand, or controversy which, under the provisions of this act, can be submitted for decision to the committee of wages and working conditions or to a regional board of adjustment, to enter into any combination or agreement with the intent substantially to hinder, restrain, or prevent the operation of trains or other facilities of transportation for the movement of commodities or persons in interstate commerce, or in pursuance of any such combination or agreement and with like purpose substantially to hinder, restrain, or prevent the operation of trains or other facilities of transportation for the movement of commodities or persons in interstate commerce; and, upon conviction, any such persons shall be punished by a fine not exceeding $500 or by imprisonment not exceeding six months, or by both such fine and imprisonment: *Provided,* That nothing herein shall be taken to deny to any individual the right to quit his employment for any reason.

"Section 31. Whoever knowingly and with like intent shall aid, abet, counsel, command, induce, or procure the commission or performance of any act made unlawful in the last preceding section hereof shall be held guilty of a misdemeanor and upon conviction shall be punished by a fine not exceeding $500 or by imprisonment not exceeding six months, or by both such fine and imprisonment."

Section 32 provides a means whereby companies may be dissolved or divested of their corporate powers and privileges. Corporations organized under the act may be dissolved by the stockholders if upon application the commission shall certify that the company has fully discharged its duties and obligations as a common carrier and that its continuance is no longer necessary or convenient in the public interest for the transportation of persons and property, and that its obligations have been duly provided for.

Section 33 increases the compensation of each member of the Interstate Commerce Commission to $12,000 per annum.

Car Service

Section 34 contains the provisions relating to car service as an amendment to the amendment of Section 1 of the act to regulate commerce, approved May 29, 1917, which is made to read as follows:

"The term 'car service' in this act shall include the use, control, supply, movement, distribution, exchange and interchange, and return of locomotives, cars, and other vehicles used in the transportation of property by or to any carrier subject to this act, or by or to any shipper making or offering any shipment or shipments subject to this act.

"It shall be the duty of every carrier by railroad subject to this act to furnish safe and adequate car service and to establish, observe, and enforce just and reasonable rules, regulations, and practices with respect to car service; and every unjust and unreasonable rule, regulation, and practice with respect to car service is prohibited and declared to be unlawful.

"The board is hereby authorized by general or special orders to require all carriers by railroad subject to this act, or any of them, to file with it from time to time their rules and regulations with respect to car service, and the board may, in its discretion, direct that the said rules and regulations shall be incorporated in their schedules showing rates, fares, and charges for transportation, and be subject to any or all of the provisions of this act relating thereto.

"The board may, after hearing, on a complaint, or upon its own initiative without complaint, establish reasonable rules, regulations, and practices with respect to car service, including the compensation to be paid for the use of any locomotive, car, or other vehicle not owned by the carrier using it, and the penalties or other sanctions for non-observance of such rules.

"Whenever the board shall be of opinion that shortage of equipment, congestion of traffic, or other emergency requiring immediate action exists in any section of the country or upon any railroad the board shall have, and it is hereby given, authority, either upon complaint or upon its own initiative without complaint, at once, if it so orders, without answer or other formal pleading by the interested carrier or carriers, and with or without notice, hearing, or the making or filing of a report, according as the board may determine, to suspend the operation of any or all rules, regulations, or practices then established with respect to car service for such time as may be determined by the board, and also authority to make such just and reasonable directions with respect to car service and the interchange and use of locomotives, cars, and other vehicles, without regard to ownership, during such emergency as in its opinion will best promote the service in the interest of the public and the commerce of the people, and also authority to give directions for preference or priority in transportation, embargoes, or movement of traffic under permits, at such times and for such periods as it may determine, and to modify, change, suspend, or annul them. In time of war or threatened war the President may certify to the board

that it is essential to the national defense and security that certain traffic shall have preference or priority in transportation, and the board shall, under the power herein conferred, direct that such preference or priority be afforded.

"The directions of the board as to car service may be made through and by such agents or agencies as the board shall designate and appoint for that purpose. It shall be the duty of all carriers by railroad subject to this act, and of their officers, agents, and employees, to obey strictly and conform promptly to such orders or directions of the board, and in case of failure or refusal on the part of any carrier, receiver, or trustee to comply with any such order or direction such carrier, receiver, or trustee shall be liable to a penalty of not less than $100 nor more than $500 for each such offense and $50 for each and every day of the continuance of such offense, which shall accrue to the United States and may be recovered in a civil action brought by the United States.

"It shall further be the duty of every carrier by railroad, subject to this act, serving coal mines located upon its line or lines to make just, reasonable and nondiscriminatory distribution among such mines of all cars available for the transportation of coal during any period (hereinafter called a car shortage period) when the carrier's supply of cars for such service does not equal the requirements of such mines. To that end, every such carrier shall make and establish rules and regulations providing for the rating of such mines and, during car-shortage periods, the distribution of cars among them in proportion to such ratings. The rules and regulations so established shall provide, among other things, that each and every car furnished or used for the transportation of coal during a car-shortage period shall be counted against the proportionate distributive share of the mine receiving or using it, and that no cars shall be furnished to or used by any mine for the transportation of coal during a car-shortage period in excess of the proportionate distributive share of such mine, regardless, in either case, of who the consigner or consignors or the consignee or consignees or the owner or owners of the coal loaded or to be loaded in such cars may be, or of the purpose for which such coal may be used or intended, or of the ownership of such car or cars. It shall be unlawful for any such carrier, by any rule, regulation, or practice, either directly or indirectly, to fail or refuse to count against the proportionate distributive share of any mine any car or cars furnished to or used by such mine for the transportaition of coal during a car-shortage period or to furnish to any mine for the transportation of coal during a car-shortage period any car or cars in excess of the proportionate distributive share of such mine, regardless, in either case, of who the consignor or consgnors or the consignee or consignees or the owner or owners of the coal loaded or to be loaded in such cars may be, or of the purpose for which such coal may be used or intended, or of the ownership of the car or cars. The proportionate distribution required by this paragraph shall be accomplished during successive 14-day periods which may be designated from time to time by the carrier: *Provided,* That in the event the board finds that it is necessary in order to furnish transportation companies with coal to be used in the movement of trains, cars to be loaded with coal to be used for fuel in the movement of trains may be omitted in the said count to the extent, and only to the extent, prescribed by the order of the board. In case of failure or refusal on the part of any carrier, receiver, or trustee to count any car or cars against the proportionate distributive share of any mine, or the furnishing for loading by any carrier, receiver, or trustee of any cars in excess of the proportionate distributive share of any mine, as herein provided, such carrier, receiver, or trustee shall be liable to a penalty of not less than $100 nor more than $500 for each offense (and each failure or refusal to count any one car or each furnishing of any one car shall be deemed a separate offense), which penalty shall accrue to the United States and may be recovered in a civil action brought by the United States. The provisions of this paragraph shall not be construed to limit or restrict the power or authority of the board to require the establishment, observance, enforcement, and filing of reasonable rules, regulations, and practices with respect to car service not in conflict herewith.

Certificate of Public Interest

"From and after January 1, 1920, no carrier by railroad subject to this act shall undertake the extension of its line of railroad, or the construction of a new line of railroad, or shall acquire or operate any line of railroad, or extension thereof, or shall engage in transportation under this act over or by means of such line of railroad, or extension thereof, unless and until there shall first have been obtained from the board a certificate that the present or future public interest requires or will require the construction, or operation, or construction and operation, of such line of railroad, or extension thereof, and no carrier by railroad subject to this act shall abandon any portion or all of its line of railroad, or the operation thereof, unless and until there shall first have been obtained from the board a certificate that the present or future public interest permits such abandonment.

"The application for and issuance of any such certificate shall be under such rules and regulations as to hearings and other matters as the board may from time to time prescribe, and the provisions of this act shall apply to all such proceedings. Upon receipt of such applications by the board it shall file or cause to be filed copies thereof with the governor of each state in which such line of railroad, or extension thereof, is proposed to be constructed or operated, or any portion or all of such line of railroad, or the operation thereof, is proposed to be abandoned, with the right to be heard as hereinafter provided with respect to the hearing of complaints or the issuance of securities.

"The board shall have power to issue such certificate as prayed for or to refuse to issue it, or to issue it for a portion or portions of a line of railroad, or extension thereof, described in the application, or for the partial exercise only of such right or privilege, and may attach to the issuance of said certificate such terms and conditions as in its judgment the public interest may require. From and after issuance of such certificate, and not before, said carrier by railroad may comply with the terms and conditions of such certificate or attach to the issuance thereof and proceed with the construction, operation, or abandonment covered thereby. Any construction, operation, or abandonment contrary to the foregoing provisions of this section may be enjoined by any court of competent jurisdiction at the suit of the United States, the board, any commission or regulating body of the state or states affected, or any party in interest, and any carrier knowingly violating any of the foreging provisions shall be guilty of a misdemeanor and upon conviction shall be punished by a fine of not more than $10,000 or imprisonment for not more than three years, or both such fine and imprisonment, in the discretion of the court.

"The board may, after hearing, in a proceeding upon complaint or upon its own initiative without complaint, authorize or require by order any carrier by railroad subject to this act, party to such proceeding, to provide itself with safe and adequate facilities for performing as a common carrier its car service as that term is used in this act, and to extend its line or lines: *Provided,* That the board shall find that such provision of facilities or extension is reasonably necessary in the public interest and will not impair the ability of the carrier to perform its duty to the public; and, with respect to extensions, that the carrier has the necessary funds or can obtain the same at a reasonable rate of interest: *Provided further,* That the authority of the board

conferred by this section shall not extend to the construction or abandonment of side tracks, spurs, industrial, team or switching tracks, street car and electric interurban lines located or to be located wholly within one state."

Section 35 applies the provisions of the act prohibiting rebating to the transmission of intelligence by wire or wireless.

Section 36 amends the second paragraph of section 3 of the act to regulate commerce to provide that all carriers subject to the provisions of the act shall, according to their respective powers, afford all reasonable, proper and equal facilities for the interchange of traffic between their respective lines and for the receiving, forwarding and delivering of passengers to and from their several lines and those connecting therewith and shall not discriminate in their rates, fares and charges between such connecting lines.

Section 37 amends the long and short haul clause of the commerce act, authorizing the commission to permit carriers to charge less for longer than for shorter distances, but the commission shall not permit the establishment of any charge to or from the more distant point that is not fairly compensatory for the service performed, and if a circuitous rail line or route is because of circuity granted authority to meet the charges of a more direct line or route to or from competitive points and to maintain higher charges to and from intermediate points on its line, the authority shall not include intermediate points as to which the haul of the petitioning line or route is not longer than that of the direct line or route between the competitive points; and no such authorization shall be granted on account of merely potential water competition not actually in existence.

Section 38 amends the anti-pooling section of the commerce act by inserting the words "except upon specific approval by order of the commission as in this section provided." The commission is given authority to authorize divisions of traffic or earnings between carriers under prescribed rules and regulations whenever it shall be of the opinion that such division of traffic or earnings will be in the interest of better service to the public, economy in operation, or otherwise of advantage to the convenience of commerce and the people and will tend to equalize earnings between carriers and will not unduly restrain competition.

Section 39 adds to Section 6 of the commerce act a provision authorizing the commission to make suitable rules and regulations for the simplification of schedules of rates, fares, charges and classifications and to permit in such rules and regulations the filing of an amendment of, or change in, any rate, fare, charge or classification without filing complete schedules covering rates not changed, if in its judgment the public will be better informed by so doing.

Section 40 authorizes the transportation board to establish physical connection between the lines of the rail carrier and the dock at which interchange of passengers or property is to be made, by direction to either to rail or the water carrier or to both.

Section 41 extends the authority of the commission to prescribe rates by substituting for the words "maximum joint rates" and "maximum proportional rates" the words "joint rates or maximum or minimum or maximum and minimum joint rates" and "proportional rates or maximum or minimum or maximum and minimum proportional rates."

Section 42 amends Section 7 of the commerce act to prohibit common carriers from entering into any combination, contract or agreement to prevent by change of time schedule carriage in different cars or by other means or divisions the carriage of freights from being continuous from the point of origin to the place of destination; and no break of bulk, stoppage or interruption made by such carrier shall prevent the carriage of freights from being and being treated as one continuous carriage from the place of origin to the place of destination unless made in good faith for some necessary purpose and without intent to avoid or necessarily interrupt continuous carriage.

State Rates

Section 43 provides for a method of co-operation between the federal and state commissions in all proceedings by amending Section 13 of the commerce act by adding at the end thereof the following:

"Whenever in any investigation under the provisions of this act there shall be brought in issue any rate, fare, charge, classification, regulation, or practice made or imposed by authority of any state, the commission, before proceeding to hear and dispose of such issue, shall cause such state or states to be notified of the proceeding. The commission shall confer with authorities of any state having regulatory jurisdiction over the class of persons and corporations subject to this act with respect to the relationship between rates, fares, charges, classifications, regulations, or practices of carriers subject to the jurisdiction of such state bodies and of the commission; and to that end is authorized and empowered, under rules to be prescribed by it, and which may be modified from time to time, to hold joint hearings with any such state regulating bodies on any matters wherein the commission is empowered to act and where the rate-making authority of a state is or may be affected by the action taken by the commission. The commission is also authorized to avail itself of the co-operation, services, records and facilities of such state authorities in the enforcement of any provision of this act.

"The commission shall, after full hearing, make such findings and orders as will in its judgment remove any undue or unreasonable advantage, preference, or prejudice as between persons or localities in state and interstate or foreign commerce, or any undue, unreasonable, or unjust discrimination against interstate or foreign commerce, which is hereby forbidden and declared to be unlawful, and such findings or orders shall be observed while in effect by the carriers parties to such proceeding affected thereby, and shall make the rates, fares, and charges, or the minimum and maximum of such rates, fares, and charges, and any classification, regulation, or practice which, in its judgment, will remove such advantage, preference or prejudice.

"Nothing in this act shall be construed to amend, repeal, impair, or affect the existing laws or powers of the states or other local authorities in relation to taxation or the lawful police powers of the several states, including the power to make and regulate intrastate rates, except as in this act otherwise provided. Any carrier shall have the right to make complaint to the commission respecting any such intrastate rate, fare, charge, classification, regulation or practice."

Section 44 authorizes the commission, whenever it shall be of opinion that any rate, etc., is or will be unlawful, to determine and prescribe what will be the just and reasonable individual or joint rate, fare or charge or rates, fares, or charges to be thereafter observed in such case, or the maximum or minimum or maximum and minimum to be charged, and what individual or joint classification, regulation or practice is or will be just, fair and reasonable to be thereafter followed, and to make an order for the future. Except as otherwise provided, orders of the commission other than those for the payment of money shall take effect within such reasonable time, not less than 30 days, and shall continue in force until its further order or for a specific period of time.

The section also gives the commission complete jurisdiction over divisions of joint rates between carriers, providing that the commission shall inform itself and take into consideration the efficiency with which the carriers are operated,

the amount of revenue required to pay operating expenses, taxes and a fair return, the importance of the carrier to the public, whether the participating carrier is an originating, intermediate or delivering line, and any other fact or circumstance which would ordinarily entitle one carrier to a greater or less proportion of the joint rate than another.

In establishing through routes the commission shall not, except as provided in Section 3, require any carrier without its consent to embrace in such route substantially less than the entire length of its railroad and of an intermediate railroad operated in conjunction and under common management or control therewith which lies between the termini of such proposed through routes unless such inclusion of lines would make the through route unreasonably long as compared with another practicable through route which could otherwise be established. It is provided, however, that in time of shortage of equipment, congestion of traffic, or other emergency, it may establish temporarily such through routes as in its opinion are necessary or desirable in the public interest. This section also amends the provisions of the present law as to suspensions, which are limited to 120 days. If the hearing cannot be concluded within this period the commission may extend the time of suspension for a further period not exceeding 30 days and if the proceeding has not then been concluded the proposed rate shall go into effect.

Whenever property shall have been diverted or delivered by one carrier to another contrary to the routing instructions in the bill of lading, any carrier thus deprived of its right to participate in the haul shall be entitled to recover from the carrier or carriers to which such traffic shall be thus diverted the revenue accruing on such diverted traffic.

Section 45 requires ocean-going common carriers engaged in foreign commerce or in coastwise or in coast-to-coast commerce, whose ships are registered under the laws of the United States, to file with the transportation board schedules showing the routes over which the boats ply, the sailing dates and the rates, fares, and charges for transportation to and from the various ports, stating the period during which such rates are to be in effect. The board shall cause such information to be published for the information of shippers and furnish such publication to rail carriers in such quantities that they may supply them to their agents in each shipping community sufficiently important to be specified by the board for that purpose. The absorption of the necessary reasonable cost for the transfer of shipments from rail lines to boats in the transportation charge of the rail carrier is authorized under such rules and regulations as the board may prescribe and under regulations prescribed by the board, rail carriers are required to issue through bills of lading.

Section 46 provides a penalty of $5,000 for each offense for violations of the provisions of Sections 3, 13 or 15.

Section 47 amends the fifth paragraph of Section 20 of the commerce act to provide that the commission shall have access to all accounts, records and memoranda, including documents, papers and correspondence kept or required to be kept by carriers subject to the act.

Section 48 provides that Sections 20, 24, 25, 26, 27, and 28 shall not apply to street, suburban or interurban electric railways operated chiefly for the transportation of passengers and not a part or parts of a general system of transportation conducted and operated in the ordinary way.

The University of London proposes to grant degrees in commerce. Under this scheme it is proposed to grant the degree of bachelor of commerce to candidates who pass the necessary examinations after a three years' course of study. Those who so desire may later proceed to the degree of master of commerce, after a minimum of two years' practical experience in the particular trade or industry taken up.

Provision for Funding Equipment Ordered by Government

A BILL WHICH WOULD PERMIT the United States Railroad Administration to accept stock in the proposed national equipment corporation for funding the cost of locomotives and cars ordered for the railroads last year by the government, in accordance with the plan worked out for the Association of Railway Executives by a committee of bankers, has been introduced in the Senate by Chairman Cummins, of the Committee on Interstate Commerce, and in the House by Chairman Esch, of the Committee on Interstate and Foreign Commerce. The bill provides that in order to make provision for the reimbursement of the United States for the sums advanced to provide motive power, cars and other equipment ordered by the President for the carriers, the President may, upon such terms as he shall deem advisable, receive in reimbursement cash or obligations of any carrier, or part cash and part such obligations, or, in his discretion, he may accept for such motive power, cars or other equipment cash or the shares of stock or obligations, secured or unsecured, of any corporation not a carrier, organized for the purpose of owning equipment or equipment obligations, or part cash and part such shares of stock and obligations, and he may transfer to such corporation any obligations of carriers received on account of motive power, cars or other equipment, and he may execute any instruments necessary and proper to carry out the intent of the provision of the federal control act which authorized the President to order equipment, to the end that title to the equipment ordered for the carriers may rest in them or their trustees or nominees.

The President is also authorized to dispose in the manner and for the consideration aforesaid of the equipment provided by him in accordance with any other provisions of the section of the law referred to, and of any obligations of carriers that may be received in reimbursement of the cost thereof. It is also provided that any contract for the sale of the equipment may provide that title thereto, notwithstanding delivery of possession, shall not vest in the carrier until the purchase price, which may be payable in instalments during any period not exceeding 15 years, shall be fully paid and the conditions of purchase fully performed.

The plan, which has now been practically agreed upon, provides for the financing in a single operation of all or a large part of the cars and locomotives purchased by the government, the total cost of which is estimated at approximately $400,000,000. The bankers' committee proposed to sell $280,000,000 six per cent 15-year equipment trust certificates to the public, while the remaining $120,000,000 worth of equipment and a reserve fund of $28,000,000 would be constituted by a stock issue of $148,000,000, which, it was suggested, should be subscribed for by the Railroad Administration. The corporation would take title to the equipment and the various companies accepting it would obligate themselves to the equipment corporation to purchase it in 15 annual installments with interest at 6 per cent.

The bill has been passed and has been approved by the President.

BRITISH COAL PRODUCTION.—During the four weeks which ended on July 19th last, the total output of coal in the United Kingdom aggregated 18,120,700 tons, while the number of persons employed was 1,146,700.

THE CITY OF WINNEPEG, MANITOBA, to build its recently completed aqueduct, constructed its own standard gage railway and a telegraph line. The road is 110 miles long and its locomotives and 115 cars are valued at $1,439,522.—*Fire and Water Engineering.*

Railroad Labor Questions Coming to a Head

WASHINGTON, D. C.

THE STEEL AND COAL STRIKES having materialized, the question whether they are to be followed by a strike or strikes of railroad employees has naturally aroused much speculation, in view of the various threats that have been uttered by railroad labor leaders in connection with their demands for increased wages, as well as in connection with their protests against proposed anti-strike legislation in Congress, and for a time there was some talk of a general strike in which the railroad employees would participate. It has become apparent, however, that the railroad labor organizations are mainly engaged in looking out for their own interests and that the working arrangement between the train service brotherhoods and the American Federation of Labor is not so close as to induce them to depart from their traditional policy against sympathetic strikes, and while the demands of the railroad organizations include the possibilities of a crisis, they are not regarded so seriously as they were before November 1.

It is understood that Grand Chief Stone, of the Engineers, has been making some efforts to bring about a peaceful settlement of the coal strike in order to avoid consequences which might be disastrous to all organized labor, and the firm policy adopted by the administration in dealing with the United Mine Workers has undoubtedly given much food for thought to any other labor leaders that might have been planning to go farther than to threaten a strike. While the labor leaders have been protesting loudly against proposed anti-strike legislation such as that embodied in the Cummins bill and bills introduced in the House, they seem to have overlooked entirely the teeth in the food and fuel control act which has proved so potent in dealing with the coal strike. This has been in existence since August 10, 1917, and was strengthened as late as October 22. As amended at that time it makes it unlawful to "conspire, combine, agree, or arrange with any other person, (a) to limit the facilities for transporting, producing, harvesting, manufacturing, supplying, storing, or dealing in any necessaries"; and the stress which has been laid upon the effect of the coal strike upon transportation in the proceedings in connection with Judge Anderson's injunction leaves no room for doubt that the same law could be applied in the case of a railroad strike.

Officers of the railroad brotherhoods were called into conferences with the leaders of the steel and coal strikes, presumably for the purpose of enlisting their co-operation, and it is understood that they agreed not to oppose walkouts by individual employees of industrial roads serving the steel plants on which the employees are not under contract with the Railroad Administration, but so far apparently the co-operation of the brotherhoods has been confined to "moral support."

L. E. Sheppard, president of the Order of Railway Conductors, in announcing the intention of the brotherhood representatives to withdraw from the Industrial Conference on October 22, said:

"I regret beyond the power of words to express that I must in the near future, if things go as the stage is set, fight men that I fought years and years ago, but whom, for some years at least, we have been on friendly relations with—the railroad men and the railroad managers, who have gotten together, and have been getting along in peace and harmony, and who have begun to fully realize what can be accomplished by co-operation, but now it seems that all that we have accomplished is to be sacrificed, and that we are to be drawn into the vortex of this industrial warfare.

"Railway labor cannot stay out of the controversy. The railroad men are the key to the whole situation. You cannot have a controversy of any description, of any magnitude, that the railroads are not drawn into it. We want to live up to our contracts; we are threatening to expel from membership those who do not live up to our contracts; but what assistance do we get from the conference which has taken place here? What can we say to our men, when the men are leaving the service of the employers all about us—'Stay at your work and help tear down the other workers?' That is what it means, and I say it is not fair to the men who want to do the right thing."

W. G. Lee, president of the Brotherhood of Railroad Trainmen, was quoted on November 1 as having given the following reply to a question as to the attitude of his organization in connection with the coal strike:

"Our organization is fully in sympathy with the miners in attempting to secure a living wage and better working conditions, and believes that the position taken by the government in connection with the injunction issued will probably disturb industrial conditions to a far greater extent than recognized by those in charge of governmental affairs.

"The railroad brotherhoods will assist the miners in every honorable and consistent way and the officers of the miners' organization fully understand the brotherhoods' position.

"I have not assumed to impose my opinion or presence either at the White House or upon the Attorney General in connection with the miners' strike, because no intimation from the officers of the miners' organization has come to the trainmen's brotherhood, to my knowledge, requesting such assistance or the use of our influence."

Apparently the first concern of the railroad labor organizations has been to prevent the return of the railroads on December 31, not because they are particularly enamored of government control, but because they have thus far been able to get more of what they wanted from the Railroad Administration than from private management, and their representatives have recently been very busy in working with members of Congress for an extension of federal control. They have also laid plans for getting as much as possible from the Railroad Administration before it lets go and will probably make some demonstration in an effort to insist on their demands before the railroads are returned, but present indications are that their efforts will not meet with entire success.

The demands for general increases in wages presented in July and August have been held in abeyance in accordance with the President's request that the government be allowed a reasonable time in which to attempt to reduce the cost of living, and meanwhile the Board of Railroad Wages and Working Conditions has been holding hearings and making recommendations to Mr. Hines on requests for readjustments to correct alleged inequalities. Some of the labor leaders have expressed impatience with the slowness of the results achieved in the direction of reducing prices and have declared they will regard the "reasonable time" as having elapsed very shortly.

Director General Hines has arranged for an early conference with the executives of the four brotherhoods, and also of the maintenance of way employees' organization, at which he is expected to give them some kind of a definite answer on the various demands that have been made, including the question of time and one-half for overtime in road train service. The engineers and conductors have not presented any formal wage demands, but the conductors are involved in the demands presented by the Brotherhood of Railroad Trainmen. A hearing on the firemen's demands has recently been concluded by the wage board.

Railroads Expected to Be Returned January 1

Temporary Legislation May Be Necessary if Permanent Act Is Not Passed by That Time.

ACTIVE PREPARATIONS FOR THE RETURN of the railroads to their owners at midnight of December 31 are now under way, both on the part of the Railroad Administration and by the executives of the railroad companies that expect to resume their operating functions. However, the proposed legislation to provide for the regulation of the roads after their return, or for their reorganization, as contemplated by the Senate bill, has encountered so many snags that it now seems probable that the roads will go back with only temporary legislation providing for a continuation of the guaranteed standard return until a permanent bill can be enacted and efforts are still being made to continue the present form of control for another year or two.

The House committee completed its work on the revised Esch bill on November 8 with the purpose of reporting it the following Monday, and of attempting to pass it during the week. Chairman Cummins, of the Senate committee, also planned to attempt to get consideration of the committee's bill in the Senate during the week in an effort to pass it, but it is recognized that it will be practically impossible to do so or to obtain an agreement before the end of the year between the House and the Senate on the two conflicting bills if both should succeed in passing them. After that situation is made clearly apparent it is proposed to pass a temporary resolution in December, although the plan will encounter some opposition on the part of members of Congress who will favor a further extension of the period of federal control.

The House committee has held almost daily sessions on its bill since a tentative bill was reported to the full committee on October 29, by a sub-committee which had worked on it since the conclusion of the committee's public hearings on September 26. The Senate committee reported the revised Cummins bill on October 23, but later the committee reached a point where it was practically ready to agree that the Cummins bill could not be passed before January 1, and that the only practicable course to pursue would be to put through a temporary resolution on which an agreement could be reached with the House, avoiding all points of controversy. When the House leaders objected to this idea and insisted that it would be possible to pass the Esch bill in time for an early adjournment it was decided to make another effort in the Senate and postpone the proposed temporary resolution until December. Before that time conferences will be held between Chairmen Cummins and Esch of the two committees, Director-General Hines and representatives of the railway executives as to the terms of the temporary resolution.

Political considerations, the desire of Congress for an adjournment of the present extra session before the new session begins in December, the interminable character of the Senate debate on the peace treaty and wide differences of opinion between the House and Senate committees as to what should be included in the railroad bill, have been added to the inherent complexity of the railroad problem as factors causing the delay. The Democrats apparently have made up their minds to wash their hands of the railroads, while the Republicans, who have taken great delight in criticising Democratic management of the roads, have recently evinced increasing reluctance to assume the problem themselves and this situation has added strength to the element in Gongress, backed by the railroad labor organizations, for an extension of federal control until after the election, next fall. Representatives of the 14 railroad labor organizations at a recent meeting in Washington decided to work for a two-year extension.

For a long time members of Congress and others seem to have harbored an idea that the President could be easily induced to retain his control of the railroads indefinitely pending the completion of the railroad legislation, in spite of his declaration last May that they would be returned at the end of the year. This idea seems to have been rather definitely dispelled by recent announcements of the director general that he was planning for the return of the roads regardless of legislation, and has given way to a realization that the Republicans can no longer dodge their responsibility. Director General Hines has made it plain on several occasions that he does not consider it practicable for the government to continue the operation of the roads for a brief or uncertain period, and during the past week he seems to have made it plain that the President is not going to change his mind. The idea has prevailed in many minds that the railroad labor situation now coming to a head would interfere with the plans for the relinquishment, but as the preparations for winding up the active operations of the Railroad Administration have proceeded, it has been more frequently suggested that the labor situation represents one of the reasons why the government would be glad to let go.

Senator Cummins Urges Action

On November 4, Senator Cummins urged the Senate to dispose of the German treaty during the week in order that the railroad bill might be taken up, and said that if he could not be assured in some manner that the railroads would not be returned to their owners in the absence of adequate and protective legislation he would feel it his duty to ask that the treaty be displaced. "Nine months ago, substantially," he said, "the President declared that not later than the first of January he would feel it his duty to return the railways to their owners, under a power which he undoubtedly possesses. I have good reason to believe that his purpose at that time has not been changed. I cannot speak positively with regard to his intent, but I am led to think that about the first of January these properties will be returned to their owners. Nor could anyone criticise the President with much severity, because we have had ample opportunity to prepare and enact into law the legislation which I regard as absolutely necessary in the return of our systems of transportation to their owners. In view of the impending calamity—and it will be a calamity from which we cannot escape, if the railroads are returned without adequate legislation—the German treaty ought to be disposed of.

"If the railroads are returned without adequate legislation, you will not only see an intensification of all the difficulties which are now observed in the labor world, but in my judgment you will witness a financial catastrophe against which it will be very hard for us to contend."

Senator Cummins added that if he were in the President's stead, he thought he would not return the roads until adequate legislation is enacted, "yet there are a great many reasons which move in that direction." "At this time," he said, "there is almost complete demoralization in the railway service. The employees cannot maintain that degree of efficiency which ought to be manifest in all such service. The railway companies are utterly incapable of doing anything, for they have nothing with which to accomplish any purpose. The

properties are not in their possession; the working capital is not in their possession; they are unable even to prepare fairly for the approaching return of the properties. There is every consideration for the rapid disposition of the subject."

When it became apparent that the Senate was not able to agree upon an early date for the disposition of the treaty the Senate committee on interstate commerce held a meeting on November 5 and decided to propose the plan of temporary legislation. The House committee, however, showed a disposition to go ahead and attempt to pass its bill and Chairman Cummins gave out a statement to make it clear that the effort to pass permanent legislation had not been entirely abandoned.

"We are informed definitely that the railroads will be returned by the President to the companies on January 1," he said. "In that situation, and with the uncertainty about passing much-needed legislation before they are returned, the Senate Committee on Interstate Commerce has been in a conference to consider the possibility of taking steps to pass temporary measures to render the transitional period easier. By that I mean, particularly, the extension of the guaranteed return for some brief period until the permanent reconstruction legislation can be passed.

"There was complete agreement as to the necessity for getting legislation passed before the roads go back, but realizing the difficulties that will confront it in the Senate I have begun to doubt whether we could pass it at this session, or even before the beginning of the new year."

The Anti-Strike Clause

It is understood that some of the House leaders and also members of the steering committee of the Senate urged that the Senate committee omit from its bill the proposed anti-strike legislation in order to expedite the passage of a bill, or even to put it into a separate bill.

Organized labor is preparing for one of the biggest fights in its history in an attempt to defeat any anti-strike legislation. The officers of the four railroad brotherhoods conferred with Chairman Cummins of the Senate committee on October 31, and made formal application for another hearing on the so-called anti-strike provisions of the Cummins bill, although they had had a three-day hearing in September. They had prepared written objections to the bill which Senator Cummins submitted to the committee, but by unanimous vote the committee declined to reopen the hearings.

Representative Sims, on November 5, introduced a bill providing for an extension of federal control until December 31, 1921, "or until Congress otherwise orders." This is in accordance with the proposals of the railroad labor organizations. Mr. Sims had proposed a six-months' extension the week before in the House committee, but the proposal had been voted down. It was reported, however, that a strong support might be gained for a one-year extension, as a compromise between those who were opposed to a continuation of the guaranty unless the roads are retained by the government and those who favored the labor plan for a two-year extension. Mr. Sims had a long conference with Director General Hines the day before he introduced his bill.

Mr. Sims also introduced a bill to provide that for one year from the end of federal control no attachment, execution, order of sale, or other process, mesne or final, shall be issued or levied upon or against the property of any railroad company subject to the federal control act, used or necessary to be used by such company as a common carrier engaged in general transportation; but that actions at law or suits in equity may be brought against such carriers and judgments rendered as now provided by law. He also introduced another bill to provide that not more than $20,000 of the salary of any railroad officer shall be charged to operating expenses, or be considered by the Interstate Commerce Commission in reaching its conclusion as to the justness or reasonableness of any rate, fare, charge, classification, regulation or practice.

The House bill, as sent to the printers on November 8, differs radically from the Cummins bill. It centers authority in the Interstate Commerce Commission, with no provision for a transportation board. It does not provide for federal incorporation nor compulstory consolidation. It has no definite standard of rate-making and it contains no anti-strike provisions. It contains a rule of rate-making requiring the commission to consider "the interest of the public, the shippers, the reasonable cost of maintenance and operation, including the wages of labor, depreciation and taxes, and a fair return on the value of the property used or held for the service of transportation" in reaching its conclusions.

The bill provides for the termination of the present government control at the end of the month within which the measure is approved by the President, for the temporary continuation of rates initiated by the government during federal control, for the continuation of the guaranteed standard return for six month, including a similar provision for short lines that were relinquished, and for a funding of the indebtedness of the roads by the government for 10 years. Provision is made for voluntary adjustment of labor controversies through boards similar to those created by the Railroad Administration and for the assessment of damages against the company or against a labor union for violation of a contract by a lockout or strike.

Minimum Weights in Grain Increased

The Railroad Administration has filed with the Interstate Commerce Commission supplements to tariffs providing for the establishment of minimum weights on grain and grain products designed to secure heavier loading and to make available additional freight cars for the transportation of grain and grain products. The amended tariffs will provide that the new minima are made effective purely as an emergency matter. When the emergency has passed, the tariffs will be withdrawn.

This step had been made necessary by the extremely heavy demands which are being made upon the Railroad Administration for the transportation of grain and grain products and by the fact that in many markets cars are being ordered loaded only to the existing minimum weights even though these are considerably less than the capacity of the cars. These minima are not being established for the purpose of securing revenue or as a permanent policy, but solely to assist in providing more freight cars during the present emergency.

The new minimum weights will be as follows:

On grain, all kinds, the minimum weight will be the marked capacity of the car except that where the marked capacity is less than 40,000 lb. the minimum weight will be 40,000 lb. per car. The actual weight will apply when grain is loaded to within 24 in. of the roof at the side walls of the car for the purpose of federal or state inspection by grain exchange at points where federal inspection is maintained (notation to that effect being inserted in the bill of lading by shippers) or when grain is loaded to proper grain line of cars so marked.

On grain products, the minimum weight will be 60,000 lb. per car provided that when the marked capacity of the car is less, the marked capacity, but not less than 40,000 lb. per car, will apply, and provided further than when a car is loaded to full space capacity the actual weight will apply.

Organized Labor Opposes Anti-Strike Legislation

General Labor Conference Called; Anti-Strike Bills Introduced in Both Houses

WASHINGTON, D. C.

THE RAILROAD LABOR ORGANIZATIONS and the American Federation of Labor have united their forces to oppose the proposed anti-strike legislation now pending in Congress, which is included in the Cummins bill in the Senate and several bills in the House. After having assumed a belligerent attitude during the summer the railroad labor leaders have been rather put on the defensive recently by the evidences of strong support in Congress for such a law.

A Conference Called

The executive officers of the four train service brotherhoods have joined with the executive council of the American Federation of Labor in a call for a general labor conference to be held at Washington on December 13 by representatives of 112 national and international unions affiliated with the American Federation of Labor and possibly by representatives of some of the farmers' organizations. The call for the conference says:

"In this critical reconstruction period labor is confronted with grave dangers affecting the very foundation of its structure. So grave is the situation regarded that at its recent meeting the executive council of the American Federation of Labor and the representatives of the railroad brotherhoods agreed that the executives of the national and international unions should be invited to participate in a conference at the headquarters of the American Federation of Labor at 10 o'clock on the morning of December 13, 1919, and there to take counsel and to formulate such action as may be essential to safeguard and promote the rights, interests and freedom of the wage-earners, the workers, who form the great mass of the people of our republic.

"It is imperative that the responsible representatives of the labor movement shall, therefore, consider the situation in the industrial and legislative field and agree upon fundamental principles and a program which the wage-earners will accept in performing their duties as citizens and at the same time maintaining the right of free men in order to conserve human interest and welfare."

This conference was decided upon at a meeting on October 25 at which, according to Mr. Gompers' announcement, "general discussion ensued regarding the legislation pending in Congress inimical to the rights and interests of industrial and agricultural workers," and "further discussion ensued regarding legislation which should be urged at the hands of Congress in the interests of the above." Mr. Gompers said that the representatives of the farmers' organizations, "although in entire sympathy with the discussion and purposes, stated that they had no authority to join in the call, but in their convention, which would be held within a month from now, would be glad to receive invitations upon which to act."

Timothy Shea Says Anti-Strike Law Would Not Be Observed

W. H. Johnston, president of the International Association of Machinists, was quoted in the newspapers as saying that in the event of the passage by either House of Congress of proposed anti-strike legislation he would immediately order a strike vote of his 350,000 members and that he had no doubt similar action would be taken by other unions. Timothy Shea, acting president of the Brotherhood of Locomoive Firemen and Enginemen, issued a statement on October 25 opposing the proposed anti-strike law, saying that firemen and hostlers would not observe "any law which deprives them of the rights of American citizens."

Mr. Shea's statement was prompted by the publication of extracts from his recent testimony before the wage board when he announced the program he proposed to insist upon as a condition precedent to the return of the railroads.

"We are now waiting," said Mr. Shea, "the outcome of this campaign against the high cost of living. We wish to see prices reduced. If prices are not reduced, however, we shall have to have further advances in our wage schedules in order that the standards of living of locomotive firemen and hostlers shall at least be maintained on a subsistence level."

Mr. Shea pointed to the war activities of the railway workers, whose patriotism and patience during the war years, he claims, were notable. For nearly four years, he said, the railway men have been waiting for the establishment of a reasonable work day, with time and one-half pay for overtime.

"We considered," he continued, "it our duty to remain at work in the transportation industry in a time of war emergency, even though we suffered great financial loss in so doing. We looked upon the war as a time to give the full measure of our capabilities and experience to the country and not as a time to make money.

"Strikes occur in industry for various reasons. The experience of the world has shown that anti-strike legislation has always been abortive. The Senate committee which has reported the Cummins bill, has a report, prepared two years ago, which was based on an exhaustive study of anti-strike legislation in Europe, Great Britain and Australia, and the conclusion was drawn that in all countries where it had been tried it was found to have been a failure. Now, we find this same committee, in the face of its own exhaustive investigations and conclusions, and contrary to the well-known experience of the leading industrial and commercial nations of the world, submitting anti-strike legislation. The irrationality of such action is only equalled by its ineffectiveness.

"If railroad employees are given their simple, fundamental, economic rights, together with proper machinery for adjusting current and less important grievances, there would be no occasion for strikes and few strikes would occur. This is the intelligent and effective policy to pursue. If the members of the Senate committee were possessed of the elements of real industrial insight and constructive statesmanship, they would recommend such a policy instead of the foolish and futile anti-strike provisions of the Cummins bill or the proposed amendment to the federal control act introduced by Congressman Black."

Shea asserted that firemen cannot physically endure the hours they are now required to work and that after four years of waiting they have decided that the shorter workday issue cannot long be postponed. Unless the cost of living is reduced, he added, the rates of pay must also be advanced to meet the increased cost of living.

He also made reference to the labor provisions of the League of Nations which guarantee to all industrial workers a living wage and an eight-hour day.

"These two principles," he adds, "have, therefore, been sanctioned by the enlightened opinion of the civilized world. They are obligatory upon our government and upon the Railroad Administration to see that they are practically applied. It is the duty of the Senate to see that they are embodied in any legislation as a condition precedent to the

return of the railroads to their private owners or to any change in the present method of operation. If they wish to bring about stability of operation of the railroads and prevent strikes or interruption of traffic, they should assure the employees of these fundamental rights.

"If anyone will take the time to review the history of the transportation brotherhoods they will have no trouble to ascertain that strikes have been an almost unknown quantity. It is true that now and then, here and there, on an individual road there has been a temporary stoppage of traffic, but not until every other effort to secure justice had been exhausted. There have been no sympathetic strikes sanctioned. The public has been always free from any inconvenience, and to have the Congress single out railroad employees and attempt to deprive them by statute of the economic right to strike if need be, to prevent injustice being imposed upon them, must be accepted, in connection with other information we have, as a foregone conclusion that the railroad interests contemplate putting into effect a general reduction in wages of railroad employees after the roads are returned to private control, and to prepare for this action they desire a law to prevent such employees from striking to combat injustices which may be perpetrated by reducing their wages or interfering with their hours of labor or rules of employment which have been established.

"If these interests or the legislators believe railroad employees will unresistingly submit to any such invasion of their rights as citizens, they had better expel that thought from their minds, because I believe I speak for locomotive firemen and hostlers, at least, when I say that any law which deprives them of the rights of American citizenship would not be observed, not because this class of American citizens are lawbreakers, but because such a law would be unwarranted, un-American, and contrary to American institutions.

"If an anti-strike law is enacted, the responsibility for any upheaval which might follow lies with Congress."

Public Opinion Crystallized

While many observers of the course of legislation in Congress have freely predicted that it would not pass an anti-strike law and some surprise was expressed when the Senate committee voted for the anti-strike section of its bill by a vote of 14 to 1, Senator La Follette constituting the minority, the coal and steel strikes have caused a remarkable crystallization of feeling against strikes and several bills on the subject were introduced independently.

An anti-strike bill, H. R. 10138, was introduced in the House on October 23 by Representative Black as an amendment to the federal control act, providing that during the period of federal control if two or more persons enter into any combination or agreement with the intent substantially to hinder, restrain or prevent the movement of commodities or persons over the lines of railroads or systems of transportation under federal control, they shall be deemed guilty of a conspiracy, and punishable by a fine not exceeding $500 or by imprisonment not exceeding six months, or by both. It is provided, however, that nothing in the act shall be taken to deny to any individual employee the right to quit his employment for any reason, but that it is the purpose expressly to prohibit his conspiring with other employees to do so by means of a strike.

Another bill, introduced by Representative Blanton, would make coal miners or railroad employees who strike subject to $5,000 fine, or two years' imprisonment, or both.

Representative Snyder on October 29 introduced in the House a bill, H. R. 10256, providing for the creation of a railroad wages and supplies board to decide controversies between common carriers and either their employees or corporations, firms, partnerships or individuals engaged in furnishing such common carriers with materials and supplies. The board would be empowered in cases of disputes between common carriers and their employees to prescribe for the future just and reasonable wages, terms and conditions of employment, hours of service, or working conditions. It would also make it unlawful for any group of employees to enter upon a strike before its controversy with the employer carrier or carriers has been submitted to the board and until the board has made a finding thereon. If the carriers conform to the findings of the board the right of the employees thereafter to strike in order to obtain their demands is prohibited and declared unlawful. The common carrier refusing to abide by the finding of the board would be made punishable by a fine of $25,000 for each offense and its officers who advise or acquiesce in the action of the carrier in refusing to comply with the findings would be made subject to indictment and a fine of not less than $5,000 or imprisonment for not more than two years, or both. Any group of employees striking after the board had rendered its findings would be made punishable by a fine of not more than $2,000 each or imprisonment for not more than one year, or both. The word "group" is defined to mean two or more employees and a strike is defined to mean the abandonment of employment by such group, pursuant to an agreement, understanding, or by concert of action.

The bill also provides that when any carrier shall need material or supplies and shall be unable to agree with the manufacturer or seller upon the price or the terms and conditions, or when contracts have been made and the proposed charges are alleged to be unreasonable, the carrier may file a petition with the board, which shall enter upon a hearing and thereafter determine and prescribe just and reasonable prices, terms and conditions. A decision of the board would be subject to court review.

Plumb Plan League Issues a Newspaper

The Plumb Plan League, which for some time has been issuing a small weekly paper called "Railroad Democracy," has made it into a newspaper and changed the name to "Labor." It contains news articles and editorials regarding current labor issues outside of as well as within the railroad field, and on the first page appeals to all organized labor "to fight for rail democracy" by becoming members of the Plumb Plan League. Everybody is invited to take out individual memberships for a fee of one dollar a year, and lodge memberships for $10. One news item, "Action Postponed on Return of Roads," apparently is intended to state that leaders in both parties of Congress have come to the conclusion that there will be no railroad legislation before the December session, although one line of the type is missing. It is stated, however, that a report on the House bill is not expected until November and that the Cummins bill will also be held up pending further developments and that "this action may be interpreted as the first victory of the Plumb plan in the legislative struggle for a solution of the railroad problem. Two months ago there was no question in the mind of Congress of any action except a return of the railroads to their private owners. Since then they have had time to think the matter over."

The news in the paper includes a report of the testimony before the Senate committee on the steel strike and of the railroad labor leaders before another Senate committee on the Cummins bill, stories regarding the British railroad strike, etc.

Managers of the League have announced that the State of Ohio has been selected for the first intensive organization in support of the "Plumb Plan." Plumb Plan leagues are to be organized at once in Cleveland, Cincinnati, Toledo, Columbus and other cities, following which the labor unions are to be organized in support of the plan. Efforts will later be made to obtain additional support from the farmers.

Railway Executives to Ask for Rate Advance

Administration Refuses to Increase Rates; Gives Data in Its Possession to Railway Executives

Director General Hines, having announced his conclusion that the Railroad Administration should not establish any general readjustment of rates during the remaining period of federal control for the purpose of increasing revenues, the railway executives had begun preparations for filing tariffs with the Interstate Commerce Commission designed to establish a proper relationship between the revenues and expenses of the railroads. In this they are taking advantage of Mr. Hines' offer of the assistance of the traffic department of the Railroad Administration which had already done a good deal of work toward the tentative preparation of tariffs during the time while the Railroad Administration was considering the advisability of a rate advance on its own account. The first point to be decided is as to what increase in revenue will be required; this is a difficult problem because of the uncertainty as to the volume of traffic and also as to whether further increases in wages will be granted. It is understood that the plans so far considered have contemplated not a horizontal percentage advance, but a readjustment designed to bring up the low spots in the present rate structure.

Director General Hines announced his conclusion that the government should not increase rates and gave his reasons in a letter dated October 7 to Thomas De Witt Cuyler, chairman of the Association of Railway Executives, confirming a previous conversation on the subject. Mr. Hines said:

Why Director General Will Not Increase Rates

"From time to time I have discussed with you and other representatives of the railroad executives, the question of what, if any, increases should be made in railroad rates, and the manner in which such increases should be made. My view has been and is that this important matter must be handled in accordance with the two following considerations:

"First: The question of an increase in rates could not properly be considered on the exclusive basis of the unfavorable showing which the Railroad Administration was making in the early part of this year, because that showing was very largely due to an abnormally small freight business, so that the results of that period could not fairly be taken as a test for making increases in rates. Necessarily, therefore, it seemed to me that the formulation of any proposal for a general increase in rates would have to await a better opportunity for making an estimate as to what the earning capacity would be under normal conditions. I have been increasingly confirmed in this opinion by the various developments which have taken place.

"Second: It has seemed to me that the public would not be satisfied under existing conditions to have any general increase in rates put into effect without the concurrence of the Interstate Commerce Commission. The public sentiment to this effect has been manifested in many ways throughout the year and has been emphasized by the recent passage by the two houses of Congress of bills providing that there shall be an opportunity to review any rates proposed by the Railroad Administration before those rates shall go into effect. It follows, therefore, that time and opportunity must be provided for public consideration by the regular rate-making authority of any rate proposals now made.

"Since the foregoing controlling factors must be respected, it is evident that it would be impossible for the government to establish any general readjustment of rates prior to January 1, 1920. It is also evident that any new basis to be established for the future should naturally be considered, not from the standpoint of unified operation of all the railroads, but to a greater extent from the standpoint of the necessities of the separate railroads. A rate adjustment which might fully protect the government when operating all the railroads as a unit might wholly fail to protect equally or fairly the different railroads when separately operated.

"I, therefore, see no escape from the conclusion that if the corporations desire to make progress at this time with this matter, they enter themselves upon a study of the problem to determine what tariffs they think ought to be proposed, with a view to filing tariffs accordingly with the appropriate public authority.

"I suggest, therefore, that you advise the railroad corporations that, if they desire to take this course, I shall be glad to place at their disposal all the information in the possession of the Railroad Administration bearing on the subject. Since most of the traffic experts who would ordinarily be relied upon by the railroad companies in a matter of this sort are now employed by the Railroad Administration, I shall be glad to provide that the traffic experts so employed shall aid the railroad corporations in studying this problem and bringing it to a conclusion."

To this Mr. Cuyler replied on October 13, as follows:

Railroad Executives Pass Resolution

"I duly received your letter of October 7, confirming our conversation in reference to the increase in railroad rates, and submitted the same today to meetings of the steering committee, the standing committee and the full membership roads, all of which were very fully attended.

"The committee came to the conclusion unanimously that they did not see their way clear to accept your suggestion of an application by the roads to the Interstate Commerce Commission for an increase in rates before a further conference with you on the subject. A very strong feeling was developed that it was the duty of the government, in view of all the circumstances, to make an increase of their own volition. I enclose you herewith a copy of the resolution that was adopted by both the steering and standing committees and the general membership.

"Under the terms of the resolution, I propose to appoint a committee to confer with you, and I shall be glad if you will advise me when you can conveniently see the committee at as early a date as possible."

The resolution reads:

"Resolved: 1. That the Association of Railway Executives respectfully insists that the duty rests upon the government to restore, on its own initiative and by its own action, the relationship between revenues and expenses which the government's action, in increasing expenses, has disturbed; and that appropriate action in this direction is necessary in order to be in conformity with the statement of the President, when the railroads were taken over by the government, that investors in railroad securities might rest assured that their rights and interests would be as scrupulously looked after by the government as they could be by the directors of the several railway systems.

"2. That a committee be appointed by the chairman, of which he shall be chairman, to take such action as it may consider appropriate to secure a reconsideration of the conclusion of the director general as stated in the letter above referred to, and to take such other action as they may deem

necessary in order to protect the interests of the railroads in regard to rates to be effective after the end of federal control."

Director General Hines Replies

Regarding the position of the railway executives, Mr. Hines, while at Duluth, Minn., on October 18, authorized the following statement:

"The suggestion of the railroad executives that the Railroad Administration make increases in rates can mean only one thing and that is, that the Railroad Administration shall make these increases during federal control for the sole and exclusive benefit of the railroads under private management after the end of federal control. This is true because the conclusion has been reached with the approval of the President that it is not in the public interest to make an immediate increase in rates for the purpose of increasing the revenues of the Railroad Administration during federal control. A fundamentally wrong conception is involved in the claim that the President ought to exercise the emergency rate-making power conferred upon him for the purpose of deciding as between the railroads and the public what the former shall charge and what the latter shall pay after federal control shall end. The theory of federal control was that the movement would guarantee a rental during federal control but not afterward. The idea, of course, was that after federal control the permanent statutory revisions and procedure would be looked to by the railroad companies to secure for themselves adequate compensation. The resolution of the railroad executives in effect takes the position that they are not willing to resort to the permanent statutory provisions to protect their interests, but instead they want the President to use his emergency power so as to provide for their compensation after federal control, in addition to having guaranteed them their return during federal control. There is no duty whatever, either legal or moral, resting upon the Railroad Administration, to initiate for the benefit of the railroad corporations rates which it believes to be inexpedient to initiate for its own benefit. On the contrary, the railroad companies have the power to protect their interests in this matter just as fully as they have had in the past, and they ought to resort to it unless they choose to stand on the rates as they are.

"With regard to the position suggested by the railway executives that the Railroad Administration ought to increase the rates because of the Railroad Administration's action in increasing the expense, this could not be true as to increases in expenses which would have taken place if the Railroad Administration had not been in existence. In view of the extraordinary increases in expenses of all forms of industry under private management, there is no basis for demonstrating that the increases in expenses of the Railroad Administration were due to any cause other than those which affected all forms of industry, hence no basis for claiming that a temporary emergency power of rate-making during federal control should be employed for the exclusive purpose of meeting them after federal control shall have ended. Even though the Railroad Administration deemed it expedient to increase rates for its own benefit, it would still be true that the increases it would make under which to defray the expenses of the unified operation of all the railroads in the country might be very different from the increases which would be necessary to protect the separate railroads or separate territorial groups of railroads in different parts of the county."

Final Action

Director General Hines met with the committee of executives at their request. After some discussion of the position of the executives, which was reaffirmed by them, that the government itself should initiate a revision in rates prior to January 1, 1920, and a reiteration by the director general of his previously announced position, the executives advised the director general that they would take advantage of his offer. At a separate meeting following the conference with the director general the executives agreed upon the following statement, a copy of which was left with the director general:

"Following the recent correspondence between the director general of railroads and the chairman of the Association of Railway Executives, a conference was held today between the director general and a committee of railway executives for the purpose of considering the request of the executives that the director general reconsider his decision not to make a general readjustment of rates during federal control. The director general having after discussion announced that he felt obliged to adhere to the conclusion he had already reached, he reiterated his offer to place at the disposal of the railroad companies all the information in the possession of the Railroad Administration bearing on the subject and to provide the aid of the traffic experts employed by the Railroad Administration in studying the problem and bringing it to a conclusion.

"It was thereupon resolved that the above-mentioned offer of the director general be accepted and immediate steps be taken by the railroad companies, with such aid, to ascertain the pertinent facts and to prepare their proposals for a readjustment of rates in such way and to such extent as will establish a proper relationship between the expenses and revenues of the railroad companies, in order that their financial needs may be adequately provided for and they be put in a position to perform efficiently their transportation duties after their properties are returned to them."

Plumb Plan Propaganda

THE PLUMB PLAN LEAGUE has a large appropriation for printing and postage for its publicity work, but it is not always necessary to draw on its fund for the distribution of its propaganda. Members of the Plumb Plan League have been receiving during the past few days an official looking envelope bearing in its upper left-hand corner in large type, the following imprint:

House of Representatives U. S.
Part of Cong. Record—Free
GUARD YOUR LIVING COSTS
Shall Dividends Be Guaranteed on
Watered Stock Equal to Rebuilding the Railroads?
The Plumb Conspiracy Letter.

In the upper right-hand corner, where ordinary mail usually carries a stamp, is the printed autograph of George Huddleston, M. C., who is a representative from Alabama in the House of Representatives. The envelope contains a printed document headed as follows:

CONSPIRACY OF THE RAILROADS
To Tax the Public on Their Debts
and Raise the Cost of Living
CAPITALIZATION DOUBLES THE COST
OF REBUILDING THE RAILROADS. NEW.
SHALL DIVIDENDS ON BILLIONS OF WATERED
STOCK BE GOVERNMENT GUARANTEED
AT 6 PER CENT?

Below is the information that this refers to a speech of the Hon. George Huddleston of Alabama in the House of Representatives on August 18, 1919, and that it was printed at Washington in the Government Printing Office in 1919. The speech was one delivered by Representative Huddleston in connection with the introduction of a resolution providing for a Congressional investigation of alleged "sensational" charges made before the committee on interstate and foreign commerce by "the responsible representatives of 2,200,000 railroad employees," that "the railroads of the United States are now seeking to validate billions of fraudulent capitalization, thereby burdening the American people in the cost of living with unjust and oppressive charges for transportation.

Firemen Given Hearing Before Wage Board

Board of Railroad Wages and Working Conditions Exposes Fallacy of Timothy Shea's Arguments

RAILROAD EMPLOYEES PROPOSE to demand, as a condition precedent to the return of the railroads to private management, the granting of their demands for increased wages and other concessions, according to a statement made by Timothy Shea, acting president of the Brotherhood of Locomotive Firemen and Enginemen, at a hearing before the Board of Railroad Wages and Working Conditions. This hearing was on the demands of the organization for increased wages, new rules governing working conditions and the installation of labor-saving equipment on locomotives, which were presented to the Railroad Administration in August. Mr. Shea used the word "we," which presumably refers to his organization, and did not state whether he was voicing the views of other organizations. He declared that the Railroad Administration had never complied with the proclamation made by the President at the time the War Labor Board was established stating the right of workers to a living wage based on a standard of health and reasonable comfort, and he continued:

"If our demands for a living wage cannot be considered at the present time and should they not be met when the time approaches for turning back the railroads to their private owners, we shall demand that as an essential preliminary to the turning back of the railroads to their private owners there shall be established as a conditions precedent to the change to private operation the realization of the fundamental rights of labor, the living wage, the eight-hour day on all federal controlled roads, time and one-half for overtime, and other principles to which the government pledged itself during the war, which have now been made a part of the Treaty of Peace and which so far the Railroad Administration has never fulfilled."

The hearing before the board was begun on October 1. Because of Director General Hines' instructions to the wage board that it was not authorized to consider at this time general increases in wages, but was limited to consideration of readjustments to correct inequalities, the complete demands of the firemen's brotherhood were not considered at the hearing, but Mr. Shea stated that the stay is only temporary and that it will be absolutely necessary for his organization to seek "relief" within the very near future for the reason that existing rates of pay to firemen and hostlers are so inadequate and their earnings have fallen so far below living requirements that immediate relief is necessary unless there is an immediate reduction in the cost of living. He was convinced that the measures being taken by the government to reduce the cost of living are inadequate and will not meet with success and he declared that the President should first have ordered the director general to increase the wages of railroad employees so as to restore prewar conditions, at least, and then if the cost of living were reduced an adjustment could have been made. The government, he said, should take control of and administer the available supplies of food, raw materials and manufactured goods and stop profiteering.

"Living Right Up to the Margin"

"There is an increase due to firemen and hostlers," Mr. Shea said, "and they have got to have it. If I cannot get it out of this conference it may be necessary to use other means, but I am going to get it. I want to make that position pretty clear."

W. E. Morse, a member of the board, asked Mr. Shea if he thought the cost of living could be reduced and wages increased simultaneously. Mr. Shea said he thought it could be done. He insisted that labor costs constitute only a small part of the price of a majority of commodities and he gave some figures to illustrate his point, but members of the board brought out the fact that his figures for labor cost usually represented only the labor cost of manufacture and did not include the labor cost involved in production and distribution of raw materials nor those of the wholesaler and retailer involved in the distribution of the finished product. Because of the increased cost of living, Mr. Shea said, his men are unable to provide for their families and are going without proper food and proper clothing. He said that when he began railroading as a brakeman, men could build their homes and live well on $1.25 a day and had more than they now have. Asked if the question of thrift did not enter into the situation, Mr. Shea said he did not think it possible for working people to curtail expenditures any more; that the men he represents are living "right on the margin" and depriving themselves and their families of the necessities of life.

"Do you represent any men who are buying automobiles and those things?" asked Mr. Morse.

"I do not hear of any fireman, or many firemen, buying automobiles," replied Mr. Shea.

"You would not regard an automobile as a necessity, would you?"

"Yes, I would."

"Well, I have denied myself a necessity all my life, then," said Mr. Morse, who was general manager of a railroad before becoming a member of the wage board.

"An automobile may be a necessity to any man," said Mr. Shea. "I have an automobile and it is a necessity to me and my family to a considerable extent. That would apply with equal force to any man and I think we have reached a period of our life where the laboring man must enjoy some of the necessaries and luxuries of life. I do not think the time is at hand when the American working man should be required to make any great sacrifices now. They have made their sacrifice."

Mr. Shea testified that the number of protests received from members of his organization as to the inadequacy of the rates established in Supplement No. 15 of General Order No. 27 exceeded those received against any previous wage increase or any other matter affecting the interests of the organization. A revised schedule of wages and rules for firemen and hostlers and their helpers was submitted to the Railroad Administration on August 23 and he was informed on August 27 that the board would hold a hearing, but was not authorized to consider requests involving general increases. Mr. Shea then wrote to Director General Hines, requesting advice as to what matters could be considered and asking whether the director general did not intend to settle the question of time and one-half for overtime in road train service pending the outcome of the efforts to reduce the cost of living. He also asked whether the proposed rules relating to final terminal detention, dead-heading, overtime, time held away from home terminals, expenses while away from home, monthly guarantees and installation of labor saving appliances on locomotives and relieving the firemen of incidental work, were to be precluded from consideration. He also asked for a comparative statement of wages by classes in December, 1915, December, 1917, and

at the present time, which would omit the effect of abnormal increases resulting from reclassifications.

To this Director General Hines had replied on September 12, stating that his instructions insured such consideration of the request as will result in any improper effect of Supplement No. 15 being corrected. As to the labor saving appliances, Mr. Hines said that as they involved capital expenditures which would require the concurrence of the corporations before they could be authorized, he did not see what good would result from such consideration by the wage board, and that they should be handled by himself and the director of the Division of Operation. As to data covering the effect of reclassification of employees, he said, no reliable data is available and the board's report of the hearing will doubtless cover arguments for the proposed rules, including the question of time and one-half for overtime and any additional information it might be able to offer him would receive full consideration.

Labor Saving Devices

Mr. Shea said that he had taken up the question of equipping locomotives with labor saving appliances in June, 1918, with Director General McAdoo and had held conferences on the subject with the directors of the divisions of operation and of labor and the director general. The locomotives ordered by the railroad Administration were so equipped and the regional directors were instructed to take up the question of equipping the other locomotives with the federal managers with a view to securing the approval of the corporations, but little had been accomplished.

"Unless you secure the consent of the corporations to the installation of these labor saving devices and to relieve the firemen from the hardships to which they are now subjected," Mr. Shea said, "it will be necessary for the organization to press its claim for two firemen on large locomotives."

Wages of Firemen and Shop Employes

Mr. Shea based his case principally on the statement that the wages of locomotive firemen in 1914 were inadequate and since that time have been increased only 50 per cent, while the cost of living has increased 85 per cent, and also upon comparisons of the firemen's rates with those of other classes of employees. He declared that there had been an inequality in the rates of firemen and hostlers as compared with those of other classes since federal control because time and one-half overtime, Sundays and holidays, had been granted to all employees except those in road service. He also claimed an inequality as to the expenses while away from home on duty, saying that Supplement No. 4 allowed $2.00 a day for meals and lodging to shop employees for expenses when away from home. He put H. J. Arries, a clerk in the Grand Lodge office at Cleveland, on the stand to introduce a series of exhibits of comparative wages, which he had made up from information furnished by the general chairmen in the absence of the information he had requested from the director general. The comparisons between the wages of firemen and shop employees aroused the ire of A. O. Wharton, chairman of the board, who was the head of the shop employees' federation before becoming a member of the board, and led to a controversy between him and Mr. Shea which extended over several days.

Mr. Wharton declared that Mr. Shea had used rates of pay instead of actual earnings, whereas the schedules applying to train service make it possible for the employees to earn much more than the basic rates of pay for a given time; that he had not made proper allowance for the effect of the introduction of the eight-hour basic day, and that he had so misunderstood the conditions applying to the shop employees that his comparisons were exceedingly unfair. He also pointed out that firemen's rates apply to inexperienced men on their first trip, whereas the shopmen's rates quoted apply to skilled employees who had been required to serve an apprenticeship before receiving full rates. Mr. Shea insisted that the fireman was a skilled employee and the fact that he was not required to serve a previous apprenticeship was offset by the fact that he does not receive full time employment at first. Mr. Wharton said that the rates of pay quoted have nothing to do with the earnings and he objected to the idea of using the shopmen's wages as an argument for increasing those of the firemen, saying that the shop crafts had never used the rates for transportation service for comparison.

"As a trade unionist," he said, "I have never dreamed that a man representing a labor union would bring before the tribunal data which shows such an incorrect picture of the conditions and the earnings of the men as you have presented." Mr. Wharton also objected to Mr. Shea's efforts to compare the mileage rates of the trainmen with the piecework rates of the shopmen.

"Do you know of any other class of employees," he asked, "who have established as a condition of pay a system that would permit them to draw a full day's pay and not give in return therefor the number of hours' service constituting a day's work?"

"Yes, if they are on the piecework basis, the same as the enginemen," replied Mr. Shea.

Mr. Wharton said that the piece worker produces for each minute or hour worked the amount of work represented by the price paid. Mr. Shea said that a trainman does also and that the man in the shop by speeding up could earn in five hours as much as his fellow machinist on an hourly basis could earn in eight hours.

"Does the man on the 57-mile run, who is paid for 100 miles, speed up?" asked Mr. Wharton.

"It all depends entirely upon the condition of the road, the tonnage hauled, the condition of the locomotive and the density of the traffic," replied Mr. Shea.

"That does not answer my question," said Mr. Wharton. "One fireman runs 57 miles in four hours and gets paid for 100 miles and another runs 100 miles in eight hours and gets the same. Who is responsible for one train going over a division faster than the other?"

"Well, it would be hard work to say," replied Mr. Shea. "One man would have the advantage over the other."

"I am afraid you do not understand piece work as I understand it and know it," said Mr. Wharton, who added that he would be able to show before the hearing closes that on the average shopmen have not received as much for a day's services as firemen.

Mr. Wharton also produced a statement of a large number of instances where inexperienced firemen had received increases in pay ranging up to 140 per cent. When Mr. Shea protested that this was only by comparison with the former rates of pay of men who had been "oppressed" and whose schedules had not been made by the organization, Mr. Wharton said that was the kind of comparisons Mr. Shea had been using to show that the shopmen had received greater percentages of increases than the firemen. When Mr. Wharton also produced some examples of firemen's earnings which Mr. Shea said were abnormal and did not represent average conditions, Mr. Shea said that he had just got the director general to order a limitation of the mileage which a man could make in accordance with a principle adopted by the brotherhood at a convention several years ago for the purpose of reducing excessive earnings of men resulting from large mileage.

Mr. Shea took the position that the director general's instructions contemplated that each class of employees should be given the same amount of increase in dollars and cents and that if the firemen had received an increase of $1.50 a day while other classes had received a $2 increase the fire-

men were 50 cents behind and the discrepancy should be corrected. And while the question of a general increase for firemen was not supposed to be considered at the hearing he kept arguing for one, saying that he understood the restriction was only for a limited period in order to determine whether or not the campaign of the government for a reduction in the cost of living is to be effective. After a reasonable time if there is no reduction, he said, it must be accepted that the present cost of living is permanent for the time being at least and the wages of railroad employees must be increased accordingly. "So I anticipate that by the first of November at least the board will have to be giving consideration to railroad employees on further requests for general increases."

Claims Board Is Unfair

Mr. Wharton objected repeatedly because Mr. Shea was comparing the hourly basic rates of foremen with the piecework earnings of shop employees, saying that if the comparisons were to be made the earnings should be used, not the rates. Mr. Shea said he never discussed earnings because they often resulted from excessive hours or mileage, but confined his arguments to the minimum basic rates, on the theory that the basis rate for eight hours and 26 days a month ought to produce an adequate earning. He insisted that the board was adopting a manifestly unfair attitude for the purpose of discrediting his presentation.

D. B. Robertson, vice-president of the firemen's brotherhood was put on the witness stand with an exhibit showing the expenses of firemen for meals and lodging while away from their home terminals. This covered 397 men, with an average expense of $34.08 per month, ranging from $15.50 to $55.50. One man reported 90 meals for a month and two beds a day, which aroused considerable discussion as to what kind of a run the man had. Mr. Shea tried to argue that an increase of $40 a month meant little to the firemen if they had to pay out $34 for living away from home, but members of the board remarked that only the increased cost of living away from home should be considered, because the expenses away from home had been considered in fixing the wage rates, and that, moreover, the majority of firemen do not regularly have as much expense as was reported. The demand presented by the brotherhood asks that the railroads provide meals and lodging away from home terminals or make an allowance in the form of an expense account.

Mr. Morse also made the point that the expense away from home is not always an extra expense to the single man. Mr. Shea retorted that that made no difference because a man may be single today but married tomorrow. "He may also be married today and single tomorrow," said Mr. Morse. When Mr. Shea argued that supervisory officials have expense accounts, Mr. Morse said that they work 12 to 14 hours a day without overtime, but Mr. Shea said it was generally difficult to find one at his office before 10 in the morning, or after 4 in the afternoon.

"We are now living in an advanced age," said Mr. Shea, "and labor is coming into its own now. Labor must have something to say regarding the conditions of employment and the salaries they receive and we must have a wage that is sufficient to maintain the American standard of living."

	Increase per month.	Per Cent Increase.
Supplement No. 4	$33.83	36.2
7	27.11	39.9
8	26.94	47.
13	44.93	57.1
14	25.65	35
15	51.14	36
16	49.50	42.1
17	28.07	54.9
18	28.88	60.4

Most of the time of the hearing was taken up with a technical discussion of the effect of various schedule provisions on earning power. Mr. Wharton put into the record a table showing the increase in percentages and in dollars and cents brought about by the general wage order and its various supplements for the various classes affected by the supplements, including the latest increase to the shop employees, as shown in the preceding table..

The exhibit showed the average earning prior to General Order No. 27 as $83.79 and the present average $118.24, per month.

Men to Be Judges of Wages

Mr. Shea said he had read in the press that the management in New York had settled with the dock workers after they had been on strike several days by granting an increase of approximately 10 per cent. "I have been wondering," he said, "if it will be necessary for the Brotherhood of Locomotive Firemen and Enginemen to use this same method, or if we are to infer that the strike is the only way that we can hope to secure fair treatment and increases in wages and better conditions of employment. We have reached a point now in our industrial life where labor must be recognized. They must receive fair wages, fair treatment, and if they do not they are going to resort to other methods, and when they do the responsibility will not be placed on labor."

"I am wondering," asked Mr. Morse, "in connection with that statement, who are going to be the judges as to whether their wages are fair and the conditions are fair, the men themselves or some joint conference?"

"The men themselves, or as a group," replied Mr. Shea, "and when it can be shown that a class of working men in the employ of rich corporations are not receiving a wage sufficient to maintain themselves and their families then they are to be the judges as to what shall be fair rates, nobody else."

W. J. Lauck presented a statistical exhibit comparing the wages of firemen with those of other classes of employees. Chairman Wharton insisted that the present methods of compiling the statistics do not make it possible to make fair comparisons. Other witnesses representing the firemen's brotherhood were also heard on various phases of the demands, including a number of firemen. On October 20 Mr. Shea made a final argument reviewing the testimony that had been presented and the arguments for each of the articles in the demands and on October 23 and 24 Elisha Lee, chairman of a committee representing the regional directors, presented a statement in reply, presenting the position of the management as to each of the articles in the demand, whereupon the hearing was adjourned.

Arrival of the First German Prisoners at Stuttgart.

Meeting of General Committee, Mechanical Section, A. R. A.

The General Committee of the Mechanical Section of the American Railroad Association held a meeting at the Hotel Traymore, Atlantic City, N. J., on October 23 and 24, at which, among other business, the plans for the next convention were laid. A joint conference was held with the executive committee of the Railway Supply Manufacturers' Association and a committee of the Hotel Men's Association of Atlantic City, and it was decided to hold the 1920 and 1921 conventions on Young's Pier. The dates selected for the 1920 convention are June 9-16. The first three days of this period will be devoted to papers on locomotive subjects and the last three to car subjects, consolidated committees reporting on Monday, June 14. An invitation was extended to Section VI, Purchases and Stores, to hold its convention simultaneously with Section III, in order that the members might avail themselves of the opportunity to visit the extensive exhibit.

Several new committees were formed and important changes were made in the personnel of others. The new subjects assigned to committees are as follows: Auxiliary or Safety Connections Between Engines and Tenders, M. H. Haig (A. T. & S. F.), chairman; Feed Water Heaters for Locomotives, F. M. Waring (P. R. R.), chairman; Engine Terminals, Design and Operation, C. E. Fuller (U. P.), chairman; Modernization of Stationary Boiler Plants, A. G. Trumbull (Erie), chairman; Repair Shop Layouts, I. S. Downing (C. C. C. & St. L.), chairman; Scheduling and Routing Systems for Locomotive Repair Shops, H. Gardner (B. & O.), chairman; Standard Method of Packing Journal Boxes on Freight Cars, C. J. Bodemer (L. & N.), chairman.

A new Committee on Couplers and Draft Gears was formed by consolidating the two committees on these subjects, R. L. Kleine (P. R. R.) being the new chairman. Duplication of committees of the Master Car Builders' Association and the American Railway Master Mechanics' Association has been eliminated by consolidating the committees on Specifications and Tests, F. M. Waring (P. R. R.) chairman, and on Standard and Recommended Practices, W. E. Dunham (C. & N. W.), chairman. The Arbitration Committee has been increased to eight members by the addition of J. E. O'Brien (M. P.), and T. H. Goodnow (C. & N. W.) has been appointed chairman.

New chairmen were appointed for other committees as follows: Committee on Loading Rules, R. L. Kleine (P. R. R.); Committee on Mechanical Stokers, M. A. Kinney (H. V.); Committee on Depreciation of Freight Cars, C. E. Chambers (U. S. R. A.); Committee on Prices for Labor and Material, G. E. Carson (N. Y. C.); Committee on Superheater Locomotives, H. R. Warnock (C. M. & Vt. P.). The Committee on Welding Truck Side Frames, Bolsters and Arch Bars was changed to the Committee on Autogenous and Electric Welding, and J. T. Wallis (P. R. R.) was appointed chairman. The Committee on Train Brake and Signal Equipment was enlarged and was assigned the subject of automatic hose connectors. The scope of the committee on Locomotive Headlights was enlarged to include also classification lamps.

The following subjects were assigned for individual papers: The Modernization of Existing Old Locomotives, to include a study of locomotive operation from the point of view of a large investment, G. M. Basford (G. M. Basford Company); Automatic Coal Weighing Devices for Locomotive Tenders, J. S. Spurway (secretary, New South Wales Government Railways and Tramways); Snow Fighting Apparatus, C. E. Fuller (U. P.).

The committee decided that the date effective of the specifications requiring boiler plate steel, flange quality, for tanks of Class III tank cars should be extended to December 31, 119. Arrangements were made to publish the specifications and standards of the former Master Mechanics' and Master Car Builders' Associations in a separate volume, as standards of Section III, Mechanical.

A committee consisting of A. W. Gibbs (P. R. R.), C. B. Young (U. S. R. A.) and V. R. Hawthorne (A. R. A.) was appointed to act as a conference committee with the American Society for Testing Materials. W. E. Dunham (C. & N. W.) was appointed to represent the Mechanical Section on the joint committee of the American Society of Mechanical Engineers to consider standard designs of pipe unions. The proposed amalgamation of the Master Car and Locomotive Painters' Association as the Equipment Painting Division of the Mechanical Section was approved.

The Rules of Interchange were approved with the changes recommended by the Arbitration Committee, the only additional change being the abolition of the differential between the labor rates on steel and wood cars and the increase of the labor rates from 58 cents to 67 cents an hour for freight cars and from 68 cents to 72 cents for passenger cars.

The management of the pier has agreed to enlarge the seating capacity of Convention Hall from 600 to 850.

The executive committee of the Railway Supply Manufacturers' Association, after the meeting at Atlantic City, announced the following committee appointments: Chairman of the exhibit committee, J. G. Platt, Hunt-Spiller Manufacturing Corporation, Boston, Mass.; chairman entertainment committee, W. K. Krepps, Crucible Steel Company of America, New York; chairman enrollment committee, C. H. Gayetty, Quaker City Rubber Company, Philadelphia, Pa.; chairman finance committee, George A. Cooper, Frost Railway Supply Company, Detroit, Mich.; chairman transportation committee, John C. Kuhns, Burden Iron Company, Troy, N. Y. The executive committee also re-elected John D. Conway as secretary-treasurer. In addition to the exhibits on the pier the usual track exhibit will be made on Mississippi avenue.

Hines Urges Early Railroad Legislation

Director General Hines on October 7 sent the following letter to Chairman Cummins of the Senate committee and Chairman Esch of the House committee:

"I know that you are exceedingly anxious to press the railroad legislation to the earliest possible conclusion. It occurs to me that you may naturally find that there are legislators that have not followed the subject as closely as you have and who may not have an equal appreciation of the reasons why the public interest necessitates the earliest possible solution. I, therefore, write this letter to point out that delay in legislation will seriously impair the public service by virtually suspending improvements and the acquisition of equipment and by seriously imperiling the morale of the railroad organization.

"The difficulties I point out could not be obviated by the government remaining in control of the railroads from week to week pending adoption of the legislation, because the suspension of the improvement and equipment program and the impairment of morale could not be remedied by such a course.

"Pending the passage of railroad legislation uncertainty naturally exists. Such uncertainty makes it impossible for the government to plan or carry forward necessary additions and betterments and to acquire essential new equipment. And such uncertainty likewise makes it impossible for the railroad companies to make such preparations.

"In order to keep abreast of the growth of business in this country it is indispensable that the railroads should continue to spend large sums in the acquisition of new equipment, the enlargement and unification of terminals and the construction of additional and the enlargement of existing shops, engine houses, turntables, etc., and in the carrying forward of normal programs for the revision of grades, construction of additional main tracks, longer and more numerous passing tracks, etc.

"In the year or two prior to the beginning of federal control this work was largely arrested by the difficulties of securing materials and labor and also by the difficulty of securing new capital. During the year 1918 this work was largely restricted to things which could be promptly done and which would have a relation to winning the war and also restricted by the scarcity of materials. The result was that comprehensive programs for developing the railroads were largely interrupted. During the calendar year 1919 there has been unavoidably an almost complete stoppage of all these matters because of the prospect of early termination of federal control and the resulting indisposition on the part of Congress to make appropriations large enough to provide for extensive improvement programs to be carried on with government funds under the direction of the Railroad Administration.

"Hence a vast amount of work now remains to be done which the intervention of the war has necessarily delayed and accumulated and the result is that during the year 1920 very large capital expenditures ought to be made to make up for the interruptions inevitably due to the war and to prepare the railroads to serve adequately the increased traffic throughout the country. This is particularly true as to equipment, as it seems to be reasonably certain that in the fall of 1920 there will be need for materially more freight cars than will be available if the corporpations are not able promptly to make plans for the additional equipment which the government has been without provision to acquire.

"In order to make the necessary preparations for additions and betterments, including equipment, it is obvious that considerable time must be allowed for planning the improvements and for raising the money. Even the physical planning for the improvements cannot be successfully made until the legislation shall be determined upon and the improvements cannot be entered upon without knowledge as to how the money can be raised to pay for them, and the raising of the money will, of course, be dependent upon the fact and character of the legislation. Even 30 days' delay in the ability to make plans means a probably much greater delay in carrying the plans into effect, and if legislation should be so delayed as to prevent the definite making of plans until well along in the spring the probability is that the plans could not be carried out at all in time to meet the railroad traffic requirements in the latter part of the summer and fall of 1920.

"What I have said above with regard to capital expenditures of course does not affect the situation as to maintenance work on the railroads. The Federal Control Act and the contracts which the government has made with the majority of the railroad corporations imposes an obligation to return the railroads to their owners in substantially the same condition as they were in when they were taken over, and the Railroad Administration is carrying on its maintenance work on this basis.

"A different and entirely distinct element of great importance is the question of morale of the railroad forces. Undoubtedly uncertainty and suspense cannot improve morale and serious prolongation of uncertainty and suspense would very greatly impair morale. So far I feel both the railroad officials and the railroad employees are withstanding in a splendid way the injurious influences of uncertainty and suspense, but I am sure that it will become more and more difficult for both officials and employees to concentrate upon the present performance of their work rather than dwell upon the future condition of the railroad business and their relation thereto. This is an inevitable manifestation of human nature which is not subject to any criticism. But it is a fact and the sooner legislation can be completed the sooner can a favorable influence take the place of the unfavorable influence which the uncertainty is bound to breed.

"While I believe that you personally are fully alive to the importance of these factors, it has occurred to me that it might be helpful to you to have my views in regard to them."

Per Diem Reinstalled

Early in the present year the Railroad Administration issued instructions that cars be loaded in the direction of home, with a view to getting cars relocated on home lines to a larger extent. The conclusion has been reached that this policy will still further be aided by re-establishing the per diem rules whereby one railroad is required to account for per diem on cars used by it belonging to another railroad.

A general order making this requirement has therefore been issued. This order will not only promote the policy of the Railroad Administration, but accords with the wishes of the officers of the railroad corporations, who are anxious, as far as practicable, to get cars relocated upon home lines prior to the termination of Federal control.

The general order is as follows:

"Effective October 1, 1919, the following rules and regulations shall govern the accounting for the use of equipment of one carrier in federal operation by or for the account of another carrier in federal operation (cancelling instructions in conflict therewith in General Order No. 31).

"The practice of recording, computing and paying per diem, mileage, or rental for the use of freight and passenger train cars of one carrier in federal operation by or for account of another carrier in federal operation, and the adjustment of differences, reclaims, etc., between such carriers shall be reinstated, in accordance with such detailed instructions as may be issued by the Division of Operation, Car Service Section."

Commissioner McChord on Railroad Credit

Commissioner McChord has submitted a memorandum to the sub-committee of the House Committee on Interstate and Foreign Commerce, which has been working on the railroad bill, referring, as he says, to a statement made by Judge R. S. Lovett to the House committee "in effect that he had seen statements from four of the present members of the Interstate Commerce Commission wherein they declared that they did not know of the existence of any problem of railroad credit."

Judge Lovett's statement, as it appears in the printed record of the hearing, was: "I have seen statements, some of them in the newspapers, where three or four members of the commission as now constituted apparently do not realize or appear not to be aware of, the existence of any problem of railroad credit."

"I have no idea to whom or to what statements reference is made," Commissioner McChord says. "If he has reference to statements in decisions of the commission in various advance rate cases wherein at least four commissioners took the position that there was no good reason for decline of railroad credit, it appears that these discussions were with respect to the cause of the decline. Nowhere do I find a

denial of the fact that there had been a decline of credit.

"So far as I can recollect, I have never in public or private statement announced that railroad credit is not a problem that must be considered. I have from time to time expressed my surprise at the continual announcement of high officials in railroad circles that railroad securities were no longer worthy of consideration from a safe investor's standpoint. I have pointed out that the propaganda directed against the value of these securities in the first instance had reacted so as to unnecessarily depress railroad credit. I also pointed out that while this was going on railroad earnings had increased."

"I have also pointed out that while under federal control the income of the railroad companies is based on the operating income they received for the three fiscal years of 1915, 1916 and 1917. They are insured that income no matter what has been or what may be the conditions of traffic. Under the law their properties are to be returned to them in as good physical condition as when they passed to federal control.

"That the net income the railroads now receive is based on the highest average earnings they have ever received in any three-year period. The average yearly return on which payment is now made is approximately $936,000,000."

Commissioner McChord's memorandum also includes tables of statistics to support his contention. He shows that the average income for the three years, 1912, 1913 and 1914, was $761,938,378, while for the three years, 1916, 1917 and 1918, the average was $939,809,635, or about $3,000,000 more than the guaranteed income.

"The income from operation in the calendar year 1918 was $29,874,077, or 3.9 per cent less than the average for the three years, 1912, 1913 and 1914; $21,967,175, or 2.9 per cent less than the average for 1913, 1914 and 1915, while the average income for the calendar years 1916, 1917 and 1918 exceeds that for the fiscal years 1912, 1913 and 1914 by $177,875,257, or 23.4 per cent.

"It is true there has been an increase in capital issues and property investment since 1912. From reports of the railroads to the commission the average percentage of operating income to the average outstanding capital for the three fiscal years 1912, 1913 and 1914 was 3.98 and to property investment 4.59. The average percentage of operating income to the average outstanding capital for the calendar years 1916, 1917 and 1918, was 4.75, and to property investment, 5.08. This shows that the percentage of operating income to capital increased .77 per cent and to property investment .49 per cent.

"From the returns already received, which include only a few of the roads of the country, it appears that the credit balances will be as large on January 1, 1919, as on January 1, 1918. During the year 1918 dividends were paid in substantially the same amount as during the previous year, while the roads were under private management. The guaranteed operating income for 1919 will be approximately the same as received in 1918. Add to this the corporate income for the year, and the credit balance of the railroads as a whole will be substantially the same on January 1, 1920, as on January 1, 1918."

Regarding estimates based upon the earnings of the first six months of this year that the earnings of the carriers will fall short of the government guaranty of variously estimated amounts, Commissioner McChord points out that for the years 1912 to 1918, inclusive, the actual railway operating income for 12 months was considerably in excess of what it would have been based on the first six months. In conclusion, he says:

"I am unable to appreciate how such statements of facts can be tortured by anyone to mean that I have not and do not recognize that railroad credit has nevertheless declined and that there is a problem as to railroad credit.

"I have repeatedly asserted that whatever decline there was in railroad credit, previous to federal control, was not due to any action of the Interstate Commerce Commission.

"My attitude and my assertions were in refutation of the repeated declaration that the railroads of the country were, or are, in a state of bankruptcy. It has been my effort to defend the railroads as against their traducers."

Regional Director Markham Resigns

CHARLES H. MARKHAM, director of the Allegheny region, has resigned from the Railroad Administration to return to the presidency of the Illinois Central. He is succeeded by L. W. Baldwin, operating assistant.

Mr. Markham was president of the Illinois Central when the railroads were taken over by the government in January, 1918. At the request of William G. McAdoo, then director general, Mr. Markham became director of the Southern region, with office at Atlanta, Ga., the country at that time being divided into three regions only, the Eastern, the Southern and the Western. In June, 1918, when the Allegheny region was formed, Mr. Markham was appointed director of this region, with office at Philadelphia, Pa. This region takes in, roughly, the territory south of New York and north of Washington, from the Atlantic seaboard to

C. H. Markham

L. W. Baldwin

Pittsburgh, Wheeling and Erie, the Pennsylvania, the Philadelphia & Reading and the Baltimore & Ohio being the largest roads. In the beginning the Allegheny region included the Pennsylvania and the Baltimore & Ohio only as far west as Pittsburgh and Wheeling, but in December last the operating departments being free from the stress of war conditions, the western lines of both companies were taken out of the Eastern region and added to the Allegheny. This was the most badly congested region in the country when Mr. Markham assumed jurisdiction in June, 1918, and the operating conditions were described at some length in the *Railway Age* of August 23, 1918, page 331. Something more was required than a good operating man for the straightening out of the railroad situation in the Allegheny region at that time. It is probable that Mr. Markham was selected not only for his general railroad knowledge and experience, but for his diplomatic abilities as well.

When Mr. Markham was elected president of the Illinois Central the morale of that company was shaken. The ousting of Stuyvesant Fish a few years before had left an organization somewhat uncertain in its loyalty to the succeeding president, J. T. Harahan, and manipulation of car repair bills by certain officers later tended still further to weaken the organization. Moreover, the Illinois Central

had serious difficulties with some classes of employees and went through a rather severe strike of boilermakers. Under the management preceding Mr. Markham the southern end of the road had been left to itself and the relations between the company and its patrons were not as good as they should have been.

In his handling of this situation, Mr. Markham showed great tact and remarkable patience. The Illinois Central had been, under Stuyvesant Fish, one of the financially strongest roads in the country. Under the Harriman-Harahan management this credit was preserved, but the cash position of the road when Mr. Markham took it needed strengthening. Strikes did considerable damage and there was one year in which the Illinois Central was somewhat hard pressed to pay its dividends. During this trying period no ill-considered move was made in an attempt to temporarily better conditions. Underlying causes were studied and remedies were applied to eliminate the cause of troubles rather than to cover up the symptoms. When Mr. Markham turned over the Illinois Central to the government it was in good shape physically; it had a loyal organization, and its patrons, both on the north and south lines, were entirely friendly.

Under Mr. Markham's directorship, congestion in the Allegheny region was entirely cleared up and even before the signing of the armistice order had been brought out of chaos. Coal, iron and steel and the supplies for the American Expeditionary Forces were moving freely to the seaboard. With the great let-down in traffic which followed the signing of the armistice a new problem arose for both the director of the Allegheny region and the director of the Eastern region. This was the equitable routing of what traffic there was between the different roads within the two regions. The return of competitive conditions was in sight and naturally the corporate officers of the different properties watched with a jealous eye the routing of all important traffic. In this situation Mr. Markham's diplomatic qualities probably stood him in good stead, although under any circumstances it was a rather trying position.

Mr. Markham is succeeded by L. W. Baldwin, who has been his operating assistant. Mr. Baldwin, like Mr. Markham, served in the Southern region before going to Philadelphia. He is best known as an officer of the Illinois Central, for which company he served about 19 years, mostly in the roadway department. Mr. Baldwin was born in Waterbury, Md., in 1875, and was graduated from Lehigh University, South Bethlehem, Pa., in 1896. He entered the service of the Illinois Central in that year, and soon was made assistant engineer. In 1900 he was supervisor of track, and for three years, 1901-1904, was roadmaster. Then for two years he was trainmaster, and in 1906 was superintendent. In 1910 he was appointed engineer of maintenance of way, with office at Chicago. In April, 1913, he was appointed superintendent of the Kentucky Division, and in January, 1915, was promoted to the position of general superintendent of the southern lines of the Illinois Central with headquarters at New Orleans, La. On November 15, 1915, he resigned his position on the Illinois Central and went to the Central of Georgia as general manager, and a year later was elected also vice-president of that road. He was drafted into the service of the Railroad Administration in February, 1918, being made operating assistant to the regional director at Atlanta.

The movement of freight over the Pittsburgh Division of the Pennsylvania Railroad for the first fifteen days of September, counting both eastbound and westbound was 6,991 cars (loaded and empty); which is an increase of 32 per cent over the average in April last. On September 15 the number of freight cars moving westbound past Gallitzin was 4,802, or 35 cars more than the highest previous record which was for April 10, 1916.

American Manufacturers' Export Association

The American Manufacturers' Export Association held its tenth annual convention at the Waldorf-Astoria Hotel, New York, October 16 and 17. The first day of the session was devoted to a consideration of trade with eastern and central Europe, including in particular Russia, the Central Empires, the Near East and the "new states." The second day of the meeting was devoted to more general topics, sessions being held on "Our Diplomatic and Commercial Service Under New World Conditions" and on "Our International Financial and Commercial Policies." The annual banquet, Friday evening, was addressed by representatives of the French, British and Italian governments, by William C. Redfield and others.

A number of important points were brought out at the general sessions, among them in particular being the matter of the low salaries paid consular representatives and the difficulty resulting therefrom in getting and keeping good men. Speakers also referred to the present difficult exchange situation, the matter of credits to cover sales abroad and the steps that were being taken to overcome our present disadvantages.

Those who spoke on our trade relations with Russia, the Near East and the so-called new countries, brought out that these countries should prove large markets for American goods and that the American business man would be well repaid in investigating these countries, in following their reconstruction work, and in carrying out development work which, although it might not pay at the start would be well worth while in the long run.

A number of the speakers referred to the lack of transportation facilities in the several countries and the large amount of equipment needed to bring the railway lines up to proper standard.

Poland

In speaking of Poland, G. Barthel de Weydenthal, acting consul general of Poland, said:

"The Poland of today has a population in excess of 35,000,000 and an area greater than that of Italy. Warsaw, its capital, has a population of upward of 1,000,000, and has rightly been termed the 'Hub of Central Europe.'

"One of the most crying needs of Poland today is adequate transportation facilities. The railroads of Poland, before the war, were in the hands of the several imperial governments, and their development was regulated almost entirely by strategical considerations, absolutely no attention being given to the interests of local population or commercial needs.

"In the United States, where so much importance is attached to railroad building, it is almost inconceivable that the total length of railways in Poland does not amount to more than 12,150 miles, or seven miles on every hundred square miles of territory. Most of the railroad development has been concentrated in former Prussian Poland where, in pursuance of its policy of aggression, the imperial German authorities laid out a railroad net for their own ambitious interests. The total length of railroads in former Prussian Poland is about 4,500 miles or, roughly, 15 miles for every hundred square miles of territory.

"Just the opposite policy of preventing railroad construction was always pursued by the Russian government and a lamentable scarcity of transportation was the result. In this section the total length of railroads does not exceed 5,000 miles, or 4.5 per hundred square miles of territory.

"The Polish railroad administration has already taken steps to remedy the situation: New lines, as a part of a comprehensive system, are now in course of construction, and electrification on a larger scale is under consideration.

. . . The present time is ideal for an extensive railroad, waterway and road construction program. Little doubt exists but that American capitalists could accomplish extraordinary results through a concentration of efforts in this formerly neglected country."

Jugo-Slovakia

"The kingdom of the Serbs, Croats and Slovenes is a new state, combined of the Kingdom of Serbia, Kingdom of Montenegro and the provinces inhabited by the Serbs, Croats and Slovenes, which formerly belonged to Austria-Hungary," said Aco Despitch of the Royal Serbian Trading Agency.

"The area of this new state is about 100,000 square miles, corresponding to the combined area of Pennsylvania, Ohio and Maryland. The population is about 13,000,000, the combined population of Pennsylvania and Ohio. The density of population is about 130 per square mile, as compared with Pennsylvania's density of 200 per square mile. There are 2,000 miles of railways and about 12,000 miles of roads. Both railways and roads need to be thoroughly repaired."

Russia

"Russia," said Dr. Joseph M. Goldstein, professor of political economy of the University of Moscow, "with a population of 160,000,000 has a railway mileage not much in excess of that of Canada with a population of only 8,000,000."

Russia, he said, to raise her economic productivity to the level of even so backward a country as Austria-Hungary was before the war, will have to expend in the next ten years a sum of no less than $56,000,000,000, of which $5,500,000,000 is for new railroads and $3,500,000,000 for equipment. The former amount for new railroads is figured on the basis of the construction of 3,500 to 4,000 miles yearly for ten years, a total of 35,000 to 40,000 miles at $150,000 a mile. The $3,500,000,000 for new equipment includes expenditures for new freight and passenger cars, and repair of old locomotives and cars.

W. L. Saunders, chairman of the board of the Ingersoll-Rand Company, New York, was elected president of the association.

Wheat Transportation Limited by Elevator Capacity

Director General Hines on October 9 authorized the following statement regarding the difficulties being experienced in the handling of wheat:

"My associates and I have been and are giving most earnest consideration to the transportation of wheat, but it is important to have it clearly understood that the present inability to transport the wheat is due to causes which the Railroad Administration cannot control. On May 20 and again on May 29 the Railroad Administration issued notices to the public that in view of an expected large crop of wheat and the necessity of utilizing all available railroad equipment to the fullest possible extent, the wheat crop would have to be handled under the permit system under which wheat would not be accepted for transportation until there were facilities for unloading it at destination. The permit system, which is administered in connection with the Grain Corporation, was put into effect in accordance with public notice on August 1, and since that time permits for the shipment of wheat have been issued only when there were facilities at destination for unloading it.

"The reason the Railroad Administration has not been supplying more cars for wheat is that the elevators are full at the proposed destinations and consequently the wheat could not be unloaded from the cars. It is absolutely necessary to avoid a situation where vast numbers of railroad cars would be filled with grain which could not be disposed of at destination, because this would result in practically taking the cars out of transportation service and using them for storage and depriving the public generally of cars which are badly needed for business of every sort. The Railroad Administration is prepared as an emergency measure to provide ample freight cars to take care of all wheat that can be unloaded out of the cars at destination, giving preference to wheat on the ground. The situation thus becomes one of finding elevator capacity to take care of the wheat at destination. My associates and I are using every endeavor to improve this situation through co-operation with the United States Grain Corporation and that corporation is following up the matter in a most active way. It must be appreciated, however, that there are world-wide limitations upon the extent to which grain can be immediately moved out of the elevators on account of conditions in the foreign markets and conditions of ocean shipping and it will be exceedingly difficult to overcome these limitations. Just as fast as elevator capacity can be provided at destination, the Railroad Administration proposes to give preference to the wheat movement and furnish the cars to move it, but it would make the situation worse and greatly injure transportation generally to tie up cars by loading them with wheat which could not be unloaded at destination."

Roads Earned $16,000,000 in August

The Operating Statistics Section of the Railroad Administration has published figures covering the financial results of operation for the month of August for all Class 1 Roads in federal operation. These comprise 231,964 miles of road, or 97 per cent of the total of 240,177 miles of road federally operated.

The condensed income account is as follows:

	August.		Increase or Decrease.	
	1919.	1918.	Amount.	Per cent.
Operating revenues	$464,550,969	$497,689,570	D.$33,138,601	D.6.7
Operating expenses	353,416,001	354,682,438	D. 1,266,437	D.0.4
Net operating revenue	111,134,968	143,007,132	D.31,872,164	....
Taxes, rents, etc.	20,485,967	16,324,502	4,161,465	....
Net operating income	90,649,001	126,672,630	D.36,023,629	....
Operating ratio	76.1	71.3	4.8	....

Note.—*D.* indicates decrease.

One-twelfth of the annual rental due the companies covered by the report amounts to $74,352,976, so that the net profit to the government was $16,296,025 for these properties. In this connection, however, it should be observed that the August expenses do not include the increases in wages recently granted the shopmen which are retroactive to May 1, 1919. It is estimated that these increases will amount to approximately $4,000,000 per month. Freight and passenger rates are on substantially the same basis in both years. The expenses in August, 1918, include about $19,000,000 back pay applicable to prior months, but they do not on the other hand reflect the increases to agents, telegraphers, trackmen, clerks, enginemen and trainmen, granted subsequent to August, 1918, which are included in the August, 1919, expenses.

The condensed income account for the eight months ended August 31 is as follows:

	8 Months Ended Aug. 31.		Increase or Decrease.	
	1919.	1918.	Amount.	Per ct.
Operating revenues	$3,238,744,231	$3,017,761,965	$220,982,266	7.3
Operating expenses	2,763,103,717	2,457,633,745	305,469,972	12.4
Net operating revenue	475,640,514	560,128,220	D.84,487,706	..
Taxes, rents, etc.	151,326,023	144,976,921	6,349,102	..
Net operating income	324,314,491	415,151,299	D.90,836,808	..
8-12 of annual rental	594,823,808	594,823,808	.....	..
Operating loss	270,509,317	179,672,509	90,836,808	..
Operating ratio	85.3	81.4	3.9	..

The comparison between the eight months' period is substantially affected by the fact that the rate increases, approximately 25 per cent, which were in effect this year, became effective for passenger and freight traffic, respectively, the middle and latter part of June, 1918.

Director General in Charge of Coal Distribution

Coal Stocks Will Last at Least a Month; Locomotives May Be Converted to Burn Oil

In addition to his functions as director general of some 230,000 miles of railroad, Walker D. Hines has taken over a large part of the functions formerly exercised by the United States Fuel Administrator.

Because of the vital interest of the railroads in an adequate supply of fuel, without which they could not serve other consumers, and also because they already had an organization in the field, as well as a directing organization at Washington, whereas that of the Fuel Administration had been practically disintegrated, the Railroad Administration, in anticipation of the coal strike, was given the important function of allocating the available fuel supply, or that which is available for distribution to other consumers after the essential needs of the railroads have been supplied.

The orders and regulations of the Fuel Administration had never been cancelled but had been merely suspended on January 31 last, and although the organization of the Fuel Administration had ceased to function, Dr. Garfield's resignation had not been accepted. Dr. Garfield was called to Washington for consultation on the plans for dealing with the coal strike situation, and it was a simple matter to issue an executive order reinstating his former regulations, after which he issued another order designating Director General Hines and his representatives to carry the orders into effect so far as the distribution and allocation of coal was concerned. The Department of Justice was given charge of enforcing the maximum price regulations.

Coal in Transit Commandeered

Director General Hines on the day before that set for the strike had issued orders to the regional directors authorizing them to commandeer all coal in transit which should be necessary to the establishment of proper reserves, making exemptions in accordance with the old priority list of the Fuel Administration, and on November 1 Mr. Hines announced the organization of a central coal committee at Washington and regional and district coal committees at other points to handle the distribution.

For several weeks prior to the strike the Railroad Administration had been putting forth every effort to transport a maximum of coal, both in order to overcome the shortage in production during the first part of the year and by way of preparation for the strike, and for two weeks before the strike preference was given to the coal traffic in order to get as much coal away from the mines as possible. Open top equipment was devoted to coal loading to the exclusion of other classes of traffic and the movement of such equipment was expedited.

On October 16 Director General Hines held a meeting with the western regional directors in Chicago and conferred by telephone with those in the east on the coal situation, as a result of which instructions were issued to railroads serving coal mines to make preferential efforts to furnish mines with empty coal cars up to the ability of the mines to load daily and to non-coal loading railroads to deliver daily to their nearest coal loading or coal route connections empty coal cars up to the maximum ability of the connections to receive them. Instructions were also issued on the same day to the effect that open-top cars should be immediately withdrawn from non-coal service in numbers sufficient to permit placement at mines and deliveries to coal loading connections as required, also that consignees not unloading coal within 24 hours after cars were placed for unloading so that the cars could be returned to the mines should have no additional cars placed for unloading. The result of these instructions was indicated by a large increase in production during the week ending October 25, estimated at 13,118,000 net tons, the highest week's record this year.

Up to October 30, the day before the strike, the Railroad Administration had permitted coal to go to the designated consignees in order to interfere as little as possible with the normal course of distribution of coal traffic. After it became certain that the strike order would not be recalled, however, and it became necessary to be prepared to insure against all temporary contingencies in order that the transportation service might be protected, Mr. Hines announced that the regional directors had been instructed to accumulate a necessary reserve of coal when it was not already on hand, purchasing it, if possible, and otherwise holding coal in transit. Mr. Hines' instructions were that in holding such coal exceptions should be made as far as possible of coal destined to certain classes of consignees in the order of priority adopted during the war by the Fuel Administration. Coal held in transit was not to be unloaded from storage nor used until actually needed, so that if its use was later found unnecessary, it could be forwarded to destination whenever practicable.

The instructions issued also provided that there should be as little disturbance as possible in the distribution of coal, but that the necessities of the railroads, which have a public duty to perform, should be protected.

During the first six months of this year an abnormally small amount of bituminous coal had been mined and transported because of the lack of demand. The demand began to improve in June and July. Slight car shortages for the movement of bituminous coal began to become evident in June and became more pronounced about July 15. In a statement sent to the Senate under date of August 14, in response to a Senate resolution, Mr. Hines said that he did not anticipate any shortages in transportation which would be in any sense exceptional or abnormal, or which would justify oppressive prices for coal. On September 4 he appeared before a sub-committee of the Interstate Commerce Committee of the Senate investigating the coal problem, and stated that the Railroad Administration would be able to transport the necessary coal and that the Railroad Administration proposed to adopt whatever expedients were necessary to accomplish that purpose. He called attention to the fact that while the highest production that had ever been made in a week was 13,000,000 tons, the highest that had been averaged for any considerable period of weeks was something over 11,000,000 tons.

Speeding Up Coal Production

Up to September not exceeding 10,000,000 tons of bituminous coal had been transported per week. The Railroad Administration early in September instructed that the railroads endeavor to provide transportation for 11,000,000 tons per week.

Reports for the week ended November 1 show that railroad cars were supplied for practically all bituminous coal offered. Bituminous coal mines in the Eastern, Allegheny, Northwestern, Central Western and Southwestern regions during the week mentioned had 100 per cent car supply and in the Pocahontas and Southern regions car placements were 96 per cent of cars ordered.

Restrictions resulting in curtailment of car supply for the loading of stone, sand and gravel which were placed in

effect temporarily to enable the full loading of bituminous coal were removed on October 30, after it was determined that requirements for bituminous mines were fully protected up to November 1.

On October 31 President Wilson, at the advice of Dr. Garfield and members of his cabinet, and in accordance with the plans arranged at previous conferences, signed an executive order revoking the orders of January 31 and February 20, 1919, which had suspended the previous rules, regulations and proclamations relating to the fixing of prices, the production, sale, shipment, distribution, apportionment, storage and use of coal, and restoring to the extent necessary the orders fixing prices of bituminous and lignite coal at the mines, fixing or regulating the commissions of middlemen, and fixing or regulating the gross margins or prices of wholesale and retail dealers in bituminous or lignite coal. The Fuel Administrator was also authorized to restore, change or make such other rules or regulations as in his judgment might be necessary.

On the same day Fuel Administrator Garfield issued a detailed order, and Director General Hines gave instructions through the regional directors to put its provisions into effect immediately.

Railroad Administration in Charge of Distribution

Mr. Garfield's order restored the order of January 14, 1918 and portions of the order of May 25, 1918 setting up preference lists and designated Mr. Hines to carry out the former.

Dr. Garfield explained that it would have required too much time to set up the old machinery of the Fuel Administration, so it had been decided that the Department of Justice would have charge of seeing that the maximum price list is observed and the Railroad Administration, with its staff already in the field, would direct the distribution. For the present, he said, no action would be necessary with reference to anthracite coal, but on November 5 President Wilson issued orders giving Dr. Garfield authority to reinstate the regulations and maximum prices as to anthracite coal if it should become necessary.

Method of Distributing Coal

The following is an outline, as announced by the Railroad Administration on November 1, of the instructions governing the procedure to be followed in the handling of commercial coal diverted in accordance with instructions of the Director General under the authority conferred by the fuel administrator:

1. Bituminous coal, including lignite, taken and held in accordance with the instructions of the director general of October 29 and 31, or thereafter, will be handled by the director general and the regional directors through the agency of a central coal committee at Washington and regional coal committees which will be established jointly by the regional directors and the fuel administration. Such regional coal committee will comprise the following representatives: one appointed by the United States fuel administrator and such others as the regional director may select to handle in matters of purchase, distribution and accounting.

2. The bituminous coal held must be distributed only to those consumers who have no reserve supply and must have coal to meet their emergency needs. The following order of preference shall govern the regional coal committee in such distribution as they may make within their jurisdiction for emergency consumption in the United States and Canada: (a) Railroads. (b) Army and Navy, together with other departments of the federal government. (c) State and county departments and institutions. (d) Public utilities. (e) Retail dealers. (f) Manufacturing plants on War Industries Board's preference list. (g) Manufacturing plants not on War Industries Board's preference list. (h) Jobbers. (i) Lake. (j) Tidewater.

3. When commercial coal is diverted to other than original consignee, promptly notify shipper and original consignee of each car and keep adequate record for later settlement.

4. Originating coal roads should hold a considerable portion of the commercial coal near coal waybilling points, available for prompt distribution.

5. Intermediate and terminal carriers should, as far as practicable, move commercial coal to, and hold it in the vicinity of, points most convenient for prompt rehandling and distribution.

6. Coal must not be delivered to commercial consumers either in accordance with the priority list (established in Rule 2) or otherwise, except with specific authority from the coal committee having jurisdiction.

7. Regional directors will immediately notify each railroad under federal control of the regional coal committee with which it shall deal.

8. Each railroad shall report at once to the central coal committee and to the regional coal committee the name, title, location and telephone address of the representative in whom this whole matter will be centered for that railroad.

9. In order that the central coal committee may be informed of the requirements for coal in each region and of the necessity for transferring coal from one region to another, each regional coal committee will make such daily reports to the central coal committee as are provided for herein and may be called for from time to time.

10. Each railroad (or each grand division of a railroad) shall report daily by wire to the regional coal committee, to be received not later than 9:00 a. m., information as to its coal situation for the 24 hours ending at 1:00 a. m., that day.

11. Each regional coal committee will report daily by wire to the central coal committee, as promptly as information is available, a summary of the coal situation for the 24 hours ending at 1:00 a. m., that day.

12. Applications to regional coal committees for delivery of coal to commercial consumers must be made through the railroad which will make delivery of the coal; such applications must show complete and accurate information with respect to the preferred nature of the requirements, the amount of coal which the applicant has on hand, and the amount which the applicant requires for the preferred use, together with the rate of consumption and the kind and size of the coal desired, all as set forth in Form C attached hereto.

13. Each regional coal committee will apply a consecutive number to all orders authorizing the delivery of coal, and compliance with such orders must be reported promptly by the railroad to the regional coal committee.

14. Coal diverted for commercial uses shall be paid for in accordance with the fuel administrator's order dated January 14, 1918. In order to insure payments coal shall be diverted for commercial use to such applicants only who shall satisfy the federal or general manager of their financial responsibility or who shall deposit a certified check or other satisfactory security in such sum as will insure full payment for any coal furnished. The applicant shall make definite written obligation to pay the shipper for the coal promptly upon presentation of bill. The legal transportation charges, including war taxes, from mines to point of delivery to the applicant, will be collected on delivery in the usual way.

It was announced that where other priorities had been taken care of and the requirements of the railroads had been provided for, ships would be given bunker coal sufficient to take them to the first fuel station en route to destination. The Shipping Board on November 3 issued an order cutting off the export of coal and on November 6 the Central Coal Committee ordered that the supply of coal to foreign-owned ships in American ports be stopped immediately.

Passenger Train Service Curtailed.

The regional directors were given authority to curtail passenger train service if necessary, and a few trains were taken off, although partly in accordance with seasonal reductions in schedules. Some complaints were received because of the taking off of trains and some because trains were not taken off. The fuel administrator of Iowa sent a telegram saying that he did not believe "there is any law in peace times that will deprive the citizens of Iowa of heat, water, health and happiness in order that the Railroad Administration may be allowed to run luxurious California trains over the state and continent."

Mr. Hines on November 6 authorized the following:

"The machinery set up by the Railroad Administration to distribute the coal held in transit by the railroads in accordance with the directions of the Fuel Administrator is in full operation, and, as a result, wherever possible coal is being distributed in accordance with the priority list established by the Fuel Administrator where such coal is absolutely needed. Therefore, where there is real need for coal, the problem should be taken up immediately with the railroad ordinarily supplying the coal and every effort will be made by such railroad to meet the demand. It is, of course, essential both because of the present bituminous coal strike and in order that the needs for the coming winter may be looked after, that fuel be used as economically as possible. It should also be remembered that the railroads did not interfere with the delivery of coal to designated consignees until the day before the present strike began. In order to conserve coal as much as possible, regional directors of railroads have been given authority wherever it seems absolutely necessary to eliminate for the time being train service, but in order to provide for the essential business needs of the country, no general curtailment of train service is contemplated. The maintenance of the public transportation service is of paramount importance in order to serve the countless needs of the general public, and the interruption of that service should be minimized as far as possible."

Although the Railroad Administration has not made public figures showing the amount of its coal stocks on hand, it is understood that the supply is sufficient to last for at least a month.

Locomotives May Be Converted to Oil Burners

If the strike of the coal miners should be sufficiently protracted to reduce seriously the available supply of fuel, a large number of locomotives could be converted to burn oil instead of coal on fairly short notice, according to information gathered by the mechanical department of the Railroad Administration. Without expecting that such a contingency should arise, an investigation has been made of the possibilities which shows that a locomotive could be converted to an oil burner in about 10 days in any of the principal shops of the railroads or the locomotive companies, and that about 250 could be converted per week. It would also be possible to obtain the use of about 1,200 acid tank cars which were used by the ordnance department of the Army, of 7,000 gallons capacity, which could be readily converted for use in transporting an oil supply. It is understood that a considerable number of industries have been making investigations of the possibility of changing from coal to oil if necessary.

The central coal committee consists of: H. B. Spencer, director of the Division of Purchases, chairman; Brice Clagett, assistant to the director general; S. Porcher, assistant director of the Division of Purchases; B. P. Philippe, fuel distributor; E. J. Roth, manager stores section; F. C. Wright, assistant director, Division of Operation; A. G. Gutheim, assistant manager, car service section; F. M. Whittaker, manager inland fuel traffic; S. H. E. Freund, assistant general counsel, and H. Y. Saint, representing the Fuel Administration.

The list of regional coal committees is given herewith:

Southwest Region, St. Louis, Mo.—P. H. Greenlaw, chairman; C. A. How, Z. W. Brice, J. G. Livengood.

Southern Region, Atlanta, Ga.—A. M. Smith, chairman; J. J. King, Horace Epes, F. H. Fechtig, S. L. Yerkes, G. W. Lamb.

Northwest Region, Chicago, Ill.—T. W. Proctor, chairman; Geo. W. Reed.

Central Western Region, Chicago, Ill.—B. J. Rowe, chairman; P. Hunter, F. C. Honnold.

Eastern Region, New York City.—G. N. Snider, chairman; A. K. Morris, R. D. Starbuck, A. E. Russell, E. B. Wight, H. L. Ingersoll, J. W. Searles.

Allegheny Region, Philadelphia, Pa.—J. B. Fisher, chairman; E. H. Bankard, W. S. Yeatts, J. W. Laurel, C. C. Foedisch.

Pocahontas Region, Roanoke, Va.—D. E. Spangler, chairman; E. J. Howe, F. L. Poindexter, E. T. Burnett, J. W. Coxe, T. D. Hobart.

At the conference on November 14, after considerable preliminary sparring, an agreement was reached to proceed with negotiations on a wage scale for the central competitive field, to be followed by negotiations to cover the other fields.

Director General Hines announced that the strike order having been rescinded, the Railroad Administration had completed plans for releasing coal held under authority of the Fuel Administrator just as rapidly as additional coal is produced. There was some shortage of coal in the Southwest, and these needs would be cared for at once, coal now being in movement to that region.

The object of diverting the coal in the possession of the railroads, he said, was to continue the operation of the railroads which were first on the Fuel Administrator's priority list and at the same time to supply needed coal to other domestic consumers. The need for coal by consumers other than the railroads began to be felt on November 6, although before that time some coal had been released on a showing that it was needed. In the period from November 6 to November 9, inclusive, a total of 2,655,300 tons of bituminous coal, or an average of 663,575 tons per day, was released by the railroads to consumers other than railroads, while during the same period a total of 1,442,100 tons of bituminous coal was loaded, or an average of 360,525 tons per day, the coal released to domestic consumers other than railroads in that period being an excess of 1,213,200 tons, or an average excess of 303,050 tons per day above the amount of bituminous coal loaded in the same period.

It was estimated that the reserve stocks held by the railroads and under the supervision of the central coal committee when the strike was called off amounted to slightly less than 15,000,000 tons, or about a 30-day supply.

The production of bituminous coal in the week of November 8, during which the strike was in progress, was estimated at 3,477,000 tons, or approximately 29 per cent of the average for the four weeks ending October 25, in which production was at the highest rate attained this year, according to the Geological Survey report. As indicated in the reports from the mines for the week of November 1, this production was outside of the central competitive district, which includes Illinois, Indiana, Ohio, and Western Pennsylvania. The union fields were almost completely shut down, the open-shop districts but partially, and the non-union fields little, if any, affected. Thus production was maintained in the general territory extending from parts of Western and Central Pennsylvania, south to Alabama, in Western Kentucky, Utah, Colorado, and New Mexico. The only fields normally supplying the upper and central Mississippi Valley markets at work were those in southern West Virginia and Kentucky.

Production in the week of November 8 was, of course, the lowest recorded in recent years, for no strike has ever before affected all union mines at the same time as has this one.

The daily average output in the week, of 580,000 tons, was 54 per cent greater than on Saturday, November 1, the first day of the strike.

The strike became effective at midnight, October 1, and the reports for the week ended November 1 thus include five days of work and one day of strike in those fields which have been affected. For the week as a whole and in the last five days of October in particular the bituminous mines enjoyed the best car supply of which there is definite record in a period of active demand and full labor supply. The average loss of time on account of car shortage for all mines reporting was but 3.4 per cent, and in most fields car shortage was so small as to be negligible. The performance of the railroads in that week is noteworthy when it is understood that under the item of car shortage is included all transportation disability that curtails the output of coal; such items as derailment, congestion of loads on tracks, etc., which to a limited extent will always prevent the prompt service of cars to mines, no matter how many empty cars may be available nearby the mines.

Strike of Bituminous Miners Called off

Government Uses Full Powers to Prevent Shortage of Fuel and Stoppage of Transportation

THE STRIKE OF MINERS AND MINE WORKERS in the bituminous coal fields, called by the United Mine Workers of America, encountered the full force of the law when Judge A. B. Anderson, of the United States district court at Indianapolis, on November 8, issued a mandatory injunction enjoining the union leaders from permitting the strike order to remain in effect and commanding them to issue a withdrawal and cancellation of the strike order by 6:00 p. m., November 11.

Declaring that the government and laws of the United States are supreme, even above the dictates of the leaders of organized labor, the court pronounced the strike call a conspiracy to limit the production and transportation of coal and other necessaries of life, prohibited by the food and fuel control act, and held that the law is still in force and that the provisions of the Clayton act, designed to protect the right of labor to organize, does not apply as against the more recent law.

Most of the unionized miners and mine workers in the bituminous coal fields, or approximately 425,000, responded to the strike call on November 1, and during the first week bituminous production was principally confined to the non-union mines, although many defections from the ranks of the strikers were reported. Every effort had been made by the President and members of his cabinet to avert a strike by peaceful settlement, but when the union leaders refused to consider any proposal that involved a calling off or postponement of the strike the federal authorities prepared to exercise all the powers of the government to make it ineffective by attacking it as a conspiracy in violation of the food and fuel control act.

On November 1, on petition of the federal authorities, the court issued a temporary order restraining the union leaders from taking any part in directing the strike and from disbursing any of the $15,000,000 fund reserved for strike benefits. It was hoped that in depriving the strikers both of leadership and of strike benefits much of the impetus of the strike would soon be expended and federal troops were dispatched to the mine fields to give protection to all who were willing to work, but during the first week, pending the hearing on the injunction, little effort was made by the operators to open the mines.

Both the President and the attorney general had pronounced the strike unlawful and unjustifiable both as an abrogation of a wage contract extending until the termination of the war and as a conspiracy in violation of the Lever act, and without attempting in any way to pass upon the merits of the demands for a 60 per cent increase in wages, a 6-hour day and a 5-day week, insisted that the issues be settled by negotiation or arbitration without imposing disaster upon the country.

The President reinstated the orders of the Fuel Administration fixing the price of coal and governing its allocation which were suspended earlier in the year, and Fuel Administrator Garfield issued an order designating Director General Hines and the Railroad Administration as his representatives to carry the orders into effect so far as the distribution and allocation of coal is concerned, while the Department of Justice was given charge of enforcing the maximum price regulations.

The demand of the United Mine Workers was adopted by the delegates at a convention held in Cleveland on September 23 at which it was decided that all contracts in the bituminous field should be regarded as having automatically expired on November 1, and the executive officers were authorized to call a strike of all bituminous miners and mine workers throughout the country if a satisfactory wage agreement should not have been secured by that time for the central competitive field. The demands were presented to the operators at meetings at Buffalo and Philadelphia at which the operators declined to negotiate a new contract on the ground that the agreement as to wages which was made with the sanction of the United States Fuel Administration was to run during the continuance of the war, but not beyond April 1, 1920, and that some of the wage contracts had dates not dependent upon the war.

The strike order was then issued on October 15, and Secretary of Labor Wilson, acting by direction of the President's cabinet, immediately called into conference at Washington the heads of the union and the operators' association. Subsequently the full scale committees of each side were called in and various proposals were offered and rejected by the union leaders, who declined to withdraw the strike order except after full compliance with their demands. The final proposal was made by President Wilson, who insisted that after negotiations without reservation all questions still in dispute should be submitted to arbitration and that the operation of the mines be continued pending a final settlement. The operators offered to accept this suggestion in its entirety, while the union leaders proposed to accept the offer of negotiation, but held the other two proposals "for consideration later." This action abruptly terminated the conference.

After a special meeting of the cabinet held on October 25, at which Director General Hines was also present, and at which the government's attitude toward the threatened strike and plans for action were discussed, President Wilson issued a statement for the purpose of making the issue clear to the

ountry and to give the miners' leaders an opportunity to ecall the strike order.

The President's statement pointed out that it was pro-osed to abrogate an agreement as to wages made with the anction of the Fuel Administration, and that the strike was roposed at a time when the government was making a most arnest effort to reduce the cost of living and had appealed vith success to other classes of workers to postpone similar isputes until a reasonable opportunity had been afforded or dealing with the cost of living. He also said that the var itself was still a fact, the world was still in suspense s to negotiations for peace, our troops were still being ransported and their means of transport was in urgent need f fuel.

Members of the international executive board of the Jnited Mine Workers, the scale committee of the central ompetitive district and the district presidents held a meet-ng at Indianapolis on October 29, at which consideration vas given to the President's statement and a statement was iven out saying that "a canvass of the entire situation shows nat a strike of bituminous miners cannot be avoided."

Word of this action was received at a conference attended y Joseph P. Tumulty, secretary to the President; W. B. Vilson, secretary of Labor; Walker D. Hines, director gen-ral of railroads; Dr. H. A. Garfield, former fuel adminis-rator, and Attorney General A. Mitchell Palmer. The at-orney general then issued a statement designed to show that ne government was not attacking labor in general, nor the ight of labor to strike, but to differentiate the coal strike rom other strikes, both because it represented an abrogation f a contract and because it was a conspiracy in violation f the food and fuel act. These facts, he said, put the trike outside the pale of the law and made it necessary for ne government to use all its resources for the protection of ne public interest.

Strike Leaders Enjoined

On October 31, Judge A. B. Anderson, of the United tates district court at Indianapolis, issued a temporary in-unction restraining the officials of the United Mine Workers rom all activity in the direction of the strike or from issuing trike benefits. The injunction was issued on a petition filed n behalf of the United States government by C. B. Ames, ssistant attorney general in charge of the enforcement of ne food and fuel control act, as an emergency measure. he hearing of the case was set for November 8, when the ederal authorities were to ask that the strike order be re-alled. In presenting the petition Mr. Ames explained that ne case did not involve the general right to strike, but that involved the right of the government to enforce its laws nd to protect the public interest. The petition asserted that ne strike, if effective, would stop the operation of the rail-oads and make it impossible for the Railroad Administra-on to earn the guaranteed return for the use of the railroad roperties by the government so that the federal government ould have to supply the deficit in income out of the public nds, and that suspension of railroad operations would ean also the stopping of the mails and the transportation the armed forces of the United States and a cessation of terstate commerce. It was also stated that the Railroad dministration has more than 1,200 contracts for coal, 60 er cent of which are based upon the extension of the Wash-gton wage agreement to March 1, 1920.

Before the injunction was served, Acting President Lewis, the United Mine Workers, had sent out telegrams with structions to carry the strike order into effect.

The application for the injunction apparently came as a rprise to the labor leaders and at once aroused bitter pro-sts among them. President Gompers and other officials of e American Federation of Labor immediately called on At-torney General Palmer to voice their objections. Officers of several of the principal railroad labor organizations, including Warren S. Stone, L. E. Sheppard, P. J. McNamara, B. M. Jewell and J. J. Forrester, also called on him about the same time, but the attorney general said later they had merely offered their services toward bringing about a settlement of the coal strike and did not join in the protest against the injunction proceedings, although they had told him the government "was taking a grave step." Nor did they join in a statement issued later by Mr. Gompers and the A. F. of L. officials declaring that the injunction "can only result in creating new and more disturbing issues, which may not be confined solely to the miners."

Miners' Argument

The argument of the union for a five-day week and a six-hour day is that there is not enough work to keep the miners busy, that during 1919 they have not had work more than about 50 per cent of the time, and that the present number of miners working on the basis proposed in their demands distributed evenly throughout the year could produce enough coal to meet the requirements of the country. They also ridiculed the claim of the operators that the contract had not yet been legally terminated and made much of the point that the orders fixing the prices of coal had been suspended several months ago. Before proceeding against the miners, however, the government reinstated its price-fixing orders, and Attorney General Palmer made it plain that the government intended to deal just as firmly with any attempt to take advantage of the opportunity to profiteer as against the striker.

The miners' union argument was advanced in a statement by Samuel Gompers, in which he attempted to show that the demands are by no means radical. He said the miners were not permitted to work more than 160 to 180 days a year because the operators wish to restrict the output in order to keep prices up. The executive committee of the coal operators of the central competitive field issued a statement denying that the miners have averaged only 160 to 180 working days and that they are not permitted to work full time. It was stated that the operators have no control over the demand for coal and that it is not possible to distribute the work evenly and, moreover, that virtually every bituminous mine in the country has on its payroll a substantial number of men who deliberately lay off from one to three days a week when they have an opportunity to work.

In a statement issued by Mr. Gompers on November 5, he declared that the injunction was "not only wrong, but a gross blunder," because it practically took away the "constructive influence of the officers of the organization and indeed bars them from attempting to end the strike." He said that if the injunction were vacated and the Department of Labor would invite the operators and the representatives of the United Mine Workers to a further conference, he had "an abiding faith" that a mutually honorable adjustment could be negotiated and effected whereby the coal strike could be brought to an end. Acting President Lewis also said that an immediate resumption of negotiations could follow dismissal of the injunction suit, but he would not say that the strike would be called off pending the negotiations. Assistant Attorney General Ames, however, announced that the strike itself was a violation of the law and that as long as it continued there could be no thought of dismissal of the injunction proceedings.

On November 6, counsel for the United Mine Workers filed a motion with the court to dissolve the temporary injunction on the ground that the petition did not disclose any interest of the government in the case. It was also argued that the government was "without clean hands" in filing its petition in that it had recognized the efforts at "collective

bargaining" in the negotiations between the union and the operators by calling the parties to Washington for conferences with the Secretary of Labor. Apparently the theory was that as the government had recognized the phase of collective bargaining involved in the negotiations it should also recognize the strike as a proper phase of collective bargaining. It was further argued that it is not unlawful to strike and that the President had no constitutional power to restore the orders of the Fuel Administration after the exigencies of the war had passed.

When the hearing on the question of making the injunction permanent was called on November 8, at Indianapolis, attorneys for the union moved for a postponement to allow time for a settlement. This was opposed by Assistant Attorney General Ames on the ground that the questions involved are too important to admit of delay. Arguments were then had on the question of a dissolution of the injunction and the petition for an order that the strike call be cancelled. Mr. Ames offered affidavits from officers of the Railroad Administration to show the requirements of the railroads for coal and that the government's deficit in the operation of the railroads would be increased by a forced curtailment of railroad service. These were to show the interest of the government in the case. An affidavit detailing the alleged violation of the wage contracts was also presented and the reinstatement of the Fuel Administration orders was established. The argument of the defense was based largely on claims of the right to strike and that the contracts had been terminated by the practical cessation of hostilities.

"Do you mean to tell me that any group of men have the right to conspire to stop the railroads?" Judge Anderson asked of Henry Warrum, counsel for the union.

"I do claim the right of the men to exercise the primary right to stop work," Mr. Warrum replied.

"I hold that the Lever act is valid right now," said Judge Anderson, "and that the act of men who conspire to reduce production and transportation of coal is unlawful. I am going to hold that it would result in irreparable loss—why, it would result in the loss of millions to the government alone. The Lever act is plainly constitutional, plainly in force. I think that the government is right and that the Clayton act does not apply at all. I think that this restraining order should be made a mandatory injunction and that the strike order should be withdrawn."

Strike Called Off

The strike was called off on November 11 when the officers of the United Mine Workers sent out a notice cancelling the strike order in accordance with the mandatory order issued by Judge Anderson, of the United States district court at Indianapolis, on November 11. The decision to obey the court order was announced after a long conference of the union officials by John L. Lewis, acting president of the United Mine Workers, who said: "We are Americans. We cannot fight our government. We comply with the order of the court, but under protest."

The federal authorities had let it be known that they would endeavor to prepare the way for the opening of negotiations between the miners and the operators as soon as the strike order was recalled, and Secretary Wilson, of the Department of Labor, immediately called representatives of the unions and of the operators to a conference at Washington for that purpose on November 14, but comparatively few of the miners returned to work.

Exports of Iron and Steel in August, 1919, aggregated $75,831,942, compared with $95,780,230 in the same month of August, 1918. For the year ending August, 1919, the total exports amounted to $689,661,816, against the total of $704,675,554 for the twelve months ending August, 1918.

Glenn E. Plumb on Speaking Tour

Glenn E. Plumb, counsel for the railroad labor organizations, is spending the month of November on an extended speaking tour in the interest of the Plumb plan. During October he spoke at a large number of meetings in the East, including New England, and during the latter part of the month he transferred his attentions to the Northwest, speaking in Grand Forks, N. D., and Duluth St. Cloud, Minneapolis and St. Paul, Minn. Some of the principal points on his schedule for November were Sioux Falls, Aberdeen, Sioux City, Omaha, St. Joseph, Topeka Kansas City, St. Louis, Chicago, Memphis, Madison, Wis. Grand Rapids, Mich, and Des Moines, Ia. He also covered a large number of smaller towns.

In addition, the Plumb Plan League has a number of other speakers who are kept busy, including ex-Congressman C. C. Dill, who is also on a western trip; W. E. Kennedy M. L. Clausen and Frederic C. Howe, and during the winter it expects to have a large staff of lecturers in addition to a volunteer army of "four-minute" speakers.

The following extracts from Mr. Plumb's speech as sent out to newspapers by his press bureau will give a sample of the kind of doctrine that is being used to settle the "spirit of unrest" among the railroad employees:

"As a condition of resuming private ownership, the owners of the railways demand a right which we have never heretofore accorded them, a right which they seek to have embodied in the written law, permitting them to charge the public such rates for service as will insure them a minimum return of 6 per cent upon the assumed value of their properties—this assumed value to be found in the book report of their 'property investment account.'

"In order that you may understand what this means, I must define the 'property investment account' of these railroads.

"Theoretically the right of the railroad to charge for its service depends on the amount of the money invested; that is, the extent of the liabilities which it has incurred to its stockholders and bondholders for money furnished, and its liabilities for materials purchased. Theoretically its asset that is, the right to charge the people for service, exactly balances its liabilities, and things which are equal to the same thing are equal to each other; therefore, its liabilities constitute its assets. And the greater its liabilities the greater its assets.

"In fact, a railroad corporation has no asset except its liabilities. This makes it necessary for the men owning the railroad and conducting its operations, in self-interest, to make the liabilities as large as possible. The result is that the railroad experience of the past 80 years shows that no railroad ever paid off an indebtedness except by creating a new indebtedness of the same or greater par value. We have now in the liabilities of our railroad companies the indebtedness incurred generations ago.

"Therefore the money expended for rails, ties, and equipment in the days of our grandfathers, and long since passed out of existence, still demands its return in the present rates.

"Today we are still paying for the use of locomotives long since sent to the scrap heap. We are paying returns on the shades of ties that have been ashes for generations. Rails that have been replaced half a dozen times still demand from us the earnings paid by our ancestors. The 'property investment account' of these railways is nothing but a whitened sepulcher, full of corruption and dead men's bones. Within that charnel-house we find billions of shadow dollars representing shadow certificates of stock that never meant anything in service to the public.

"This coffin of the past they drag into Congress, and now demand of the people that it be brought to life and made a

living thing by a guaranty of 6 per cent on the total sum of its dust and corruption, in order that the 'faith and credit'—God save the mark!—of this empty grave may be re-established amongst living men of this generation, and fastened as a perpetual burden upon our children and our children's children to the end of time.

"Who shall deliver us from the body of this death?

"It is out of this chaos of corruption that labor's plan has been evolved."

Engineers' Board Proposes Industrial Commission

On November 2 the advisory board of the Brotherhood of Locomotive Engineers issued a statement at Washington deploring the "attempt at government by injunction," and declaring that the principle of "collective bargaining" is of vital importance to the members of the organization. It also suggested that steps be taken to assemble an industrial commission that is "not pledged to oppose collective bargaining."

The statement follows:

"In view of the conditions facing our country at this time, which in our judgment is far more serious than during the late war, inasmuch as it affects all classes of the people, and in consideration of the situation, the advisory board of the Brotherhood of Locomotive Engineers, assembled at Washington and formulated the following declaration of principles:

"The advisory board of locomotive engineers, the undoubted Americanism of whose membership should assure them of recognition, not only by the government, but every factor contributing to the welfare of all the people, believe that:

"The industrial conditions now confronting the nation, with capital and labor occupying a militant attitude toward each other, while the whole country is suffering from high cost of living caused by hoarding and profiteering, resulting in general discontent which tends to lower production, has brought about the most serious crisis in the history of our country.

"We believe that there is no industrial dispute or misunderstanding that cannot be adjusted upon a basis of justice and right, and we further believe that in seeking justice, justice should be practiced by all concerned.

"We believe in the laws and institutions of our country which guarantee that all the people shall have equal opportunity and a fair and impartial hearing before being condemned. We deplore the action of the federal government in its present attempt at government by injunction, believing such action will only tend to make conditions worse and defer if not defeat a peaceful settlement.

"The advisory board have full assurance that we express unanimous sentiment of the 85,000 members of our organization that the principle of collective bargaining is of vital importance to them and cannot be construed as harmful to any interest which desires to be just and fair.

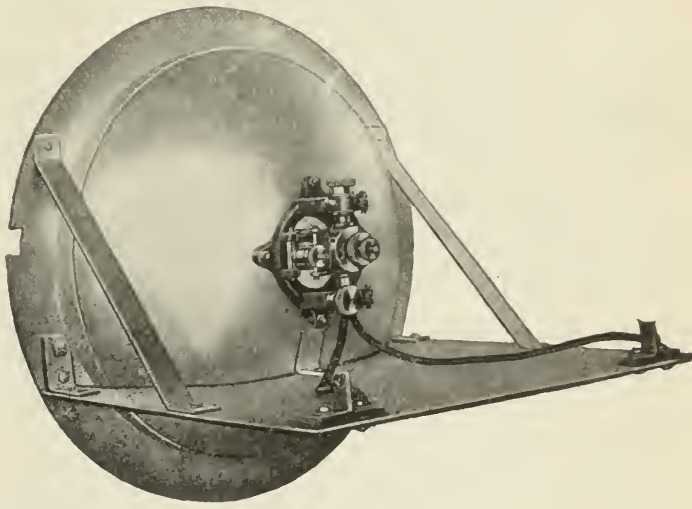
"As a remedy for the present turbulent conditions we suggest that immediate steps be taken to assemble at Washington an industrial commission that will recognize the rights of all citizens and is not pledged to oppose collective bargaining, as this is a time for deliberate action on the part of all concerned in a peaceful solution of the present conditions.

"We pledge the support of our organization to the government in every just and reasonable effort toward stabilizing industrial conditions, to the end that normal conditions be restored.

"We believe that if such a policy is adopted, reason and justice will take the place of passion, and the autocratic and militant attitude now being displayed, a successful and permanent adjustment of the relations between capital and labor, which vitally concerns all the people, could be hoped for."

Demountable Mirror Unit for Locomotive Headlight

The Electric Service Supplies Company, Philadelphia, Pa., has introduced a demountable mirror unit for locomotive headlights, which is designed primarily for the purpose of replacing 18-in. by 9-in. metal reflectors with a reflector which will not corrode in service. These mirror units are supplied for practically all of the standard 18-in. cases now in general use, and are so constructed as to slide into the cases without fitting or other alterations. They consist of a heavy sheet steel shield and



Rear View of Demountable Mirror Unit, Showing Mirror Protective Shield and Micrometer Screw Focusing Device

flange fitted into a horizontal steel base at a midway point and secured thereto with steel braces. The shield is lined with felt at its extreme edges where the reflector rests, for the purpose of protecting the reflector. A clamping ring, secured by screws which bear against a ground surface on the outer periphery, holds the reflector in place.

These units are supplied with universal focusing devices which are mounted on the back of the sheet steel shield. Leads from the lamp sockets are supplied which connect to the brass contacts mounted on the back of the shield base.

Standard Cars Being Placed in Service

Director General Hines announced on November 6 that only 168 of the freight cars ordered by the Railroad Administration and already built remained to be lettered and numbered and placed in service, and that this remaining supply would be lettered and numbered and placed in service immediately. During the week ended November 1, 1919, the cars already built and in storage were lettered and numbered and placed in service at the rate of 62 a day, and new cars were constructed and placed in service at the rate of 187 a day. Of the original order of 100,000 freight cars there remained to be built 17,881.

General News Department

The Vicksburg, Shreveport & Pacific has been transferred from the southwestern region to the southern.

R. C. Richards, claim agent of the Chicago & Northwestern, has been elected president of the National Safety Council.

The American Association of Railway Surgeons held its sixteenth annual meeting at the Hotel Sherman, Chicago, on October 22, 23 and 24.

The new passenger terminal of the Canadian National Railways at Vancouver, B. C., was opened for business on Saturday, November 1.

At Clearing, near Chicago, the operation of the hump yard, which was discontinued several months ago, because of lack of traffic, was resumed on October 27.

The bill making an additional appropriation for the construction of the Alaska Railroad, $17,000,000, has passed both Houses of Congress and has become a law without the President's signature.

William Barr, consulting chemist of the Union Pacific will present a paper on "The Treatment of Water for Locomotive Boilers" before the next meeting of the Western Railway Club which will be held at the Hotel Sherman, Chicago, on November 17.

The Western Society of Engineers, Chicago, completed successfully a seven-day drive for 2,000 additional members on Friday, October 17, increasing the membership of the society to 3,200. Among the enlarged activities which will be undertaken is the establishment of a railroad section.

The National Safety Council is to organize an Engineering Section, a special committee having been appointed for that purpose. It will be composed of members of the Council (or their employees) who are also members of the national engineering societies; or who have had ten years' experience in engineering work and five years' experience in responsible charge of such work.

The airplane mail from Cleveland, Ohio, to New York city, was carried through on Thursday, September 25, in three hours, twelve minutes, including a stop of 13 minutes at Bellefonte, Pa. The distance through is calculated at 430 miles, making the rate of speed 134 miles an hour, or, excluding the stop, more than 140 miles an hour. The mail carried on this trip weighed 355 pounds.

The Interstate Commerce Commission has announced a hearing for oral argument on the valuation proceedings in the Texas Midland, Winston-Salem Southbound & Elgin, Joliet & Eastern costs at Washington on January 7, and has granted leave to the parties to file briefs upon the final value which the commission should find, the elements to be considered and the weight to be attached thereto.

Normal time was resumed throughout the United States on Sunday, October 26, by the setting back of clocks one hour at 2 a. m. The railways of Canada, which also have used summer time—without special statutory authority—made the change at the same hour. The cities of Cleveland, Ohio, and Cincinnati, Ohio, left their clocks unchanged and now are regulating their activities by Eastern instead of Central standard.

Henry J. Aukerman, general secretary of the railroad Young Men's Christian Association, at Altoona, Pa. (Pennsylvania Railroad), has retired from that position after a service of 37 years, and will henceforth be known as secretary emeritus. Mr. Aukerman is succeeded by R. D Emerick, who for the last seven years has been general supervising secretary of railroad associations on the Buffalo, Rochester & Pittsburgh.

Railroad enginemen and firemen to the number of more than 100 were called before Health Commissioner John Dill Robertson of Chicago, on October 16, and accused of permitting locomotives to violate the smoke abatement ordinance of that city. Representatives of the railroads and of employees' unions were present and joined with the city representatives in examining the men. Those found guilty of violating the ordinance were warned not to repeat the offense.

The strike of drivers of the American Railway Express Company in New York and adjacent cities was ended on Thursday, October 23, by the men voting to return to work. A committee had been sent to Washington to see the director-general, but he told them that unless they returned to work by Friday evening, the 24th, their places would be filled. The strike leaders in New York interpreted Mr. Hines' position as an intention to employ soldiers on the express wagons if necessary. The Merchants' Association of New York city sent to the director-general a formal complaint of the great inconvenience and considerable losses caused to the business interests of New York by the ten days' strike.

Disastrous Collisions in Europe

Press dispatches of October 25 report a collision between a passenger train and a freight near Kranowitz, Silesia, in which 40 persons were burned to death. Over 60 others were severely injured.

Forty-one persons were killed and many others were injured in a collision at Vigerslev, Denmark, on the first of November, five coaches being wrecked.

Twenty or more persons were reported killed, and about 20 injured, in a collision on the night of November 3 at Pont-sur-Yonne, France, about 60 miles southeast of Paris.

Changes in Interchange Rules

The Mechanical Section of the American Railroad Association has issued circulars 69 and 70 covering minor changes in the code of car interchange rules. Circular 69 provides that the charge for Pintsch gas from October 1, 1919, to December 31, 1919, shall be $1.40 per receiver. The addition of 30 per cent as authorized by passenger car rule No. 20 is not applicable in this case. Circular No. 70 calls attention to errors in freight car rule 131 and passenger car rule 24 which show the dates on which the 1919 code becomes effective as October 1, 1919. The new rules went into effect November 1, 1919, as provided by Circular 63.

American Society of Civil Engineers Nominates Officers

The American Society of Civil Engineers has made public the report of the nominating committee, suggesting the following members for officers for the ensuing year: President (one year), Arthur P. Davis, chief engineer, U. S. Reclamation Service, Washington, D. C.; vice-presidents (two years), Robert A. Cummings, construction engineer, Pittsburgh, Pa., and Francis Lee Stuart, construction engineer New York City; treasurer (one year), Arthur S. Tuttle, deputy chief engineer, Board of Estimate and Apportionment, New York City; directors (three years), Clarence W. Hudson, professor of civil engineering, Polytechnic Institute of Brooklyn, New York City; Carleton Green, construction engineer, New York City; John A. O'Connor, construction

engineer, New York City; John C. Hoyt, hydraulic engineer in charge, Surface Water Division, U. S. Geological Survey, Washington, D. C.; Anson Marston, dean of engineering, Iowa State College, Ames, Iowa; and David C. Henry, construction hydraulic engineer, Portland, Ore.

Steel Treaters' Society Holds Convention

The American Steel Treaters' Society held its first convention at the Seventh Regiment Armory, Chicago, on September 23 to 27. This organization, which was formed several months ago, has for its object the promotion of the art of heat treatment as applied to steel. Numerous papers dealing with various phases of heat treatment were presented and an extensive exhibit was held in connection with the convention. The following officers were elected: President, T. E. Barker, Miehle Printing Press & Manufacturing Company, Chicago; first vice-president, E. J. Janitzky, Illinois Steel Company, Chicago; second vice-president, D. J. Barnes, Cann & Saul, Philadelphia, Pa.; secretary, A. G. Henry, Illinois Tool Works, Chicago; treasurer; A. L. Boissoneau William Ganschow Company, Chicago.

B. & B. Association Meets in Cleveland

The twenty-ninth annual convention of the American Railway Bridge and Building Association was held at the Statler Hotel, Cleveland, on October 21, 22 and 23, over 250 members in attendance, a larger number than at any previous convention.

At the annual meeting on the third day the following officers were elected for the ensuing year: President, F. E. Weise (C., M. & St. P.), Chicago; first vice-president, W. F. Strouse, Baltimore, Md.,; second vice-president, C. R. Knowles (I. C.), Chicago; third vice-president, Arthur Ridgway (D. & R. G.), Denver, Colo.; fourth vice-president, J. S. Robinson (C. & N. W.), Chicago; secretary-treasurer, C. A. Lichty (C. & N. W.), Chicago; members of executive committee, J. P. Wood (P. M.), Saginaw, Mich.; A. B. McVay (L. & N.), Evansville, Ind.; J. H. Johnston (G. T.), Montreal, Que.; E. T. Howson, *Railway Age*, Chicago; C. W. Wright (L. I.), Jamaica, N. Y. and G. A. Manthey (D. S. S. & A.), Marquette, Mich.

Atlanta, Georgia, was selected as the location for the next convention.

Thirty-four firms presented, in rooms adjoining the convention hall, exhibits of material used in the bridge, building and water service departments.

Freight Traffic Committee to Close Docket

The Dallas (Tex.) District Freight Traffic Committee in Circular No. 130 has reproduced a letter received from Washington to the effect that the work of all freight traffic committees should be brought to a close on or before January 1, and all subjects now before the committees be disposed of. Changes in rates, etc., which may result from the committees' work should be not only published but made effective before the end of federal control. No further consideration is to be given by any freight traffic committee to any subject involving a general revision of rates, except where consideration has already been authorized. This withdraws the instructions of February 15, 1919, under which these general questions could be referred to Washington, and is intended to save the committees' time in the preliminary consideration of such subjects.

After November 10, no new applications are to be accepted by any committee nor docketed for public consideration except as follows:

(1) To publish new commodity rates, on articles which usually take commodity rates, to cover newly developed traffic, where only class or combination rates are in effect.

(2) To publish new class of commodity rates on newly constructed lines.

(3) To correct clerical errors.

(4) To readjust rates thrown out of line by General Order No. 28.

(5) To make changes necessary to comply with orders of the Interstate Commerce Commission (these applications to be made only by one of the general committees and only in cases where the Interstate Commerce Commission has ordered the removal of discrimination without setting the rates).

(6) On subjects concerning which a request for consideration is received from Washington.

In the consideration of pending subjects, committees are requested to give preference to those which have been longest before the committee and those which are of the most importance.

Meetings and Conventions

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

Air Brake Association.—F. M. Nellis, 165 Broadway, New York City. Next convention, May 5-7, 1920, Chicago.

American Association of Demurrage Officers.—F. A. Pontious, Supervisor of Demurrage and Storage, C. & N. W. Ry., Chicago.

American Association of Dining Car Superintendents.—S. W. Derr, C. R. R. of N. J., Philadelphia, Pa.

American Association of Freight Agents.—R. O. Wells, Illinois Central, Chicago. Next annual meeting, June, 1920.

American Association of General Baggage Agents.—E. R. Reynolds, C. G. W. R. R., Chicago. Next meeting, November 11-13, 1919, New Orleans, La.

American Association of Passenger Traffic Officers.—W. C. Hope, C. R. R. of N. J., 143 Liberty St., New York. Next meeting, October 28-29, Chicago.

American Association of Railroad Superintendents.—J. Rothschild, Union Station, St. Louis, Mo.

American Electric Railway Association.—E. B. Burritt, 8 W. 40th St., New York. Next convention, October 6-10, Atlantic City, N. J.

American Electric Railway Manufacturers' Association.—C. F. J. Dell, 50 E. 42nd St., New York.

American Railroad Master Tinners', Coppersmiths' and Pipe Fitters' Association.—Otto E. Schlinck, 185 W. 5th St., Peru, Ind.

American Railroad Association.—J. E. Fairbanks, 75 Church St., New York:

Section I, Operating (including former activities of Association of Railway Telegraph Superintendents).

Section II, Engineering.—E. H. Fritch, 431 South Dearborn St., Chicago.

Signal Division.—H. S. Balliet, 75 Church St., New York. Next annual meeting, September 17-19, Congress Hall and Annex, Chicago.

Section III, Mechanical (including former activities of Master Car Builders' and Master Mechanics' Association).—V. R. Hawthorne, 431 South Dearborn St., Chicago.

Section IV, Traffic (including former activities of Fregiht Claim Association).

Section V, Transportation (including former activities of Association of Transportation and Car Accounting Officers).

Section VI, Purchases and Stores (including former activities of Railway Storekeepers' Association). J. P. Murphy, N. Y. C. R. R., Collinwood, Ohio.

Section VII, Freight Claims (including former activities of the Freight Claim Association).

American Railway Bridge and Building Association.—C. A. Lichty, C. & N. W. Ry., 319 N. Waller Ave., Austin Station, Chicago. Next convention, October 21-23, 1919, Cleveland, O.

American Railway Engineering Association.—(Works in co-operation with the American Railroad Association, Section II.) E. H. Fritch, 431 South Dearborn St., Chicago. Next convention, March 16-18, 1920, Chicago.

American Railway Master Mechanics' Association.—(See American Railroad Association, Section III, Mechanical.)

American Railway Perishable Freight Association.—E. F. McPike, 135 E. 11th Place, Chicago. Regular meetings, 2d Wednesday in March and September.

American Railway Tool Foremen's Association.—R. D. Fletcher, 1145 East Marquette Road, Chicago.

American Society for Testing Materials.—C. L. Warwick, University of Pennsylvania, Philadelphia, Pa.

American Society of Civil Engineers.—Charles W. Hunt, Engineering Societies Building, 33 W. 39th St., New York. Regular meetings, 1st and 3d Wednesday in month, except July and August, 33 W. 39th St., New York.

American Society of Mechanical Engineers.—Calvin W. Rice, 29 W. 39th St., New York.

American Train Despatchers' Association.—D. L. Darling, Northern Pacific Ry., Spokane, Wash.

American Wood Preservers' Association.—F. J. Angier, B. & O., Mt. Royal Sta., Baltimore, Md. Next annual meeting, February 10-12, 1920, Hotel Sherman, Chicago.

Association of Railway Claim Agents.—Willis H. Failing, C. R. R. of N. J., Jersey City, N. J. Next meeting, May, 1920. Atlantic City, N. J.

Association of Railway Electrical Engineers.—Jos. A. Andreucetti, C. & N. W., Room 411, C. & N. W. Sta., Chicago. Next meeting, October, 1919, Chicago.

Association of Railway Telegraph Superintendents.—(See American Railway Association, Section I, Operating.)

Association of Transportation and Car Accounting Officers.—(See American Railroad Association, Section V, Transportation.)

Bridge and Building Supply Men's Association.—M. J. Trees, Chicago Bridge & Iron Works, Chicago. Next annual convention, October 21-23, 1919, Cleveland, O.

Canadian Railway Club.—W. A. Booth, 131 Charron St., Montreal, Que.

Car Foremen's Association of Chicago.—Aaron Kline, 626 North Pine Ave., Chicago. Regular meetings, 2d Monday in month, except June, July and August, New Morrison Hotel, Chicago.

Car Foremen's Association of St. Louis.—Thomas B. Kocneke, Federal Reserve Bank Bldg., St. Louis, Mo.

CENTRAL RAILWAY CLUB.—Harry D. Vought, 95 Liberty St., New York. Regular meetings, 2d Thursday in November, and 2d Friday in January, March, May and September, Hotel Statler, Buffalo, N. Y.

CHIEF INTERCHANGE CAR INSPECTORS' AND CAR FOREMEN'S ASSOCIATION.—H. J. Smith, D. L. & W. R. R., Scranton, Pa. Next annual convention, September 23-25, 1919, St. Louis, Mo.

CHIEF INTERCHANGE CAR INSPECTORS' AND CAR FOREMEN'S SUPPLY MEN'S ASSOCIATION.—D. B. Wright, Lehon Company, 45th and Oakley Sts., Chicago. Next annual convention, September 23-25, 1919, St. Louis, Mo.

EASTERN RAILROAD ASSOCIATION.—D. G. Stuart, Washington, D. C.

FREIGHT CLAIM ASSOCIATION (See American Railroad Association, Section IV, Traffic).

GENERAL SUPERINTENDENTS' ASSOCIATION OF CHICAGO.—A. M. Hunter, 321 Grand Central Sta., Chicago. Regular meetings, Wednesday preceding 3rd Friday in month, Room 856, Insurance Exchange Bldg., Chicago.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.—A. L. Woodworth, B. & O., Lima, Ohio.

INTERNATIONAL RAILWAY FUEL ASSOCIATION.—J. G. Crawford, 702 E. 51st St., Chicago. Next annual meeting, May, 1920, Hotel Sherman, Chicago.

INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—Wm. Hall, 1061 W. Wabash Ave., Winona, Minn.

MAINTENANCE OF WAY MASTER PAINTERS' ASSOCIATION.—F. W. Hager, 1323 Hurley Ave., Ft. Worth, Tex. Next annual convention, October 21-23, 1919, American Annex Hotel, St. Louis, Mo.

MASTER BOILER MAKERS' ASSOCIATION.—Harry D. Vought, 95 Liberty St., New York.

MASTER CAR AND LOCOMOTIVE PAINTERS' ASSOCIATION OF THE UNITED STATES AND CANADA.—A. P. Dane, B. & M., Reading, Mass. Next convention, September 9-11, 1919, Hotel La Salle, Chicago.

MASTER CAR BUILDERS' ASSOCIATION.—(See American Railroad Association, Section III, Mechanical.)

NATIONAL ASSOCIATION OF RAILWAY AND UTILITIES COMMISSIONERS.—James B. Walker, 49 Lafayette St., New York. Next annual convention, October 14, 1919; Indianapolis, Ind.

NATIONAL FOREIGN TRADE COUNCIL.—O. K. Davis, 1 Hanover Square, New York. Next convention, May 12-15, 1920, San Francisco.

NATIONAL RAILWAY APPLIANCES ASSOCIATION.—C. W. Kelly, Kelly-Derby Co., Peoples Gas Bldg., Chicago.

NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meetings, 2d Tuesday in month, excepting months of June, July, August and September.

NEW YORK RAILROAD CLUB.—Harry D. Vought, 95 Liberty St., New York. Regular meeting, 3d Friday in month, except June, July and August, 29 W. 39th St., New York.

NIAGARA FRONTIER CAR MEN'S ASSOCIATION.—George A. J. Hochgrebe, 623 Brisbane Bldg., Buffalo, N. Y. Regular meetings, 3d Tuesday in each month, Tenjost Hall, Buffalo, N. Y.

PACIFIC RAILWAY CLUB.—W. S. Wollner, 64 Pine St., San Francisco, Cal. Regular meeting 2d Thursday in month, alternately in San Francisco and Oakland.

RAILWAY ACCOUNTING OFFICERS' ASSOCIATION.—E. R. Woodson, 1116 Woodward Bldg., Washington, D. C.

RAILWAY BUSINESS ASSOCIATION.—Frank W. Noxon, 30 Church St., New York. Next annual meeting, December, 1919, New York, N. Y.

RAILWAY CLUB OF PITTSBURGH.—J. D. Conway, 515 Grandview Ave., Pittsburgh, Pa. Regular meetings, 4th Thursday in month except June, July and August, Americus Club House, Pittsburgh, Pa.

RAILWAY DEVELOPMENT ASSOCIATION.—D. C. Welty, Missouri Pacific R. R., Little Rock, Ark.

RAILWAY ELECTRIC SUPPLY MANUFACTURERS' ASSOCIATION.—J. Scribner, General Electric Co., Chicago. Annual meeting with Association of Railway Electrical Engineers.

RAILWAY EQUIPMENT MANUFACTURERS' ASSOCIATION.—D. L. Eubank, Galena Signal Oil Company, Richmond, Va. Next annual meeting, September, 1919, Hotel Sherman, Chicago.

RAILWAY FIRE PROTECTION ASSOCIATION.—G. L. Ball, St. Louis-San Francisco Ry., St. Louis, Mo. Next annual meeting, October 21-23, 1919, La Salle Hotel, Chicago.

RAILWAY REAL ESTATE ASSOCIATION.—R. H. Morrison, C. & O., Richmond, Va.

RAILWAY SIGNAL ASSOCIATION.—(See American Railroad Association, Section II, Signal Division.)

RAILWAY STOREKEEPERS' ASSOCIATION.—(See American Railroad Association, Section VI, Purchases and Stores.)

RAILWAY SUPPLY MANUFACTURERS' ASSOCIATION.—J. D. Conway, 1841 Oliver Bldg., Pittsburgh, Pa.

RAILWAY TELEGRAPH AND TELEPHONE APPLIANCE ASSOCIATION.—G. A. Nelson, Waterbury Battery Co., 30 Church St., New York.

ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—P. J. McAndrews, C. & N. W. Ry., Sterling, Ill. Next annual convention, September 16-18, 1919, Chicago.

ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo. Regular meetings, 2d Friday in month, except June, July and August.

SIGNAL APPLIANCE ASSOCIATION.—F. W. Edmunds, West Nyack, Rockland County, New York.

SOCIETY OF RAILWAY FINANCIAL OFFICERS.—L. W. Cox, 1217 Commercial Trust Bldg., Philadelphia, Pa. Next annual meeting, October 16-17, New York City.

SOUTHERN AND SOUTHWESTERN RAILWAY CLUB.—A. J. Merrill, P. O. Box 1205, Atlanta, Ga. Regular meetings, 3d Thursday in January, March, May, July, September and November, Piedmont Hotel, Atlanta.

SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—E. W. Sandwich, Western Ry. of Ala., Atlanta, Ga.

SUPPLY ASSOCIATION OF AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—C. N. Thulin, Duff Manufacturing Company, 935 Peoples Gas Bldg., Chicago.

TRACK SUPPLY ASSOCIATION.—W. C. Kidd, Ramapo Iron Works, Hillburn, N. Y. Next annual convention, September 16-18, 1919, Auditorium Hotel, Chicago.

TRAIN DESPATCHERS' ASSOCIATION OF AMERICA.—J. P. Finan, A. T. & S. F. Ry., Needles, Cal.

TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, N. Y. C. R. R., Cleveland, O. Next annual meeting, September 16-19, 1919, Hotel Sherman, Chicago.

WESTERN ASSOCIATION OF SHORT LINE RAILROADS.—Clarence M. Oddie, Mills Bldg., San Francisco.

WESTERN RAILWAY CLUB.—A. F. Stuebing, 750 Transportation Bldg., Chicago. Regular meetings, 3d Monday in month, except June, July and August.

WESTERN SOCIETY OF ENGINEERS.—Edgar S. Nethercut, 1735 Monadnock Block, Chicago. Regular meetings, 1st Monday in month, except July and August.

Traffic News

The Board of Railway Commissioners for Canada, has refused to condemn increased round-trip passenger fares which were put into effect by certain Canadian roads on February 1.

The bill making an additional appropriation for the construction of the Alaska Railroad, $17,000,000, has passed both Houses of Congress and has become a law without the President's signature.

The Mexican Government has issued an order abolishing all special freight rates on the railroads of the republic which have been granted to foster "infant industries." The promotion of traffic by this means is a custom of long standing. The American Chamber of Commerce in the City of Mexico has entered a protest against the enforcement of the order

A. S. Titus, special claim adjuster for the Southern Pacific with headquarters at San Francisco, Cal., has been appointed traffic manager of the California White & Sugar Pine Manufacturers' Association with office at San Francisco. Mr. Titus was formerly connected with the freight claim departments of the Southern at Washington, D. C., and the Southern Pacific at San Francisco. In his new position he will handle all traffic matters for the mills in the association.

Charles E. Christopher, formerly sales representative of the Joseph T. Ryerson & Son Company, Chicago, with headquarters in that city, has been appointed traffic manager of the Midco Oil Sales Co., Tulsa, Okla., and assistant traffic manager of the Mid-Co Gasoline Co., Tulsa, and the Mid-Co Petroleum Co., Tulsa. Mr. Christopher was formerly connected with the general freight departments of the Chicago, Milwaukee & St. Paul, the Kansas City Southern and the Missouri, Oklahoma & Gulf.

The National Industrial Traffic League has complained to the Interstate Commerce Commission, concerning the two-year clause in the uniform bill of lading. Some roads are construing this as forbidding the payment of valid claims for damages after the expiration of two years and one day, the time limit named in the bill of lading. The League calls for a more reasonable construction; for an interpretation which will not forbid the voluntary payment of claims, and will make the clause applicable only in cases where no claim has been filed.

The longshoremen's strike at New York City was broken by November 1, but it was not subdued until November 6. Even then, though most of the men were back at work, the relations of employers and employees were confused. Export and coastwise freight traffic, though badly hampered, had adjusted itself to the situation in some degree, so that the congestion was less than would be expected from such a long-continued blockade. Normal conditions had not, however, been restored before many ocean vessels were again held up by the scarcity of coal, because of the strike of the bituminous miners, the United States Fuel Administration refusing to supply coal to foreign-owned vessels.

Stricter Packing Rules for Express

The American Railway Express Company announces the adoption of new and stricter packing rules, to be put into effect December 10. The rules will forbid the use of paper wrapping for packages weighing over 25 pounds, or of ordinary paper boxes, wrapped or unwrapped, when the weight of the contents is over that limit. For heavier packages, the regulations, like those used in the freight department of railroads, will require wood, fibre board, corrugated strawboard, etc., of specified test strengths; though in the express service a wider latitude is permitted in the size of the carton used. The new regulations are embodied in Supplement No. 5, to Express Classification No. 26.

Foreign Railway News

The government of India is considering methods of mak- India more independent of outside sources in the supply railway material. It is proposed to guarantee the pur- ase in India of 2,500 standard gauge and 500 meter gauge gons yearly for ten years, provided the price is no higher d the quality no lower than in the case of imported gons.

Electrification in Brazil.—The London Times Trade Sup- ment states that the electrification of the Barra to Pirahy ilway is likely to be carried out shortly as a government mmission has recommended the system to be employed. e power will be obtained from one of the existing power mpanies. The cost of rolling stock, sub-station plant and nsmission line will be nearly £1,000,000.

Ninety per cent. of the railroad rolling stock in the Perm, katerinburg and Cheliabinsk districts of Russia was pulled t before the territory was given over to the Bolsheviki. his is the substance of an Associated Press dispatch from nsk, Siberia, dated in July and printed in American papers August. The statement was credited to General Jack of e Inter-Allied Technical Committee. The number of loco- otives saved was about 600 and of freight cars about 30,- 0. The railroad machine shops, as well as other factories the territory given over to the Bolsheviki, were left intact, effort being made to destroy them.

Poland Takes Over Railways

A cablegram from the American Legation at Warsaw states at it is reported by the Polish authorities that all railway es of Poland, comprising a total of 7,110 miles, are now der the control of the Government. Of the railways thus erated, 5,606 miles are under the civil authorities and 1,504 les under the Polish War Department.

New Railway in Nicaragua

London.

A new railway, 75 miles in length, is to be constructed in caragua, says Modern Transport, from a point on the aculaya River, following the course of the Bamabana and conguas Rivers, of which 40 miles have already been con- ructed.

In the Belgian Congo

It is proposed to extend the Katanga Railway, which now ds at Bukama, to a new terminus at a place which the lgian Administration calls Kibouerbo, on the upper waters of e Congo. This is expected to get over the difficulty of navi- tion on the upper channels between Kabolo and Bukama, hich at present often necessitate the discharge of cargo owing the lowness of the water.

The Drama-Cavalla Railway of Greece

An important railway and sea connection is being undertaken the Greek Government, writes Trade Commissioner Eliot Mears, from Athens. This line will connect up the Salonica- rres-Constantinople Railway at Drama with the Aegean Sea Cavalla. At the present time the only outside outlet is in stern Thrace at Dedeagatch, an open roadstead unprotected om the strong southerly winds. The Drama-Cavalla line has en considered a commercial necessity for many years, but der Turkish rule nothing was done. Cavalla is the only im- rtant Macedonian port except Salonica, and is the most im- rtant tobacco-exporting port in Greece.

The right of way will be 43 kilometers (27 miles), compared th 36 kilometers (22.5 miles) by the carriage road. The untry is mountainous, which necessitates several tunnels, one of them about 2½ kilometers (1.5 miles) long. The cost of construction will be over twice what it would have been before the war. A conservative estimate would allow at least two years for the completion of this line.

Standardization of Brazilian Equipment

Commercial Attaché J. E. Philippi, Rio de Janeiro, reports that a commission has been appointed to make a special study looking to the adoption of uniform types of equipment and material for the Government railways of Brazil. The members of the commission are to be engineers from the Federal Department of Railway Inspection and the Federal railways. The first study will be devoted to the selection of uniform types of locomotives, passenger cars and freight cars for the railroads of one meter gage.

Cars and Locomotives in Russia

London.

The Ironmonger states that at the declaration of war Russia possessed in the neighborhood of 30,000 locomotives and 570,000 cars and that at the time of the revolution there were 6,200 locomotives and 120,000 cars in good condition with 3,900 locomotives and 145,000 cars needing repairs. This has been considerably reduced and this year a new Commission of the Russian Government does not record more than 4,000 locomotives and 95,000 cars.

Brazil's Transport Difficulty

According to La Nacion, the Minister of Public Works, the Congressional Committees and the managers of the Brazilian railways met recently with a view of finding a solution to the transportation problems in Brazil. At the meeting it was suggested that the Brazilian Government should take up the matter diplomatically with the United States in an effort to obtain rolling stock, in order to enable residents of the interior of Brazil to find a better and more profitable market for their goods.

Danish Railways Run by U. S. Coal

Owing to the British coal strikes several contracts were made with agents for American coal merchants. According to reports the General Director of the Danish State Railways said that the Danish railway authorities have bought large quantities of coal in the United States. He is satisfied with this coal and wants imports from America to continue American coal is slightly more expensive in Denmark than British coal, and it is reported that the Scandinavians will have to buy it if they do not wish to be without coal during the coming winter.

Railway Extensions in Columbia

London.

Modern Transport states that $100,000 is to be raised for the completion and extension of the railway from Tolima to Ibagne. A trial trip has already been made over the Gualanday Divide.

Plans are being prepared for the construction of the Uraba Railway, and when ready will be submitted to the National Congress of the Republic.

A further extension of the Sabana Railway is also to be carried out which extension will run from Facativa to Pacho.

British Westinghouse Becomes Metropolitan Vickers

The name of the British Westinghouse Electric & Manufacturing Company, Limited, has been changed to Metropolitan-Vickers Electrical Company, Limited, following an amalgamation with the extensive Vickers interests of the Metropolitan Carriage, Wagon & Finance Company, Ltd.

From its inception in 1899 until 1917 the British Westinghouse Electric & Manufacturing Company, Ltd., was controlled by American interests, but in 1917 the American holdings were taken over by the Metropolitan Carriage, Wagon

& Finance Company, Ltd., followed later by amalgamation with the Vickers interests.

The change of name will not affect the general policy of the company. As a direct result of the amalgamation, much additional strength will be gained, allowing particularly greater possibilities of competition in the markets of the world.

$25,000,000 Loan to China

A loan of $25,000,000 to the Republic of China, which has been arranged with the consent of the Four Power Consortium, will shortly be offered in this country by a syndicate headed by the Continental & Commercial Trust Co. and the Chase Securities Corp.

The proceeds of the loan will be used for the development of railroad properties in China. The first offering, unless the plans are changed, will be limited to $15,000,000, but it is expected that later offerings will raise the total to $25,000,000, if this amount is not offered in the first place.

The loan is the first that has been authorized by the consortium.

Proposed Electrification of Italian Railways

The London Times Trade Supplement reports that the Council of Ministers has approved a scheme, proposed by the Transport Minister, De Vito, for the electrification of the State railways. The bill provides for the exploitation of the national water power resources and their utilization for propulsion. The first programme, which limited the improvement to 2,000 kilometers is now extended to 6,000 kilometers. This includes the two principal trunk lines across the Apennines, viz., the two "Direttissime", Genoa-Tortone and Bologna-Florence, eight mountain passes and the principal arteries of the railway system of the peninsular from Trient to Reggio, Calabria, or from Turin to Trieste. The bill provides for an expenditure of 800,000,000 lire spread over eight years. Other sums are provided for the acquisition of material and for the government's subsidies to the new plants. The bill will be submitted to the King shortly. The Trentino alone can provide at least 1,000,000 horse-power, while the mountain basins of numerous rivers and torrents along the Alps and the Apennines can be transformed into artificial lakes.

Exports of Locomotives in August

Exports of locomotives in August totaled 69, a value of $1,539,540. This was considerably more than in July, but not as great as the exports of some of the preceding months. One-half the August total from the standpoint of value were destined for Japanese China. The figures in detail as compiled by the Division of Statistics of the Bureau of Foreign and Domestic Commerce are as follows:

Countries	Number	Dollars
Canada	7	57,865
Cuba	5	57,595
Dominican Republic	1	6,200
Bolivia	1	19,500
Brazil	5	162,990
Chile	18	198,583
Ecuador	1	11,400
Paraguay	1	10,600
Peru	5	18,694
Japanese China	16	833,600
British India	2	17,205
Philippine Islands	5	116,508
British South Africa	2	28,800
Total	69	1,539,540

New Locomotives for Indian Railways

London.

An extract from Modern Transport states that the Indian State Railways have placed contracts with the Vulcan Foundry, Limited, of Newton-le-Wiliows, Lancs, for 82 0—6—0 type locomotives; with the Hunslet Engine Co., Lt., for 26 4—6—0 type locomotives, and 70 2—8—0 type locomotives from Messrs. Kitson & Co., Limited, of the Airdale Foundry, Leeds. The North British Locomotive Co., Limited, of Glasgow, has an order for thirty broad gage and five meter gage locomotives for the Bengal-Nagpur Railway. Sir W. G. Armstrong Whitworth & Co., Limited, are to deliver 25 2—8—0 type broad gage locomotives for the Bombay, B roda & Central Indian Railway, and 17 2—8—0 type broad ga locomotives for the Madras & Southern Mahratta Railwa Nasmyth, Wilson & Co., Limited, of Patricroft, Manchest have orders for the delivery of 17 locomotives for the Burr Railway, 12 for the Assam-Bengal Railway, 10 for t Eastern Bengal State Railway, 10 for the South Indi Railway, and 9 for the Nizam's Guaranteed State Railwa All these locomotives are to be fitted with the Robins type super-heater.

The Great Indian Peninsular Railway has recently plac contracts with the North British Locomotive Co., Ltd., Glasgow, for 100 locomotives for their broad gage (5 6 in.) lines, comprising 30 2—10—0 type engines, 60 2—8— type goods engines and 10 0—8—4 "Ghat" tank locomotive and an order has been placed with the Vulcan Foundr Ltd., for 4 standard 4—6—0 passenger engines.

Exports of Car Wheels and Axles in August

The exports of car wheels and axles in August total $1,302,546, nearly one-half of which total was destined f Japan. There were also large shipments to British India a to France. The figures as compiled by the Division of St tistics of the Bureau of Foreign and Domestic Commerce a as follows:

Countries	Dollars
France	111,829
Italy	30,654
Norway	56,680
Scotland	9,163
Canada	17,936
Costa Rica	816
Honduras	480
Salvador	546
Mexico	239
Jamaica	212
Cuba	29,773
Dominican Republic	333
Argentina	19,770
Brazil	29,647
Chile	5,800
Colombia	1,875
Ecuador	145
Peru	10,497
China	81,648
Japanese China	37,064
British India	282,202
Dutch East Indies	13,958
Japan	546,554
Turkey in Asia	2,500
Australia	574
Philippine Islands	8,790
British South Africa	2,852
Total	1,302,546

Portuguese East African Railway Development

At present only one railway line has been constructed in th Beira district, running from Beira to Macequece and Umtal called the Beira & Mashonaland Railway, and operated entirel by British employees. Another railway is, however, about t be constructed. It will link up the Central African Railway with Beira, and will be constructed from Chindio, on th Central African Railways, to a point on the Beira and Mashona land Railway about 20 miles out of Beira. The total distanc will be about 200 miles, and the survey has been completed The gage is to be 3 ft. 6 in., the gage common to nearly al the South African Railways.

As at present the Beira and Mashonaland Railways as fa as possible obtain all their supplies in the United Kingdom, i is probable that efforts will be made to secure materials re quired for construction and the necessary rolling stock fo this new line in the United Kingdom also.

The line presents no abnormal difficulties, excepting the bridg over the Zambezi, and the estimated time for construction i two years. One of the effects of this line will be that, although Morromeu will send its sugar to Chinde by the Zambezi River Sena and all the factories in that district will certainly despatch their sugar by rail. Instead of loading sugar at Sena, trans-shipping it at Chinde, and possibly again transhipping it a Beira, the sugar will be railed to Beira and shipped to its destination.

There is also a possibility though no survey has yet been made, that a railway will be constructed from Melsetta to Villa Perry. Should this line be constructed, a large area o farming land would be opened up. A plan has been passed

and the work is to be executed immediately, for deepening the lighter channel so that lighters can approach the wooden jetties at all states of the tide to load or discharge cargo. A very great saving in time will ensue from this work, as at present at low tide work is almost at a standstill.

Exports of Railway Track Materials in August

The exports of railway track material in August were greater than in July, but not as great as in June or May. Of spikes, 4,009,107 pounds, valued at $216,154, were exported in August as compared with exports in July of 3,803,927 pounds, valued at $209,054. The August exports of rails totaled 48,700 tons, valued at $2,768,558 as compared with July exports of 32,707 tons, valued at $1,870,583. August exports of switches, frogs, etc., totaled $538,914 as compared with $289,232 in July. Nearly one-half the August shipments of rails went to Japan.

The detailed prices for August as compiled by the Division of Statistics of the Bureau of Foreign and Domestic Commerce are as follows:

Countries	Spikes Pounds	Spikes Dollars	Steel Rails Tons	Steel Rails Dollars	Switches, Frogs, Splice Bars, etc. Dollars
Belgium	158,760	11,163	10	537	1,151
Denmark	....	....	229	14,790	1,740
France	145,432	8,636	717	39,715	....
Netherlands	....	....	893	41,473	1,329
Norway	....	....	30	1,500	....
Portugal	....	....	...	....	1,014
Spain	....	....	79	4,810	5,700
Sweden	....	....	100	7,774	338
England	....	....	...	....	1,013
Scotland	....	....	406	25,245	487
Canada	294,600	10,669	733	35,807	16,404
Guatemala	800	68	...	....	....
Honduras	23,070	1,048	70	1,211	612
Nicaragua	200	12	...	....	....
Panama	50,000	1,801	110	4,984	4,539
Salvador	62,100	2,484	948	50,532	4,233
Mexico	319,800	12,341	2,545	96,760	33,531
Jamaica	....	....	...	....	2,505
Other British West Indies	....	....	...	....	111
Cuba	370,524	11,948	7,829	458,584	39,954
Danish West Indies	1,696	150	...	....	....
French West Indies	2,200	88	90	3,803	....
Dominican Republic	7,000	295	51	2,328	903
Argentina	91,797	8,249	...	....	....
Bolivia	52,000	3,452	29	1,617	11,116
Brazil	186,188	12,948	1,286	79,276	24,814
Chile	21,128	822	25	1,170	18,460
Colombia	153,400	6,100	...	....	70
Ecuador	20,000	731	...	....	90
British Guiana	....	....	...	....	110
Paraguay	460	42	...	....	....
Peru	309,216	24,049	606	39,017	12,442
Uruguay	....	....	...	....	168
Venezuela	....	....	26	1,425	269
China	101,900	3,192	1,060	66,544	5,133
Japanese China	....	....	1,742	131,450	....
British India	....	....	209	11,612	945
Straits Settlements	....	....	39	2,544	96
Dutch East Indies	476,176	42,991	3,129	157,986	46,372
Japan	938,869	39,888	20,475	1,160,316	22,652
Siam	66,528	5,291	3,228	197,860	....
Australia	8,392	473	...	....	1,867
New Zealand	....	....	434	26,491	1,245
Philippine Islands	142,700	6,974	150	11,500	3,625
British South Africa	4,171	213	292	17,512	258,306
British East Africa	....	....	200	11,669	3,234
Portuguese Africa	....	....	930	60,716	11,520
Total	4,009,107	216,154	48,700	2,768,558	538,914

To Extend Quebec Hotel.—President Beatty of the Canadian Pacific has announced that his company will spend over $2,000,000 in the extension of the Chateau Frontenac Hotel at Quebec, Canada.

England, with an area of less than the State of New York is planning to invest $17,000,000 in a ten year campaign to reforest 250,000 acres of land, so as to replace for future commercial use the timber used in France during the war.

Wages of Japanese Laborers.—The average wage for an unskilled Japanese male laborer to-day is 2s. ($.48) and for a female laborer 1s. 4d. (.32); for a skilled male laborer it is from 5s. ($1.20) to 7d. ($1.68) per day. These rates are about 70 per cent above pre-war rates. Besides the daily rates, however, yearly bonuses are given of a month's wages, and often considerably more. The working hours may be given generally as 70 hours per week, and the amount of work produced per hour by a Japanese workman may be put down very roughly at one-half of that produced by an average British workman where large jobs and heavy machinery are concerned. As regards holidays, the general rule is to close down twice a month only, about the 1st and the 15th.—*The Engineer, London.*

Equipment and Supplies

Locomotives

The Birmingham Southern is inquiring for two locomotives.

The Chesapeake & Ohio is inquiring for five Pacific type locomotives.

The Pennsylvania Equipment Company, 1420 Chestnut street, Philadelphia, Pa., is in the market for a second-hand, standard gage gasolene locomotive.

Freight Cars

A. J. Ceccaro, 1 Broadway, New York, is inquiring for 51 half-ton capacity cane cars for export.

Gaston, Williams & Wigmore, 39 Broadway, New York City, is inquiring for 6 box cars and 6 flat cars.

The Youngstown Sheet & Tube Company, Youngstown, Ohio, is inquiring for 7 tank cars of 10,000-gal. capacity.

W. R. Grace & Co., New York City, has ordered 60 all-steel flat cars for export from the American Car & Foundry Company.

The L. O. Steinbeck Lumber Company, Charleston, W. Va., has ordered 10 15-ton narrow-gage logging cars from the American Car & Foundry Company.

The Union Tank Car Company has distributed an order for 2,000 tank cars between the Standard Steel Car Company, the Cambria Steel Company and the Pressed Steel Car Company.

Passenger Cars

Gaston, Williams & Wigmore, 39 Broadway, New York City, are inquiring for six passenger cars.

Iron and Steel

The Government of Netherlands has ordered through its New York office 15,000 tons of steel rails for export to the Dutch East Indies.

Mitsui & Co., 65 Broadway, New York, are in the market for export for 3,300 steel high-tension transmission towers, and the necessary insulation material.

The Pennsylvania Railroad System is inquiring for 200,000 tons of steel rails to be delivered after the termination of the federal control of the railroads.

The Baltimore & Ohio has ordered 5,600 tons of bridge steel from the American Bridge Company, for its bridge over the Allegheny river at Pittsburgh, Pa.

The Southern Railway has ordered 2,300 tons of bridge steel from the American Bridge Company, for its bridge over the Tennessee river at Chattanooga, Tenn.

The Northern Railway of Costa Rica has ordered, through the United Fruit Company, a 103-ft. riveted truss span bridge from the U. S. Steel Products Company.

Perin & Marshall, 2 Rector street, New York, has given an order to the Consolidated Steel Company for 2,357 tons of 30-lb. steel rail; also for the necessary splices, bolts and dog-eared spikes; and for 50 complete turnouts for the Mysore State Railways (India).

Sophus Berendsen is inquiring for 210 tons of 116-lb. groove rails with the necessary angle plates, tie bars and bolts, to be laid on the wharves in connection with harbor improvement

work, and has ordered from the United States Steel Corporation 1,500 tons of 94-lb. rails and the necessary accessories for the Copenhagen Tramways (Denmark).

Rodney D. Chipp, United States representative at New York, of the Parana Railway, Brazil, is inquiring for 51 tons of 44-lb. rail, 3,000 pairs of splice bars, 10,000 splice bolts, 1,000 track screws, 8 complete switches, 2 velocipedes and 15 extra wheels, and for the Sao Paulo Rio Grande Railway, 370 tons of 50-lb. rail, 140,500 splice bolts, 2,000 track screws, 21 complete switches, 6 velocipedes and 18 extra wheels.

The United Fruit Company has given orders to the United States Steel Products Company as follows: For 2,357 tons of 60-lb. rail for its lines in Cuba; for 2,357 tons for its lines in Costa Rica; for 2,263 tons for the Trujillo Railroad in Honduras, and for 230 tons of steel for three bridges to be erected on the Cuba lines. A contract has also been given to the Lackawanna Bridge Company for a 210-ft. steel span to be built on the Trujillo Railroad.

Machinery and Tools

The Pennsylvania, Lines West, are inquiring for a large number of machine tools for shops at Columbus, Ohio, Crestline and Stark, and at Terre Haute, Ind.

The Tela Railroad, Honduras, has ordered the following shop equipment through the United Fruit Company: a driving wheel lathe, car wheel press, car wheel boring machine, steam pile hammer and a crank shaper.

Track Specialties

The Oneida & Western is inquiring for 12 miles of 40-lb. relaying rails with angle bars and spikes.

Miscellaneous

Sophus Berendsen, 15 Broad street, New York, is inquiring for 85 copper firebox plates to have a tensile strength of 32,700 lb. to the square inch. These plates are for the Danish State Railways.

The Du Pont Chemical Company, Wilmington, Del., is disposing of the equipment used in its war plants and has issued a circular giving a list of the machinery, equipment and material which is for sale, including machine shop and foundry equipment, power plant equipment, etc.

Signaling

The Canadian National Railways have ordered from the Federal Signal Company, Albany, N. Y., a mechanical interlocking for Villeroy, Quebec; Saxby & Farmer, 32 levers.

The Pennsylvania, Lines West, have ordered material for an all-electric interlocking plant at Leetonia, Ohio, from the General Railway Signal Company, Rochester, N. Y., 52 working levers and 20 spare spaces.

Americanization Work among foreign born employees of Chicago industrial plants, conducted by the committee on Americanization of the Chicago Association of Commerce in collaboration with the Board of Education has grown remarkably since it was started a year ago. More than 6,000 students are attending 65 classes which hold sessions in 30 different plants.

The Highway Authorities of Great Britain, according to a report received by the Bureau of Foreign and Domestic Commerce, have made grants, to July 31, 1919, amounting to $45,500,000 for the repair of roads and bridges in the British Isles. This grant was divided as follows: England, $39,240,000; Scotland, $2,640,000; Ireland, $645,000; Wales, $2,975.000.

Supply Trade News

The **Bowen Motors Railway Corporation**, Terre Haute, Ind., has completed plans for a plant to produce gasoline-propelled passenger cars.

The **C. A. S. Engineering Company**, 790 Woodward Ave., Detroit, Mich., has been appointed Detroit district representative of the Pollak Steel Company, Cincinnati, Ohio.

The Terre Haute, Ind. plant of the **American Car & Foundry Company**, was damaged by fire, on October 7, causing a loss of $100,000. Rebuilding will be started immediately.

W. Russell Walsh, son of W. J. Walsh, district manager of the Galena-Signal Oil Company at Chicago, has recently become associated with the **Glidden Company**, Cleveland, Ohio,

The **Edgewater Steel Company**, Pittsburgh, Pa., has appointed **Rank & Goodell**, 906 Merchants Ban kBuilding, St. Paul, its selling agents for St. Paul, Minneapolis, Duluth and adjacent territory.

R. H. Brown, Jr., of the St. Louis, Mo., office of the Ingersoll-Rand Company, New York, has been appointed manager of the new office of the company in the Sam Houston Life building at Dallas, Tex.

Mudge & Co., Chicago, has completed the construction of its new railway motor car plant at Chicago. **C. P. Benning**, assistant general manager, with headquarters at Chicago, has been appointed factory manager.

The **Steel & Tube Company of America**, Chicago, is asking for bids on an additional merchant blast furnace stack to be erected either at South Chicago, Ill., or Indiana Harbor, Ind. The capacity will be rated at about 600 tons per day.

The **Lyon Metallic Manufacturing Company**, Aurora, Ill., has opened a New England district sales branch at 161 Devonshire street, Boston, Mass., in charge of **J. B. Throckmorton**, formerly New York City representative of the company.

The **Pettibone-Mulliken Company**, Chicago, manufacturers of railroad specialties, has awarded a contract to Westinghouse, Church, Kerr & Company, New York City, for a one-story foundry, 150 ft. by 240 ft. at Chicago, to cost $200,000, including equipment.

C. E. Hutchison, formerly district representative at St. Louis, Mo., of the La Belle Iron Works, Steubenville, Ohio, has resigned to become associated with the Youngstown Sheet & Tube Company, Youngstown, Ohio, with headquarters at Cleveland, Ohio.

Dan Greene, who has been engaged in the Signal Valuation department of the Wabash at Decatur, Ill., has been appointed service engineer in the railroad sales department of the **National Carbon Company, Inc.**, Cleveland, Ohio, with headquarters at Chicago.

The **Rock Island Brake Shoe & Foundry Company**, Rock Island, Ill., has been incorporated with $200,000 capital stock to manufacture brake shoes and other railway supplies. The incorporators are **Simon Lewis, Hyman Lewis** and **M. I. Morris**, all of Rock Island.

The Detroit Lubricator Company, Detroit, Mich., is making additions to its plant, which include a new general office building and a new machine shop. The construction will cost $500,000 and is such as to admit of adding more stories to the building as necessity may require.

Robert N. Dickman, mining engineer on the staff of **Robert W. Hunt & Company**, engineers, Chicago, died on September 14, at La Jolla, Cal., following an operation. Mr. Dickman was formerly associated with the mining engineering firm of Dickman & MacKenzie.

G. E. Anderson, formerly assistant to vice-president of the American Locomotive Company, has been appointed assistant eastern sales manager, of the **Duff Manufacturing Company,** Pittsburgh, Pa., with headquarters at its eastern sales offices, 50 Church street, New York.

The **Pollak Steel Company,** Cincinnati, Ohio, has appointed the **C. A. S. Engineering Company,** 790 Woodward avenue, Detroit, Mich., as its representative in the Detroit district, which embraces Michigan and northern Ohio, including the cities of Toledo, Elyria and Cleveland.

John B. Jordan, assistant manager of the railroad sales department of the **Crane Company,** with headquarters at Chicago, has been appointed manager of the department with the same headquarters, succeeding **F. D. Finn** who has been granted an indefinite leave of absence.

The Railway Signaling Text Book Corporation, Utica, N. Y., has filed articles of incorporation at the office of the secretary of state, Albany, N. Y., to deal in school supplies; capital $60,000. The incorporators are H. C. Williams, H. L. Strobel, and A. M. Kieffer, all of Utica.

The Ohio Brass Company, Mansfield, Ohio, has been given an order to replace all couplers on the electrically operated cars of the Long Island Railroad, with the Tomlinson coupler which, in addition to coupling the cars connects the air pipe. A total of 154 cars will be equipped in this way.

H. V. McKedy, assistant to the vice-president in charge of sales of the American Locomotive Company, has severed his connection with that company. He has been appointed eastern railway representative of the **Glidden Company,** Cleveland, Ohio, with headquarters at 636 West 34th street, New York City.

W. W. Herron has organized the **Herron Lumber Company** with office in the Henry building, Seattle, Wash., and will make a specialty of shipments to railroads, railroad contractors, and car manufacturers. The new company will take over the interest of the Herron Company of Seattle and will maintain the latter's branch office in Chicago.

The **T. H. Symington Company,** New York, announces that at the meeting of its board of directors held in New York on October 22, **C. J. Symington** was elected president in charge of sales and operation, vice **T. H. Symington,** elected chairman of the board, both with headquarters at New York. **Donald Symington,** vice-president in charge of operation at Rochester has resigned from the company.

Dr. Leonard F. Fuller has been appointed assistant manager of the insulator factory at Barberton, Ohio of the **Ohio Brass Company,** Mansfield, Ohio. Dr. Fuller did some notable work in connection with the laboratories of the Federal Telegraph Company at Palo Alto, Cal., and in recognition of his work in wireless telegraphy, was recently given the degree of Ph.D. in Electrical Engineering by Leland Stanford University.

A. G. Gibbons has become associated with the **Wetmore Reamer Company,** Milwaukee, Wis., as production engineer. He was formerly superintendent of tools and supplies for Winslow Brothers Company, Chicago. He also served with the Cadillac Company and the Brown & Sharpe Manufacturing Company for many years. The Wetmore plant has been re-arranged and additional equipment installed under the direction of Mr. Gibbons.

Valentine Winters, president of the Winters National Bank, Dayton, Ohio, has been appointed receiver for the **Barney & Smith Car Company,** of that city, on petition of Frank H. Ballman and Edwin U. Irvin, partners, doing business as Ballman & Irvin of Cincinnati. Suspension of the business of building and equipping both freight and passenger cars, caused by the war, is defined as the chief reason for the receivership action. The receiver has been authorized to borrow on receiver notes to the extent of $100,000 with which to carry on the business. The company, it is set forth, possesses assets largely in excess of the liabilities, but it is unable to meet the liabilities as they mature.

Railway Construction

Canadian National Railways.—This system has let contracts for building about 410 miles of line as follows: To Grant, Smith & McDonell, Ltd., Calgary, Alta., 25 miles on the Arcadia Valley branch; the Western Construction Company, Ltd., North Battleford, Sask., 21 miles on the Jackfish Lake branch from mile 61.95 to mile 83, and on the Luck Lake branch from mile 13.64 to mile 35, a distance of 21.36 miles. On the Peebles-Lampman branch 20 miles has been let to the Canadian Construction Company, Ltd., Winnipeg, Man., on the Swift Current branch 27 miles from mile 92 to mile 120 to Gibbs Brothers, Gravelbourg, Sask.; on the Peace River branch 38 miles, beginning at mile 34 has been let to Malcolm McCrimmon & Son, Edmonton, Alta.; on the Thunderhill branch, 9 miles from mile 100 to D. R. & D. J. McDonald, Netherill, Sask.; on the Munson-Wayne branch a contract has been let for double tracking from mile 312 to 322 to J. Manning, Drumheller, Alta., and on the Rosebud Creek diversion, Carter-Halls-Aldinger Company, Ltd., Winnipeg, has a contract for the Calgary subdiversion. The Canadian Construction Company, Ltd., also have received contracts for two extensions on the Hanna-Medicine Hat branch for a total of 88 miles, and J. W. Stewart & Co., Winnipeg, has received contracts covering 150 miles of construction on the following branches: 35 miles on the Eston southeasterly line, 30 miles on the Melfort northeast line, 28 miles on the Melfort-Humbolt branch, 15 miles on the Amaranth extension, 22 miles on the Oliver northeast branch and 20 miles addition on the Amaranth extension to Ste. Rose du Lac north.

Canadian National.—Extensive improvements have been made by this road on its lines through Alberta, Canada. A second track has been completed between Munson Junction, Alta, and Drumheller, a distance of 11 miles, and is being extended to Wayne, a further distance of 7 miles. On this stretch a 300-ft. tunnel is being built, together with a number of diversions to eliminate a number of Trestles along the Rosebud and Red Deer River valleys. At Drumheller a new freight yard accommodating 750 cars and a new roundhouse have been completed.

A branch line extending from Peace River Junction, Alta., to Whitecourt, a distance of 78 miles, is nearing completion. Freight service is in operation from Peace River Junction to Sangudo, 31 miles, and grading and preparation for track laying have been completed to Whitecourt.

The Canadian National is also improving its station at New Glasgow, N. S., by building a brick extension, two stories high, 38 ft. wide and 41 ft. long. The work is being carried out by company forces.

Pennsylvania, Lines West.—Officers of this road and the municipal officers of the Akron, Ohio, have signed an agreement to collaborate in the construction of a temporary grade separation viaduct at South Main street and Miller avenue in Akron. As soon as the signatures of officers of the Baltimore & Ohio and Erie, both of which roads are interested in the project, are obtained, the work will be started, The articles signed include a plan providing for a structure across the south Main street yard at Miller avenue, which will serve to carry traffic over tracks in the southern end of the city while viaducts are being built over other crossings. The cost of the temporary structure is estimated to be $150,000.

Tidewater Southern.—A survey has been completed for a proposed extension from Hilmar, Cal., 62 miles southerly to the San Joaquin River, at a point known as Skaggs Bridge. It has not been decided when construction work on this line will be started.

The Italian Economic Mission to the United States has had its departure postponed until October 15.

To Create Public Sentiment for the Plumb plan, a large mass meeting was held in the Hippodrome Theatre at Pottsville, Pa., on September 29, under the auspices of the Plumb Plan League of that city.

Railway Financial News

ARTESIAN BELT.—The sale of the Artesian Belt to Harry Landa of New Braunfels, Tex., J. E. Jarrett and W. R. Wiseman of San Antonio, Tex., and others, for $167,500, has been confirmed by the court at Jourdanton, Tex. The purchasers will organize a company and will continue to operate the line. The road extends from Kirk, Tex., to Christine, a distance of 45 miles. An increase in traffic is expected from the development of the Somerset oil fields.

CENTRAL OF GEORGIA.—Charles H. Markham has been elected chairman of the board of directors to succeed Charles A. Peabody, resigned.

CHICAGO & NORTH WESTERN.—This road has obtained authority from the Public Utilities Commission of Michigan to issue unsecured five and one-quarter per cent promissory notes in the aggregate amount of $800,000 for the purpose of enlarging and extending the capacity of its rain elevator and interchange facilities connected therewith in Chicago. The notes will be issued in denominatons of $1000 and $5000 and shall be made payable at the rate of $100,000 per year.

CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS.—This company has applied to the Public Utilities Commission of Ilinois for leave to execute its refunding and improvement mortgage, dated June 27, 1919, and to issue bonds thereunder to an amount not exceeding $20,000,000. The petition filed by this company also asked for rehearing and for modification of the order dated July 1, 1919, and elimination from this order of provisions for the payment of a fee by the petitioner for authority to issue bonds.

GEORGIA COAST & PIEDMONT.—Judge Evans of the United States District Court at Savannah, Ga., on October 18 confirmed the sale of this road to H. H. Dean, of Gainesville, Ga., for $426,500. The business interests of Brunswick, Ga., and points along the line put in a bid for $410,000, with a view of operating the railway as a going concern. Mr. Dean announced after the sale that the road would be dismantled except a small portion of a few miles which he had sold to the citizens of Reidsville, Ga., for $3,500 a mile. The bridge over the Altamaha river at Darien, which is five miles long and practically the only passageway for motor traffic between Jacksonville and points north, is offered for sale by Mr. Dean.

GREAT NORTHERN.—Seward Prosser, president and director of the Bankers Trust Company of New York, has been elected a director succeeding Roger Shepard of St. Paul, Minn.

GULF, FLORIDA & ALABAMA.—H. B. Thorne, vice-president of the Metropolitan Trust Company of New York, representing the bondholders' committee purchased this road, on October 14 at Pensacola, Fla., for $500,000. A new company to be known as the Pensacola, Gulf & Northern is being organized to operate the property.

ILLINOIS CENTRAL.—After a long legal battle the Cook County (Chicago) Board of Review has ruled that the Illinois Central must pay taxes amounting to $300,000 on approximately $10,000,000 worth of stocks and bonds of other corporate organizations, held by the company. The railroad company had maintained for years that the bonds were not subject to taxation. The city attempted to collect taxes this year and when the railroad objected the case was taken to the Board of Review. The contention of the city's corporation counsel that the bonds were nonchartered property and taxable was sustained. Immediately after the return of the decision, E. J. Brundage, attorney-general of Illinois, announced that he would file claims for back taxes on the stock and intimated that a large sum would be involved.

INTERNATIONAL & GREAT NORTHERN. — An extension until November 1, 1922, with interest at 7 per cent has been granted on the $11,290,500 first mortgage 6 per cent bonds of this company, due November 1, 1919.

Railway Officers

Railroad Administration

Central

Major C. E. Lester has been discharged from military service and appointed assistant supervisor of equipment with the Railroad Administration at Meadville, Pa.

General

J. A. Gordon, general manager of the Detroit, Toledo & Ironton has been appointed federal manager, with headquarters at Detroit, Mich. **G. W. Eckerle,** assistant to Mr. Gordon as general manager, has been appointed assistant to him as federal manager and also purchasing agent, with headquarters at Detroit.

H. B. Sargent has been appointed federal manager of the Alabama & Vicksburg, the Louisiana & Mississippi Transfer and the Vicksburg, Shreveport & Pacific with headquarters at Vicksburg, Miss., succeeding **E. H. Coapman** as federal manager of the first two mentioned roads and **J. A. Edson** of the Vicksburg, Shreveport & Pacific.

Regional

H. D. Brown, assistant to the transportation assistant to the regional director of the Central Western region, has been promoted to transportation assistant, succeeding **Frank E. Clarity,** who has been promoted.

Gentry Waldo, district freight traffic committeeman of the Dallas district of the Southwestern region and traffic manager of the San Antonio & Aransas Pass, with office at Houston, Tex., has been promoted to traffic assistant to **B. F. Bush,** regional director, of the Southwestern region, with office at St. Louis, Md., succeeding **H. M. Adams,** who has resigned.

Operating

W. T. Peyton, superintendent of the Fort Worth Belt, has been appointed terminal manager with headquarters at Fort Worth.

Thomas E. Coyle, trainmaster on the Tacoma division, Northern Pacific, with headquarters at Tacoma, Wash., has resigned.

D. F. Kirkland, terminal manager of the Atlanta Terminal, with headquarters at Atlanta, Ga., has been appointed superintendent also.

R. B. Willimason has been appointed superintendent of claim prevention of the Missouri Pacific with headquarters at St. Louis, Mo.

J. McNaught, train master of the Great Northern, with headquarters at Minneapolis, has been appointed superintendent of terminals with the same headquarters, succeeding **P. L. Clarity,** transferred.

E. G. DeLong has been appointed assistant trainmaster on the Toledo division of the Pennsylvania, Western Lines, with office at Toledo, Ohio, succeeding **F. A. Watkins,** who has been assigned to other duties.

G. H. Moore, has been released from military service and appointed trainmaster of the Shasta Division, Southern Pacific, with headquarters at Dunsmuir, Cal., succeeding **H. G. McCarthy,** assigned to other duties.

Guy M. Lawrence has been appointed acting trainmaster, Lake Superior division, of the Northern Pacific Railway Company with headquarters at Duluth, Minn., succeeding **Henry J. Councilman** appointed committeeman for the United States Railroad Administration.

B. J. Peasley, master mechanic of the Vicksburg, Shreveport & Pacific, has been appointed superintendent of motive power of that road and of the Alabama & Vicksburg and the Louisiana & Mississippi Transfer at Monroe, La. **J. F. Stanton** has been appointed superintendent of car service at Vicksburg, Miss.

B. L. Bugg, superintendent of the Atlanta Terminal, has been appointed general manager of the Atlanta, Birmingham & Atlantic, the Charleston & Western Carolina and other roads under the direction of E. T. Lamb, federal manager, with headquarters at Atlanta, Ga., succeeding **W. R. Hudson,** deceased.

R. H. Smith, assistant division superintendent of the Pocahontas division of the Norfolk & Western has been appointed assistant superintendent of the Radford division, with office at Roanoke, Va., succeeding **A. S. Payne,** promoted. **W. O. Tracy** has been appointed Mr. Smith's successor with office at Bluefield, W. Va.

W. H. Johnson, superintendent of terminals of the Norfolk & Western, at Roanoke, Va., has been appointed superintendent of terminals at Norfolk, succeeding **B. W. Brownell,** resigned. **A. S. Payne,** assistant division superintendent of the Norfolk & Western has been appointed to succeed Mr. Johnson as superintendent at Roanoke.

W. F. Schmitz, assistant trainmaster of the Chicago, Milwaukee & St. Paul, Sioux City & Dakota division, has been appointed trainmaster of the Hastings & Dakota division with headquarters at Montevideo, Minn., succeeding **H. L. Bigg,** resigned. **C. F. Urbutt,** district engineer with office at Chicago, has been appointed Mr. Schmitz's successor.

Elmo Hodges, assistant chief clerk to the manager of the Galveston, Harrisburg & San Antonio, has been appointed assistant superintendent of the Southern Pacific, Louisiana Lines, with headquarters at Lafayette, La., succeeding **W. S. Middlemas,** resigned. **Mr. Hodges** began railroad work in 1906 as yard clerk with the Houston & Texas Central. In 1908, he became roadmaster's clerk of the same road; two years later, division accountant and in 1914 was appointed chief clerk to the superintendent. The following year he went to the Galveston, Harrisburg & San Antonio as head clerk in the auditor's office at Houston, Texas. In 1917 he returned to the position he had resigned with the Houston & Texas Central and again resigned shortly after to accept chief clerkship to the assistant general manager of the Galveston, Harrisburg & San Antonio. From March until September of this present year he held the position from which he received his recent promotion.

Financial, Legal and Accounting

E. L. Mitten, has been appointed auditor of passenger traffic of the Pere Marquette with office at Detroit, Mich., succeeding **F. W. Niemann,** who has resigned.

A. J. Silham, acting cashier and paymaster of the Chicago & Eastern Illinois, with office at Chicago, has been appointed cashier and paymaster with the same headquarters, succeeding **John H. Pratt,** deceased.

C. H. Nero has been appointed auditor of passenger receipts of the New York, New Haven & Hartford, the Central New England and other roads under the supervision of **H. S. Palmer,** federal auditor, succeeding **H. W. Snow,** assigned to other duties.

Fred Horton, general accountant for the Pere Marquette, with office at Detroit, Mich., has resigned to become federal auditor of the Grand Trunk, Western Lines, with the same headquarters, succeeding **J. L. Talbott.** Mr. Talbott retains his position as federal auditor of the Pere Marquette with office at Detroit.

H. H. Leroy, auditor of the Vicksburg, Shreveport & Pacific, with headquarters at New Orleans, La., has been appointed federal auditor of the same road as well as of the Alabama & Vicksburg and the Louisiana & Mississippi Transfer with the same headquarters. **Udolpho Wolfe,** local treasurer with headquarters at New Orleans, has been appointed federal treasurer with the same headquarters.

Fitzgerald Hall, assistant general solicitor of the Nashville, Chattanooga & St. Louis, the Tennessee Central and the Birmingham & Northwestern, with headquarters at Nashville, Tenn., has been appointed general solicitor to fill the vacancy created by the death of **Judge Claude Waller,** who died December 7, 1918.

Traffic

D. R. Lincoln, has been appointed assistant freight traffic manager of the Missouri Pacific, with office at St. Louis, Mo., succeeding **W. A. Rambach,** promoted.

William T. Boardman has been appointed general freight and passenger agent of the Mississippi Central with office at Hattiesburg, Miss., succeeding **H. R. Wilson,** who has resigned.

Warren H. Fogg has resigned as consolidated ticket agent for the Railroad Administration and returned to his former position, district passenger agent of the Central of Georgia at Atlanta, Ga.

Hiram M. Pearce, traffic manager of the Chicago, St. Paul, Minneapolis & Omaha, with headquarters at St. Paul, Minn., has been appointed general traffic manager with the same headquarters.

John A. Jackson, general freight agent of the Gulf, Mobile & Northern, with office at Mobile, Ala., has been promoted to federal general freight and passenger agent of the Gulf, Mobile & Northern and the Meridian & Memphis, with the same headquarters.

N. J. Brennan, of the commercial agent's office of the Michigan Central, at Toledo, Ohio, has been appointed freight representative succeeding **A. W. Billington,** who has resigned to become general agent for the Toledo Distributing & Forwarding Co., Toledo.

W. E. Callender, division passenger agent of the Chicago & Eastern Illinois with headquarters at Evansville, Ind., has been transferred to Chicago succeeding **S. M. Childs,** resigned to enter other business. **O. B. Lozier,** division passenger agent at Chicago, succeeds Mr. Callender at Evansville.

W. A. Rambach, assistant freight traffic manager of the Missouri Pacific, has been appointed freight traffic manager of the same road as well as of the Memphis, Dallas & Gulf, Arkansas Central, Natchez & Southern, Natchez & Louisiana Railroad Transfer with headquarters at St. Louis, succeeding **C. E. Perkins.**

G. M. Lawrence, assistant trainmaster of the Lake Superior division of the Northern Pacific with headquarters at Duluth, Minn., has been appointed acting trainmaster in charge of the first and second subdivisions with the same headquarters, succeeding **H. J. Councilman,** temporarily assigned to other duties.

H. E. Heller, assistant general freight and passenger agent of the Chicago, Burlington & Quincy, with headquarters at Kansas City, Missouri, has been appointed general freight agent of the Missouri district with headquarters at St. Louis, Missouri, succeeding **William Gray,** resigned. **Frank A. Hart** has been appointed Mr. Heller's successor.

C. A. Smith, general freight agent of the Carolina, Clinchfield & Ohio and the Carolina, Clinchfield & Ohio Railroad of South Carolina, with office at Erwin, Tenn., has had his jurisdiction extended over the passenger department, under the title of general freight and passenger agent, with the same headquarters. As general passenger agent he succeeds **C. T. Mandel,** deceased.

H. L. Hanes, assistant general freight agent of the Nashville, Chattanooga & St. Louis, the Tennessee Central and

the Birmingham & Northwestern, has resigned to become associated with the J. H. Wilkes Company, grain dealers of Nashville, Tennessee. **J. C. Kirk**, chief clerk in the rate and traffic department of the freight traffic organization of the above mentioned roads, has been appointed to succeed Mr. Hanes.

A. C. Johnson, chairman of the Freight Traffic Committee, of the Northwestern, Central Western and Southwestern regions, and assistant traffic manager of the Chicago & Northwestern, with office at Chicago, has been appointed traffic manager of the Chicago & Northwestern, with the same headquarters, succeeding **H. R. McCullough**, who resigned to accept service with the Chicago & Northwestern Railway Company.

A. J. Chapman, auditor of disbursements of the Southern Lines with headquarters at Cincinnati, has been appointed freight traffic manager of the Alabama & Vicksburg, the Louisiana & Mississippi Transfer, and the Vicksburg, Shreveport & Pacific with headquarters at New Orleans, La. **C. F. Woods**, general passenger agent of the Alabama & Vicksburg, has been appointed general passenger agent of that road and of the Louisiana & Mississippi Transfer and the Vicksburg, Shreveport & Pacific.

George Krause, Jr., division freight agent on the Cleveland, Cincinnati, Chicago & St. Louis, at Cleveland, Ohio, has been promoted to assistant general freight agent with office at Cincinnati, Ohio, a position which he held prior to August, 1918, when, in the reorganization under government control, he was assigned to the position of division freight agent at Cleveland. **J. E. Anderson**, division freight agent at Cincinnati, has been transferred to Cleveland, succeeding Mr. Krause. **Miles Todd**, of the freight department, has been appointed to succeed Mr. Anderson at Cincinnati.

R. B. Battey, chief clerk to the federal manager of the Chicago, Burlington & Quincy, with office at Chicago, has been promoted to assistant general freight agent in charge of coal traffic with the same headquarters, succeeding **W. A. Holley**, whose resignation was announced in the *Railway Age* of June 13, page 1450. Mr. Battey was born in Chicago. He began railway work in April, 1905, as a stenographer in the superintendent's office of the Pennsylvania Lines at Chicago. In 1907 he became connected with the general passenger department of the Chicago, Burlington & Quincy, where re remained until 1910, when he was transferred to the office of vice-president of the traffic department as secretary to **C. G. Burnham**, vice-president. When Mr. Burnham was made federal manager of the Chicago, Burlington & Quincy in 1918, Mr. Battey was appointed chief clerk in the federal manager's office, which position he held until his recent appointment.

Engineering and Rolling Stock

J. A. Bryan, has been appointed roadmaster of the Montana, Wyoming & Southern with headquarters at Belfry, Montana.

F. A. McArthur has been appointed mechanical valuation engineer in charge of the valuation of rolling stock of the St. Louis-San Francisco.

J. C. Dorsey, division engineer of the Pennsylvania division of the Delaware & Hudson, has been transferred to the Saratoga division with headquarters at Albany, N. Y.

C. H. Holdredge, road foreman of engines of the Southern Pacific at San Francisco, Cal., has been appointed assistant general air brake inspector succeeding **A. M. Meston**, promoted.

D. M. Pearsall, shop superintendent of the Atlantic Coast Line at Waycross, Ga., has been appointed superintendent of motive power, second and third divisions, with the same headquarters.

A. M. Meston has been appointed district road foreman of engines and oil burning inspector of the Southern Pacific with headquarters at Los Angeles, Cal., succeeding **F. W. Corcoran**, assigned to other duties.

F. E. Bates, assistant engineer on the Missouri Pacific with office at St. Louis, Mo., has been promoted to assistant bridge engineer with the same headquarters, succeeding **W. D. Hudson**, who has resigned.

B. E. Conlan, roadmaster of the Western Pacific at Portola, Cal., has been appointed roadmaster of the third and fourth districts of the Denver & Rio Grande with headquarters at Walsenburg, Colo., succeeding **Richard Hughes** who has resigned.

J. C. Wrenshall, Jr., has returned to the position of division engineer of the Philadelphia & Reading at Spring Garden Street, Philadelphia, succeeding **W. G. Wieand**, acting division engineer, who has returned to the position of supervisor at Lansdale, succeeding C. D. Adams, acting supervisor, who has been appointed assistant supervisor at Lansdale.

F. W. Hillman, division engineer of the Madison division of the Chicago & Northwestern, with headquarters at Madison, Wis., has been transferred to the Wisconsin division with office at Chicago, succeeding **Lee Jutton**, who has been transferred to the operating department with headquarters at Madison, Wis. **J. A. Dyer**, division engineer of the Southern Illinois division, with office at South Pekin has been appointed to succeed Mr. Hillman and **J. D. Irving**, assistant engineer, with office at Boone, Iowa, has been promoted to division engineer succeeding Mr. Dyer.

Purchasing

F. E. Outerbridge has been appointed storekeeper of the Detroit & Toledo Shore Line Railroad with headquarters at Lang, Ohio.

P. H. Shay has been appointed storekeeper of the Lehigh Valley at Coxton, Pa. **R. E. Walker** has been appointed storekeeper of the Lehigh Valley at Auburn, N. Y.

W. W. Blowney has been appointed assistant purchasing agent in charge of purchases and stores, of the Toledo, St. Louis & Western and the Detroit & Toledo Shore Line with headquarters at Toledo, Ohio.

T. H. Ryan, local purchasing agent at New Orleans, La., of the Vicksburg & Alabama, has been appointed purchasing agent of that road and of the Louisiana & Mississippi Transfer and the Vicksburg, Shreveport & Pacific.

R. I. Irwin, purchasing agent of the Texas & Pacific, the International & Great Northern and other lines under the direction of J. L. Lancaster and F. G. Pettibone, federal managers, has been granted leave of absence. **C. B. Porter** has been appointed acting purchasing agent with headquarters at Dallas, Texas.

Special

J. M. Hughes has been appointed land commissioner of the Northern Pacific with headquarters at St. Paul, Minn., succeeding **Thomas Cooper**, resigned.

Corporate

Executive, Financial, Legal and Accounting

R. A. Clark has been appointed auditor of the Rahway Valley with headquarters at Kenilworth, N. J.

F. M. Hicks, auditor of the Gulf, Mobile & Northern, with office at Mobile, Ala., has been appointed controller of the same company with the same headquarters.

Frank B. Bowes, traffic manager of the Illinois Central, with office at Chicago, has been elected vice-president of the Illinois Central, the Central of Georgia, and the Yazoo & Mississippi Valley. Mr. Bowes was vice-president of the Illinois Central prior to government control.

D. R. Harris, of Henderson, Tex., has been appointed receiver of the Timpson & Henderson Railway Company.

R. W. Hannington, formerly city solicitor at Victoria, B. C., has been appointed general attorney of the Canadian National with office at Vancouver, B. C., a position newly created.

George H. Ingalls, senior traffic assistant to the regional director of the Eastern region and traffic manager of the New York Central, lines west of Buffalo, with office at Chicago, has been elected vice-president of the corporation, with the same headquarters.

H. E. Byram, has resigned as federal manager of the Chicago, Milwaukee & St. Paul, the Ontonagon and the Escanaba & Lake Superior, having been elected president of the Chicago, Milwaukee & St. Paul Railroad Company, which position he held prior to federal control. **R. M. Calkins,** who has been president during the period of federal control, has been elected vice-president in charge of traffic.

Edward G. Smith, formerly cashier for the Union Pacific but engaged for the past two years in construction work for The United States Government, has been appointed assistant treasurer of the Union Pacific with headquarters at New York city succeeding **C. W. Weston,** who resigned to become vice-president of the Metropolitan Trust Company, New York.

J. B. McLaren, auditor of revenue of the Grand Trunk system with office at Montreal, has been appointed general auditor succeeding **J. M. Rosevear** promoted. Mr. McLaren began railroad service as junior clerk of the Grand Trunk at Brockville, Ont., and later held the positions of accountant, chief clerk, agent and general yard master at Durand, Mich. He was appointed clerk in the audit office of the Grand Trunk headquarters in 1901 and has since been successively traveling auditor, chief clerk to the auditor of the freight accounts and auditor of revenues. **W. S. Harrison,** assistant to Mr. McLaren, has been appointed to succeed him as auditor of revenues.

Operating

C. W. P. Ramsey, assistant superintendent of the New Brunswick district of the Canadian Pacific with office at Brownville Junction, Maine, has been appointed acting superintendent with the same headquarters, succeeding **J. H. Boyle,** temporarily assigned to other duties.

C. J. McGregor, car distributor in the car service department of the Canadian Pacific, has been appointed assistant superintendent of the Smith Falls division; **C. L. Leighty,** chief dispatcher at Smith's Falls, has been appointed assistant superintendent of the Montreal Terminals division.

Traffic

T. D. Geoghegan, traffic manager of the Gulf, Mobile & Northern, with office at Mobile, Ala., has been appointed traffic manager of the corporation with the same headquarters.

J. H. Norton has been appointed assistant general freight agent of the Canadian National with headquarters at Moncton, N. B. **E. B. Robb,** division freight and district passenger agent for the Transcontinental Division, with office at Cochrane, Ont. has been appointed division freight agent with headquarters at Halifax, N. S., **W. E. G. Bishop** has been appointed to succeed Mr. Robb.

Engineering and Rolling Stock

C. H. Tillett, acting signal engineer of the Grand Trunk at Montreal, has been appointed signal engineer succeeding **R. F. Morkill,** resigned.

A. M. MacGillivray, resident engineer on the Canadian National at Port William, Ont., has been promoted to district engineer at Saskatoon, Sask., succeeding **H. L. Vercoe,** who has been assigned to other duties.

Purchasing

A. S. Perry, of the New York City office of the Panama Railroad Company, has been appointed assistant commissary purchasing agent at New Orleans, La., a newly created position.

Obituary

Edgar Shimp, freight agent of the Pennsylvania Western Lines, at Alliance, Pa., died September 8 at his home in Alliance, Pa.

J. R. Anderson, superintendent of the Blue Ridge at Anderson, S. C., died suddenly of apoplexy in the railroad yards at Anderson, November 4.

John T. Finerty, trainmaster of the Delaware, Lackawanna & Western, at Scranton, died October 27 at his home, 362 Butler Street, Dunmore, Pa.

Robert Weddell, founder of the Weddell Bridge & Engine Works, Trenton, Ont., which has executed many contracts for the Dominion Department of Railways and Canals, died at Trenton recently.

William Zabel, designing engineer and formerly engineer of production of the Union Switch & Signal Company, Swissvale, Pa., with office in that city, died at Wilkinsburg, Pa., on October 22, at the age of 39 years.

Z. T. Brantner, superintendent of the maintenance of the way shops of the Baltimore & Ohio at Martinsburg, W. Va., died in that city October 21. Mr. Brantner has been in the service of the Baltimore & Ohio for 57 consecutive years.

Samuel O. Malin, formerly special agent of the Northern Central and the Philadelphia, Baltimore & Washington, with headquarters at Baltimore, died recently at his home in that city. Mr. Malin retired in 1916 at the age of 70 years.

Howard B. Bryning, district passenger agent on the Chicago Great Western, with office at Kansas City, Mo., died in that city recently at the age of 47 years. He was at one time traveling passenger agent on the Northern Pacific.

George W. Thompson, assistant to **R. J. Parker,** general manager of the Panhandle & Sante Fe, and formerly general superintendnt of the Detroit, Toledo & Ironton, died in Springfield, Ohio, October 19 following a nervous breakdown.

William C. Copley, special agent of the Pennsylvania, with headquarters at Altoona, Pa., died October 15, at his home in Altoona after an illness of four years. Previous to his appointment in 1918, as special agent, Mr. Copley was freight trainmaster of the same road.

James C. Rogers, former division superintendent of the Vancouver division of the Spokane, Portland & Seattle with headquarters at Vancouver, B. C., died recently in Spokane, Wash., at the age of 54 years. Mr. Rogers was in the service of the Great Northern from 1889 to 1900 as dispatcher and superintendent. Later he went to Alaska in the service of the White Pass & Yukon, where he remained for seven years prior to becoming connected with the Spokane, Portland & Seattle.

John B. Brownell, formerly assistant general auditor of the Delaware & Hudson, died suddenly at his home in Altamont, N. Y., Sept. 12. Mr. Brownell was born at Schenectady, N. Y., December 31, 1842. In 1870 he entered railroad service as clerk in the freight office of the Delaware & Hudson at Troy, N. Y., and continued in the service of that company 48 years. In 1903 he was appointed auditor of revenue and nine years later was promoted to assistant general auditor, a position he held until pensioned on July 1, 1918.

Doctor James Burry, chief surgeon of the Elgin, Joliet & Eastern and the Illinois Steel Company, was found dead on the suburban tracks of the Illinois Central near Harrison

street in Chicago recently. Whether he had been robbed and then thrown from a railroad train or had been the victim of an accident the police have been unable to determine. Doctor Burry, who was 65 years old, was born in Montreal, Canada, and came to Chicago at the age of 15 years. He was graduated from the Chicago Medical College in 1875 and began practicing in Chicago in 1883, and has been chief surgeon of the Elgin, Joliet & Eastern for 25 years.

Patrick Laden, district engineer of the Illinois Central at Waterloo, Iowa, died at his home in Rockford, Ill., on October 13, following a stroke of apoplexy. He was 57 years old. Mr. Laden entered railway service with the Illinois Central in 1887 as extra gang foreman. In 1888 he was promoted to road supervisor, with office at Rockford, Ill., and in 1889 was made roadmaster of the Mississippi division with office at Jackson, Tenn. From that year until 1907 he was roadmaster on various other divisions and in the latter year was made superintendent with office at Mattoon, Ill. In 1912 he was appointed district engineer of the Northern and Western lines with office at Waterloo.

Joseph S. Ford, former secretary and auditor of the Chicago & Eastern Illinois, with headquarters in Chicago, died October 16 at Jamaica Plain, Mass. Mr. Ford was born at Damariscotta, Maine, in 1839. He entered railway service in 1868 as treasurer of the Missouri Valley and served successively as treasurer, auditor and controller of several western roads until October, 1901, when he was appointed assistant secretary and assistant treasurer of the St. Louis-San Francisco with headquarters at New York. In 1903 he resigned to become secretary and auditor of the Chicago & Eastern Illinois. He served the latter company until May 1, 1916, when he resigned on account of ill-health.

John H. Pratt, cashier and paymaster of the Chicago & Eastern Illinois, died October 31, at Asheville, N. C. Mr. Pratt was born in Swaffham, Norfolk, England, on July 10, 1871, and came to the United States in March, 1889. He entered railway service in 1890 as a clerk in the general office of the Chicago, Rock Island & Pacific. In 1895 he resigned, returning to Europe to visit relatives. In August, 1896, he returned and became connected with the Chicago & Eastern Illinois, with headquarters at Chicago. In April, 1903, he was appointed cashier and paymaster which position he held until his death. Because of ill health he was granted a leave of absence in May, 1918.

George H. Earl, vice-president of the Northern Pacific, died October 25 at his home in Jersey City. Mr. Earl was born in Jersey City in 1857 and graduated from the Jersey City High School with the class of 1877. Two years later he began railroad work as clerk to the general counsel of the Northern Pacific. Later he became stenographer and clerk to the vice-president. From October 21, 1886, until October, 1890, he was assistant secretary. He was appointed secretary in 1890 and retained that position until August 15, 1893, when he became assistant secretary and treasurer. In 1897 he resumed the duties of secretary and became assistant treasurer, in which capacity he served until October 24, 1916, when he was elected vice-president.

William R. Hudson, general manager of the Atlanta, Birmingham & Atlantic, Charleston & Western Carolina, Augusta & Summerville, Atlanta & West Point, Western Railroad of Alabama, Georgia Railroad, Augusta Union Station, Atlanta Terminal and Augusta Belt, with headquarters at Augusta, Ga., died September 25. Mr. Hudson was born in Pulaski County, Va., in November, 1886, and received a grammar and high school education. He entered railroad service in 1882 as freight handler with the Norfolk & Western, remaining with that company until 1901, during which time he advanced to trainmaster. The year just mentioned he became trainmaster of the Seaboard Air Line; in 1907 was promoted to superintendent and in May of the same year left the Seaboard Air Line to become general superintendent of the Norfolk Southern. From August to October, 1912, he was assistant general manager of the Atlanta, Birmingham & Atlantic; from then until April, 1918, served as general superintendent of the Chesapeake & Ohio. In April, 1918, he returned to the Seaboard Air Line as general superintendent but resigned in December of that year to accept the position he held at his death, general managership of the roads mentioned above.

John J. Reardon, for the past 12 years superintendent of the Litchfield & Madison at Edwardsville, Ill., died Sept. 19 at Edwardsville. Mr. Reardon was born in May, 1862, at Southfields, N. Y., and received a public school education. He entered railroad service at the age of 17 as station agent, of the Erie. Two years later he became station agent, telegraph operator and interlocking tower man of the Long Island. In 1884 he was appointed train dispatcher and sometime later chief train dispatcher of the Long Island. Eight years following he was trainmaster of the Chicago & Alton at Bloomington, Ill., a position he held ten years and left to become general yard master of the Chicago Terminal. Having served in the capacity just mentioned two years, he was appointed superintendent of the Litchfield & Madison.

David Bosman, vice-president, secretary and treasurer of the Erie, and for two years Mayor of Rutherford, N. J., died October 24 at his home in Rutherford after several months' illness. Mr. Bosman was born in Brooklyn, N. Y., December 18, 1864. He was graduated from the Brooklyn High School and for the first few years after graduation from school he was employed in the law office of William B. Hornblower, New York city. At the age of 23 he began railroad work as clerk in the office of the general manager of the Erie. The following year he was appointed secretary to the vice-president and in 1894, secretary to the receiver. In 1895, he became secretary of the Chicago & Erie, now part of the Erie, and in 1903, assistant secretary of the Erie Later that year he was made secretary. He received his appointment as vice-president in 1911. In 1918 he was appointed treasurer of the Erie.

Morgan K. Barnum, corporate mechanical engineer of the Baltimore & Ohio, died suddenly October 26 at Baltimore, Md. Mr. Barnum acted as assistant to the vice-president of the Baltimore & Ohio, giving special attention to the conservation of material of all kinds from stationery to locomotive and car material and such as is used for the maintenance of way and buildings. He undertook this work in February, 1917, the position having been created for him. He graduated from Syracuse University in 1884 with the degree of A.B. and later received the degree of A.M. Shortly after graduation he began railroad work as apprentice in the shops of the New York, Lake Erie & Western, now the Erie, at Susquehanna, Pa. He soon became machinist and mechanical inspector and two years later was promoted to general foreman of the same road at Salamanca, N. Y. In 1889 he was appointed general foreman of the Louisville & Nashville at New Decatur, Ala., and in September of the following year became superintendent of shops of the Atchinson, Topeka & Santa Fe at Cheyenne, Wyo. During the years intervening between 1890 and 1904 he continued to rise, serving for periods with the Union Pacific, Southern and the Chicago, Rock Island & Pacific in different positions. In 1904 he was appointed mechanical expert of the Chicago, Burlington & Quincy and left that road in April, 1910, to become general superintendent of motive power of the Illinois Central and the Yazoo & Mississippi Valley. He joined the staff of the Baltimore & Ohio in July, 1913, as general mechanical inspector and in September of the next year was promoted to superintendent of motive power, the position he held when he was appointed corporate mechanical engineer.

THE CO-OPERATIVE STORE PROJECT among railroad employees is looked upon with favor by the allied shop employees of New Castle, Pa., who have started a movement for such a store through which they will purchase their foodstuffs, etc. Incorporation and a capital of $30,000 with which to start are proposed.

EDITORIAL

Railway Age

EDITORIAL

Table of Contents will be found on Page 5 of the Advertising Section.

The Plumb Plan in the Movies

The Plumb plan will be dramatized and presented to the public as a movie. This information comes from press reports accredited to reliable correspondents in the movie-producing field about Los Angeles, Cal. It is practically impossible to even hazard a guess as to the manner in which the Plumb plan could be incorporated, as the dramatic *raison d'etre*, in a story. However, one who has studied the plan in all its ramifications can readily see many features, especially in its results, that would lend themselves admirably to moving pictures rather than to any other form of exposition. For instance, the steady stream of dollars from the taxpayer's pockets to the government for the paying of deficits incurred under this form of railway ownership and management certainly would require a moving picture with its rapidity to adequately present the situation. If the authors and producers of this new development in the present economic struggle tell the "whole truth and nothing but the truth," they certainly will outrival the greatest authors and producers of this age, who have considered the sovietizing of the world's greatest republic a subject too great for them to chronicle in this period.

Americanization on Railroads

This country is suffering severely from the almost absolute lack of any system for educating to our customs and ideals the great hordes of immigrants that flocked to our shores year after year before the opening of the world war. Foreigners have been left largely to themselves; little real interest has been shown in their methods of living or of their habits or beliefs; in many cases they have been exploited by selfish and unprincipaled interests. The seriousness and danger of this neglect—and in some cases abuse—is clearly evident today. There are many foreigners in the employ of the railroads and it is questionable whether any better investment can be made by the management than that involved in an aggressive Americanization program. The Railroad Y. M. C. A., in connection with its continental extension program, is planning on directing some of its energies to this end and the railroads can well afford to back up this effort; indeed, they should supplement it, for there are many points that are not served or cannot be reached by the Y. M. C. A. One suggestion made by the Railroad Y. M. C. A. is the formation of clubs with the slogan, "Every member a voter"; but why should not the roads as a whole enter into such a campaign; why not have the different divisions vie with each other in having every employee become an American citizen as soon as possible—and also an intelligent voter? This movement is every bit as important as a Liberty Loan or Victory Loan campaign. Why not instill the same spirit and organization into it and "put it over the top?" Even an optimist must admit that the days to come will be full of serious problems for this country and that of making real Americans of our foreign population is not the least of these. Let it not be said by our sons and grandsons that we lacked in preparedness in this respect.

A Short-Sighted Policy

It is a question whether the general movement toward drastic railway regulation during the last two decades was more the result of the wide publicity given to several notorious cases of gross mismanagement, or arbitrary business methods on the part of certain railway officers in cases where lack of competition gave them the advantage over the shipper. While most railway executives now see the folly of this policy, it is a fact that evidences of this tendency still crop out from time to time. To illustrate: A recent derailment on the coal track of an industrial plant caused a car to run through a corner of the building and block the track so that three coal cars could not be withdrawn. When the track was repaired the industry entered a claim for damage to the building, and the railroad presented a bill for demurrage on the three cars for the time that they were tied up on the track and proceeded to take advantage of its strategic position by refusing further service until the bill was paid. The merits of the controversy are of no importance; it is entirely possible that the industry was responsible for the maintenance of the track and liable for all damage done by the derailment. Nevertheless, a shortsighted, arbitrary disposal of a case such as this can have but one effect—to make another strong advocate of rigid and minute regulation of the roads by the local regulating authority. Because of the thoughtless acts of a few, many may be forced to suffer unjustly.

The Russian Situation

One of the sessions of the recent meeting of the American Manufacturers' Export Association held in New York on October 16 and 17, was devoted to trade with Russia. The several speakers who addressed the session clearly brought out the important fact that the American business man owes it to himself to study Russia and to lay his plan for cultivating that country as a future export market. Russia today does not present much of a market for anything, but it is well to remember that the tide in that great country has turned and the plague of Bolshevism is gradually being eradicated. Russia represents not only a great nation but a great market, and one that we will make a great mistake in believing that we cannot cultivate. At present it is apparent that the Germans are much more alert to the possibilities there than we are. Germany, from its experience before the war, understands the Russian market probably better than any other country. Today she has the advantage over most of her competitors in the almost ridiculously low value of the mark. But we must not agree that we are to be left out because of these factors. It would no doubt help Germany the better to meet her obligations to the world to cultivate the Russian market, but the rest of the world is in no position to sit back and let the Russian market get into the hands of a single nation—especially one such as Germany has shown herself to be commercially or otherwise. The railway supply industry of this country is perhaps the best fitted of any American industry to take up the work in hand.

Russia needs railway equipment as probably no other nation needs it. We and England are the only nations in a position to supply it in quantity at present. The other countries—Germany among them—have no small task on their hands to supply their own needs and even Britain will have difficulty in supplying her own dependencies, especially India. The American railway supply field should, therefore, closely watch the Russian situation and should be the most interested in being first on the ground when normal conditions are once more restored.

Running Passenger Trains on Time

THE MOVEMENT started by Regional Director Winchell of the Southern region to stimulate rivalry between the different railways in running passenger trains on time has been broadened by the Railroad Administration, which is now giving publicity to data regarding the "on time" records in the different regions. The statistics for August show that in that month 320,718 passenger trains were operated on 156 roads and that of this number 226,184, or 83 per cent, arrived at their final terminals on time. In September 317,742 trains were operated, of which 74.3 per cent arrived on time. In August the worst record was made in the Pocahontas region, in which only 74.3 per cent of the trains were on time, while the best was made in the Allegheny region, in which 88.1 per cent were on time. In September the Pocahontas region showed a great improvement, with 84.5 per cent on time. The poorest record made in September was that of the Southwestern region, with 77.3 per cent of its trains on time, and the best was that of the Allegheny region, with 88.7 per cent on time.

Some trains originate in one region and run to a final terminal in another. The region in which the best record was made in September in handling both trains which originated in it and trains which originated outside of it was the Southern, in which 91.9 per cent of all trains either arrived on schedule time, or, if late when received in that region, made runs in it in schedule time or less. The improvement in the general results in September as compared with August is gratifying, but the total showing made is by no means satisfactory. In September one passenger train in every six run on the railways of the United States was late in reaching its final terminal. In 1917 the average number of passengers carried per train was 65. In view of the large increase of passenger business since then, and especially of the curtailment of passenger train service, it is safe to estimate that the average number of passengers carried per train in September, 1919, was 75. The number of trains late in that month was 50,034. This means that in that month at least 3,750,000 people were inconvenienced, irritated, and perhaps caused loss by delayed passenger trains.

As a matter of fact, the number was much larger, since a train which is late at its terminal usually has been late at intermediate stations. Every one of those people helped to make public opinion regarding railroad operation and probably none of them helped to make it more friendly to government operation.

The late passenger train as an American institution cannot, however, be attributed to government operation. It was very frequently in evidence under private operation—perhaps as frequently as it has been under government operation. The Railroad Administration deserves great credit for stimulating the movement for getting passenger trains on an "on time" basis, and it is to be hoped that after the railways are returned to private operation the companies will continue the efforts now being made to cause all trains to be run more nearly in accordance with their published schedules.

The Elwood Collision

ONCE MORE, WE ARE INDEBTED to the Bureau of Safety of the Interstate Commerce Commission for disclosing details of collisions not brought out by the ordinary published accounts. Reporting on the rear collision of passenger trains which occurred at Elwood, N. J., on August 24 (see *Railway Age*, September 12, page 514), Chief Borland concludes that the engineman at fault "must have dozed off or have suffered a momentary lapse of his mental faculties"; and that he "had probably had less than four hours' sleep since Saturday morning." The collision occurred at 4:45 Sunday morning.

Being awake 19 hours out of 23 is not a condition to condemn an engineman, absolutely; but it is significant that sleepiness has been a chief factor in four of our worst recent collisions: Mount Union, Pa., February 27, 1917; Ivanhoe, Ind., June 22, 1918; South Byron, N. Y., January 12, 1919, and now Elwood. The law requiring enginemen to take eight hours off duty may almost be looked upon as a farce. It does prevent those extreme abuses which formerly were frequently heard of; but there are men who, when off 12 or 24 hours, or even much longer, continue their former irregular habits of sleeping whenever they please; and the comparative frequency with which cases of that kind become public indicates that actually there must be multitudes of them. Obsessed by a combination of lack of knowledge, insufficient experience and dull consciences, such men get into a condition where they will start out on a trip in a foggy night with apparently no realization of the awful responsibility they are taking.

The fact that our best roads make such unsatisfactory progress in coping with this difficulty—the difficulty of knowing that runners always go on duty fresh and rested—reinforces very strongly the argument for the use of the automatic train stop. The objection that automatic stops are costly will always be with us; but of the other arguments—those of a technical or scientific character—all have been silenced, except that concerning this matter of improving discipline. In the face of 25 years' unsuccessful efforts to build up a measurably perfect personnel for our locomotives, the argument persists that the automatic stop and its perplexities must be frowned on because we can provide "something else just as good." This means, if it means anything, that our discipline is good enough, or is becoming good enough, to warrant passengers in entrusting their lives to enginemen depending for competency on the use of their eyes, and perfect habits in using them. (We go on ignoring the benefits to be derived from signal adjuncts making use of enginemen's ears.) This claim is not being made good. And if this is the situation on our best roads, what shall we say of those which are second best? Or of those parts of the big roads where the officers, the enginemen and the signaling are below the highest standard? Keeping a large force of enginemen 100 per cent efficient—or even keeping them somewhere near that—is not accomplished to a satisfactory degree in the passenger service, let alone the freight.

As long as the Chicago & Eastern Illinois can boast of five years' favorable experience with an extensive installation of automatic stops; and the Great Western of England can report 12 years' satisfactory experience with its large number of cab signals (many of them fitted also with brake-setting apparatus), the burden of proof rests on American railroads to show what reason, except lack of money, justifies them in their policy of inaction. And it is just possible that the financial side of the question might profitably be studied somewhat more in detail. Figures showing the money cost of each one of the last ten—or the last fifty—notable train wrecks in the United States would make a striking impression, even when set beside the highest estimates of what automatic stops would cost.

The Elwood report, abstracted on another page, shows that the collision was occasioned—not caused—by an unexplained electrical failure in connection with an automatic block signal; a striking example of the delicate nature of the signal maintainer's responsibilities. The report also contains instructive details concerning auxiliary causes. The flagman and the firemen had little or no acquaintance with the road, and even the engineman apparently had none too much.

The case also affords a very interesting example of how, with the best visual block signals, the flagman, with his torpedoes and fusees, cannot be expected to furnish a satisfactory supplementary safeguard. The line of road is straight and nearly level, and is well signaled; but the conditions on that August morning afford very definite evidence that with sixteen passenger trains following one another, on a foggy night, as closely as they can, the desideratum is a block system on which the dependence can be absolute. This report shows with what difficulty and how very imperfectly the flagging rule is carried out under such circumstances. Operating officers will do well to read every page of it. There is no map or diagram of the line, and it is difficult to localize and make clear all of the doings of the men on the three or four trains, the movements of which are discussed; but there is ample testimony to the great gap between the words of Rule 99, as they are quoted in courts and other public hearings, and the practice of the men who are expected to put the rule in practice. Even where the conduct of a flagman has been measurably correct, it is next to impossible, in a case like this, to demonstrate the fact, with any satisfaction, in a subsequent inquiry. The flagging system finds itself powerless, in the final test, to avail itself of what little virtue it does possess, for no one is able to put the witnesses' testimony together into a lucid story.

Corporations and Liberty Bond Subscribers

The United States Railroad Administration sold a large amount of each of the Liberty Loan bonds to railroad employees and officers, on the installment plan under which payments for the bonds were deducted from the payroll. Whether intentionally or not, there was actually considerable pressure brought to bear on the individual to subscribe to bonds to an amount equal to the average subscription of others earning about the same amount. Since the individual capacity to save, even when such accidents as sickness or death in the family do not arise, differs widely between different individuals, there were a considerable number of railroad men who found the payments on their bond subscriptions irksome, if not impossible. In most cases, the federal managers of the railroads refunded partly paid subscriptions to individuals who had sickness or death in the family, and to those who left the employ of the railroad before all of the payments had been completed. Payments on the Fourth Liberty Loan and the Victory Loan are not in all cases completed yet. Furthermore, the cashing of the coupons on the bonds and the exchange of the present temporary bonds for definitive bonds is something which the employees have looked to the railroad company to do for them. When the roads are turned back to the owning corporations, what is to become of the bonds which the federal treasurers hold, and which they have paid par for in the expectation of having the bonds taken off their hands through monthly subscriptions by employees? This subject was discussed at some length at the annual meeting of the Society of Railroad Financial Officers, which includes in its membership both federal and corporate officers. No action was taken officially by the Association, but the consensus of opinion was plainly that either the bonds should be retained by the government and treated as unsold treasury bonds, or turned over to the corporations at market value, not par value. This seems so obviously fair that it needs no comment.

On the other hand, as to continuing the work of collecting subscriptions, cashing coupons and exchanging bonds, there seem to be among certain railroad financial officers a feeling that this was not a duty that devolved on the corporations when they resumed operation. While this attitude is easily understood, and in a narrow sense may be justified, a broader way of looking at it would be to cheerfully shoulder the burden of this work, accepting it as part of the after-war costs that we all have to pay. The experience of having bought Liberty bonds with the resulting regular saving of part of the monthly wage was of inestimable value to railroad wage earners, as to other wage earners, and the railroad corporations can well afford to bear a certain amount of the left-over trouble and expense of completing the transaction.

The Extraordinary Railway Labor Conditions

The present conditions in the railroad labor field are the most remarkable that ever existed. A little over three years ago a controversy arose between the railway companies and the train service employees over the demands of the latter for the use of an eight-hour day as a basis for calculating wages and for time and a half for overtime. The railway companies offered to arbitrate. The employees declined arbitration in any form or before any tribunal. President Wilson supported their declination, saying the eight-hour day was not an arbitrable matter. Congress on the President's recommendation passed the Adamson law establishing the basic eight-hour day.

Subsequently, during the sixteen months which remained of private operation, the railway companies made advances in wages, including those caused by the Adamson law, amounting to probably $300,000,000. On January 1, 1918, government operation began. The government has openly and expressly encouraged the organization of railway employees, practically refusing to deal with them except through unions. Never were railway labor unions treated with so much consideration as since government operation was adopted. The eight-hour day and the basic eight-hour day have been made practically universal. Advances in wages have been granted amounting to $1,000,000,000 a year, which, added to those made under private operation, makes the total advances during the last three years about $1,300,000,000 a year.

The traditional visitor from Mars might expect to find the railway labor situation, as a result of these changes, settled and untroubled. On the contrary, the railway labor situation never was so unsettled and troubled. Three years ago Congress was rushing through legislation to give certain railway employees what they asked to keep them from striking. Today Congress is seriously considering the enactment of legislation to make it a criminal offense for railway employees to strike, or for any person or persons to incite them to strike. In spite of the vast advances in wages which have been made the railroad labor organizations are threatening to strike unless the government either reduces the cost of living or grants another huge advance in wages. They are also threatening to strike if Congress passes legislation to prohibit railroad strikes. One of the charges formerly urged against private management of railways was that it was not successful in dealing with labor. The government, in spite of all the enormous concessions it has made, has been just as unsuccessful as the companies in satisfying labor.

Meantime, the public has revised its ideas regarding the

true causes of the controversies which were chronic under private operation. Having found that the labor leaders are as hard to satisfy and as belligerent under government as under private operation the public has begun to assume an attitude which is distinctly hostile to organized railroad labor. This attitude is reflected in the compulsory arbitration provisions of the Cummins bill. These provisions are more drastic than any ever suggested by the spokesmen of the railway companies. The farthest the spokesmen of the railways have suggested legislation should go is to make strikes and lockouts unlawful until the merits of the points in controversy have been investigated and reported upon by some tribunal in which representatives of the public hold the balance of power. The senators who drafted the Cummins bill propose to make strikes and lockouts absolutely illegal.

The *Railway Age* never has advocated compulsory arbitration. It does believe, however, that strikes and lockouts which will interrupt transportation should be made unlawful until the matters in controversy have been heard and passed upon by some tribunal on which the public is represented. Furthermore, we believe the law should contain provisions which would insure that no strike would be ordered until it actually had been authorized by the members of the labor organizations concerned, and authorized under conditions which gave all of them opportunity to know what the matters in dispute really were, to vote their true sentiments, and to have their votes correctly counted and reported. Our European editor has sent us an extremely interesting article about the railway strike in Great Britain. It shows, among other things, that their strike occurred without the men having an opportunity to vote on it and without a large majority of them knowing what they were striking about.

The question of whether the railroads of this country shall be tied up is far more important than most of the issues voted on in our state and national elections—more important to railway employees and to the public. Therefore, if strikes are to be permitted after the matters in dispute have been fully investigated by representatives of the public the law should provide for the following: First, that all strike votes shall be taken by the Australian ballot system so that every member of a union considering a strike will be given a ballot setting forth clearly and correctly what it is proposed to strike for and have opportunity to go into a booth by himself and vote on the question as his reason and conscience dictate, without pressure or dictation from his fellow members or leaders. Second, that every strike vote shall be counted and reported by public officials to make sure whether those voting actually have voted to strike or not.

The railway labor leaders say that the absolute prohibition of strikes would mean "involuntary servitude" for railway employees and would be contrary to American institutions. There would certanly be nothing undemocratic or un-American, however, in legislation the only effect of which would be to require such an important issue to be passed upon freely and intelligently by those who were considering striking. The public clearly has a right to protection from railroad strikes, such as that in Great Britain, which are ordered by labor leaders regardless of the views of their followers.

Meantime it behooves the members as well as the leaders of the railway labor organizations carefully to consider what the present attitude of Congress means. A large majority of its members, if they should vote their true sentiments, would vote in favor of the anti-strike provisions of the Cummins bill. Nobody who comes in contact with all classes of the people will question that the attitude of members of Congress reflects that of a large majority of the people of the United States. The present attitude of the public is due to the destruction of voluntary arbitration by the leaders of the railway brotherhoods three years ago and to the incessant threatenings of strikes and revolutions in which they have been indulging ever since. They have been trying to bluff the American people, and the American people have about made up their minds to call the bluff.

Now, there is no use in railway employees fooling themselves with the belief that they can dictate to the entire American public. British railway employees tried to dictate to the British public by actually striking. The government resisted them, a vast majority of the public backed it, and the strikers were whipped. The immediate outcome would be the same in the United States. The ultimate outcome might be the destruction of the railway labor organizations.

The railway companies dictated in politics in many states for years. Then the public arose against them and for almost fifteen years the companies have been struggling, not to get back the power that they have lost, but merely to get something like decent and fair treatment from the public. A wise man once said that "experience is the best teacher, but a man is a d—— fool who will not learn by the experience of other people."

Nobody is in the least scared by the talk of Mr. Stone, Mr. Shea, Mr. Plumb and others about a revolution. Revolutions to which a vast majority of the people of a democratic country are opposed never occur. A vast majority of the people of the United States are not in favor of a revolution of any kind; they don't intend to have one, and furthermore, they don't intend to be ruled or bluffed by any particular class. The sooner the organized railway employees recognize these plain facts and begin to act accordingly the better it will be for everybody, and especially for them.

New Books

America's Munitions, 1917-1918, *Report of Benedict Crowell, Assistant Secretary of War and Director of Munitions.* 592 *pages,* 6 *in. by* 9 *in., illustrated. Bound in cloth. Government Printing Office, Washington.*

This rather unusual government publication steps outside the bounds usually set up for such documents and takes a place among the really interesting and readable books. It contains a complete description of America's many-sided and extensive activities included under the name in the title. Each chapter is devoted to a particular part of the work, such as gun production; mobile field artillery; railway artillery; explosives, propellants and artillery ammunition; machine guns; airplane production; the Liberty engine; balloons; engineer activities; gas defence, and so on, over the wide range of activity that had to be carried on. Written in an interesting fashion, each chapter describes the material to which it relates and shows how different models were investigated and adopted—French, English and American, as the case may have been. It then shows how the models adopted were put into production, which required in many cases the building of entirely new plants, or at any, rate extensive additions, and the installation of the new machinery. Naturally, the book is written in a somewhat optimistic vein and one does not find much trace of the criticism that racked the country at the time concerning the slowness with which many of the things to be done were gotten under way and carried out. There is some attempt nevertheless, to explain many things that unfortunately reached the point where they needed explaining.

In view of the great part that the railway supply industry played during the war, the book will be found of no small interest to readers of the *Railway Age.* The author has recognized the able work done by the industries of the country during the war, and has given in detail the work done by the individual concerns, with special reference to those cases where they had to overcome unusual obstacles or carried out their contracts with exceptional despatch.

The Deserted Great Eastern Railway Goods Siding at Strotford, London.

Great Britain's Nine-Day Railway Strike

Test of Strength Between Railwaymen's Union and Government Decided by Public Opinion

By Robert E. Thayer,
European Editor of the *Railway Age*.

London, England.

Never before in the annals of organized labor has there been called a strike of such great proportions and which affected so vitally the life of a nation on such unwarranted grounds as that of the nine-days' railway men's strike in Great Britain. The fundamental cause of this strike was a minimum wage which the government proposed to put into effect after the cost of living had been reduced to a certain amount, and under no circumstances until the end of next March—six months hence. That a body of men, such as the executive committee of the National Union of Railwaymen, should precipitate such a serious crisis as a complete tie-up of railway transportation when there was at least still six months before any reduction would be made in existing wages, is beyond belief. A consideration of the facts as they stand gives strong support to the accusation, already made in Great Britain, that this Union was seeking an excuse for a strike; in other words it was seeking to test its strength against the government.

While the union executives persistently made the claim that it was a strike wholly and solely for the betterment of conditions and increased compensation, the public, regardless of its views as to the justice of the men's claims, could not consider it as such. To the public it was not so much a matter of wages as it was an insurrection, and the people rose to meet the situation in a wonderful spirit. The unpopularity of the strike and the weakness of the cause were further illustrated by the action of other labor unions which came to the rescue of the National Union of Railwaymen, and so ably brought about "an honorable settlement," which again opens the discussion of the minimum wage and advances six months—to the end of September, 1920—the period during which no reduction shall be made in the existing wages, which in any case would not have been put into effect unless there was a reduction in the cost of living.

While the responsibility of the strike has been placed on the railway men it is a question whether they as a class should be charged with it, for the strike was precipitated more by the action of the executive committee of the union rather than by the men themselves. When the strike was called on Friday, September 26, at midnight, there were but few railway men throughout Great Britain that really knew the details of the disputed points which led to the strike, but they followed their leaders blindly. The men had absolutely no voice in the matter, as no strike vote was taken on the questions involved.

The Important Lessons of the Strike

One great lesson to be learned is that no government, deserving the name of a government, despite the extremely poor situation it may be in, will permit itself to be dictated to by a class of workers no matter how important their position may be in the economic life of the country. The government of Great Britain was surely in no position to fight a strike that involved the cessation of work by its railway workers, but it did not permit itself to be dictated to by them.

Another important lesson taught by the strike was that of the independence of a nation when faced with a crisis so grave as that of a general cessation of work by its railway workers. Both the government and the railway men were greatly surprised to find how well the nation could physically exist with meagre transportation facilities. Of course,

it is not meant to imply that a nation would economically exist for any length of time without adequate railway transportation, but as for being starved into submission by the refusal of the transportation men to work, it was shown that it could not be done—at least in Great Britain. Other means of transportation have developed so rapidly during the war that it was not difficult to provide adequate means for properly distributing the food supply of the nation, thus keeping it alive without the aid of the railways. With the experience gained from the war and the equipment available as a heritage from the war, England found little difficulty in rapidly organizing a comprehensive and adequate system of motor transport to meet the pressing needs in the distribution of food.

A third point which the strike strongly emphasized is that of the necessity of the laboring classes using greater care in the selection of the men who represent them and whom they give such unlimited powers. The strength of the labor unions in all countries depends upon their being led by men of greater ability and broader vision than are many of the union leaders today. The organization of labor has become so large and has so great an influence on the economic welfare of the nation that as much thought and care should be exercised in choosing its leaders as is done in choosing the leaders of a nation. It is not enough for labor unions at the present time to think in terms of increased wages and better working conditions—they must also consider their economic position as regards the nation as a whole.

A fourth essential point is the necessity of "open diplomacy" in controversies between labor and the government. It was not until three days after the strike had been called that the public of Great Britain had an opportunity really to

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The Volunteer Workers Helped Save the Day. A Scene at Marylebone Station

find out what the strike was about, and until then it was unable to form any definite opinion as to the justice of the position of either the unions or the government. Had the conferences and the questions at issue been thoroughly understood, not only by the public, but by the rank and file of the railway men, it is very doubtful if there would have been a strike. The justice of the unions' claim for an increase of the minimum wage was entirely forgotten when it was learned that the union had still six months in which to seek a settlement before any reduction could be made.

In commenting on the strike a few days after it had closed, the Prime Minister stated that in order to preclude the recurrence of similar misunderstandings, the community must make it clear that it means to deal justly and fairly with the claims of all classes. A man's property, whatever form it takes, whether that of land, buildings or labor, if the community needs it, it must pay a fair price for it. "We must make it clear," he said, "that the nation means to be master in its own house—a firm master, a strong master. We must make it clear—a fair master and a generous master —but always a master in its own house."

The Questions in Dispute

During the war the British government found it necessary, in order to meet the increased cost of living, to advance the wages of the railway men. This was done on a sliding scale and the pre-war wage was still maintained as a base. The increase made applied to every railway man in the country and at the beginning of the year it amounted to 33 shillings ($7.92) per week per man which was to be added to the regular pre-war rate of pay. Last March an agreement was made between the government and the unions—the National Union of Railwaymen, the organization which

Passengers Removing Their Own Luggage at Waterloo Station, London & South Western Railway

precipitated the present strike, and the Associated Society of Locomotive Engineers and Firemen—to the effect that the railway workers should continue to receive this 33 shilling bonus until the end of this year and during that time a permanent standard wage should be determined for all railway workers to apply to all the railways throughout Great Britain. This has been given the constant attention of the government, and last August standard rates of pay were determined and accepted by the union for the locomotive engineers, firemen and cleaners.

These new rates were such as to include and in some cases to exceed, for most of the engineers and firemen, the 33 shilling war bonus. The plan was to increase the wages by an average of over 100 per cent over the pre-war wage. Several schemes were also submitted to the National Union of Railwaymen for the other railway workers, which includes porters, ticket collectors, passenger guards (conductors), goods guards (freight conductors), shunters, checkers, carmen and plate layers (track men). These men are of the lower wage class and in applying the 100 per cent increase to their wages the new standard wage was not sufficiently high to absorb the 33 shilling war bonus. A minimum wage was established at 40 shillings ($9.60) per week for all adult workers. These men did not receive the same increase in actual money as the engineers and firemen and it was to this that the National Union of Railwaymen objected, claiming that members of its organization should receive as much as the members of the Associated Society of Locomotive Engineers and Firemen. In presenting the new wage schedule to the union the government stated that as soon as these new rates were agreed upon they would come

into immediate effect with the added stipulation that in no case would a reduction in wages be made before the first of the year. The union considering this as a definite order and at the same time declining it, announced on Wednesday afternoon, September 24, that the railwaymen would be called upon to strike at midnight on Friday, September 26.

The negotiations with the union had been carried on by the Board of Trade and the Railway Executive Committee, but the declaration of the strike brought forth a conference between the Prime Minister and the Cabinet on the one hand and the executive committee of the National Union of Railwaymen on the other. Conferences were held the following Thursday and Friday in which the union demanded that the permanent standard minimum wage would be the highest maximum paid in each class of service before the

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The Rev. W. Pollack-Hill, Chaplain to the Forces, Doing Duty as a Porter at Paddington Station

war plus the 33 shilling war bonus. The secretary of the union pointed out that when the cost of living had been reduced it would be time for the government *to ask the union* to review the circumstances in the light of conditions which existed at that time. The government made a further offer that in no case would the existing wage, including the 33 shilling war bonus, which was fixed when the cost of living was 125 per cent above the pre-war cost be reduced until the cost of living had fallen and remained for three months at not more than 110 per cent of the pre-war cost. The following is a summary of the government's final analysis of what it had given and would give the men:

1. Standard wage of an average of 100 per cent over the pre-war wage with a minimum of 40 shillings, to remain in effect irrespective of the decline in the cost of living.

2. Time and a half for Sunday duty and time and a quarter for night duty with overtime over eight hours. This has already been conceded and is in operation and represents an average increase to the railway workers of 20 per cent over the pre-war wage.

3. In addition to these advantages in money the government has already reduced the hours of labor to eight.

4. In any event no reduction in the present wage will be made before January 1, 1920, and from that time on no reduction will be made until the cost of living has fallen and remained for three months at not more than 110 per cent.

It will thus be seen that the men who were to receive more than the 33 shillings in their new adjusted permanent wage would be better off by the acceptance of this schedule, and further that those who did not receive an advance equal to 33 shillings per week would not suffer any reduction until the first of April next, and not then if the cost of living had not remained as low as 110 per cent of the pre-war cost for the three preceding months.

The schedule of weekly wages proposed by the government for the men in the lower wage class and concerning which the controversy was principally about is shown, in shillings (24 cents), in the following table which gives the

Photo from Central News

A Cameron Highlander on Duty at Marylebone Station, Great Central Ry., London

pre-war wage, the present wage guaranteed until March 31, the minimum standard wage and the bonus which rises or falls with the cost of living:

	Pre-war wage	Present wage guaranteed to March 31	Minimum standard wage	War bonus which rises and falls with the cost of living
Porters	16 to 22	49 to 55	40 to 49	9 to 6
Parcel porters	22 to 30	53 to 63	45 to 54	8 to 9
Ticket collectors	21 to 31	54 to 64	45 to 54	9 to 10
Passenger conductors	25 to 35	58 to 68	48 to 60	10 to 8
Goods conductors	25 to 35	58 to 68	48 to 60	10 to 8
Shunters	20 to 31	53 to 64	46 to 60	7 to 4
Goods porters	20 to 26	53 to 59	40 to 47	13 to 12
Checkers	21 to 31	54 to 64	46 to 55	8 to 9
Carmen	20 to 29	53 to 62	45 to 52	8 to 10
Plate layers (trackmen)	21 to 24	54 to 57	40 to 50	14 to 7

Note (1). The lower rates apply chiefly in the country; the higher rates in industrial areas.

Note (2). The figures of the cost of living, that is, rent, retail prices of food, clothing, fuel, light and so forth, are to be those shown in the *Labor Gazette*.

Regardless of the fact that the situation would not be changed until six months hence, the executive committee of the Union would not accept the terms and despite the Prime Minister's request that more time be taken for discussion it permitted the strike to go into effect.

Throughout the negotiations every effort was made to im-

press upon the Union's Committee what the concessions would cost in increased operating expenses. Sir Robert Horne, the minister of labor, estimated the proposed increase at approximately $335,000,000, or 140 per cent of the pre-war wage. To meet this added cost in railway operation it was stated that the passenger rates, which it has been hoped would be reduced from their 50 per cent increase, would have to remain as they are, and that freight rates would undoubtedly have to be raised if the government acceded to the Union's demands.

Attempts at Reconciliation

The call of the Union for a strike received a remarkable response from the railway men, and on Saturday, and Sunday the first two days of the strike, railway services was practically at a standstill. The engineers and firemen, although they had accepted their revision in wages, went on strike in sympathy with the Railwaymen's Union. The Union was thus very much encouraged and throughout the country made the prediction to its men that the government would accede to their demands within three days. But such was not the case. Public opinion was unanimous in support of the government, and it was not long before it was seen that the Railwaymen's Union was playing a losing game.

On Wednesday, the fifth day of the strike, the Transport Workers' Federation, an organization made up of over 30 unions, including the dockmen, and licensed vehicle workers and having a membership of about 500,000 men, held a conference to discuss, it was supposed, the matter of a sympathetic strike. Representatives of various other prominent labor organizations which were not directly interested in transport were called to attend this conference. While nothing is available regarding the discussions at this conference, the succeeding actions indicate that the more level headed and conservative elements in labor recognized the serious position in which the National Union of Railwaymen had placed the whole labor cause. The result of this conference was the appointment of a conciliation committee consisting of conservative labor representatives, which acted as an intermediary between the railway men and the government. A meeting was arranged between the railway men Executive Committee and the Prime Minister with the distinct understanding that the government would no resume negotiations with the Union until the striking railway men had resumed work.

As a result of these conferences on Wednesday and Thursday the Government made the following proposal of the basis on which negotiations could be continued:

1. That upon the men now on strike returning to work negotiations shall be taken up where they were broken off last Friday.
2. That in accordance with the offer made by the Prime Minister on Friday last the government guarantee that there will be no reduction in wages until March 31, 1920, and the government undertake that any time after December 31, 1919, they will be ready to discuss, in view of the circumstances then existing, the possible extension of that date.
3. That the government are prepared to discuss with the railwaymen any unfairness or hardships affecting any particular grade of workmen through the operation of the scheme of standardization already put forward by the government, and to consider any anomaly as between the various grades in the application of the percentage of increase proposed to each grade.
4. In the event of failure to agree upon any question arising out of the matter mentioned in paragraph 3 the point of difference be referred to arbitration.

The National Union of Railwaymen declined to accept these terms.

At a meeting on Friday morning the Prime Minister proposed that the N.U.R. should agree to a truce of the strike for a limited period of a few days in order that negotiations might be resumed with a view to reaching a settlement. The Prime Minister further indicated that if the railwaymen returned to work on this basis arrears of wages would be paid to them.

The N.U.R. agreed to the suggestion made by a truce, but only "on condition of the government being prepared to work out a basis for standardization which shall operate in the same manner to the various grades as in the case of those grades for which a settlement has been effected."

The government rejected this proposal on the grounds that the grades referred to were settled as was claimed by the railwaymen on their special merits and on the understanding that the other grades now in dispute would be treated on their merits, and that the demand made now was only a repetition of the original scheme which had already been declined.

The Prime Minister then made the following counter-proposals:

1. The government are prepared to agree to a truce of seven days to count from the full resumption of work in order to discuss —
(a) The period of standardization of wages.
(b) Any alleged unfairness or hardship affecting any particular grade of workmen through the operation of the scheme of standardization already brought forward by the government, and any anomalies as between the various grades in the application of the percentage of increase proposed to be made for each grade. In the event of failure to agree upon any question arising out of the matters mentioned.
2. The government are prepared to submit the questions in dispute to arbitration. If at the end of five days after the full resumption of work the representatives of the men come to the conclusion that the negotiations cannot be brought to a satisfactory issue, they will undertake to give 48 hours' notice before any cessation of work takes place. If negotiations be again broken off, the men agree to hand over all plants in good working order, and to run all trains to their destination. The men agree to work harmoniously with the railway servants who have remained, or who have returned to work. The railway executives agree to undertake that there will be no victimization of the men who have gone on strike.

Photo copyright by Int. Film

The Marquis of Cholmondeley, Unloading Eggs at Paddington Station

This proposal was rejected by the N.U.R.

The intermediary committee, however, attempted to find a way of renewing the negotiations, and late on Sunday, the ninth day of the strike, a compromise was made, the terms of which are as follows:

1. Work to be resumed forthwith.
2. On full resumption of work negotiations shall be continued with the understanding that they will be completed before December 31, 1919.
3. Wages will be stabilized in the United Kingdom at their present level

until September 30, 1920. Any time after August 1, 1920, they may be reviewed in the light of circumstances then existing.

4. No adult railwayman in Great Britain shall receive less than 51 shillings so long as the cost of living is not less than 110 per cent above pre-war level.

5. The National Union of Railwaymen and Amalgamated Society of Locomotive Engineers and Firemen shall agree that the men work harmoniously with the servants who have remained at or reported to work, and the government and the National Union of Railwaymen and Amalgamated Society of Locomotive Engineers and Firemen agreed that no man shall be prejudiced in any way as the result of the strike.

6. The arrears of wages which have been withheld in consequence of breach of contract will be paid after the resumption of work.

Photo from Central News.

The British Railway Strike—The Closed Gates at Victoria Station

A seventh point was brought to light in the report of Mr. Thomas, the general secretary of the National Union of Railwaymen, to his men, but which was not included in the government's report of the settlement. It was, in effect, that if the standardization of wages resulted in an increase over that which the men are now receiving, it is to be paid as from August 18 of this year. Thus the final settlement appears to include an extension of the guarantee that the present level of wages, including the war bonus, will in no case be reduced until September 30, 1920, and that any increases over the present wage will be retroactive to August 18.

Features of the Strike

At the beginning of the strike the response to the call of the labor union executives was remarkable. Practically all train services were at a standstill on Saturday and Sunday, no trains being run into or out of London on Saturday. On Monday a few trains were run, and from that time on the number increased rapidly each day. On Tuesday over 800 passenger trains were run, on Wednesday 2,380, on Thursday 2,593, on Friday over 3,400, and on Saturday a similar number. The number of freight trains operated remained at a very low figure throughout the entire strike. The improvement in the passenger service was obtained through the gradual return of the strikers to work and by the aid of volunteers. The action of the union's executive committee in declaring a strike was so precipitate and so little information had been published regarding the negotiations between the union and the government before the strike, that but very few of the railwaymen understood the points of contention, and they were under the impression that there was to be a drastic reduction in wages. The union was so thoroughly organized and the men had such faith in their leaders that there was no difficulty in getting an immediate response to the strike orders.

A correspondent of the London Post who mixed among the strikers during the week found them to be very much misinformed. Practically every striker he interviewed was out to resist a reduction of wages—an immediate and heavy reduction. Those who were not familiar with the situation were under the misapprehension that all wages were going to be reduced to 40 shillings a week except for the engine drivers. The correspondent attributed the misunderstanding to the propaganda of the railwaymen's union.

It is a conceded fact that had the strike been balloted and had the men thoroughly understood the questions at issue there would have been no strike. W. A. Appleton, secretary of the General Federation of Trades Unions, is reported

Sailors from the Navy Try Their Hand at Plate Laying

to have said that as no reductions were liable to be made within the next three or six months there would have been no strike had the men been allowed to ballot. In fact, a railway office at one important railway center obtained a pledge from the local union that the men would return to work if the government promised that there would be no reduction in wages before the end of March. This point had already been conceded by the government before the strike was called, and the circumstance indicated the unfamiliarity of the men with the points at issue.

Another factor that influenced the men in returning to work was the fact that the government threatened to withhold the two weeks' pay that was due the workers unless they returned immediately to work, the argument of the government being that the men broke their contract and stopped work without due notice and in complete disregard of the effect of their action on persons and property. Further the government did not feel justified in handing over to the strikers money which would be used to prolong the struggle. The amount involved in this question was some $5,000,000. In addition to this the strike pay fixed by the Union was only 12 shillings ($2.88) a week for scale A men, which comprised about 75 per cent of the strikers, and 6 shillings ($1.44) a week for the remainder, with one shilling for each child under 12. This absurdly low allotment—which, by the way, was on a pre-war basis—would put the strikers to a very great disadvantage in a long strike and as time went on the prospects were that the strike would last for some time.

Not only did this monetary consideration and the unreasonableness of the strike influence the strikers in returning to work but in addition the fact that public opinion was so strongly against them and the response of volunteers to the government's appeal for aid was so great that the more intelligent of the strikers saw that they were playing a losing game.

Under the head of "Fight for the Life of the Community" the government issued a strong appeal for volunteers to assist in maintaining the necessary transport service. Not only thousands of individuals, but many organizations, responded to this call, and offered their services. Notable among the latter was the British Federation of Discharged Soldiers and Sailors having a membership of 7,800, the Gillingham Branch of the Comrades of the Great War which had a membership of 1,600, the British Engineers' Association and the Scottish Middle Class Union. In four days this last named association placed in railway service at Glasgow 57 locomotive engineers and firemen, and over 200 men in other positions. Many prominent persons entered into the struggle acting in various capacities from that of porter to motor and engine driver. Graham White, the well known aviator, volunteered to serve as a motorman on the Underground system in London. One of the first trains to leave London for the north of England was driven by a son of a Peer with his chauffeur acting as fireman. Lord Portarlington acted as porter on the Great Western Railway at Paddington station and various other members of English society acted in other capacities.

At London over 35,000 volunteers offered their services not only as railway operatives but as motor car drivers for the extensive system of motor transport the goverment instituted to assist in the distribution of food immediately on the strike being called.

London was particularly hard hit because of the fact that the underground subway workers went on a sympathetic strike with the railwaymen. People in the outlying districts of London found it particularly hard to get to their places of employment. Thousands had to walk to the city and those with automobiles were ever ready to give assistance. Large business houses which operated motor trucks offered them to the service of the public with only a nominal charge.

Food and Mail Situation

The food situation was, of course, the greatest problem the government had to contend with. It was here that the government did remarkable work. It was only a matter of hours before a well developed and effective distributing system was inaugurated in order to provide all sections of the country with food, and in no case was any serious shortage reported during the strike. In explaining this organization, after the strike, the Prime Minister stated that an organization for just such an emergency was started last February. At that time there were signs that such a crisis was coming, and the Prime Minister left the Peace Conference in Paris to come to England to see what could be done. With the aid of his colleagues the organization, which was a purely civilian one, was started under the chairmanship of the Home Secretary, and the plans were so well developed that it was put into operation in a very short time. He made it clear that it had nothing to do with the war forces and was an entirely separate organization which will be kept alive in a dormant state for any other similar crisis.

On the sixth day of the strike it was reported that there were 150,000 vehicles of various kinds in use by the government for transport work.

The flour mills had found it possible to despatch 50 per cent of their output and the bakers were further assisted by flour from the government's reserves. Hyde Park, one of the largest parks in London, was requisitioned for the distribution of milk to London, and on the sixth day of the strike this distribution was up to 75 per cent of normal. As a further precaution to prevent any undue privations, emergency rations were put into effect. Inasmuch as a rationing system was already in effect the difficulty on this score was not great and the situation was met by still further reducing the rations. The weekly ration of sugar was set at 6 ounces, butter one ounce and butchers' meat 40 cents' worth. At hotels and restaurants the total quantities of meat, flour, bread and sugar were fixed not to exceed the following scale per meal:—

	Meat, oz.	Sugar, oz.	Bread, oz.	Flour, oz.
Breakfast	2	¼	2	nil
Dinner, including supper and meat, tea	4	¼	2	1
Luncheon, including meat dinner	4	¼	2	1
Tea	nil	¼	2	nil

The consumption of bread and cakes at afternoon tea was limited to 2 ounces in all. No sugar or butter was served separately at any meal; except to children under ten, no milk could be consumed except in tea, coffee, cocoa and chocolate, as usually served. Furthermore maximum prices were fixed for articles of food which had not previously been scheduled. In London 12,000 tons of food were required daily and one thousand motor lorries were used in the distribution of milk. Throughout the entire nine days of the strike no reports of any privations were received.

The use of motor lorries proved so successful that plans are being developed for using this means of transportation for relieving the breakdown in the system of inland trasportation which has been a serious matter in England for some time and which has contributed so seriously to the congestion of the docks. It is believed that something like 1,000 lorries are to be used at Liverpool for this purpose. Such use of this means of transportation will show how far it can be used as a practical proposition for commercial purposes. Some believe that until petrol falls in price, the motor lorry will be too expensive for long distance traffic. The more efficient lorries used by the government are capable of running 8 to 9 miles on one gallon of petrol, but most of the vehicles cannot do more than 6 miles to the gallon. During the strike the Ministry of Food charged traders making use of the motor transport 12 cents per ton per mile. It is believed that any loss which may be occasioned by using this means of transport to relieve dock congestion will be more

than offset by decreasing the large loss resulting by the detention of ships which are unable to discharge their cargoes.

The transportation of mail created another serious problem. This was handled by army lorries and such few trains as were running at the beginning of the week. In a very few days an aeroplane service was inaugurated from London to Bristol, Birmingham, Newcastle, Manchester and Glasgow, in addition to a continental service between London and Paris and London and Brussels. The aeroplane service worked out extremely well and on Tuesday, the fourth day of the strike, 54 aeroplanes were in service. A charge of

A Volunteer Attending to a Lamp on an Underground Coach

two shillings an ounce on each letter was made for this special service. On one day a Handley-Page machine carried 1,400 pounds of mail matter to Brussels for Holland and Norway and brought back 2,000 pounds. A strong effort has been made through the press to retain this service which worked so successfully, but as the train services improved during the latter part of the strike, the aeroplane service was discontinued.

Effects of the Strike on Industry

While it is impossible to calculate the monetary loss to the country of the nine days' strike, it has been estimated to be in the vicinity of $250,000,000. Despite the fact that Mr. Smillie, the head of the Miners' unions, stated that a week's strike would put 90 per cent of the miners out of work, this did not prove to be true. A large number of mines, however, suffered greatly from the lack of cars but in many instances the mined coal was stored until cars could be procured. A week after the strike had been in effect the majority of the firms in the iron and steel industry had been somewhat affected. In some cases it was necessary to close down the furnaces. The textile industry was not affected to any appreciable degree, nor were the engineering industries. In fact at that time very little reduction of production was reported.

General Gassouin, Director of Transport of France, in commenting on the strike stated that it was particularly serious for that country. France is dependent on England for a coal supply, as the Germans are far behind in their promised delivery of coal. Furthermore in addition it was stated that the export business of France was completely paralyzed and while it was not a matter of great importance to certain lines of merchandise it was fraught with serious consequences in the case of perishable foodstuffs.

Italy too suffered, for the lack of coal, as it relies on England for a monthly supply of 500,000 tons. The quantity of coal coming from America, Belgium, and Germany through France is comparatively small.

A press despatch from Amsterdam presented another phase of how the strike affected Holland. The British fishing fleet, owing to the strike in Great Britain, sought to dispose of its catch in the Amsterdam market and the Ship Owners' Association there requested the government to take measures to prevent this, for otherwise the natural herring industry of Holland would be seriously affected.

Four Atlantic liners were held at Liverpool and the passengers were not allowed to disembark until means could be provided for sending them to their destinations. Both England and the United States were also affected by the cancellation of sailings announced by the American Shipping Board on account of the strike.

Military Measures

It is quite remarkable that there were not more cases of sabotage during the strike. A few instances were reported where engine drivers and other men who had remained loyal

Photo from Central News.

A Parade of Strikers

to the government were attacked; numerous cases of stone throwing were reported, and one or two cases of attempts to derail trains. The government precluded any serious attempts to cause trouble by the distribution of soldiers to strategic points on the railways. The terminals were guarded by police and detachments of soldiers which camped on the station grounds. In some cases machine guns were in readiness to prevent any serious demonstrations. While exact figures of the number of troops involved have not been published it was stated that in the Birmingham district 2,000

soldiers were on duty. Wherever an indication of trouble was found, troops were immediately despatched to provide protection. In some cases detachments of men were carried in the baggage cars of the trains in readiness for any disturbances along the line. One cause of the lack of serious demonstrations on the part of the strikers was undoubtedly due to the counsel of the strike leaders, for they urged the men to refrain from demonstration, and it is a fine commentary on the character of the railwaymen that more trouble was not experienced.

However, it was believed desirable on Friday, October 3, seven days after the strike had been in effect, to issue an appeal to all citizens in all countries, cities and ports to form a citizen guard to act in co-operation with the police in the duty of protection and maintenance of order. This organization is somewhat after the plan of the home guards which were recruited in the United States during the war. The appeal went on to say that if the food and the safety of the nation

Photo from Central News.

A Rush for a Tram

were to be safeguarded in face of the menace by which they were confronted, it was essential that all citizens who were willing to contribute labor should do so without interference or apprehension. While the cessation of the strike made unnecessary the formation of such an organization, it is reported that the plans will be carried forward in order to have such an organization well developed in case any future similar occasion arises.

The Leaders in the Dispute

Too much credit cannot be given Lloyd George, the British Premier, for the tactful way in which he handled the entire situation during the discussions prior to and after the strike was called. There was no attempt to "bulldoze" the men. In fact he made the statment that before the war the railway workers were very disgracefully paid and their hours of labor were too long; in a latter statement he said that the government was not fighting trade unionism, for trade unionism is a recognized factor in the industrial life of the country, but that the government was fighting to prevent the extremists of any industrial body from gaining their ends by attacking the life of the community and so bringing untold misery upon thousands of innocent people. It was evident that he was seeking to give the railwaymen a square deal, but at the same time he could not permit the government to be held up at the point of a pistol by a group of workers who considered only their own selfish ends. After the settlement had been made he disclaimed any credit on the part of the government for having won a victory and said that neither he nor the government wanted a victory over the men. They only wanted a settlement, and that was the spirit in which the negotiations had been conducted.

J. H. Thomas, the leader and general secretary of the National Union of Railwaymen, on the other hand disclosed throughout the controversy a very Prussianistic attitude. He acted as though he felt he had the power to make the government accede to his every wish and he certainly must have had an overdose of egotism to believe that he could challange the government of Great Britain on such a frail excuse as that for which the strike was called. A side light on the character of the man is shown by the following extract from a talk he made to the railway men at Clapham Common during the early days of the strike. He was commenting on a

Photo from Central News.

A Lift on a Motor Truck

statement made by the government to the effect that the strike was a war against society. (The arrangement of the quotation and the italics are ours.)

He said:

"*I* have warned them all through that if it is, the responsibility is theirs.
"*I* say to the government: Do they know what they are playing with? Do they know they are letting loose passions that it will be difficult to control?

"*I* have refused the offer of other trade unions to call their men out.
"*I* have refused the busmen and tramway men.
"*I* have refused the electricians, but
"*I* am not going to continue to do so now that
"*I* am driven to this fight and
"*My* back is to the wall."

That labor leaders in general were not in accord with the action of the railwaymen's executive committee is well illustrated by the action they took in seeking a reconciliation and also by the following statement issued, after the strike, by J. R. Clynes, who is a strong labor man:

"Workmen must more and more look upon the public as a jury which to a great extent can influence governments and determine the settlement on the verdict they may give, whether the men act rightly or wrongly.

"A large number of people who have fully believed the railwaymen should get better terms have not been on the railwaymen's side just because of the manner in which the trouble started."

This statement sums up the situation well, for the strike was settled by public opinion.

Will New Legislation Cause Railroad Expansion?

Real Test of Value of the Law—Carriers Should Invest $6,000,000,000 Within Three Years

By Samuel O. Dunn
Editor of the *Railway Age*

WHEN GOVERNMENT OPERATION was adopted there were many persons in the country who favored government ownership and management. After almost two years of government operation the only large class that now favors government ownership is the railroad employees, and there is no large class which is in favor of government management. I shall not attempt to review the reasons why there has developed such an overwhelming public sentiment against government management. That it exists is unquestionable. It appears certain that the railroads will be returned to private operation at the end of this year.

Assuming, as we all must, that the railways are going to be returned to private management, it would appear that regardless of our individual views on the question of government ownership versus private ownership we should want to see the conditions made favorable to the success of private management. This is a democratic country and if the public ever wills, as it may, that government ownership shall be made the policy of the nation, I shall want to see the system of management adopted one which will insure that government management will be made as successful as it is possible to make it. On the other hand, since the public has willed, that for some years to come, at least, the system of private management shall prevail, every patriotic citizen should desire to see legislation enacted which will give opportunity to make private management as successful as it can be made.

Imperative Need of Railroad Revival

At the present time the most imperative need of the country from a transportation standpoint is an immediate revival of the expansion of railroad facilities on a very large scale. This need does not exist because the railways are going to be returned to private management. It would exist just the same if government ownership and management or the Plumb plan were going to be adopted.

The fact that there is need for an early and very large expansion of railroad facilities has been emphasized repeatedly by the director general of railroads, Mr. Walker D. Hines, who is strategically in the best position to know what the transportation situation is. In a recent address he said:

"In the year or two preceding federal control of the railroads the normal additions to cars and other transportation facilities were not made because prices were very high, labor was scarce, and financing on the part of the railroad companies was unusually difficult. * * * During the first year of federal control there was a severe limitation as to the amount of material that could be taken from other war purposes to use for providing additional railroad facilities. * * * When the year 1919 began we were then confronted with a new difficulty in the way of adding to the facilities, and that was that federal control naturally was approaching its end from the time the armistice was signed. More than that, the failure of the appropriation on the 4th of March last, which had been sought by the Railroad Administration to enable it to meet its obligations already incurred, postponed the construction of even the hundred thousand cars that had been ordered, because they could not be paid for, and the equipment companies naturally had to slow down on their production. The railroad companies were unwilling to furnish money for new equipment because of uncertainty as to their own future, so the result has been that the Railroad Administration during the year 1919 has not been in position to provide any additional facilities except those which were needed, as an emergency measure, unless the railroad companies were willing to furnish the money, and the result is that at the present time the Railroad Administration has been unable to order or obtain authority to order any cars in addition to the hundred thousand that were ordered last year.

"So that that inadequacy of facilities, which were inadequate before federal control began, and which have become increasingly inadequate since that time, principally accounts for the fact that the facilities are not sufficient to handle all of the enormous business which is offering to the railroads of the country. * * * We are in a waiting and uncertain situation with reference to the provision of transportation facilities, and it is a matter of very grave concern to the country. In my judgment if the legislation cannot take definite shape during the month of December, so that the railroads will know where they stand, and can begin making their plans to get the additional facilities they will undoubtedly need to handle the business of next fall, the country will be most disastrously handicapped next fall in having its business moved."

Enormous Deficiency of Investment

If Mr. Hines had chosen to use the available statistics bearing upon the subject of the inadequacy of railroad facilities he could have presented the existing situation in a manner which would have been positively startling. There are several different ways in which you can estimate the amount of new investment which must be made to increase the facilities of the railways enough to bring them abreast of the demands of the country's commerce. Probably the best way to estimate it is on the basis of the increases which have occurred in the investment in the properties and in the amount of traffic handled. Mr. Hines remarked that in the year or two before this country entered the war the railway companies had been unable materially to increase their facilities because of the difficulty of raising new capital. His remark takes us back practically to the year 1915.

Now, in the ten years from June 30, 1905, to June 30, 1915, the increase in the freight business was 61 per cent and the increase in the passenger business 45 per cent. Meantime ,the investment made in new facilities was $5,300,000,000, or 44 per cent. The increase in freight business since the year ended June 30, 1915, has been 57 per cent, and the increase in passenger business 32 per cent, each being almost as great as it was in the preceding 10 years. If the new investment had been as great in proportion to the increase in traffic during the last four and a half years as it was during the preceding 10 years it would have been about $5,000,000,000. As a matter of fact, it has been less than $1,900,000,000. Furthermore, because of advances in wages and in prices of materials, a dollar would not buy during the last four and a half years more than two-thirds, and perhaps not more than one-half as much as it would buy on the average during the preceding 10 years. Therefore, equated on the 1905-1915 basis of the value of money the investment during the last four and a half years has been only about $1,300,000,000.

Assuming that investment should have been made during this four and a half years as fast in proportion to the in-

* From an address delivered before the annual convention of the American Mining Congress, St. Louis, Mo.

crease of traffic as it was during the preceding ten years, the investment in the railways has fallen behind approximately $3,700,000,000 during this time. But that is stating the deficiency in the pre-war value of money. In the year 1919 two dollars will not buy a railroad any more labor, equipment and materials than a dollar would on the average in the years 1905-1915. The average wage of an employee is now 125 per cent higher than it was then. Now, the deficiency of investment must be made up in dollars of the present value. On that basis it would take over $7,000,000,000 to make up the deficiency in railroad investment which has been allowed to accrue since 1915.

Great Increase of Traffic—Little Increase of Facilities

This deficiency in investment is strongly reflected in the remarkably small increase in facilities which has been made. During the ten years ending with 1915 the increase in the freight traffic of the country was 61 per cent and the increase in the number of freight cars in service was 36 per cent. During the last four and a half years the increase in the freight traffic of the country has been 57 per cent and the increase in the number of freight cars in service has been only about 5 per cent.

Between 1905 and 1915 the increase in passenger traffic in this country was 45 per cent and the increase in the number of passenger cars in service was 36 per cent. Since 1915 the increase in passenger business has been 32 per cent and there has been practically no increase in the number of passenger cars. The increase in the number of locomotives in the country in the ten years from 1905 to 1915 was 30 per cent. In spite of the enormous increase of traffic since 1915 there has been practically no increase in the number of locomotives. The increase in the railroad mileage of the country between 1905 and 1915 was over 40,000 miles, or over 4,000 miles a year. There has been almost no increase in mileage at all in the last four years, the mileage torn up or abandoned being practically equal to that built. There has been a great increase in the efficiency with which railway facilities have been used in recent years—most of this increase having taken place under private management during 1916 and 1917—and therefore it undoubtedly would be an exaggeration to assume that there must be an investment of $7,000,000,000 to make good the deficiency which has accrued since 1915. But allow all that we dare for that increase of efficiency, and cut the estimated deficiency in half, and you will still have a deficiency to make good of at least $3,500,000,000.

Besides making up this deficiency of investment and facilities, the railways must provide in future still other additional facilities to care for the future increase of business. As I have shown, the average investment per year in the ten years ended June 30, 1915, was $530,000,000. With present wages and prices it would cost at least $1,000,000,000 to provide as much additional facilities as were formerly provided for a half billion dollars. With a deficiency of at least $3,500,000,000 to make good and an investment of at least $1,000,000,000 a year required to provide for the growth of business, it follows that the railways, if they are to provide for the needs of American commerce, must raise and invest at least $6,000,000,000 or $6,500,000,000 of new capital within the next three years if they are to catch up with the needs of the country. This is a conservative estimate. They ought to acquire within that time, for example, about 800,000 freight cars, 20,000 locomotives and 10,000 passenger cars and to provide other facilities — new lines, tracks, sidings, yards, terminals, roundhouses, shops, and so on—in proportion.

It is needless to tell any man who ships goods or who travels upon our railroads that the vast deficiency in railroad investment which has accrued is reflected in the service now being rendered. It has become impossible for the railroads to handle all the traffic which is offered to them at any time when the country is producing to anywhere near the limit of its capacity. In the fall of 1917 the Railroads' War Board warned the government that even then it had become impossible to handle all the available freight and that if the essential war traffic was to be handled the so-called "non-essentials" would have to be excluded. In 1918, under government operation, in spite of the fact that the government had almost unlimited power and the advantage of $577,000,000 worth of additional facilities the railway companies had provided in 1917, it was able to increase the freight handled only 2 per cent, and it found it necessary constantly to embargo many kinds of commodities. Last spring, when the railways lost a large amount of war business, there was a temporary surplusage of cars, but as soon as the country began to produce again on a peace basis this surplusage disappeared and during recent months it has again been impossible to handle all the available freight.

I do not say merely that it has been impossible to handle all the freight satisfactorily. I say it has been impossible to handle much of it at all. It has been impossible to furnish sufficient cars to the coal mines and that has cut down the production of coal. It has been impossible to furnish enough cars for the movement of lumber and that has curtailed the production of lumber. It has been impossible to furnish enough cars for the movement of wheat and that has curtailed the movement of wheat. The various state, municipal and other governments have appropriated $633,000,000 to be spent during the next year in building new roads. Those roads can't be built simply because the railways can't handle the materials.

Railways Limiting Factor in Production

People talk about the need for an increase in production. There is great need of an increase of production, but there cannot be any further substantial increase of production in this country until there has been a substantial increase in the facilities of transportation, because there can be no substantially increased production without increased transportation. Unless there is invested in new railroad facilities within the next three years at least $6,000,000,000 of new capital, it is a perfectly safe prediction that three years from now the railroads will still be unable to move all the commodities that the country can produce; and regardless of the amount of new investment made in railroads meantime there will not be a year in the next three, unless there is a severe depression in general business, when the railroads, whether under government or private management, will be able to move all the traffic which the industries of the country can offer.

Many people seem to think that as soon as the railways are returned to private operation there will be a restoration of the good freight and passenger service which formerly was rendered. The good service formerly rendered will not be restored immediately or very soon after a return to private operation because the cars, locomotives, tracks and yards required to render it do not and will not exist. They can be provided only by a vast expenditure of new capital, and unless there is a vast expenditure of new capital they never will exist.

Having provided means of preventing abuses in financial management in future the public must also in its own interest in some way assure to those who make investments in railways that they will be given opportunity to derive a reasonable return from their investments.

The True Test of Regulation

The principal test which should be applied to any measure to solve the railroad problem which is introduced in Congress is the question, "Would this proposed legislation

if passed enable the railroad companies to raise and invest in their properties at least $6,000,000,000 of new capital within the next three years?" If the answer "Yes" can be made to that question, then the proposed legislation may be sufficient, but if the answer "No" must be made, then the proposed legislation certainly is not sufficient, no matter how good it may be in other respects. The question of what net return the railway companies are to be allowed to earn, is from the standpoint of the public as well as that of the companies the very essence of the railroad problem. Without that question clearly and soundly settled no advance whatever will have been made. Without that question clearly and correctly answered by new legislation the return of the railways to private operation will not be followed by a revival of the expansion of railroad facilities; and without a revival of railroad expansion the country's industrial and commercial growth will be practically stopped.

Effects of Temporary Legislation

President Wilson announced in May that the railways would be returned to their owners at the end of the present year. It was generally recognized at that time that before they were returned some important legislation should be passed. It now appears probable that if they are returned to their owners on January 1 it will be under some kind of temporary legislation which will continue the present government guarantees, but which will not definitely settle what return the railways are to be allowed to earn after the guarantees are withdrawn. It will be better to return the railways to their owners under such temporary legislation than not to return them at all at the end of the year; but every day that permanent legislation is delayed will postpone the beginning of the expansion of railroad facilities. There will be no revival of investment in railroad securities on a large scale unless the government has definitely indicated to investors what kind of a "run for their money" it intends to give them in future.

At the same time, the railways will be returned to their owners under conditions which for some time will render successful private operation of them very difficult, and unless the right kind of legislation is passed the results of private management will be disappointing to the public. In that case we shall be in great danger of drifting into government ownership, in spite of the strong sentiment against it which now exists.

President Vetoes Bill to Restore I. C. C. Rate Powers

President Wilson on November 18 vetoed the Cummins bill, S. 641, restoring to the Interstate Commerce Commission its pre-war rate-making power. The President said the immediate effect of the proposed law would be to deprive the federal government of the ability "to cope promptly and decisively with operating emergencies which are now arising and must continue to arise during the existing period of heavy traffic."

"This bill," said the President's message, "deprives the government of the United States, while still charged with the exclusive responsibility for operating the railroads during federal control, of any power to make any change in any intrastate rate, fare, charge, classification, regulation or practice without having first secured the approval of the proper state regulating tribunals, whereas under the federal control act as originally enacted the government of the United States has the same power to determine the intrastate matters as it had to determine similar matters of an interstate character.

"Recently the Railroad Administration found that refrigerator cars were being unduly detained by consignees at a time when there was urgent demand for an enlarged transportation use of such cars. The Railroad Administration was able substantially and promptly to correct this situation by the imposition of an emergency charge. Such a step could not have been taken promptly if it had been necessary to consult also state authorities throughout the Union.

"Since the authorities of each state would under this bill have the full power to exercise an independent judgment, the probable result would have been, if this bill had been in effect, to prevent any uniform practice at all, notwithstanding the fact that the federal government was the sole operator of the railroads, and as such conducting the intrastate operations, as well as the interstate operations.

"At the present time the Railroad Administration is proceeding with an important measure to secure the heavier loading of cars with grain and grain products so as to meet more fully the urgent need for a greater transportation of those commodities. If it should be necessary to obtain the independent judgment of each state tribunal, the delay would probably be so great as to defeat the purpose of the plan.

"The matters I have mentioned are illustrative of pressing practical emergencies which must be dealt with promptly if they are to be dealt with effectively, and while the federal government alone is responsible for railroad operation, it ought to have within itself the power to deal with these problems.

"The practice of the Railroad Administration to secure the advice of the Interstate Commerce Commission upon matters of importance reasonably insures an adequate representation of the public interest and avoids the divided action and inevitable delay which would result if each state authority should have exclusive and final power as to regulation of all matters of intrastate traffic within its borders.

"Beyond these pressing practical exigencies, I feel that it is a far sounder general principle to vest in the federal government power to raise the revenue to operate the railroads when the federal government alone is responsible for paying the bills for their operation.

"In a country of such great extent it is undoubtedly desirable to get the fullest practical benefit of local advice upon local matters, and this is equally as much to be desired in respect of local interstate rates and practices in a given portion of the country as in respect of intrastate rates and practices covering a similar extent in the same locality. It is the policy and practice of the Railroad Administration, which I heartily endorse, to secure as far as practicable the full benefit of the suggestions of the state authorities, both as to intrastate rates and as to local interstate rates, but in the last analysis, while the federal government is solely responsible, it seems to me that entirely independent and final power as to a large proportion of these vital matters should not be transferred to the respective states.

"The broad question of general principle which I have just discussed might perhaps be waived in view of the short duration of federal control, but the practical emergencies to which I have first referred are matters with which the federal government must deal day by day in the discharge of its responsibility and I do not think its ability to deal with them promptly and conclusively should be impaired even during a brief period of federal control.

"The leading principle of this bill, which is to give the Interstate Commerce Commission power, pending its provision thereon, to suspend rates, practices, etc., initiated by the President, is entirely acceptable to me, although if in the future the bill should be repassed I should hope to see some modifications in detail which would avoid attaching a presumption of unreasonableness (as this bill appears to do) to changes so initiated in rates, practices, etc.

"I should also hope to see another modification which would avoid any possibility of bringing in question the

validity of orders which already have been made by the Railroad Administration in the discharge of its responsibility."

Chairman Cummins of the Senate interstate commerce committee, who introduced the original bill, later amended by the House, said it was not likely that any attempt would be made to pass the measure over the President's veto, as the rate-making powers of the commission would be restored when the roads were returned to private operation January 1.

Senator Cummins said the President's action was not a surprise.

Republican Leader Mondell, approving the President's veto of the bill, said the measure "should never have been passed," and he added that he expected no effort would be made by the House to override the veto.

A. R. A.---Section VII

THE EXECUTIVE COMMITTEE of the American Railroad Association, at a meeting held on July 31, created a new section, to be known as Section VII—Freight Claims; and H. C. Pribble of Topeka, Kan., chairman of the section, has issued a circular setting forth the plans for the organization of the section.

The temporary general committee, appointed by the executive committee of the association to manage matters until a regular election shall be held, consists of prominent members of the former Freight Claim Association, as follows:

H. C. Pribble (chairman) A. T. & S. F.
H. C. Howe, C. & N. W.
J. H. Howard, manager, Claims and Property Protection Section, United States Railroad Administration.
J. J. Hooper, Southern.
R. L. Calkins, New York Central.
W. O. Bunger, C. R. I. & P.
E. J. Bloodgood, C. & N. W.
J. B. Baskerville, N. & W.
W. S. Reed, Pitts. & W. Va.

This general committee met in Chicago on August 11 and elected Mr. Pribble chairman, Mr. Howe, first vice-chairman, and Mr. Howard, second vice-chairman; and Lewis Pilcher, Richmond, Va., was chosen secretary. The constitution and rules of the Freight Claim Association, as published in 1917, were adopted, with suitable changes in the wording.

The committees were also continued, but the secretary of the section is to act as secretary of all committees.

The seven arbitration committees of The Freight Claim Association were elected to serve as the arbitration committees of Section VII. Six of these will be known as loss and damage committees, and are composed of men handling loss and damage claims; one will be known as the overcharge committee, and is composed of men handling overcharge claims exclusively, to which shall be referred all overcharge claims for arbitration. The appeal committee of The Freight Claim Association was also elected to serve in the same capacity with Section VII.

Members are requested to submit to the secretary of the section any subjects upon which it is desired to have the committees pass, so that they may be docketed and placed in the hands of the committeemen without delay. The Committee on Cause and Prevention has already met and is asking for suggestions. The other committees will hold their initial meetings as early as practicable. Copies of the adopted rules of order and freight claim rules and rulings, with names of those composing the several committees, will soon be mailed to members.

Chairman Pribble announces that henceforth the cost of arbitration will be $15 per claim and the deposit on appeal $25 per claim.

Report of Elwood Collision

THE INTERSTATE COMMERCE COMMISSION has issued a report, dated September 2, and signed by W. P. Borland, chief of the Bureau of Safety, on the rear collision of passenger trains on the West Jersey & Seashore, near Elwood, N. J., on August 24, in which one passenger was killed and 25 injured. This collision was made the subject of a special report by C. S. Lake, assistant director of the Division of Operation, of the Railroad Administration which was given in the *Railway Age* of September 12, page 514. Extra (excursion) passenger train 2416 was run into at the rear by extra passenger train 5342 at 4:43 a. m., the latter train having run past distant and home automatic block signals set against it. The speed of the colliding train at the moment of contact is believed to have been about 20 miles an hour; and the leading train had been started, after a stop of several minutes, and was running at six or eight miles an hour. The three rear cars of the leading train were considerably damaged.

At Elwood station there is an automatic signal which is used also as a train order signal. When, as in this case, the station operator is off duty, a stop signal must be investigated particularly; and, this signal having been at stop, with no discoverable cause, a freight train preceding the excursion trains had stopped long enough to make sure that the operator was not on duty; and the delay of the freight had delayed several excursion trains preceding those involved in the collision. At one time there were at least three and perhaps four of these passenger trains standing short distances apart, north of Elwood. For a part of the time at least, the signal was operating properly, and whether or not more than one failure occurred could not be definitely established.

The report contains several pages of the testimony of the men on the different excursion trains, with regard to fog and other conditions; but on the whole it appears that the fog was not serious enough to prevent seeing the signals several hundred feet, and probably several hundred yards, before reaching them. The engineman of train 5342 said that he saw the stop signal when only about six feet away from it, and he appears to have admitted passing the caution signal without seeing it. His testimony, however, seems to be regarded by the investigator as not worthy of credence. He had been resting from noon the preceding day until 12:10 a. m., the 24th, when he was called for this run; but the report concludes that he had not slept over four hours during the preceding 23 hours. It is stated that he had run over this line on August 16, and on July 27; and had fired over it for eleven days in July; and apparently these runs (13 days) constituted the whole of his acquaintance with the road. The fireman was not familiar with the road; he appears to have called signals to the engineman, more or less faithfully, but his testimony is not clear.

The flagman of train 2416 is held responsible for not providing adequate protection by flag; but his testimony appears to be of little value. Because of the delays occasioned by the slackening of preceding trains he had had occasion to go back several times, but, the last time, he put down torpedoes only about 150 ft. back from his train. Asked why he went such a short distance he made no satisfactory explanation.

The engineman of train 5342 is 30 years old, and entered the service as fireman in 1912. He was promoted to engineman in May, 1918, and had a good record. He said positively that he was wide awake all the time, but the inspector believes, nevertheless, that he must have dozed off.

CHINA is planning to educate her farmers to modern methods and with that object in view is to have a demonstrating farm every fifty miles along her railways.

The Esch Bill Passed by the House

Policy Pursued of Attempting to Build on Existing Structure of Regulation Rather Than Adopt New Plan

FOLLOWING IS AN EXTRACT of the Esch bill, as submitted by John J. Esch, chairman of the House Committee on Interstate and Foreign Commerce, giving a discussion of the committee's conclusions in various phases of the proposed railroad legislation. (The bill was passed on November 17.)

H. R. 4378, introduced June 2, 1919, constituted the basis for the hearings held by the committee. Only one other bill, H. R. 8157, introduced by Hon. Thetus W. Sims, a member of the committee on interstate and foreign commerce, and presenting the so-called "Plumb plan," was introduced. The committee began hearings on July 15. These hearings continued with morning and afternoon sessions continuously until September 27. Some 3,500 pages of testimony have been printed. Exclusive of the printed hearings, numerous exhibits were filed. Proponents of various plans were first heard. These were followed by witnesses interested in special features of the railroad problem, or special interests which would be affected by the legislation. Practically every person who applied for a hearing had his request granted. Every class, condition, and interest found one or more representatives in the long list of witnesses. These witnesses came from no particular section but from every part of the country. Almost without exception, the witnesses were well versed in the subjects they sought to present. The special and general knowledge of many of them will make these hearings of especial value. No more elaborate and intensive investigation of the railroads and their relations to the government and to the public has ever been undertaken by a committee of Congress. Your committee respectfully offers these hearings for careful study not only by members of Congress but by the country generally. Scores of witnesses voluntarily appeared and gave us the benefit of their views and study. Private individuals appeared representing nobody but themselves. Labor organizations appeared through numerous representatives. The side of the shippers and of the general public was given full presentation. Days were devoted to listening to representatives of carriers by rail and water. The wire systems—telegraph, telephone, cable, and wireless made their showing.

Although H. R. 4378 (Esch-Pomerene bill) was made the basis of consideration during the course of the hearings and in executive sessions of the committee, drafts of bills presented to the committee but not introduced in Senate or House were carefully examined and their special features given due consideration. Among such drafts and bills were those presented: By the railway executives, known as the "Railway Executives plan"; by the transportation conference, being the plan indorsed by the United States Chamber of Commerce, known as the "Transportation Conference plan"; by the National Association of Owners of Railroad Securities, known as the "Warfield plan"; by the Citizens' National Railroads League, outlined in S. 2889, known as the "Amster-Lenroot plan"; by the railroad brotherhoods as set forth in H. R. 8157, known as the "Plumb plan." Several other plans less pretentious in purpose and scope were presented. In addition to these drafts and bills witnesses offered many amendments to H. R. 4378 and also amendments to the other drafts and bills. As H. R. 4378 was originally introduced it contained no provisions relating to the termination of federal control, or to the financial readjustment of the carriers with the government necessitated by such control, or for financing the carriers during the period of reconstruction immediately following the termination of such control. The bill now reported makes such provisions and the details will be hereinafter explained.

Government Ownership and Plumb Plan

In view of the fact that the President early this year delivered to the Houses in joint session a message in which he expressed his intention to return the roads to private ownership and control by the end of the current year, and in view of the desire on the part of the carriers to be so returned and the wide-spread demand among the people that federal control cease as soon as suitable legislation could be enacted, your committee has not recommended government ownership as a solution for the railroad problem. Only one bill (Plumb plan) has been introduced at this session providing for ownership of the railroads by the United States government. This bill not merely asks that the government should secure ownership and control of the railroads, but also asks for employee operation thereof. The provisions of this bill are so radical and the principles so foreign to the fundamental principles of our government that it was considered by our committee as impossible. Notwithstanding this fact, the committee devoted six days to listening to its proponents. As a result of a rigid cross-examination of these proponents, the committee was all the more strongly convinced that it was not and ought not to be the solution which should be proposed to the House.

There is appended a summary of the proposed plans for railroad legislation, prepared by Richard Waterman, secretary, Railroad Committee, Chamber of Commerce of the United States. An examination of this summary discloses the fact that the several bills and drafts or plans have certain features in common. All except the "Plumb plan" provide for ownership of all railroads of the United States by private corporations, with operation by such carriers. All advocate consolidations including the "Plumb plan." Some, including the pending bill, go only to the extent of permissive consolidation. Some provide for permissive and some for compulsory federal incorporation. All drafts, bills, and plans set forth in the above summary provide for full control by the Interstate Commerce Commission over stock and bond issues. As to wages and working conditions the various drafts, bills, and plans differ widely. Most of them provide for some form of arbitration board, with the right of appealing to some higher board, such as a "transportation board." As to the federal agency of regulation there is also much diversity of a plan and method. All of them agree, however, in the maintenance of the Interstate Commerce Commission with its present rate-making powers. In addition to the commission some of the plans provide for a federal "transportation board"; others, such as the pending bill, increase the powers of the commission instead of granting such additional powers to the "transportation board," or other like agency.

Objections to Including in the Pending Bill Some of the Features Found in One or More of the Proposed Drafts, Bills, or Plans.

1. Transportation Board

In support of a transportation board advisory to or wholly independent of the Interstate Commerce Commission, it is argued that the Interstate Commerce Commission

as now functioning has administrative as well as quasi judicial powers and that the exercise of such powers by a single agency is contrary to the spirit of our Constitution; that the commission is now overburdened with work and that its burdens will still further be increased should the pending bill be enacted; that the transportation board would be able to take a broader view of transportation problems and after investigation be able to recommend plans and policies looking to the better coordination of all forms of transportation—rail, highway, and water; that it would more wisely determine the financial needs of the carriers; could formulate the transportation budgets and declare what should be the level of rates and issue a mandate to the Interstate Commerce Commission to so adjust the level of rates as to meet the financial needs as found by the transportation board; that the grant to and exercise of such powers by the board would "fortify" the Interstate Commerce Commission in any action it might take in fixing the rates necessary to meet the board's mandate. Your committee, while conceding the merits of some of the arguments presented in support of a transportation board, concluded that such board was not necessary and for the following, among others reasons:

The transportation board with its members nominated by the President and confirmed by the Senate would in all probability be made subject to political influence, certainly more so than the Interstate Commerce Commission—a quasi judicial body; it would not and could not have for many years to come the intimate knowledge of all phases of the railroad problem, financial, commercial, operative, or otherwise. It would be impossible to so separate the functions of the transportation board from those of the Interstate Commerce Commission as to prevent duplication of work or conflict of authority. It would be but another governmental agency whose gauntlet of regulations and restraints would have to be run by the shippers of the country. With the high salaries that would have to be paid to secure competent members, with a staff of experts, accountants, attorneys, agents, and examiners, a large and increasing burden would be laid upon the federal Treasury. The Interstate Commerce Commission does not need any governmental agency to "fortify" it for the performance of its duties. No other official body in our government stands higher in the estimation of our people. Its integrity, nonpartisanship, and fearlessness in the performance of its duties can not be questioned.

The creation of a transportation board to take over the various administrative duties of the Interstate Commerce Commission with reference to safety-appliance acts, hours-of-service act, explosives act, boiler-inspection act, and other acts, can not be justified on the ground that the administration of these several acts by the Interstate Commerce Commission has not been efficient and satisfactory. It is certain that these acts can not be better administered if their administration were transferred to the board. If this be true, why transfer their administration? Under the organization now existing under the commission for the administration of these several acts, the judicial functions of the commission have not been interfered with. In fact, the commission has been aided in the performance of its judicial functions by reason of the intimate knowledge its members have acquired as to practical problems of railroad administration arising out of the administration of these several acts. In short, your committee fears that the creation of a transportation board, no matter how clearly its duties may be differentiated from those that are to be left to the Interstate Commerce Commission, will result in a division of authority and hence in a divided responsibility. If the recommendations of the transportation board are to be merely advisory to the commission, the country will gain little. If the commission ignores the recommendation of the board, occasion for misunderstanding and jealousy might arise. If, on the other hand, the recommendations of the board were in the nature of a mandate to the commission, the commission would degenerate in prestige and influence and lose the position it now occupies in the public mind. The people of the United States would not approve of any legislation which would have such a result.

2. Federal Incorporation

Federal incorporation was strongly urged before the Newlands Joint Commission in 1916 and the chief reason offered then and re-offered during the course of the hearings recently ended before your committee was to get rid of the so-called "48 masters," that is, the regulatory bodies established by the states of the Union. It is admitted that the uncertainty of regularitory laws enacted by the several states with no attempt at uniformity has proven, in many instances, burdensome. This is especially true as to safety appliances, full crews, and laws relating to physical operation. The laws of many of the states require consent of the state regulatory bodies as a condition precedent to the issue of stocks and bonds and has resulted in delay and the exaction of unjust conditions. In view of the fact that the pending bill gives the Interstate Commerce Commission exclusive jurisdiction over the issuance of railroad securities, the conflicting laws of the several states with reference to this matter could no longer be urged as an argument for federal incorporation, for Congress once occupying the field it is entitled to occupy under the commerce clause of the Constitution, the right of the states to legislate on the subject matter abates. But a principal argument for federal incorporation lies in the fact that the carriers so incorporated would be relieved, in a large measure, of the regulation by the states for they, being the creatures of the federal government, might no longer be subject to the jurisdiction of the states. Once federal incorporation is accomplished the claim would be immediately made that jurisdiction of the several states over rates, fares, charges, etc., would no longer be tenable. The primary purpose behind federal incorporation is the elimination of state control. While ultimately this may come to pass, we are convinced that the country is not yet ready to indorse legislation which would bring about so radical a change. The increasing tendency of Congress to exercise to the full the powers granted it under the commerce clause of the Constitution, and the decisions of the Supreme Court of the United States in the Shreveport and Minnesota rates cases, indicate a gradual but certain diminution of state control.

Federal incorporation necessarily involves some grave constitutional questions and eminent counsel have submitted to your committee briefs arguing with much show of reason that Congress has no authority to compel a common carrier, holding a state charter, to become federally incorporated. Without determining in our own minds the relative merits of the constitutional aspects of this question, we are persuaded that the carrying out of a plan of federal incorporation would entail large expense, long delays, and a vast amount of litigation. It is but natural that the stockholders in a common carrier chartered by a state, enjoying special privileges which that state charter conferred, would reject or refuse to entertain a proposition for exchange of their securities in the state corporation, for the securities of a federal corporation no matter how attractive such offer might be. Refusal to accept such exchange by recalcitrant security holders might be compelled on the part of the government by the right of eminent domain. This would mean litigation and would not be decided until the Supreme Court of the United States had passed thereon. The situation which will confront the carriers at the conclusion of federal control is one which requires a plan that can be readily applied. The period of reconstruction is one which should not invite litigation as

to the legal status of the carriers. It is better to deal with them under their existing charters.

Under federal incorporation a new status as to taxes both federal and state might arise. If the carriers are federally incorporated they could, and would in all probability, be taxed by the federal government. The states are jealous of their taxing powers and even under the federal control act, during the war period, the right of the states to tax the railroad properties within their boundaries was specifically recognized. Should federal incorporation raise an issue between the states and the federal government on the matter of taxation, this would constitute another reason why federal incorporation should not be included in the pending bill. For the above, among other reasons, your committee has not adopted federal incorporation and made it a part of the pending bill.

3. Consolidations

As to consolidations the plans presented to your committee differed materially. But two are recommended. One, permissive consolidation, and the other, compulsory consolidation. The pending bill favors permissive consolidation, subject to approval by the Interstate Commerce Commission. The so-called "Warfield plan" advocates the same policy. The "Amster plan" favors complete consolidation of all railroad companies into a single corporation—resulting in an end to competition. The "Senate Committee plan" (Cummins bill) and the "Railway executives' plan" favors the consolidation of existing lines into a certain number of strong competitive systems. The "Senate plan" permits voluntary consolidation if accomplished within seven years after the approval of the act. Many of the objections we have above urged against federal incorporation arising out of delays, expenses, and litigation are alike applicable to compulsory consolidations. In our opinion, the interests of the public will be better served where the consolidations are voluntarily entered into, upon approval by the Interstate Commerce Commission, and where such consolidation or merger is in the interest of better service to the public, or economy in operation, or otherwise of advantage to the convenience or commerce of the people. Under such a plan the problem of weak roads when taken in connection with the other provisions of the pending bill will, in a large measure, be capable of solution.

Your committee believing that the creation of regions for incorporation, administrative, and rate-making purposes would not permit of the fullest measure of competition and would make rate making based on average conditions of carriers within a given region an impossible task, have not deemed it wise to adopt any such plan in the pending bill. Rate making even as it now is, is a most difficult task. If rate making is to be based upon regions, or upon systems of roads within a region, the great railroad systems of the country traversing vast areas would in many instances have to be placed in one or more regions or group systems. If the regions are to follow existing trunk lines, especially in official and western classification territories, their rates would be affected by the rate structure adopted in the several regions through which they passed. This would involve differences in the application of through routes on their systems. Trunk-line roads running north and south and traversing more than one region and not, because of their length, capable of being embraced within single regions, would still further add to the complexity of the problem.

4. Regional Commissions or Commissioners

Owing to the present large task of the Interstate Commerce Commission and the fact that the pending bill will increase its duties, some of the plans presented and some of the individual recommendations urged the creation of regional commissions subordinate to the Interstate Commerce Commission, or, in lieu of such regional commissions, that regional commissioners be appointed. This phase of the problem was given very full consideration in the hearings and by the committee, with the result that the committee believed that it was better to leave the administration of the existing law and of the pending bill, should it become law, solely in the hands of the Interstate Commerce Commission. While such subordinate agencies might relieve the commission of some of its work, decisions would result which lacked uniformity. There might be as much diversity of decisions as there has been on the part of district courts with reference to war-time prohibition. Such diversity of decisions begets uncertainty, and uncertainty—especially in rate matters—is highly detrimental to the shipping interests and to the general public. Moreover, no time will be saved in the adjudication of rate cases by the creation of these subordinate agencies. The amount involved can not be the limitation, as in the case of the United States district courts, because of the fact that a rate case in which but a small amount of money is involved may involve the application of a principle of widest application. This would mean that appeals would be necessarily taken from the subordinate agency to the commission here at Washington resulting in greater delay than if no subordinate agency had passed upon the question.

Your committee believes that the increased duties imposed upon the commission by the pending bill can be met by increasing by two the membership of the committee, and the bill provides for such increase. Under the present practice, attorney examiners representing the commission take testimony as to rate matters in the field and thus obviate the necessity of witnesses coming to Washington. It is hoped that with the increase of the number of the commissioners that the practice of 10 years ago may be revived and that the commissioners may, so far as their work here at Washington will permit, visit the various sections of the country personally and hear cases. This would, in a measure, meet the complaint that the commission was not in as close touch with the shipping and consuming public as it might be.

5. Guaranty

Some of the witnesses and some of the plans favored a guaranty on the part of the government of a certain rate per cent upon the property of the carriers used in the public interest. This is what has been designated as a straight guaranty and is the plan that has been adopted to some extent in foreign countries. The success of such plan in these countries has not been such as to warrant its adoption in the United States. In most cases such guaranty has resulted in the taking over by the government of the roads. The failure of the roads to earn the guaranty created such an indebtedness as to compel the government in its own interest to take over the roads to protect the investment it already had made therein.

A straight guaranty, irrespective of the amount in percentage either on a basis of capitalization or of valuation, is destructive of all initiative and would lead to extravagance, inefficiency, an increased cost of transportation, and to government ownership.

A modified form of guaranty has been incorporated in some of the plans above referred to and has been suggested by individual witnesses. It consists in dividing the railroads of the country into groups, or by regions, and then requiring the maintenance of a general rate level by the Interstate Commerce Commission under a statutory rule prescribing that rates shall, as nearly as possible, produce not less than a certain per cent on aggregate investment account of the railroads in each group or system; or, that the Interstate Commerce Commission under a statutory rule of rate making should provide a rate structure designed to yield a certain percentage on the aggregate fair value of the roads in each traffic section of the country. This form of

guaranty is based upon the ability of the commission to so fix the level of rates within each group system, or region, as will produce the percentage on property investment account, or on valuation, as fixed by Congress. We question the ability of the commission, or any regulatory body, to accomplish this result. It is well known that freight and passenger revenues fluctuate from year to year, and even during a single year. These fluctuations may be due to drought—affecting crops throughout great areas—or may be due to crop failures due to pests, or may be due to floods destroying tracks and bridges and delaying traffic, or may be due to economic causes national or international in scope. The difficulty, and, in fact, the impossibility of maintaining the level of rates required to produce the percentage rate fixed by the statute should make us hesitate to adopt any such plan. If the rate level must be changed to meet such fluctuations there can be no stability of rates. As business is interested almost as much in the stability as in the amount of the rates business would inevitably suffer as the result of any such plan. By making a given region, or traffic area, a unit within which the required rate level is to be maintained, a uniformity of kind and quantity of production would seem to be necessary.

But in a country like ours with such diversified interests and because of the large extent of the territory which each unit or traffic area under the plans proposed would have to cover, it would be difficult for the Interstate Commerce Commission to make a fair estimate of average conditions. If New England is to constitute a region, or traffic section, the commission would have to consider in arriving at an average the agricultural and timber products of northern Maine, and the manufacturing production in the densely populated States of Massachusetts and Connecticut. It seems to the committee that such a plan is unworkable and imposes upon the commission an impossible task. It is contended that this plan is not in fact a guaranty, in that the government is not responsible for losses. Yet the government, through the commission, assures the security holders of the railroads that it will, under all circumstances and regardless of fluctuations in traffic, so adjust the rates that they will produce 6 per cent, for example, on the aggregate property investment account. This is nothing less than a guaranty. The objections to a straight guaranty based on the fact that such guaranty destroys initiative and leads to extravagance and inefficiency, and to government ownership is applicable to this modified form of guaranty. But the plan proposed seeks to meet the objection by permitting the carriers to retain a certain portion of the excess over the guaranteed return. In our opinion the retention of only a portion of the surplus will not be sufficient to promote enterprise, develop initiative, and preserve the morale of the administrative and operative forces of the carriers. Such a plan is not new in its main details. It has been tried elsewhere with the result that no surplus has been developed. On the other hand, the prospect of sharing the surplus with the government, or with labor, leads to extravagance in expenditures. This has been the experience of the state of New Hampshire and the Republic of Brazil.

This question of sharing any excess over the fixed return as established by the statute gives rise to the question of the constitutional right of Congress of making any such law. Very distinguished counsel in briefs and orally have contended that as the rates fixed by the Interstate Commerce Commission are the legal rates, whatever return to the owners such rates produced as a matter of law, belonged to them and could not, therefore, be taken away from them under any plan providing for the division of the excess—that the deprivation of any part of such excess was in violation of the fifth amendment to the Constitution. Without passing upon the legality of this portion of the guaranty plan we have felt it better and wiser to continue the methods prescribed by the interstate commerce act and followed for years—requiring the commission upon the initiation of the carriers to determine the justness and reasonableness of rates. While this guaranty plan is propounded with much confidence as the solution of the problem of the so-called "weak sisters," we believe that such elaborate machinery—so elaborate as to be unworkable in some of its parts—will result in disappointment. We believe that equally good, if not better, results can be obtained by the provisions of the pending bill. These provisions would authorize the commission to permit the voluntary consolidation of the weaker with the stronger lines. By the application of minimum as well as maximum rates to permit a longer and weaker line to get a greater share of the business than heretofore, and with the initiative in the commission to establish joint rates and through routes, and the division of the rates, would still further aid the short or weaker lines.

There is another, and fundamental, reason why your committee opposes the fixing by act of Congress of a percentage return. This reason is political. As one Congress can not bind its successor, this Congress, should it fix the percentage return at 6 per cent, can give no assurance that this rate will remain fixed or continue for any stated period. If, because of political agitation, a majority of the people, or any considerable portion of them, are led to believe that the percentage rate fixed by this Congress is excessive, the percentage rate might, and in all probability would, become a political issue of large importance and wide-reaching effect. This would result in dragging rate making into politics and would endanger the stability of the rate structure. We believe that existing law as to the standard of rates, and that the rates that are fixed pursuant to such standard, should be continued. Neither the standard nor the rate structure prescribed by the commission thereunder have heretofore been the object of political strife.

The Pending Bill

The policy pursued by the committee in framing the pending bill was not to adopt new and untried plans, but rather to build on a structure already in existence, whose foundations were well laid. In the period of reconstruction when conditions are still unsettled and the public mind is in more or less of ferment resulting from the World War, it was thought wise not to make experiments with the largest single industry in the United States, outside of agriculture, but what the committee sought to do in the bill now presented, was to provide for an adjustment of financial relations between the carriers and the government arising out of federal control and to provide, during the brief period of reconstruction, for financial support and for temporary relief in the way of loans, as might be asked for by the weaker roads. In addition to these provisions of a financial character, the bill seeks to preserve to the people such advantages arising out of unified management and control as have been demonstrated during the last two years, having more particular reference to joint use of terminals, a greater degree of coordination between rail and water carriers—especially on inland waters—and consolidations together with pooling of traffic, earnings, and equipment.

The Elimination of Wire Systems and Water Transportation

The bill H. R. 4378 as originally introduced placed wire systems (telephone, telegraph, cable, and wireless) under the full jurisdiction of the Interstate Commerce Commission and applied to them as common carriers the provisions of the interstate commerce act, and also applied to them the provisions of the bill with reference to requiring a certificate of convenience and necessity for any extensions or abandonments, and also the provision requiring certificates from the commission for issues of stocks and bonds. As a result of

the hearings and a fuller consideration of the situation, the committee left the control of wire systems practically as it was under the interstate commerce act prior to federal control. There was practically no demand for placing with added powers the wire systems under the commission. Since 1910, when the wire systems were declared to be common carriers and the commission was granted authority to pass upon the justness and reasonableness of their rates, only a half dozen cases have been brought before the commission. Moreover, over 80 per cent of the business transacted by telephone companies is intrastate and therefore very largely under the jurisdiction of state regulatory bodies.

As there are over 10,000 telephone companies in the United States and most of these of small capitalization, it was not thought wise to subject these thousands of small companies, who, because of their various exchanges, might be doing an interstate business, to the restrictions, obligations, and penalties of the interstate commerce act. While the situation as to telegraph companies is somewhat different, in that they do a larger percentage of interstate business, there are but two large companies, and if their rates are unjust and unreasonable, the present interstate commerce act affords proper remedy. But the committee was also persuaded that wire systems should be eliminated from this bill, as the bill deals primarily with railroads, and it was not thought wise at this time to complicate the solution of the railroad question with the peculiar problems connected with the regulation of wire systems. The better course to pursue would be at a later date to take up the whole situation as to wire control and deal with it in a separate measure.

The original bill (H. R. 4378) gave to the Interstate Commerce Commission jurisdiction over transportation by water. Under the existing law the commission had jurisdiction over water transportation only when such transportation constituted a part of a through route and gave it no jurisdiction over port-to-port traffic. In the original bill jurisdiction was given over port-to-port traffic on inland waters, the Great Lakes, and the coastwise trade, including Alaska. Much opposition was developed in the hearings against the water transportation features of the bill. Opponents of these provisions contended that water transportation, especially coastwise, should remain free and unrestricted as heretofore, and that if jurisdiction were given to the commission our shipping interests would be seriously hampered and in some instances destroyed. For these and other reasons the committee eliminated the provisions giving jurisdiction to the commission over transportation by water, retaining, however, those provisions relating to physical connection between rail and dock and the construction of docks. The bill makes provision for the continued operation of government tows and barges on the Black Warrior and Mississippi rivers, placing the operation thereof in the hands of the War Department, but giving to the commission authority to regulate the rates, fares, charges, etc.

Important Features of the Bill

The bill is divided into four titles for purposes of clarity and easier reference. Title I deals with definitions. Title II deals with the termination of federal control, government-owned boats on inland waterways—which has already been referred to—settlement of matters arising out of federal control, inspection of the records of carriers because of action arising during federal control, refunding of carriers' indebtedness to the United States, continuing in effect existing rates, guaranty to railroads after termination of federal control, new loans to railroads, and execution of the powers of the President.

Under the terms of the bill (sec. 206) "all rates, fares, and charges, all divisions of joint rates, and all classifications, regulations, and practices in anywise changing, affecting, or determining any part or the aggregate of rates, fares, or charges, or the value of the service rendered, which, immediately preceding the termination of federal control, are in effect on the lines of carriers subject to this act, shall continue in force and effect until thereafter changed by or pursuant to authority of law." Without such a provision the rates, fares, charges, etc., authorized under federal control would terminate immediately upon the termination of federal control and would revert to the status existing prior to time they were changed or increased by order of the President. In view of the enormous increase in operating costs of carriers due to increased wages and cost of materials, a restoration to the former level would result in such an enormous decrease in the revenues as would render it utterly impossible, even for the stronger railroads, to meet operating expenses. By the insertion of the above section the existing rates, fares, charges, etc., are to continue in force and effect until changed by or pursuant to authority of law—that is, until changed by the appropriate regulatory body.

The financial sections of Title II relating to: Refunding of carriers' indebtedness to the United States; guaranty to railroads after the termination of federal control, and new loans to railroads, require further explanation.

Refunding of Carriers' Indebtedness to the United States

Section 205 provides for the refunding of the indebtedness of the carriers to the United States arising out of matters of federal control. The indebtedness of the carriers for additions and betterments made during federal control and for advances made to it by the United States, and chargeable to capital account, shall at the carrier's request, be extended for 10 years, or a shorter period at the carrier's option, with interest at the same rate as that fixed by the President, under section 4 of the federal control act, on the cost of additions and betterments made during federal control by order of the President. First-mortgage bonds are to be taken if possible, and if not, then the security is to be such as the President may prescribe. Any other indebtedness of the carrier to the United States is to be evidenced by notes payable on demand with interest at 6 per cent per annum.

The President is authorized to set off against such indebtedness any indebtedness of the United States to the carriers to the extent that such set-off is permitted under the terms of the standard contract between the carriers and the United States, in such manner as to leave the railroads with sufficient funds to pay their fixed charges and dividends and have a month's working capital.

Guaranty to Railroads After Termination of Federal Control

Section 207 provides that during the six months following the termination of federal control the United States guarantees to each railroad at any time under federal control that its railway operating income for such guaranty period as a whole shall not be less than the average of its railway operating income for the three corresponding periods of six months each during the three years' test period ending June 30, 1917. If the road was not meeting expenses during the test period the guaranty is of the amount by which the deficit for the guaranty period exceeds the average deficit for the three corresponding periods during the test period.

In order to prevent excessive charges to operating expenses and for maintenance of way and structures or maintenance of equipment during the guaranty period, the section provides that the amount of such expenditures, for the purposes of the guaranty, shall be limited by the Interstate Commerce Commission in such manner as to correspond as closely as may be to the average expenditures for such purposes during the test period.

In order that the carriers may have sufficient sums to meet

their fixed charges and operating expenses during the guaranty period the Secretary of the Treasury, on certificate from the Interstate Commerce Commission, may make advances during the period of the guaranty on proper security being given that, if the amount of the advance exceeds the amount of the guaranty when that is ascertained, the difference shall be paid to the United States.

In order to prevent the railroad from relying on the guaranty and making no effort to increase its rates until the guaranty period has expired the section provides that the guaranty shall not be given to any road which does not within 60 days after the termination of federal control file with the Interstate Commerce Commission schedules embodying general increases in its rates.

New Loans to Railroads

Section 208 provides a revolving fund of $250,000,000 for the purpose of making loans to railroads during the two years' period following the termination of federal control. Such loans shall be made by the Secretary of the Treasury for terms not exceeding five years with interest at 6 per cent and the security given must be adequate to secure the loan.

Title III. Disputes Between Carriers and Their Employees

One of the most difficult phases of the pending railroad legislation is to provide for a fair and just method for the adjudication of disputes between the carriers and their employees arising out of wages, working conditions, and hours of service. It is agreed on every hand that the tribunal created to decide disputes and to reduce or prevent strikes must be of such character as to create respect on the part of the parties to the controversy, as well as on the part of the general public. Many plans were suggested, ranging from those which provided only for mediation and conciliation, to those making strikes, pending, or after an award, illegal and penalizing disobedience of the award. An intermediate plan, patterned after the Canadian arbitration act, proposed to prohibit a strike or lockout pending consideration of the matter in dispute by the arbitration board, was also considered. Your committee believed that fulfillment of contracts between carrier and employee is fundamental and that organized labor can not win or retain public confidence where contracts duly entered into are violated without notice or without sufficient cause.

The public expects the carrier to fulfill to the letter its wage contracts and knows of no sufficient reason why employes should not, with a full sense of responsibility, fulfill their part of the contract. It is true that many of the recently organized unions among railroad employees, with little or no experience in the ranks of organized labor, have not felt the binding effect of contract obligations, or been as scrupulous in this connection as the members of the older organizations represented by the four brotherhoods. Nevertheless, these newer organizations should submit to the discipline prescribed by their own rules and regulations and should be made to feel that they injure their own cause by a nonobservance of their contracts. The committee, therefore, has adopted provisions authorizing the bringing of actions for damages by the parties injured because of the violation of contracts or agreements relating to wages, hours of service, and working conditions. After hearing numerous witnesses and after a full view of the situation, your committee deemed it unwise to include in its plan an anti-strike provision. The committee is eager and willing to go as far as it is possible to go to enact a just, workable, and effective law.

Believing in the potency of public opinion based upon the findings and recommendations of a disinterested tribunal, the committee advocates the plan of conciliation and arbitration, and to this end presents the following plan:

Railway Labor Adjustment Board

The board shall be composed of a group of employee members consisting of one representative for each union, who shall be a member thereof, to be appointed by its chief executive, and a group of members representing the employers or carriers. The employer group is also to have a representative for the express companies, and one for the sleeping-car company. If either the employee or employer group does not appoint a representative on the Adjustment Board within a specified time, the President is to make the appointment. This Adjustment Board, consisting of 30 or more members and representing both groups, is to constitute a panel from which, whenever such board shall receive for hearing and decision any dispute between a carrier and union or member thereof, the Adjustment Board shall refer such dispute to a conference committee composed of an equal number of representatives of each group. This conference committee is to use due diligence in reaching a decision upon the dispute and is to report its decision to the parties interested and to the Board of Labor Appeals and also to the President, making public its findings and recommendations in such manner as the Adjustment Board may determine. The Adjustment Board neither hears nor decides any such dispute nor does it review the decision of the conference committee, but the decision of the committee is made in the name and constitutes the decision of the Adjustment Board. The Adjustment Board is to hold its first meeting within six weeks after the passage of this act at Chicago, Ill., and maintain its central offices in that city. But the Adjustment Board, or any committee thereof, may meet at such other places as it may determine. The board is to determine all matters relating to its own procedure and to appoint its own employees. The salaries of members are paid by the constituent elements of the employee and employer groups.

Railway Board of Labor Appeals

The bill further provides for the establishment of a Railway Board of Labor Appeals to be composed of three divisions of three members each. One division is composed of three members representing the unions, one to be appointed by the President of the United States from each of three sets of six nominees offered by the group of employee members of the Adjustment Board. Another represents the carriers and its members, all also appointed by the President from the nominees offered by the employer members of the Adjustment Board. The third division represents the public, and is also appointed by the President, in such manner that the agricultural interests, commercial interests, and unorganized labor shall be represented. No member of the Appeals Board shall be a member of the Adjustment Board nor shall any member of the Appeals Board, during his term of office, be a member or in the employ of, or hold any official relationship to any union or carrier. Members of the Appeals Board shall after the first appointments hold for terms of six years, and shall receive from the United States an annual salary of $10,000. Members may be removed from office for inefficiency, neglect of duty, or malfeasance in office, but for no other reason.

While all members of the Board of Labor Appeals shall participate in the hearing and consideration of any dispute certified to it by a conference committee of the Adjustment Board or by the President, only the members of the divisions representing the unions shall decide any such dispute or vote in respect thereto. The decision of the Appeals Board requires the concurrence therein of at least five of the six members of the divisions representing the unions and car-

riers. The decisions shall immediately be communicated to the parties to the dispute, to the Adjustment Board, and to the President, and shall be made public in such manner as the Appeals Board may determine. The Appeals Board shall also maintain central offices at Chicago but it may meet at such other places as it may determine. The board shall investigate and study the relations between carriers and their employees, particularly questions relating to wages, hours of labor, and other conditions of employment and the respective privileges, rights, and duties of such employers and employees, and shall gather, compile, classify, digest, and publish from time to time data and information relating to such questions. Any party to any dispute to be considered by a conference committee of the Adjustment Board or by the Appeals Board shall be entitled to a hearing either in person or by counsel. Full authority is granted for the production of any books, paper, document, or other evidence; securing the attendance of witnesses, and the taking of depositions. Failure to comply with any subpœna or with any order of the court in cases of contumacy is made punishable.

Any carrier which breaks any term of contract of hire based upon the decision of the Adjustment or Appeals Board shall be liable for full damages to the union member arising from such breach. In case any union which authorizes any member to break any term or terms of any such contract of hire, or in case such contract is modified by any decision of the Adjustment Board or Appeals Board, then of such contract as so modified, or which aids, abets, counsels, commands, induces, procures, or consents to, or conspires to effect any such breach by its member shall be liable for the full damages to the carrier arising from the breach. For the purpose of enforcing such liability (1) service of papers may be made upon the chief executive or other principal officer of the union; (2) no action for such damages shall abate by reason of the death, resignation, removal, or legal incapacity of any official or member of such union or by reason of any change in the membership thereof; (3) such action may be commenced and prosecuted against the union in its recognized group name; and (4) satisfaction of any judgment rendered against the union shall be limited to the common property thereof, and no insurance, pension, or other benefit fund shall be held a part of such common property. Expenses of the Adjustment Board and the Appeals Board, including salaries of secretaries and other employees and necessary expenses, shall be paid by the Federal Government. The sum of $100,000 is appropriated for the salaries and expenses of the Appeals Board for the fiscal year ending June 30, 1920, and the sum of $50,000 for the Adjustment Board.

Title IV

Title IV relates to amendments to the commerce act. Only such amendments as materially change existing law will be given particular attention.

In paragraph 4 of section 400 it is made the duty of every common carrier "in case of joint rates, fares, or charges, to establish just and reasonable divisions thereof as between the carriers subject to this act participating therein which shall not unduly prefer or prejudice any of such participating carriers." The commission upon complaint or upon its own initiative can compel a division of the rate. This is a matter in which the so-called "short-lines" are vitally interested. Ofter short lines refrain from making complaint against their trunk line connection because of the fear of giving offense. By giving the commisssion the initiative in such matters the short line is relieved in this respect.

Car Service

Section 402 amends the car service act of May 29, 1917, in several particulars. Originally the term "car service" included "the movement, distribution, exchange, interchange, and return of cars used in the transportation of property." As amended the term is made to include the use, control, supply, movement, distribution, etc., not only of cars, but of locomotives and other vehicles. It is further extended to include, "the supply, movement, and operation of trains by any carrier by railroad subject to this act," and so require every carrier by railroad "to furnish safe and adequate car service." In a recent decision of the Supreme Court of the United States it was held that under the commerce act the commission does not have the authority to order a common carrier to supply itself with certain cars. The pending bill gives the commission such authority. The same section makes it the duty of every common carrier, or railroad, "to make just and reasonable distribution of cars for transportation of coal among the coal mines served by it, whether located upon its line or lines of customarily dependent upon it for car supply. During any period when the supply of cars available for such service does not equal the requirements of such mines it shall be the duty of the carrier to maintain and apply just and reasonable ratings of such mines and to count each and every car furnished to or used by any such mine for transportation of coal against the mine." During federal control such a rule has been followed by the director general and the committee follows the decisions of the Interstate Commerce Commission and the present practice and has put in form of law what had been enunciated as proper practice.

Whenever the commission is of the opinion that shortage of equipment, congestion of traffic, or other emergency requiring immediate action exists in any section of the country, it is given authority to suspend the operation of any or all rules, regulations, or practices with respect to car service for such time as may be determined and to make such just and reasonable directions with respect to car service "without regard to the ownership of locomotives, cars, and other vehicles, and to handling, routing, and movement of traffic during such emergency."

Joint Use of Terminals

The commission is further given the authority to require such joint or common use of terminals as in its opinion will best meet the emergency and serve the public interest and grant such preferences or priority in transportation, embargoes, or movement of traffic under permits, at such time and for such periods as it deems necessary to meet the emergency. Some objections have been urged against these provisions with respect to car service on the part of owners of private cars. In view of the recommendations of the commission in its report on private cars in 1918 holding that private cars perform a distinct public service and facilitate transportation, it is believed that the owners of private cars need have no fear if the above provisions as to car service are enacted into law.

Extensions and Abandonments

Section 402 further provides that extensions of an existing railroad or the construction of a new line or the abandonment of a line shall not be permitted unless and until there shall have been obtained from the commission a certificate that the present or future public convenience and necessity require or will require such construction or abandonment. A like provision can be found in the statutes of a number of states. Your committee believes that the requirement of such a certificate, so far as extensions are concerned, will tend to stabilize existing conditions and prevent the construction of unnecessary or parallel lines which, without any reasonable hope of profitable operation, would become a burden to the public. A similar provision in the laws of several states has proven successful in preventing the construction of weak lines. This provision of the bill, however, does not extend to

the construction or abandonment of sidetracks, or of spur, industrial, team, or switching tracks, or of street car and electric interurban lines, if such tracks or lines are located or are to be located wholly within one state.

Terminals

Under section 405 the commission may require the terminals of any carrier to be open to the traffic of other carriers upon such just and reasonable terms and conditions, including just compensation to the owners thereof, as the commission, after full hearing, upon complaint or upon its own initiative, may by order prescribe. The advantages of joint use of terminals have been fully demonstrated under federal control, and it is to preserve these advantages that the above power has been granted to the commission in this bill. While the question of compensation may present some difficulties, these can be overcome. The right of the individual carrier to the exclusive use of its own property should be made to yield to the superior right of the public. In these days, when the cost of terminals in the larger cities is almost prohibitive, the joint use of terminals under regulations prescribed by the commission will result in large economies in operation, and in many instances add to the convenience of the public.

Consolidations, Mergers, and Pooling

Ever since 1887, when the original commerce act was enacted, pooling of traffic earnings or equipment has been prohibited. Our experience during the war, when the railroads of the entire country were operated as a unified system, consolidations and poolings became a necessity. Many of the objections formerly raised have in many respects lost their significance. Your committee, therefore, (sec. 407), permits unification, consolidation, or merger by purchase, lease, stock control, or in any other way, also the pooling of traffic, earnings, or facilities upon application to the commission and its findings that these will be in the interest of better service to the public or economy in operation, or otherwise be of advantage or convenience to the commerce of the people. In this connection the commission is given the authority to approve and authorize the unification, consolidation, or merger of the four express companies into the American Railway Express Company upon application by such company.

Amendment to the Panama Canal Act

The Panama canal act of August 4, 1912, is amended (sec. 408) so as to permit the ownership and operation of vessels owned by rail carriers even where such vessel may compete with the rail line, except where such vessel passes through the Panama canal. The testimony before the committee indicated that the divorcement of vessels from their rail owners, except where such vessel passed through the Panama canal has been of no public benefit. On the contrary, such divorcement has proven a serious loss to shipping along the Atlantic coast and on the Great Lakes and to the communities served by such shipping. The enforcement of the Panama canal act caused rail lines, such as the Erie, New York Central, Lehigh Valley, Pennsylvania, and other lines to dispose of their lake vessels. Only two vessels owned by rail carriers are now plying on the Great Lakes; in consequence, the packet freight business has been reduced to a minimum, to the great loss of the cities along the Great Lakes. Section 408 permits existing service by water to continue and also permits new service if, in the opinion of the commission, such service will be in the interest of the public.

Connections Between Docks and Rail

Section 411 extends to the provisions of the Panama canal act of 1912, in the matter of a better coordination of rail and water transportation. To this end the commission is authorized to direct either or both the rail and water carrier, individually or in connection with one another, to construct a suitable dock and construct and connect with the lines of the rail carrier a track or tracks to the dock. Such dock shall be considered a terminal with full authority in the commission to determine and prescribe the terms and conditions upon which these docks and connecting tracks shall be operated, and to determine what sum shall be paid to or by either carrier in the construction of such dock and track.

Minimum and Maximum Rates

Under section 412 the commission is authorized to fix minimum as well as maximum rates. Under the Interstate Commerce act the commission ever since 1887 has only been empowered to declare the maximum rate to be charged. As a result of the testimony the committee believes that the commission should also be granted authority to prescribe joint rates, or maximum, or minimum, or maximum and minimum joint rates. With this power the commission could prevent a rail carrier from reducing a rate out of proportion to the cost of service, by establishing a minimum, below which such carrier could not fix its rate. It would also prevent a rail carrier from destroying water competition between competitive points by prohibiting such carrier from so reducing its rates as to destroy its water competitor. Circumstances have been cited where the rail carrier destroyed its water competitor by such a reduction of rates as to make it impossible for the water carrier to survive. When once competition was thus driven off the rail rates would be restored or would rise to even higher levels. The power to fix minimum rates will also enable the commission to adjust many cases under the fourth section of the commerce act, known as the "long and short haul clause."

Adjusting Conflicts Between Inter and Intra State Rates

Whenever, in any investigation under the provisions of the Commerce act, or in any investigation instituted upon petition of the carrier concerned, there shall be brought in issue any rate, fare, charge, classification, regulation, or practice made or imposed by authority of any state, the commission (sec. 415) before proceeding to hear and dispose of such issue shall cause such state or states to be notified of the proceeding. The commission can ask the state regulatory body to "sit in" with it and hold joint hearings and to avail itself of the co-operation, services, records, and facilities of such state authorities. After such hearing the commission shall make such findings and orders as may in its judgment tend to remove any undue advantage, preference, or prejudice as between persons or localities in state and interstate or foreign commerce. The provision practically enacts into law the decision of the Supreme Court in the so-called "Shreveport" case. Any undue burden upon interstate or foreign commerce is forbidden and declared to be unlawful. It is believed that the provisions of this section will have a beneficial and harmonizing effect and will tend to reduce the number of so-called "Shreveport" cases, while at the same time recognizing the regulatory bodies of the several states.

Rule of Rate Making

Section 417 provides as follows:

"The commission shall be charged with the duty and responsibility of observing and keeping informed as to the transportation needs and the transportation facilities and service of the country, and as to the operating revenues necessary to the adequacy and efficiency of such transportation facilities and service. In reaching its conclusions as to the justness and reasonableness of any rate, fare, charge, classification, regulation, or practice, the commission shall take

into consideration the interest of the public, the shippers, the reasonable cost of maintenance and operation (including the wages of labor, depreciation, and taxes), and a fair return upon the value of the property used or held for the service of transportation."

Suspension of Rates

Paragraph 4 of section 417 changes the existing law with reference to the period of suspension by the commission. Under existing law there is a fixed period of four months which upon application may be extended for an additional six months, making a period of 10 months not including the period of 30 days notice. It has been contended that this is too long a period. The pending bill limits this period of suspension to 120 days. If at the conclusion of this period the commission has not passed upon the lawfulness of the proposed change of rate, fare, charge, classification, regulation, or practice, the commission may require the carrier or carriers to keep accurate account in detail of all amounts received by reason of such increase, where an application for an increase is made, to the end that a refund with interest may be made to the persons interested.

Under section 419 where a carrier suffers loss by reason of the diversion or delivery by one carrier to another contrary to routing instructions in the bill of lading, unless such diversion or delivery is in compliance with a lawful order, rule, or regulation of the commission, such carrier shall have a right of action for the recovery of loss of full freight charges by reason of such diversion or delivery. This provision is inserted in order to put an end to a practice frequently indulged in and mainly by the larger lines to the detriment of the short lines.

Size of Divisions

Paragraph 5 of section 429 changes the existing law by permitting the division of valuation of railroad property under the physical valuation act to consist of three instead of five members. All other divisions of the commission consist of three members. Owing to the increased duties which will be imposed upon the commission by the enactment of the pending bill, it was deemed advisable to permit the valuation work to be placed in charge of a division of three members. This will not mean that this division will finally determine the principles of valuation. Its findings and recommendations will be passed upon by the full commission.

Stock and Bond Issues

Section 437 gives the commission control over stock and bond issues. In 1914 and again in 1916 the House passed bills containing almost the identical provisions now embraced in section 437. These provisions are familiar to the House and need not be dwelt upon. Suffice it to say that practically all of the witnesses indorsed the provisions of section 437. Had such provisions been on the statute books during the last 10 years the financial wrecking of such roads as the Frisco, the Rock Island, Pere Marquette, Pittsburgh Terminal, the New Haven, and others, would not have been possible. Provisions similar to those contained in section 437 are found in the statutes of several of the states. The experience of these states with the regulation of stock and bond issues has proven successful. Without federal control the carriers would have to be subjected to the diversified requirements of the several states. These requirements have been burdensome to the carriers and resulted in expense and delay. The enactment of the pending bill will put the control over stock and bond issues exclusively in the hands of the federal government and will result in uniformity and greater promptness of action.

Enlargement of the Commission

Section 438 enlarges the Interstate Commerce Commission so as to consist of 11 members instead of 9 and increases the salaries of the members from $10,000 to $12,000 per annum. In view of the provisions of the pending bill giving the commission increased duties over car service and operation and the provisions giving it control over stock and bond issues, the committee felt that it was absolutely necessary to increase the membership of the commission so there could be created in it a division which could take charge of the issuance of securities.

Automatic Train Control

Section 439 gives the commission after investigation authority to order any carrier by railroad to install automatic train-stop or train-control devices, which comply with specifications and requirements prescribed by the commission. Automatic train-control devices have passed the experimental stage and in the interest of the public as well as of the safety of employees, your committee believes that some action should be taken by Congress which would hasten the installation of such safety devices. In the end the installation of such devices would be an economy to the carrier. The annual losses, by reason of collisions, which would be prevented by the installation of automatic train-stop and train-control devices, would equip many miles of road. The saving of lives as well as property should be a sufficient justification for the enactment of this section.

Bills to Authorize Commission to Require Automatic Train Stops

A section of the Esch bill for the further regulation of the railroads which was passed by the House on November 17 authorizes the Interstate Commerce Commission after investigation to order any carrier by railroad subject to the act to regulate commerce, within a time specified in the order, to install automatic train stop or train control devices which comply with specifications and requirements prescribed by the commission, upon the whole or any part of its railroad, such order to be issued and published one year before the date specified for its fulfillment. It is provided, however, that a carrier shall not be held to be negligent because of its failue to install such devices upon a portion of its railroad not included in the order and any action arising because of an accident happening upon such portion of its railroad shall be determined without consideration of the use of such devices upon another portion. Any common carrier which refuses or neglects to comply with any order of the commission made under the authority conferred by this section, would be made liable to a penalty of $100 for each day that such refusal or neglect continues, to be recovered in a civil action brought by the United States. In its report referring to this section, the committee said:

"Automatic train-control devices have passed the experimental stage and in the interest of the public as well as of the safety of employees, your committee believes that some action should be taken by Congress which would hasten the installation of such safety devices. In the end the installation of such devices would be an economy to the carrier. The annual losses, by reason of collisions, which would be prevented by the installation of automatic train-stop and train-control devices, would equip many miles of roads. The saving of lives as well as property should be a sufficient justification for the enactment of this section."

Another bill, introduced by Representative Vestal on November 10, to require railroads to provide such service, way, structures, facilities, rules and operating methods as shall promote the safety of employees and passengers, also contains a section somewhat similar to that in the Esch bill, authorizing the commission to require carriers to install an automatic train-control system, such an order to be issued

at least six months before the date specified for its fulfillment.

The bill also authorizes the commission to require carriers to adopt a block signal system on not more than one-fourth of its entire line during any calendar year, to require the installation of interlocking plants or systems at railroad crossings at grade, railroad junctions, terminals, cross-overs, switches, draw-bridges, and other similar locations where, in its judgment, such a system is necessary, and wherever there shall exist on a railroad line where the block system is in use or is to be adopted in accordance with the act, any switch, draw-bridge, railroad crossing or street railroad crossing not provided with adequate signals, the commission would be authorized to require the carrier to submit for approval a rule or code of rules regulating and limiting to a safe rate the speed of all trains passing or approaching such point.

Another section would authorize the commission after hearing and notice to issue orders fixing, determining and designating changes, improvements and repairs to be made in the way and structures, equipment, supplies and operating rules governing the movement of trains.

Another section authorizes the commission in its discretion to conduct experimental tests of automatic train control devices or systems and to require the installation and use for development purposes of any automatic train control devices or systems on any line or portion of a line.

Tariffs to Be Prepared for Resumption of Private Operation

By way of preparation for the return of the railroads the Interstate Commerce Commission on November 22 issued the following instructions to all carriers of passengers or property that are subject to the act to regulate commerce to get their tariff files with the commission in proper shape:

"The act to regulate commerce requires all common carriers of property and passengers that are subject to the provisions of the act to publish, post and file with the commission schedules of their fares and charges. It prohibits such carriers from engaging in transportation except under schedules so published, posted and filed; and from charging, demanding, collecting or receiving a greater or less or different compensation for transportation or any service in connection therewith than is provided and specified in the schedules on file with the commission.

"Each such carrier must publish and file such schedules for itself, or by power of attorney or concurrence, in form required or approved by the commission, authorize publication by an agent, or concur in the publication of another carrier.

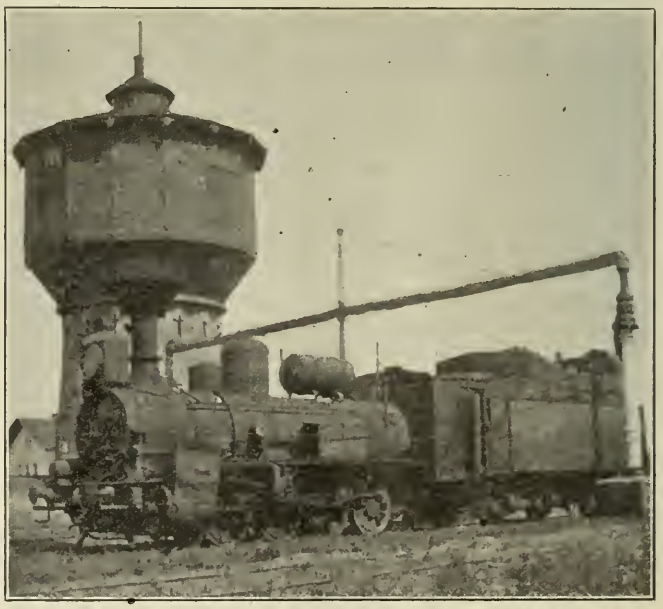
"The forms of powers of attorney and concurrences approved and prescribed by the commission and regulations in connection therewith appear in the commission's regulations governing the construction and filing of freight tariffs and classifications and passenger fare schedules, Tariff Circular No. 18-A.

"After the carriers generally were taken under federal control the Railroad Administration decided that it was not necessary for carriers under federal control to exchange concurrences with each other inasmuch as they were all operated by one administration and as part of a unified system. There is a probability that the carriers will be released from federal control at a not distant date. After their return to private control it will be necessary for all carriers and their agents to conform to the commission's regulations in connection with schedules thereafter published, including the requirement that the schedule shall show the names of all participating carriers and the forms and numbers of the powers of attorney or concurrences under which that participation is authorized. It is, therefore, important that before federal control terminates complete arrangements for exchange and filing of powers of attorney and concurrences shall be made, and that in every instance in which a carrier is shown as participant in a schedule filed by an agent or another carrier and it is desired to continue that participation it shall be authorized by power of attorney or concurrence that is on file with the commission.

"Powers of attorney and concurrences that were on file with the commission when the carriers were taken under federal control and that have not been revoked prior to the termination of federal control will be still on file and available for use just as if there had been no interruption of private control. In instances where such instruments have been or are revoked or where it is desired to publish joint rates, fares or charges that are not covered by such powers of attorney or concurrences it will be necessary to execute and file new powers of attorney or concurrences.

"It is very desirable that this matter should have prompt and careful attention in order that controversies as to the legality of a schedule may be avoided.

"It is proposed in a bill which has been receiving consideration in Congress to provide that all rates, fares, and charges, divisions of rates, classifications, regulations and practices, which may be in effect immediately preceding the termination of federal control, shall continue in force and effect until changed by or pursuant to authority of law. If that shall become law prior to the termination of federal control, it will, of course, be conclusive on that point, but if that provision shall not be contained in the law, or if no legislation is enacted prior to the termination of federal control, the commission will adopt and follow the rule above referred to. That is, that unless it shall conflict with a law that may be enacted the commission will hold that the tariffs on file and in effect at the termination of federal control will be and remain the tariffs of the carriers participants therein until they are changed by or pursuant to authority of the law, and that all changes therein must be made under and in conformity with the commission's tariff regulations or in accordance with special permissions granted by the commission."



Baikal Engine and One of the Curious Water Tanks in Use on the Trans-Siberian

The Test was Witnessed by Many Prominent Men

Test of New C. M. & St. P. Electric Locomotive

Two Steam Motive Power Units Used to Try Capabilities of Giant Electric Competitor

TESTS WERE MADE on one of the five electric locomotives built by the General Electric Company for the Chicago, Milwaukee & St. Paul at Erie, Pa., on Friday, November 7. The large number of prominent engineers and railroad men present at the demonstration was evidence of the interest taken in the subject of electrification. The representation included 11 American railroads, two Canadian railroads, the Chilean Railway Commission, manufacturers from the United States, France and Japan, several consulting engineers, and representatives of the General Electric Company from various parts of the world.

During the morning a number of speed runs were made along the three-mile test track. Two passenger cars were

Two Steam Locomotives Were Used as Prime Movers for Regeneration Test

hauled on some of these runs and some were made with the locomotive running light. The runs were continued until every one had had an opportunity to ride on the locomotive. It was particularly interesting to note that practically all of the railroad men who rode in the cab of the locomotive under-estimated the speed. A speed of 60 miles an hour was estimated usually at about 45.

In the afternoon tests were made to show what could be done with regenerative braking. Two New York Central steam locomotives were brought onto the test track. One of these was a (4-6-2) Pacific type and the other a (4-8-2) Mohawk type. These were coupled in tandem to the electric locomotive and used to push it while the electric locomotive was made to regenerate electric power to the trolley and thereby resist the power of the steam locomotives. The steam engineers were instructed to use all the power they could, but it was possible with both steam locomotives working to full capacity to hold the speed down to any desired value by regenerating with the electric. The noise of the exhausts was good evidence of the fact that reverse levers were left in the extreme forward position and that throttles were wide open. A measurement of just what the steam locomotives were doing was obtainable in the sub-station where the meters showed that the electric locomotive was returning 1,200 amperes at 3,000 volts or almost 5,000 hp. of electrical energy to the power system. This was done at a speed of about 25 miles an hour. When pushed by another electric locomotive, one of these engines has returned as much as 1,600 amperes to the line.

After a number of regeneration tests had been run all of the observers were taken in a train hauled by an oil-electric locomotive to a point near one end of the test track, where a tug-of-war test was made. This part of the track was used because of the possibility of damaging rails by slipping drivers. The three units were coupled as before and at a given signal the steam locomotive engineers started to push the electric locomotive, and the driver of the electric started to push against them. The steam engineers showed some expert handling in this test, and neither one slipped the drivers of his engine. At first the steam locomotives were allowed to push the electric a short distance. Then additional power was applied to the electric until the steam locomotives were pushed slowly backward. This was repeated several times. Comparative data for the two locomotives is given in the table. The total weights given for the steam locomotives do not include the tender.

	Pacific	Mohawk	Electric
Total weight, lb.	273,000	343,000	530,000
Weight on drivers, lb.	173,000	234,000	458,000
Weight on each driving axle, lb.	57,667	58,500	38,167
Diameter of driving wheels, in.	72	62	44
Size of cylinders, in.	22x28	28x28	.....
Number of driving axles	3	4	12

From the data in the table it may be seen that the total weight on drivers of the electric locomotive is 51,000 lb. greater than that of both steam locomotives. For this reason the test did not illustrate the fact that greater adhesion is

possible with the electric locomotive because of uniform torque. On the other hand, it shows that a great amount of power can be delivered to the rails by an electric locomotive. The test showed the ease with which an electric locomotive can be controlled, and illustrated the possibilities of regenerative braking in a manner to convince the most skeptical. A description of one of the electric locomotives will appear in an early issue of the *Railway Age*.

Train Accidents in August[1]

THE FOLLOWING is a list of the most notable train accidents that occurred on the railways of the United States in the month of August, 1919:

COLLISIONS

Date	Road	Place	Kind of Accident	Kind of Train	Kil'd	Inj'd
20.	Pere Marquette	Sabin	bc	P. & F.	6	34
24.	W. J. & Seashore	Elwood	rc	P. & P.	1	22
28.	Southern	Rankin	xc	P. & F.	..	..

DERAILMENTS

Date	Road	Place	Cause of Derailment	Kind of Train	Kil'd	Inj'd
2.	Kan. City So.	Bunch	unx	P.	2	17
8.	Fort Worth & D. C.	Vernon	....	P.	0	4
13.	Colorado So.	Walsenburg	....	P.	1	2
14.	Chicago, B. & Q.	Dewees	unx	P	0	1
20.	Central Ga.	Leeds	....	P.	1	3
21.	Norfolk & W.	Boyce	b. truck	P.	0	13
27.	Chi., R. I. & P.	Tucumcari	....	P.	2	4
31.	N. Y. C.	Painesville	....	P. & F.	1	0

The trains in collision on the Pere Marquette at Sabin, Mich., four miles south of Traverse City, on the evening of the 20th of August, were a southbound passenger and a northbound freight. Both locomotives were wrecked. Six trainmen were killed and 34 passengers were injured. The collision was due to neglect on the part of the men in charge of the freight (an extra) who overlooked the schedule of the passenger train.

The trains in collision on the West Jersey & Seashore near Elwood, N. J., on the 24th of August, were the 9th and 10th sections of an excursion train from Washington destined for Atlantic City. The ninth section had been stopped because of a train ahead, and it was run into at the rear by the tenth section, badly damaging three cars. One passenger was killed and 22 were injured. The tenth section had run past cautionary and stop automatic block signals set against it. This collision was made the subject of a special report by C. S. Lake, assistant director of the division of operation. In this report, summarized in the *Railway Age* of September 12, page 514, the fault of the engineman is held inexcusable, and responsibility is placed also on the flagman of the ninth section and also on one other brakeman and the conductor of that section.

The trains in collision at Rankin, Tenn., on the 28th were passenger train No. 102, eastbound, and a westbound freight train. The freight was on a side track and had nearly cleared the main line when the passenger train approached at uncontrollable speed, striking the caboose. Responsibility for the collision is charged against the passenger train for approaching at a higher speed than was proper, according to the rules, and against the freight for not being protected by flag. It appears that the flagman of the freight was sent forward, but he had not gone far beyond the forward end of his train when he was struck and killed by the pasesnger train. The conductor in charge of a locomotive, standing on the side track, also was killed. Officers of the road have not been able to determine the cause of the death of either of these men, but neither death was caused by the collision.

The train derailed at Bunch, Okla., on the 2nd of August, was southbound passenger No. 3. The train was running about 35 miles an hour when the locomotive was thrown off the track and the whole train, except the two rear cars, was ditched. The mail car was wrecked. The engineman and fireman were fatally scalded and 15 passengers and two trainmen were injured. The cause of the derailment was not determined.

The train derailed on the Fort Worth & Denver City near Vernon, Tex., on the 8th, was southbound passenger No. 4. Three Pullman cars were overturned; four passengers injured.

The train derailed on the Colorado & Southern, near Walsenburg, Colo., on the 13th. was southbound passenger No. 2. Two cars were overturned. The engineman was killed and the fireman and express messenger were injured.

The train derailed near Dewees, Neb., on the 14th was an eastbound passenger. The fireman was injured. The cause of the derailment was not determined.

The train derailed on the Central of Georgia near Leeds, Ala., on the 20th was the westbound Seminole Limited, No. 9. The engine and tender fell through a trestle bridge spanning the track of the Southern Railway and a stream of water, and lodged in the stream. A foreman carpenter working beneath the bridge was killed and three other men were injured; but the engineman and fireman escaped with slight injuries.

The train derailed near Boyce, Va., on the 21st about 1 a. m. was northbound passenger No. 2. One coach and two sleeping cars were overturned. Twelve passengers and one trainman were injured. The train, running at about 45 miles an hour, was thrown off the track by a broken tender truck.

The train derailed on the Chicago, Rock Island & Pacific near Tucumcari, N. M., on the 27th was the eastbound Golden State Limited. The engine and first two cars were overturned. The engineman and fireman were killed, and four other trainmen were injured.

The trains involved in the accident on the New York Central near Painesville, Ohio, on the 31st of August were an eastbound freight and the eastbound Twentieth Century Limited express, running on parallel tracks. Four cars in the freight train were thrown off the track and fouled the track on which the passenger train was running and were struck by the engine of the passenger. The runner of this engine was killed. A few passengers were injured by broken glass.

Electric Car Accidents.—Near Parkersburg, Ohio, on the 14th an electric car ran into a locomotive of the Baltimore & Ohio and 11 or more occupants of the car, mostly children, were killed. About 30 were injured.

Canada.—Near Stonecliff, Ont., on the 4th the eastbound Imperial Limited, of the Canadian Pacific (train No. 2) was derailed, and one passenger was killed. Four cars were overturned and a number of persons were injured. The derailment was reported as due to a broken rail.

[1] Abbreviations and marks used in Accident List:
rc, Rear collision——bc, Butting collision——xc, Other collisions——b, Broken——d, Defective——unf, Unforeseen obstruction——unx, Unexplained——derail, Open derailing switch——ms, Misplaced switch——acc, obst., Accidental obstruction—malice, Malicious obstruction of track, etc. ——boiler, Explosion of locomotive on road——firc, Cars burned while running——P, or Pass., Passenger train——F. or Ft., Freight train (including empty engines, work trains, etc.)——Asterisk, Wreck wholly or partly destroyed by fire——Dagger, One or more passengers killed.

Plans for Census.—Special effort is being put forth to make the manufacturers' section of the approaching fourteenth decennial census the most complete and comprehensive ever made. The schedules for use in tabulating the information will be mailed to every manufacturing establishment in the United States in December. The questions relate to the calendar year 1919. In 1914, the year the last manufactures census was taken, about 275,000 manufacturing establishments were listed. This time more than 300,000 schedules will be sent out; and, in addition, it is expected that about 50,000 mines and quarries will also be reported.

Salaries of Railroad Officers in 1917

Eleven Shown as Having Received $75,000 or Over; Ten as Being Paid $60,000 and Fourteen About $50,000

A LIST OF 208 RAILROAD OFFICERS and officers of the Pullman Company receiving salaries in excess of $20,000 a year during the year 1917 was put into the Congressional Record of November 18 as an extension of remarks by Representative Thetus W. Sims of Tennessee in connection with his proposed amendment to the Esch railroad bill to provide that not exceeding $20,000 of the compensation of a railroad official should be charged to operating expenses or be considered by the Interstate Commerce Commission in reaching its conclusion as to the reasonableness of rates. Mr. Sims also used it as an argument against a proposed section of the bill, which was eliminated, requiring the commission to take into consideration "the reasonable cost of maintenance and operation." In the list, which Mr. Sims said he got from "the report of the Government Railroad Wage Board," the highest compensation shown was that of J. M. Dickinson, receiver of the Chicago, Rock Island & Pacific, $120,732.90. R. S. Lovett, as chairman of the executive committee of the Union Pacific, is shown as having received $104,104.16. Julius Kruttschnitt, A. J. Earling, Walker D. Hines, L. F. Loree, Samuel Rea, E. P. Ripley, A. H. Smith, W. H. Truesdale and F. D. Underwood are shown as receiving $75,000 or over. There are 10 shown as receiving approximately $60,000, and 14 shown as receiving approximately $50,000.

A list of the salaries over $10,000 was made up by Director General McAdoo's office early in 1918 at the request of the Senate committee on interstate commerce but it was not made public. Mr. Sims said in part:

"My personal friend, the able gentleman from Virginia, ex-Gov. Montague, says that there is a tendency to have too many employees under government operation. It may be true—I am not controverting it—but what in the name of consistency has been the tendency of the railroad companies when they had the right to employ as many as they pleased and pay as many officials as they pleased and as much as they pleased and all of it to be charged up to expense of operation? Take the greatest railroad system in this country, which is, according to my judgment, the Pennsylvania Railroad System. It had for the year 1917 a president at a salary of $75,460, which is more than the President of the United States receives. It has 11 vice presidents with compensations beginning with $40,620 and running down to $25,000. I have only included the officers of this system receiving salaries of $20,000 and over. In all, it has in this class 23 officers and attorneys whose compensation is from $20,000 up to $75,460, amounting in all to $681,960. The President of the United States receives $75,000. Ten Cabinet officers receive altogether $120,000. The nine Justices of the Supreme Court received $126,500. The Vice-President of the United States receives $12,000. The Speaker of the House of Representatives receives $12,000. These 23, the highest-paid officials of all departments of the Government, executive, judicial, and legislative, all combined, receive salaries amounting to $345,500, just a little more than half the 23 executive officials of the Pennsylvania Railroad System amount to all combined.

"Did the Interstate Commerce Commission have any power to consider the reasonableness of expenses of operation, including the payment of salaries to railroad officials greater than that of the President of the United States in fixing rates? I said the other day in my opening remarks that some of the ablest railroad officials in the United States have never received salaries of more than $25,000.

"This amendment is to limit expenses chargeable to costs of operation, and does not prevent these railroad officials receiving any amount in excess of $20,000 each, provided it is paid out of the net earnings which belong to the stock holders who elect the directors, who allow these exorbitant salaries. They undoubtedly do it for other reasons than the public interest, as the public interest requires no such extravagant expenses of operation of this kind. The owners of the roads are responsible for the employment and compensation of these officials.

"I do not object to giving Mr. Rea the salary he receives if it comes out of the net earnings in excess of $20,000. A distinguished official of the Southern Railroad, coming from Virginia, a fine young man, gets $50,500. These salaries of railroad officials that I have referred to were for the year 1917, and my information comes from the report of the Government Railroad Wage Board. Now, the director general may have employed more laborers under operation and effect of the Adamson eight-hour law, and for the further reason that the best men they had were taken from them for Army service, both here and abroad, but everyone knows that they have not employed more general officers than did the railroads themselves before they were taken over. The railroads, prior to federal control, had for the year 1917 208 general officers, including attorneys and receivers, receiving $20,000 and over a year as salaries or compensation."

The list as given by Mr. Sims follows:

List of railroad officers and attorneys who received a salary of $20,000 or more during 1917.

	Compensation.
Aishton, Richard H., president, Chicago & North Western	$50,240.00
Atterbury, W. W., vice-president in charge of operations, Pennsylvania	40,000.00
Auch, John F., vice-president and traffic manager, Philadelphia & Reading	20,000.00
Baker, Botts, Parker & Garwood, attorneys, Southern Pacific	30,000.00
Bannard, Wm. Newell, special agent to general manager, Pennsylvania	25,000.00
Batchelder, F. C., president, Baltimore & Ohio, Chicago Terminal	22,015.00
Bell, M. L., general counsel, Chicago, Rock Island & Pacific Railway Co.	59,486.45
Bernet, J. J., president and general manager, Nashville, Chattanooga & St. Louis	26,906.66
Berry, J. B., consulting engineer, Los Angeles & Salt Lake	23,600.00
Besler, W. G., president and general manager, Central Railroad Co. of N. J.	50,210.00
Biddle, W. P., president, St. Louis-San Francesco Railroad	39,879.00
Bierd, W. G., president, Chicago & Alton	36,646.55
Biscoe, H. M., vice-president, Boston & Albany	20,010.00
Blair, Joseph P., general counsel, Southern Pacific	34,500.00
Bledsoe, Samuel T., assistant general solicitor, Atchison, Topeka & Santa Fe	20,000.00
Blendinger, F. L., vice-president, Lehigh Valley	20,120.00
Bond, Hugh L., Jr., general counsel and director, Baltimore & Ohio	25,290.00
Bowes, Frank B., vice-president, Illinois Central	20,115.00
Brown, E. N., chairman board of directors, Pere Marquette	21,666.67
Brownell, Geo. F., vice-president and general solicitor, Erie	49,610.00
Bruce, Helm, local counsel, Louisville & Nashville	27,770.00
Buckland, Edward G., vice-president and general counsel, New York, New Haven & Hartford	22,699.99
Budd, Ralph, assistant to president, Great Northern	20,000.00
Burn, Charles W., general counsel, Northern Pacific	30,000.00
Burnham, C. G., vice-president, Chicago, Burlington & Quincy	31,249.98
Bush, B. F., president, Missouri Pacific	44,170.00
Bush, D. L., vice-president, Chicago, Milwaukee & St. Paul	20,010.00
Butler, Pierce, counsel of Federal Valuation, Missouri Pacific	45,000.00
Byram, H. E., president, Chicago, Milwaukee & St. Paul	60,000.00
Byram, H. E., vice president, Chicago, Burlington & Quincy	22,500.00
Calvin, Edgar E., president, Union Pacific	35,080.00
Campbell, Benjamin, senior vice-president and director New York, New Haven & Hartford	28,343.33
Capps, Chas. R., first vice-president and director, Seaboard Air Line	20,000.00
Carey & Kerr, general counsel, Spokane, Portland & Seattle	22,500.00
Carpenter, Myron J., president, Chicago, Terre Haute & Southeastern	25,040.00
Carter, Ledyard & Milburn, general counsel, Denver & Rio Grande	55,000.00
Carstensen, John, vice-president, New York Central	35,000.00

	Compensation.
Cary, Robert J., general counsel, New York Central	22,000.00
Chadbourne & Shores, counsel, Denver & Rio Grande	63,000.00
Chambers, Edward, vice-president, Atchison, Topeka & Santa Fe	25,000.00
Clark, James T., president, Chicago, St. Paul, Minneapolis & Omaha	25,160.00
Coapman, F. H., vice-president, Southern	30,150.00
Cooke, Delos W., vice-president, Erie	25,826.67
Cooper, Thomas, assistant to president, Missouri Pacific	25,000.00
Cravath & Henderson, general counsel, St. Louis & San Francisco	20,000.00
Crowley, P. E., operating vice-president, New York Central	25,000.00
Daly, C. F., vice-president, New York Central	35,000.00
Darlow, E. R., president, Buffalo & Susquehanna	35,300.00
Davis, J. M., vice-president, charge of operations and maintenance, Baltimore & Ohio	24,000.00
Dean, Richmond, vice-president, Pullman Co	30,000.00
Depew, Chauncey M., chairman, board of directors, New York Central	25,260.00
Dice, Agnew T., president, Philadelphia & Reading	35,000.00
Dickinson, J. M., receiver, Chicago, Rock Island & Pacific	120,732.90
Dixson, Geo. Dallas, vice-president in charge of traffic, Pennsylvania	30,000.00
Donnelly, Chas., assistant general counsel, Northern Pacific	20,000.00
Doran, Joseph L., general counsel, Norfolk & Western	20,310.00
Earling, A. J., president, Chicago, Milwaukee & St. Paul	75,319.00
Earling, H. B., vice-president, Chicago, Milwaukee & St. Paul	20,000.00
Edson, J. A., president, Kansas City Southern	25,000.00
Elliott, Howard, director, president and chairman, New York, New Haven & Hartford	37,381.69
Evans, W. F., general solicitor, St. Louis & San Francisco	25,000.00
Fahnestock, James F., treasurer, Pennsylvania	20,000.00
Farrell, J. D., president, Union Pacific	30,030.00
Felton, S. M., president, Chicago Great Western	40,259.96
Galloway, Chas. Wm., general manager, Baltimore & Ohio	20,210.00
Gilman, L. C., president, Spokane, Portland & Seattle	30,000.00
Gorman, J. E., president, Chicago, Rock Island & Pacific	47,715.00
Gowan, Marcus L., general counsel, Pennsylvania Railroad	30,000.00
Gowan, Francis I., general counsel, Pennsylvania	30,000.00
Gray, C. K., chairman of board, Western Maryland Railway	32,960.00
Gruber, James M., vice-president and general manager, Great Northern	25,000.00
Hannaford, J. M., president, Northern Pacific	50,000.00
Hanson, Burton, general counsel, Chicago, Milwaukee & St. Paul	25,000.00
Harahan, W. J., president, Seaboard Air Line	40,857.00
Hardin, A. T., vice-president, New York Central	35,020.00
Harris, Albert H., vice-president, New York Central	35,560.00
Harrison, Fairfax, president, Southern	50,500.00
Hawkins, W. A., general attorney, El Paso & Southwestern	25,000.00
Heiseman, C. B., general counsel, Pennsylvania Western	20,000.00
Henderson & Burr, solicitors, Pennsylvania System	29,700.00
Herbert, J. M., president, St. Louis Southwestern of Texas	20,343.36
Herrin, William F., vice-president and chief counsel, Southern Pacific	38,170.00
Hill, Louis W., chairman, Great Northern	50,000.00
Hillard, Charles W., fourth vice-president, St. Louis-San Francisco	20,000.00
Hines, Walker D., director, chairman, Atchison, Topeka & Santa Fe	77,210.00
Holden, Hale, president and director, Chicago, Burlington & Quincy	65,000.00
House, F. E., president and general manager, Duluth & Iron Range	34,645.00
Howard, E. A., vice-president, Chicago, Burlington & Quincy	20,000.00
Hughitt, Marvin, Sr., chairman, board of directors, Chicago & North Western	60,460.00
Hughitt, Marvin, Jr., vice-president, Chicago & North Western	25,050.00
Hungerford, L. S., general manager, Pullman Co	20,000.00
Huntington, C. W., president, Virginian Railway Co	20,660.00
Huntington, G. R., general manager, Minneapolis, St. Paul & Sault Ste. Marie	20,000.00
Hustis, James H., president, Boston & Maine	35,200.00
Hyser, Edward M., vice-president and general counsel, Chicago & North Western Railway	36,260.00
Ingersoll, Howard L., assistant to president, New York Central	20,000.00
Inglis, Wm. W., vice-president and manager, Delaware, Lackawanna & Western	30,030.00
Jackson, Wm. J., receiver, Chicago & Eastern Illinois	27,000.00
James, Arthur Curtis, vice-president, El Paso & Southwestern	26,650.00
Jeffery, E. T., chairman of board, Denver & Rio Grande	20,166.66
Jeffries, L. E., general counsel, Southern Railway	23,083.32
Jenney, Wm. S., vice-president and general counsel, Delaware, Lackawanna & Western Railroad	31,383.98
Johnson, L. E., president, Missouri Pacific	60,090.00
Jungen, C. W., manager, Southern Pacific	21,500.00
Kearney, Ed. F., president, Wabash	50,120.00
Keeley, E. S., vice-president, Chicago, Milwaukee & St. Paul	20,000.00
Kenney, Wm. P., vice-president, Great Northern	22,500.00
Kerr, John B., president and general manager-director, New York, Ontario & Western Railway	20,230.00
Kramer, Le Roy, vice-president, Pullman Co	24,000.00
Kruttschnitt, J., chairman of executive committee of board of directors, Southern Pacific Transportation System	88,860.00
Kurn, J. M., president, Detroit, Toledo & Ironton	20,000.00
Lamb, E. T., president, Atlanta, Birmingham & Atlantic	25,110.00
Lancaster, J. L., president and receiver, Texas & Pacific	20,470.00
Lathrop, Gardiner, general solicitor, Atchison, Topeka & Santa Fe	25,000.00
Lawton-Cunningham, general and division counsel, Central of Georgia	21,000.00
Ledyard, H. B., chairman, board of directors, Michigan Central	30,240.00
Levey, Chas. M., president, the Western Pacific	25,420.00
Levy, Edw. D., first vice-president and general manager, St. Louis & San Francisco	27,600.00
Lincoln, Robt. T., chairman, board of directors, Pullman Co	25,300.00
Lindley, E. C., vice-president, director and general manager, Great Northern	20,000.00
Loesch & Richards, solicitors, Pennsylvania	25,805.00
Loomis, E. E., president, Lehigh Valley	44,287.18
Loomis, N. J., general solicitor, Union Pacific	20,000.00
Loree, L. F., president, Delaware & Hudson	50,800.00
Loree, L. F., chairman, board and executive committee, the Kansas City Southern	30,825.00
Lovett, R. S., chairman, executive committee, Union Pacific	104,104.16
Lyford, Will H., general counsel to receiver, Chicago & Eastern Illinois	24,040.00
McAllister, Henry, Jr., general counsel, Denver & Rio Grande	55,000.00
McCabe, D. T., vice-president, Pennsylvania	30,000.00
McChesney, W. S., president, Terminal Railroad Association, St. Louis	22,450.00
McCormack, E. O., vice-president of traffic, Southern Pacific	30,200.00
McDonald, A. D., vice-president and controller, Southern Pacific	26,250.00
McDonald, Morris, president, Maine Central	35,735.12
McGonagle, William A., president and general manager, Duluth, Missabe & Northern	21,000.00
McKeen, B., vice-president, Pennsylvania Lines	25,020.00
McKenna, E. W., member conference committee, Chicago, Milwaukee & St. Paul	20,000.00
McKenney & Flannery, solicitors, Pennsylvania	21,250.00
Maher, N. D., vice-president of operations, Norfolk & Western	36,350.00
Markham, C. H., president, Illinois Central	60,555.00
Martin, W. L., vice-president and traffic manager, Minneapolis, St. Paul & S. Ste. Marie	20,160.00
Middleton, J. A., vice-president, Lehigh Valley	30,445.00
Minnis, James L., vice-president and general solicitor, Wabash	20,833.33
Mudge, H. U., president, Denver & Rio Grande	43,232.00
Myers, W. Heyward, vice-president, Pennsylvania	25,000.00
Noonan, William T., president, Buffalo, Rochester & Pittsburgh	50,000.00
O'Brien, Boardman, Harper & Fox, counsel, Pennsylvania	26,500.00
Pardee, Dwight W., secretary, New York Central	21,500.00
Patterson, G. S., general solicitor, Pennsylvania	30,000.00
Platt, H. V., vice-president and general manager, Union Pacific	20,000.00
Pearson, Edw. J., president, New York, New Haven & Hartford	40,000.00
Peck, G. L., fourth vice-president, Pennsylvania	30,030.00
Pennington, E., president, Minneapolis, St. Paul & S. Ste. Marie	52,723.34
Peters, Ralph, president, Long Island	30,470.00
Pierce, Winslow S., general counsel, Wabash	24,000.00
Place, Ira A., vice-president, New York Central Lines	35,150.00
Potter, Mark W., president, Carolina, Clinchfield & Ohio	20,000.00
Randolph, Epes, president, Arizona Eastern	26,465.00
Rea, Samuel, president, Pennsylvania	75,460.00
Reed, J. H., president and director, Bessemer & Lake Erie	23,562.00
Ridgway, A. C., vice-president, Chicago, Rock Island & Pacific	25,390.00
Rine, E. M., vice-president and general manager, Delaware, Lackawanna & Western	33,373.33
Ripley, Ed. P., president, Atchison, Topeka & Santa Fe	75,400.00
Robertson, Alexander, vice-president, Missouri Pacific	25,869.55
Rodd, Thomas, chief engineer, Pennsylvania Lines West	21,080.00
Ross, Walter L., president and receiver, Toledo, St. Louis & Western	25,090.00
Ruhlender, Henry, chairman, board of directors, St. Louis & San Francisco	40,000.00
Runnells, John S., president, Pullman Co	60,500.00
Russel, Henry, vice-president, Michigan Central	20,095.00
Schaff, Charles E., receiver and president, Missouri, Kansas & Texas	43,000.00
Schoomaker, J. M., vice-president, Pennsylvania	25,000.00
Schumacher, Thomas M., president, El Paso & Southwestern	60,150.00
Scott, W. B., president, Morgan's Louisiana & Texas Railroad & Steamship	27,225.00
Scott, William R., vice-president and general manager, Southern Pacific	23,766.67
Seger, C. B., vice-president and comptroller, Union Pacific	37,016.87
Sewall, E. D., vice-president, Chicago, Milwaukee & St Paul	20,160.00
Seymour, M. V., counsel, St. Paul Union Depot	27,000.00
Shriver, G. M., vice-president, Baltimore & Ohio	30,250.00
Sloan, George T., first vice-president, Northern Pacific	35,120.00
Smith, A. H., president, New York Central	78,360.00
Smith, Milton H., president, Louisville & Nashville	20,639.09
Spence, L. F., director of traffic, Southern Pacific	36,525.00
Spencer, O. M., general counsel, Chicago, Burlington & Quincy	27,123.28
Sproule, William, president, Southern Pacific	62,036.67
Stevens, George W., president, Chesapeake & Ohio	31,873.26
Stone, A. J., vice-president, Erie	29,070.00
Storey, W. B., vice-president, Atchison, Topeka & Santa Fe	32,950.00
Strong, A. H., general attorney, Pennsylvania	20,000.00
Slade, George T., first vice-president, Northern Pacific	35,120.00
Tatnall, Henry, vice-president, Pennsylvania	35,200.00
Taylor, Edw. B., vice-president, Pennsylvania Lines West	31,235.00
Thomas, E. B., chairman of board, Lehigh Valley	50,880.00
Thompson, Arthur W., vice-president, Baltimore & Ohio	30,510.00
Todd, Percy R., president, Bangor & Aroostook	30,395.00
Trabue, Doolan & Cox, district attorneys for Kentucky, Illinois Central	27,720 00
Truesdale, William H., president, Delaware, Lackawanna & Western	75,399.88
Trumbull, Frank, chairman of board, Chesapeake & Ohio	26,738.97
Turner, James J., senior vice-president, Pennsylvania Lines West	40,620.00
Underwood, F. D., president and chairman, executive committee, Erie	77,950.00
Utley, F. H., vice-president and general manager, Bessemer & Lake Erie	20,867.12
Warfield, S. Davis, chairman of board, Seaboard Air Line	50,000.00
Waterhouse, Frank, foreign freight agent, Union Pacific	24,000.00
Williams, W. N., vice-president, Delaware & Hudson	20,636.66
Williams, Henry R., vice-president, Chicago, Milwaukee & St Paul	31,117.00
Winburn, W. A., president, Central of Georgia	21,855.00
Winchell, B. L., director of traffic, Union Pacific	36,000.00
Woodworth, James G., second vice-president, Northern Pacific	22,500.00
Worcester, H. A., vice-president and general manager, Cleveland, Cincinnati, Chicago & St. Louis	22,395.00
Young, J. H., president and director, Norfolk Southern	26,020.00

L. E. Johnson is given in the list as president of the Missouri Pacific, evidently through a typographical error. Lucius E. Johnson in 1917 was president of the Norfolk & Western. H. E. Byram, whose name is included twice, left the Burlington during the year to become president of the St. Paul.

Doings of the United States Railroad Administration

Time and One-half for Overtime in Freight Service—Results of Accident Prevention Drive

DIRECTOR GENERAL HINES announced on November 1 that gratifying progress in connection with the National Railroad Accident Prevention Drive was shown in reports received by the Safety Section of the Railroad Administration. The figures follow, the comparison being with the same number of days in the same period a year ago:

Eastern Region, 11 days, decrease of	428 casualties
Pocahontas Region, 11 days, decrease of	38 casualties
Allegheny Region, 11 days, decrease of	589 casualties
Southern Region, 9 days, decrease of	287 casualties
Northwestern Region, 7 days, decrease of	305 casualties
Central Western Region, 11 days, decrease of	390 casualties
Southwestern Region, 10 days, decrease of	148 casualties
Total	2,185 casualties

Time and One-Half for Overtime in Freight Service.

The Railroad Administration, according to a statement authorized by Director General Hines on November 15, has proposed to the four brotherhoods representing the train and engine employees that in order to give an additional measure of compensation to the employees in the slow freight service, time and one-half will be paid for time required to make their runs in excess of what would be required if an average speed of 12½ miles per hour were maintained, provided, however, that all arbitraries and special allowances now paid in various forms of freight train service are entirely eliminated. The proposal was taken under consideration by the officials of the brotherhoods that have been conferring with Mr. Hines and Railroad Administration officials, with a view to consideration and further discussion. The statement says it is estimated that the net cost of this proposal will be approximately $3,000,000 a month, or $36,000,000 a year.

The Railroad Administration has thus conceded as to the freight service the principle which the brotherhoods have contended for since 1916, when time and one-half for overtime was one of the principal features of their demand which led to the enactment of the Adamson eight-hour law. The demand for time and one-half was waived during their negotiations with the President in 1916 but was repeated when new wage increases were demanded in 1917, and again before the wage board created by the Railroad Administration. Time and one-half for yard service was allowed last year. The wage board submitted to the director general a divided report earlier in the year, and Mr. Hines has since had the question before him for decision, while some of the brotherhood leaders have been insisting on the demand being granted before the roads are returned to private management.

The Railroad Administration has not complied with the full demands of the brotherhoods, however, for the principle of time and one-half will not be applied in the passenger service, as requested, nor will it be applied for Sundays and holidays as provided for in the new demands submitted by the Brotherhood of Locomotive Trainmen and the Brotherhood of Locomotive Firemen and Enginemen this year. Neither does Mr. Hines agree with the brotherhoods on the principle of "punitive overtime." He prefers to base his proposal on the conclusion that the train service employees in freight service who are habitually averaging less than 12½ miles per hour do not get an opportunity to earn a reasonable monthly wage as compared with employees in fast freight service, or in passenger service without working abnormally long hours per month, and are entitled to an equalization. He also requires a concession from the brotherhoods in return which they have refused to consider when it has been proposed by the railroad companies.

Mr. Hines' statement was in part as follows:

"The Railroad Administration, in discharging its responsibility to make readjustments necessary to avoid unjust inequalities in the compensation of different classes of railroad employees, has proposed to the four brotherhoods representing the train and enginemen that, in order to give an additional measure of compensation to the train service employees in the slow freight service, time and one-half will be paid for time required to make runs in excess of what would be required if an average speed of 12½ miles per hour were maintained, provided, however, that all arbitraries and special allowances now paid in various forms of freight train service are entirely eliminated for the railroads as a whole.

"Last August the President suggested to Congress that in view of the early approach of the termination of federal control it would be desirable to have these questions of further compensation for railroad employees committed to a special tribunal to be created by act of Congress. The Congress, however, was unwilling to adopt this course and the Senate Committee on Interstate Commerce took the position that such legislation was not needed because ample power was conferred upon the director general under the federal control act to deal with these matters. The policy was thereupon adopted by the Railroad Administration that, while it could not consider increases in the general level of railroad wages until a reasonable opportunity had been afforded to ascertain the result of the efforts of the government was making to reduce the cost of living, nevertheless, the Railroad Administration would endeavor to correct unjust inequalities as between different classes of railroad labor.

"In discharging the responsibility which thus unavoidably rested upon the Railroad Administration consideration has been given to the claim that various classes of train and engine employees are relatively underpaid. In considering these claims, the conclusion has been reached that the train service employees in freight train service who are habitually averaging less than 12½ miles per hour do not get an opportunity to earn a reasonable monthly wage as compared with employees in fast freight service or employees in passenger train service, without working abnormally long hours per month, frequently amounting to from 275 to 300 hours or more per month, and the above method has been decided to be the best way in which to make a fair equalization of this condition.

"It has frequently been the practice to make employees in freight train service various arbitrary payments and special allowances in addition to their mileage rates, and the proposal of the Railroad Administration contemplates that all of these arbitraries and special allowances must be eliminated from all freight service on all railroads under federal control.

"For many years the train and enginemen have urged that time and one-half ought to be allowed for excess time as a punitive measure to compel trains to be run at a higher average speed. The director general, however, has decided that this step is not justifiable as a punitive measure, because it is not, generally speaking, feasible or reasonable, to economically run the heavy freight trains at a speed as high as 12½ miles per hour. The present proposal, therefore, is not adopted as a punitive measure, but simply to enable an

important class of train service employees to earn a reasonable monthly wage as compared with other train service employees, without working an abnormal number of hours.

"The conditions above explained grow out of the fact that for many years train service employees have been paid according to the number of miles they have made, with a guaranty of a minimum number of miles per hour, which minimum was formerly 10 miles, and by reason of the Adamson act became 12½ miles per hour. The result of this is that employees on freight trains which habitually make 12½ miles per hour or more get an important benefit from the additional mileage they make, whereas this benefit is entirely denied to those employees working on trains which habitually make less than 12½ miles per hour, and this inequality will be substantially corrected by the proposal now made.

"It is important to emphasize that this proposal will operate exclusively for the benefit of employees in the slow freight train service. These employees have all the disadvantages of spending a large time away from home at their own personal expense and yet have not the advantages of the larger compensation enjoyed by employees in fast freight service and also in passenger service, making much larger mileage in the same or less length of time. It is these employees making large mileage in a comparatively short time who are frequently accepted by the public as indicating the standard of compensation for men in all train service.

"It is estimated that with the average speeds now made by the slower freight trains the net cost of this proposal will be approximately $3,000,000 per month. Undoubtedly, however, the proposal would have the effect of correcting many extreme cases of trains being kept an abnormally long time upon the road and to the extent that this condition can be so corrected the cost will be reduced."

Timothy Shea, acting president of the firemen's brotherhood, was quoted as saying in Chicago that apparently Mr. Hines proposed to allow an increase of $36,000,000 and to take away $30,000,000 in arbitraries and special allowances. He said that the brotherhoods would continue to insist on general wage increases.

New Freight Cars Put in Service.

Director General Hines has announced that with the exception of 17 cars which were damaged while in storage and have to undergo repairs, all of the freight cars ordered by the Railroad Administration which had been completed and placed in storage awaiting lettering and numbering have now been placed in service. Of the total order of 100,000 freight cars, 16,636 remain to be built. During the six days from November 1 to November 6 new cars were constructed and put in service at the rate of 207 a day.

Traffic Committees Instructed to Wind Up Their Work.

The directors of the Division of Traffic and Public Service have written letters to the regional and local traffic committees, saying that in view of the probable return of the railroads to their owners on or about January 1, 1920, they desire the work of all freight traffic committees brought to a close on or before that date and all subjects before the committees disposed of so that the publication of changes in rates, etc., which may result from the committee's work may be not only published but made effective before the end of federal control. Detailed instructions are given, under which after November 10 no new applications were to be accepted by any committee nor docketed for public consideration, except in such cases as applications to publish new commodity rates to cover newly developed traffic or for newly constructed lines, applications to correct clerical errors or to readjust rates thrown out of line by General Order No. 28, or to make changes necessary to comply with orders of the Interstate Commerce Commission, and subjects of which either the Division of Traffic and the Division of Public Service may request consideration.

Rules for Per Diem Settlements

The Car Service Section has issued instructions supplementing those of Director General Hines, effective October 1, governing the settlement of passenger and freight car hire accounts between the railroads. The new regulations are contained in Circular CS-77, which supersedes Circular CS-59, and are, in part, as follows: "In accordance with director general's order 31-A October 3, 1919, effective October 1, 1919, the settlement of passenger and freight car hire accounts will be in accordance with the following:

"Per diem settlements for use of freight cars will be in accordance with the Code of Per Diem Rules in effect July 1, 1918, with the following exceptions:

"Rule 3. Suspended.

"Rule 15. All regulations embraced in Circular CS-57, covering the issuance of embargoes are continued in effect and will supersede paragraph 3, of the rule.

"Rule 19. Suspended.

"Per diem and mileage settlements for use of passenger cars will be in accordance with Rules 7 and 8 of the Code of Car Service Rules in effect July 1, 1918.

"1. The settlement of car hire accounts between Canadian roads and United States roads through the Car Hire Bureau at Buffalo will discontinue with per diem reports for the month of September, 1919.

"Per diem accruing from October 1, 1919, should be reported direct to the car owner.

"Per diem due to or from Canadian roads account of discrepancies and reclaims for period May 1, 1919, to September 30, 1919, will be handled through the Car Hire Bureau at Buffalo.

"Per diem due to or from Canadian roads account of discrepancies and reclaims covering period to May 1, 1919 (not in process of settlement through Car Hire Bureau), will be handled direct by the interested lines.

"2. The settlement of car hire accounts between Federal and non-Federal roads within the United States through the assigned Federal road will be discontinued with the per diem reports for the month of September, 1919.

"Per diem accruing from October 1, 1919, should be reported direct to car owner.

"Per diem due to or from non-Federal roads account of discrepancies and reclaims covering period prior to May 1, 1919, will be handled direct between the interested lines.

"Per diem due to or from non-Federal roads on account of discrepancies and reclaims for period May 1, 1919, to September 30, 1919, will be handled through the assigned Federal road."

Sub-Committee on Upkeep, Additions and Betterments.

The Railroad Administration has appointed a sub-committee on upkeep, additions and betterments, to make an investigation and report on what part of the cost of additions and betterments made during the period of federal control should be charged to the capital accounts of the railroad companies, what part to maintenance and what part should be borne by the government. The committee consists of S. H. E. Freund, representing the Division of Law; E. M. Alvord, representing the Division of Operation; C. W. Hillman, representing the Division of Accounting, and George N. Huss, representing the engineering department. The work of the committee will include an investigation of a large number of cases where improvements were made for the joint benefit of two or more carriers or for the general purposes of the government, as to which there is a question as to whether they can be properly charged to any railroad.

General News Department

The bill providing for the acquisition of the Grand Trunk Railway by the Canadian Government has passed both houses of Parliament by large majorities.

The Great Northern Railway Company has been authorized by the Minnesota Railroad and Warehouse Commission to abandon a certain portion of its present track, and its passenger and freight stations at Hibbing, Minn. Business interests protested against carrying out the change before the whole village of Hibbing had been removed to Alice, two miles away. The change is to allow the extension of certain coal mining operations.

Subsidiary oil companies of the Southern Pacific plan extensive oil operations in the near future; this is shown by the transfer of oil leases covering 8,000 acres situated in Eastland county, Tex., and 2,000 acres in Comanche County, by the Rio Bravo Oil Company of Texas to the Associated Oil Company of California. Both are subsidiaries of the Southern Pacific. The necessary operating facilities are now being arranged for.

The railroad sections, which have been organized by the American Association of Engineers during the last six months have been so successful that the board of directors of the association has decided to extend the plant to other industries, so that sections may be formed wherever there is a special group who desire such an organization. These sections will be subordinate to the chapters, which have jurisdiction in their respective sections of the country.

The unauthorized convention of the Federated Railway Shop Crafts at Chicago, called by the Chicago District Council of the organization without the sanction of the International shopmen's brotherhood officers, ended on September 28, after sitting three days, with the repudiation of the international officers of the organization by the delegates and a refusal on their part to pay further per capita taxes or dues into their various international unions until the repudiated officers gain the demands which they presented to the Railroad Administration for increased wages and better shop conditions. The delegates also denounced the "one big union" idea.

The Chesapeake & Delaware Canal has been formally taken over by the United States Government, and the event was the subject of a celebration at Delaware City, Del., on October 11. This canal is about 15 miles long from Delaware City on the Delaware river, westward to Chesapeake City, Md., on a stream flowing into Chesapeake Bay. The canal was chartered in 1799. The last session of Congress appropriated $2,514,290 for the purchase of the canal, and about 500,000 additional for deepening and widening. It is proposed to make it a sea-level canal, which involves excavation to make it 10 ft. lower for a considerable distance at the summit. With adequate enlargement this canal will complete an inland waterway from Philadelphia to Norfolk.

Employees of the Canadian National Railways have subscribed $5,076,300 in the Canadian Victory Bond Campaign which has just closed in Canada. This amount was subscribed by 27,000 employees. At the outset of the drive the directors of the Canadian National set their objective at $5,000,000, and an elaborate organization was perfected to reach this amount. Apart from the bonds taken by the employees, outside subscriptions amounting to $1,960,800 were reported through the Canadian National auspices, and the total subscribed by the employees or secured by them was $7,037,100. The Brotherhood of Railway Carmen of America has subscribed $100,000 to the Canadian Victory Loan of 1919. The announcement was made by Thomas Broad, vice-president of the Canadian Pacific Railway Joint Protective Board of the brotherhood. A total subscription of $210,000 has been made by the brotherhood to the various Canadian public loans.

Signal Division—A. R. A.

The Signal Division of the American Railroad Association will hold its fourth meeting at Hotel McAlpin, 34th street and Broadway, New York City, on Tuesday and Wednesday, December 2 and 3. Committee reports to be discussed will be distributed on Tuesday morning.

Chicago Car Foremen's Association

At the annual meeting of the Car Foremen's Association of Chicago, held at the Morrison Hotel, October 13, the following officers were elected: President, M. F. Covert, Standard Car Construction Company; first vice-president, James Reed, assistant master car builder, New York City; second vice-president, E. H. Mattingley, general car foreman, Baltimore & Ohio; treasurer, F. C. Schultz, Chicago Car Interchange Bureau; secretary, Aaron Kline.

An Unusual Souvenir

Subscribers to the Bulletin of the International Railway Congress, have received from Brussels a rare souvenir; copies of the Bulletin for September and October, 1914. This bulletin, it appears from a slip attached to it, "was printed at the moment when Brussels was occupied (by the invaders) in August, 1914." The contents of this number consists mainly of reports presented for discussion at the Ninth session of the Congress; but it contains also the usual elaborate indexes of the volume for that year—January-October, 1914.

Grade Crossing Disaster

In a grade crossing accident at Clarksboro, N. J., on the night of November 1, about 11:20, sixteen persons were killed and about twenty injured, an automobile truck, occupied by thirty men and four women, on a pleasure trip, being struck by train No. 1926 of the West Jersey & Seashore, at a crossing which was without warning signals, but with approaches giving an unobstructed view. Clarksboro is on the Salem branch, 14 miles south of Camden. A coroner's jury on November 3 exonerated from blame the men in charge of this train. It appears from newspaper accounts that the pleasure-seekers were moving southward, and the passenger train northward, the crossing of the highway being at an acute angle with the railroad track; and there was a house near the crossing, except for which the headlight of the locomotive might have been seen sooner by the driver of the automobile.

Highway Crossings in Pennsylvania

The state of Pennsylvania is to have cautionary signals at all highway crossings which are not already protected, the Public Service Commission having arranged with the railroad companies of the state to furnish these signals. The total cost will be something like $200,000. The setting and care of these signals, which will devolve on the town, city, or county authorities, seems to be a matter which is still the subject of negotiation, there being no compulsory law touching this feature of the matter. The Public Service Commission finds that there are in the state 11,738 highway grade crossings, of which 9,773 are unprotected. The signals are

to be of the well-known standard already in use in several other states, a circular disk bearing the letters RR in black on a white ground, and fixed on a post at the right of the road about 300 ft. short of the crossing.

Engineer Company Being Recruited for European Service

The Secretary of War has announced that it is desired to enlist immediately for service with American Forces in France and Germany, 253 men to constitute an engineer company for possible use in railway operations and maintenance. Only white men will be enlisted. Enlistments will be for periods of one or three years. Former military service will not be required. Men eligible for discharge and reenlistment under existing instructions may also be reenlisted under this authority. Men enlisted under this authority for the service indicated will be sent to Camp Humphreys, Va. Furloughs upon reenlistment will not be required.

Railway Revenues for August

The Interstate Commerce Commission's monthly summary of railway returns for August and eight months of the calendar year, covering 186 Class I railroads and 17 switching and terminal roads, is as shown in table 1.

TABLE 1*—GROSS AND NET RECEIPTS OF PRINCIPAL RAILWAYS TO SEPTEMBER 1

		August				Eight Months			
		Amount		Per mile of road operated		Amount		Per mile of road operated	
		1919	1918	1919	1918	1919	1918	1919	1918
1.	Average number of miles operated	234,079.09	234,186.07	.....	.....	233,924.88	234,456.73	.....	.....
	Revenues.								
		Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars
2.	Freight	313,875,305	350,936,907	1,341	1,499	2,234,389,636	2,118,443,819	9,552	9,036
3.	Passenger	120,521.120	113.761.117	515	486	776,979,660	667,123,598	3,321	2,845
4.	Mail	4,676.173	4,481.361	20	19	34,639,799	36,089,150	148	154
5.	Express	9,975.941	10,659.296	43	46	70,416,421	76,245,372	301	325
6.	All other transportation	11,422,837	12,501,588	49	53	81,296,535	81,986,711	348	350
7.	Incidental	10,812.142	11.994,994	46	51	83,644,267	81,156.329	358	346
8.	Joint facility—Cr.	623,483	527,827	2	2	4,457.032	3,808,879	19	16
9.	Joint facility—Dr.	180,598	149,997	1	1	1,385,860	1,157,680	6	5
10.	Railway operating revenues	471,726.403	504,713,093	2,015	2,155	3,284,437,490	3,063,696,178	14,041	13,067
	Expenses								
11.	Maintenance of way and structures	68,222.897	56,820.820	291	243	506,085,281	399,606,175	2,163	1,705
12.	Maintenance of equipment	92.221.959	116,154.835	394	496	761,870,793	662,429,478	3,257	2,825
13.	Traffic	4,014,769	3,527.066	17	15	30,777,439	35,152,055	132	151
14.	Transportation	180,555,506	172,399.959	772	736	1,401,291,573	1,308,348,937	5,990	5,580
15.	Miscellaneous operations	4,361.989	3,363.793	19	14	31,288,131	25,446,361	134	109
16.	General	10,388.166	8,625.164	44	37	82,196,781	73,618,745	351	314
17.	Transportation for investment—Cr.	496,031	429,494	2	2	4,052,369	3,750,406	17	17
18.	Railway operating expenses	359,269,255	360,462,142	1,535	1,539	2,809,457.629	2,500,851,345	12,010	10,667
19.	Net revenue from railway operations.	112.457,148	144,250,951	480	616	474,979,861	562,844,833	2,031	2,400
20.	Railway tax accruals (excluding "War Taxes")	16,360,913	15,757,619	70	68	124,071,069	124,170,494	530	530
21.	Uncollectible railway revenues	72,877	51,938	.....	.....	493,293	426,839	3	2
22.	Railway operating income	96,023,358	128,441.394	410	548	350,415,499	438,247,500	1,498	1,868
23.	Equipment rents (Dr. Balance)	2,234,588	*995 056	9	4	13,741,665	9,148,630	59	39
24.	Joint facility rents (Dr. Balance)	1,392,134	1,280,602	6	5	9,647,378	9,174,324	41	39
25.	Net of items 22, 23 and 24	92,396,636	128,155,848	395	547	327,026,456	419,924,546	1,398	1,790
26.	Ratio of operating expenses to operating revenues, per cent	76.16	71.42	.....	.....	85.54	81.63	.....	.....

*Credit item.

Note—The average railway operating income corresponding to item 22 above for August in the three years 1914, 1915 and 1916, included in the test period was $396 per mile of line.

New Industrial Conference Called

President Wilson has called a new industrial conference to meet at Washington on December 1, in accordance with the recommendation made by the public group at the conference which met in October, to endeavor to work out some plan for an improvement in the relations between employers and employees. None of the delegates to the former conference are included in the list of those invited to attend the new one, and there will be no specific representation of either capital or labor.

The personnel of the new body follows: Thomas W. Gregory, Austin, Texas, lawyer and former attorney general; George W. Wickersham, New York, lawyer, attorney general in Taft cabinet; Oscar S. Straus, New York, diplomat, lawyer and author, secretary of commerce and labor under Roosevelt; Frank Taussig, Washington, former college professor and chairman of the United States tariff commission; Samuel W. McCall, Boston, lawyer, former governor of Massachusetts; Herbert Hoover, former food administrator, mining engineer; Martin H. Glynn, Albany, N. Y., newspaper man and former governor of New York; H. C. Stuart, Richmond, Va., business man, former governor of Virginia; W. O. Thompson, president of Ohio State University and Presbyterian minister; George T. Slade, St. Paul, former vice-president Northern Pacific; Julius Rosenwald, Chicago, president Sears, Roebuck & Co.; O. D. Young, New York, lawyer; Henry J. Waters, editor Kansas City *Star*, and former president Kansas State College of Agriculture; Stanley King, lawyer, of Boston and Washington, former member of the council of national defense and special assistant to the secretary of war; Henry W. Robinson, Pasadena, Cal., former member United States shipping board: Richard Hooker, Springfield, Mass., newspaper man, former Washington correspondent.

The President said in his letter of invitation: "Guided by the experience of the last conference, I have thought it advisable that in this new body there should be no recognition of distinctive groups, but that all of the new representatives should have concern that our industries may be conducted with such regard for justice and fair dealing that the workman will feel himself induced to put forth his best efforts, that the employer will have an encouraging profit, and that the public will not suffer at the hands of either class.

"It is my hope that this conference may lay the foundation for the development of standards and machinery within our industries by which these results may be attained.

"It is not expected that you will deal directly with any condition which exists today, but that you may be fortunate enough to find such ways as will avoid the repetition of these deplorable conditions."

Aviator Crosses Continent in 79 Hours

Lieutenant B. W. Maynard, of the United States Army, flying in a DeHaviland 4, and starting from Mineola, N. Y., near New York city, on Wednesday, Oct. 8, completed a round trip to the Pacific Coast and return, in a trifle over ten days; and, in accordance with the regulations of the War Department, he made prescribed stops at regular landings throughout the journey and did no flying at night or on Sunday. He remained in San Francisco from Saturday until Tuesday. Lieutenant Maynard was the leader of 47 contestants in this elaborate race. A large proportion of the men dropped out before finishing the trip. Numerous accidents in flying resulted in the death of nine of the competitors and the injury of several others.

Lieutenant Maynard left Mineola at 9:23 a. m., on Oct. 8, and arrived in San Francisco at 1:12 p. m. on Oct. 11, making the time 78 hours 49 minutes for a calculated distance of 2,701 miles. The time actually on the wing was 24 hours 58 minutes 55 seconds. Eastbound he left San Francisco on Oct. 14, at 1:19 p. m., and arrived at Mineola at 1:50 p. m. on the 18th. The time in the air was about the same as on the westbound journey, but the elapsed time, 93 hours 31 minutes, included 18 hours lost in Nebraska because of a broken motor shaft.

On Saturday, the 18th, Lieutenant Queen flew from Bryan, Ohio, to Cheyenne, Wyo., 1,046 miles, the longest single day's flight in this contest.

The San Diego Arizona Completed

With the driving of a golden spike on Nov. 16, six miles east of Jacumba Hot Springs, Cal., by John D. Spreckels, president, the construction of the San Diego & Arizona was completed. The road extends from San Diego, Cal., eastward to El Centro, a distance of 147 miles, much of which is through the Ysidro mountains. It connects at El Centro with the Southern Pacific, running south to the Mexican border at Tia Juana, Cal., where connection is made with the Inter-California (Southern Pacific), which debouches southerly 16 miles from the international line, thence easterly and northerly to the boundary of the United States again where, at Cantu, Cal., connection is made again with the Southern Pacific. The length of line in Mexican territory is 44 miles. Local train service on the new road between San Diego and the Imperial Valley will begin Dec. 1. On Dec. 10 it is expected to begin Pullman car service between San Diego and Chicago by way of the new road, the Southern Pacific and the Chicago, Rock Island & Pacific. A freight terminal costing $100,000 has been completed at San Diego and also a union station. This project comprises the only heavy railroad construction that has been carried on in the United States since the entry of the country into war with Germany and Austria. It was released from federal control within a short time after the roads were taken over by the government and, because of the pressing necessity for the completion of the line, authority was given to proceed with the construction.

The company has applied to the Railway Commission of California for authority to issue bonds to the amount of $710,912 with which to reimburse the Southern Pacific Company for money advanced for construction. Increases in the cost of labor and materials materially increased the cost of building and equipping the road. According to the financial statement filed with the application, the actual investment in road and equipment in the San Diego & Arizona on Sept. 30, 1919, amounted to $15,945,800. In order to avoid complications and to comply with the Mexican laws, a separate corporation, known as the Tijuana & Tecate Railway Company has been formed to manage that part of the road which lies in Mexico. The officers of this corporation, however, are the same as those of the San Diego & Arizona.

Henry Ford, president of Henry Ford & Son, Inc., Detroit, Mich., has designed a passenger car for street or interurban service to be driven by an internal combustion motor. It is expected that the car will be tried out on the Michigan Central tracks within the next 60 days.

Traffic News

J. E. Houck has been appointed traffic manager of the Samson Tractor Company, Janesville, Wis.

The Canadian Pacific Ocean Services Ltd., has moved its Chicago office from 140 South Clark street to 40 North Dearborn street.

T. J. McGeoy, has been appointed general western freight agent in charge of the Chicago office of the Luckenbach Steamship Company, Inc., of New York City.

W. I. Nokely, formerly in charge of the Toledo (Ohio) office of the United States Grain Corporation, has been appointed traffic manager of the Paragon Refining Company, Toledo, Ohio.

Albert L. Wilson, chief tariff clerk in the Chicago offices of the Illinois Central, has been appointed traffic agent of the 4-Ones, a national association of manufacturers of wirebound boxes, with headquarters at Chicago.

The Car Service Section of the United States Railroad Administration, acting on an appeal from the Louisiana Railway Highway Council, has promised to furnish a better supply of open cars for carrying gravel in Louisiana.

Changes in Boston Suburban Fares

The Massachusetts Public Service Commission, acting on a request from the director general at Washington, has investigated the request of railroads centering in Boston for authority to make increases in suburban passenger rates; and it holds that no increase is necessary except that on the New York, New Haven & Hartford five-ride tickets, good to points within five miles, may be discontinued. These have been sold at 5.6 cents a ride, but it does not appear that the increase in fares which will follow this discontinuance will amount to much.

All three of the roads had applied for authority to make the increases, because of congestion of traffic due to an advance in rates on surface and elevated electric railroads which has driven large numbers of suburban passengers to the steam roads; but the commission declares that this claim of congestion, from this cause, is unfounded, except as regards outbound trains on the New Haven road between 5 and 6 o'clock in the evening. At other hours, and on the Boston & Albany and the Boston & Maine at all hours, the congestion is not intolerable. The commission finds that rush-hour traffic on the New Haven road has increased 83 per cent in a year, and other traffic 28 per cent; but the company has added only one train since 1913; but on the rush-hour trains the number of cars is about 24 per cent more than one year ago.

Where 83 per cent increase in traffic can be handled without increasing the number of trains, the commissioners think that the traffic must be more nearly remunerative than it was at any time in the past.

Director General Hines has issued a circular reiterating his belief that the disparity between the fares on the steam roads and on the elevated lines must inevitably tend to impair comfort if not safety on the steam railroads, and that the twelve-ride tickets, which will be used in place of the former five-ride tickets, ought to be advanced in price substantially; but in view of the Massachusetts Commission's unfavorable attitude, and also in view of the prospect of federal control terminating on Dec. 31, he will take no action. Charles A. Prouty, representing the United States Railroad Administration, sat with the Massachusetts Commissioners in their hearings on this matter. The Administration will discontinue the sale of the "open form" of 25-ride tickets between Boston and stations within 15 miles, this change apparently being not disapproved by the Massachusetts Commission.

Foreign Railway News

English Goods Traffic Rates Increased

LONDON.

An abstract from the London Times states that the Ministry of Transport is considering the schedules of rates for goods traffic. It is estimated that there will be increase amounting to about 50 per cent.

Railway Rates in Brazil Raised

LONDON.

Modern Transport states that as a temporary measure designed to meet the transport crisis in Brazil all railway rates are to be raised immediately. It is also announced that a bill is to be introduced empowering the government to revise railway contracts.

Cost of England's Railway Strike

LONDON.

The total cost of the nine days' railway strike in Great Britain is estimated at about $50,000, including delay in demobilization estimated at $25,000,000. Mr. Bottomley, Independent Labor member, called on the government at once to introduce legislation rendering illegal any stoppage of public services at the instance of trade union executives without due notice to and a ballot of the members concerned.

Railway Congestion at Nigeria

LONDON.

An extract from the London Times Trade Supplement states that owing to lack of inland transport facilities and to the bad working of the railways due to a deficiency in rolling stock, large quantities of local produce are awaiting removal in different Nigerian trade centers. The pay offered to railway men does not attract good mechanics to the service of the Nigerian railways, with the result that repairs to engines, rolling stock and permanent way suffer from the shortage of skilled labor.

Rebuilding of Railways in Devastated Parts of France

LONDON.

An extract from the Times Trade Supplement states that the rebuilding of the destroyed parts of the Nord and Est railways has recently made great progress. On October 1 only 44km of track and two stations of the Nord line remained to be put in order. Nearly all the bridges are rebuilt, and only two tunnels, those at Feren and Folambray, remain to be reconstructed. On the Est, 175km of track are still to be put in order and only twenty-four stations are not open to the public.

Railway Material from France

LONDON.

An abstract from the London Times says that the Ministry of Transport is hurrying the work of bringing back railway material from France. By means of the train ferry, wagons are returning at the present time at the rate of 500 a week, and it is hoped shortly that this number will increase to 900. The material consists of two kinds, one being that which was taken from the railway companies and which is now being returned to them, and the other that built specially for the war. Locomotives and trucks are being allocated to the railway companies according to priority of need.

Japanese Laborers' Wages

LONDON.

An extract from the Engineer states that the average wage for an unskilled Japanese male laborer today is 48 cents and for a female laborer 32 cents per day. A skilled laborer earns from $1.10 to $1.68 a day. These rates are about 70 per cent above prewar rates. Besides the daily rates, however, yearly bonuses are given of a month's wages, and often considerably more. The working hours may be given generally as 70 hours per week, and the amount of work produced per hour by a Japanese workman is about one-half that produced by an average British workman where large jobs and heavy machinery are concerned.

New Locomotive Works at Essen, Germany

LONDON.

The annual capacity of the new locomotive works of Krupp at Essen are stated, says the Engineer, to be 300 heavy locomotives with tenders and 2,500 15-ton cars. The Prussian State Railways have apparently guaranteed to take 108 locomotives and 2,000 cars a year from the works, and the Krupp Company has undertaken to limit its profits to a very low percentage, no matter what economies in production it may be able to effect, all the excess going to the public exchequer. The government is free of responsibility for any loss that may be sustained by the firm and reserves the right of inquiring into the company's cost prices.

All-Steel Passenger Rolling-Stock for Indian Railways

The Bengal-Nagpur Railway has placed a contract with Cammell Laird & Co., Limited, Nottingham, for the construction of four bogie dining cars, underframes, bogies and ironwork, and for ten third-class bogies, underframes and bogies. These underframes will each be 67 ft. in length. The same company have also received an order from the Great Indian Peninsular Railway for forty-six bogie carriages, each 68-ft. length together with the necessary underframes, bogies, ironwork, as also the ironwork with the metallic furniture, lavatory and electric light details and other fittings for nine ordinary first and second-class bogie carriages for the Assam Bengal railway.

France Will Receive But Few Machine Tools from Germany

LONDON.

Allied commissions which have searched the occupied territory in Germany estimate that of the material and machines stolen from France and Belgium only 10 per cent can be removed in good condition, 15 per cent is useless and the remainder has been totally destroyed, says the Fortnightly Information Review, the publication of the American Chamber of Commerce in Paris. Approximately about 50,000 machine tools were stolen or destroyed in the invaded district of France alone.

British Government to Manufacture Railway Rolling Stock

LONDON.

The government arsenals of Great Britain are to manufacture rolling stock for the railways of Great Britain and there are now on order 2,000 freight cars for the North Eastern and 500 for the Great Western at the Woolwich Arsenal. It is stated, however, that the government will not do this work in competition with the private car builders and will only undertake such work when the railways are unable to get the deliveries required from them. In addition to cars 100 locomotives were manufactured at the arsenal for the government under order from the Ministry of Munitions and a certain amount of repair work of railway rolling stock has been done.

Railway Congestion in England

LONDON.

In reply to a question in Parliament, Sir Eric Geddes, Minister of Transport, stated that the cause of the delay in transport of freight on the railways in England was due chiefly to the congestion at terminals and ports, shortage of freight cars, diversion to railways of traffic which before the war was carried by coast-wise vessels (the rates by water have been greatly increased while those by rail have not changed), the 8-hour day and the more recent dislocation caused by the railway strike.

Over a thousand government-owned motor lorries are being placed at the disposal of the railway companies for the purpose of carrying traffic to and from the railway terminals and in addition to this government lorries are to be used in relieving the congestion at ports.

It is anticipated that the wagon shortage will be alleviated by the return of the 30,000 freight cars sent to France during

the war, and the 8,000 freight cars which were constructed for the war office and which are being consigned to the railways.

Railway Labor Unions Seek Joint Control of English Roads

LONDON.

In negotiations between the government and the National Union of Railwaymen which were resumed shortly after the close of the railway strike presumably to discuss the question of the standardization of railwaymen's wages has, it is learned, developed into the discussion of a scheme placed before the government by the unions relating to the future control of the railways. While it is impossible to obtain any concrete information as to what the plans of the labor leaders are on account of the fact that the negotiations are being kept absolutely secret, it is believed that the labor unions are demanding somewhat the same concessions as those included in the Plumb plan of railway administration in the United States. Press despatches state that the proposals are believed to give the railwaymen a certain amount of control over conditions of labor as well as a share in the formulation of railway policy; in other words, it is believed that the proposals provide for the administration and direction of the railways by joint boards of control.

Improved Conditions in Mexico

According to Col. Paulino Fontes, director general of the National Railways of Mexico, the several lines comprising that system are being gradually improved and brought up to their former standard of efficiency. He recently finished an inspection trip over all of the principal divisions of the system. New steel and ties are being laid upon the main line between the City of Mexico and Laredo. The steel is obtained from the plant of the Monterey Iron & Steel Company, and the ties are for the most part obtained from domestic lumber mills. Plans have been adopted for the erection of several new passenger stations. The new station at Saltillo will be finished in about three months. Large machine shops, roundhouse and other improvements are also being made at Saltillo.

Inactivity on the part of Villa during the last few weeks has enabled the reconstruction of much of the railroad in the state of Chihuahua which has been out of commission for several months. Mr. Fontes said that within the next three months the destroyed bridges, track and roadbed upon the old Mexican Central main line between Torreon and El Paso would be replaced and through traffic resumed.

At Durango much work is now under way. The new station, which will be the finest in the country, is well toward completion. This city is the center of four different lines—the one to Tehauntepec, the one to Torreon, the one to Canitas and the fourth to Llano Grande, which when completed will extend to Mazatlan, on the Pacific coast.

At Aguascalientes, where extensive repair shops are situated, it was arranged so that ten or eleven locomotives should be repaired each month, while not less than 100 freight cars and ten passenger coaches are turned out in complete order within the same period. The creosoting plant at that place was also put into operation. New contracts were let for the delivery of half a million ties monthly until all the lines shall have been put into good condition in this respect.

Electrification in South Africa

LONDON.

The Times Engineering Supplement states that a report has been presented to the government on the problem of electrifying the railways of the Union of South Africa by Mr. C. H. Merz, of Messrs. Merz and McClellan. It deals with four sections of the lines—the main line from Cape Town to Touws River with suburban lines in the peninsula; the Natal main line from Durban to Glencoe, and the Glencoe-Vryheid East branch; the Witbank-Germiston-Randfontein line; and the Delagoa Bay line between Witbank and Komati Poort.

The estimated return on the net capital cost of electrification on the main line from Cape Town to Touws River is 12.1 per cent and on the Simonstown branch of this line 10 per cent, on the Seapoint line 8.1 per cent, on the Docks branch 20.5 per cent, and in the Docks area 9.7 per cent.

The Durban-Glencoe line is calculated as returning 40.5 per cent and the Glencoe-Vyrheid East branch 12.5 per cent. The Witbank-Germiston-Randfontein line is estimated to return 10.8 per cent and the Delagoa Bay line 5.6 per cent. Owing to the anticipated results of the Durban-Glencoe line it is recommended that this electrification be undertaken first, followed by that of the Rand line, the Vryheid East branch, the Cape lines, and finally the Witbank-Komati section.

The direct-current system is regarded as most suitable for South African requirements. Though the narrowness of the gage to some extent restricts the use of high-voltage motors, supply to trains at an average of 3,000 volts is pronounced practicable and desirable. The overhead system is recommended and regenerative working would be adopted.

For main line traffic it is proposed to use freight locomotives with a tractive effort of 48,000 lb. compared with the 53,750 lb. of the present Mallet articulated type, and passenger locomotives with a tractive effort of about 30,000 lb. which would be capable of hauling a 600-ton load up a gradient of 1 in 60. Provision is to be made for a speed of 20 to 23 m. p. h. up ruling gradients by freight trains and of 28 to 39 m. p. h. by passenger trains, as tending to the most economical working. While on the level the express passenger locomotives would haul 15 main line coaches at not less than 55 m. p. h.

For suburban service the trains would be made up on the multiple unit system, each unit consisting of a motor coach and a trailer. In this way trains at busy times could be composed of four or five units (eight or ten coaches), while at other times two units might suffice.

Reorganization of Railway Systems in Serbia, Croatia and Slovakia

LONDON.

The Jugo-Slav minister for transport and war has issued the following provisional order, dealing with the reorganization of railways, says the Journal des Transports, Paris.

1. All railways situated in Serbia, Croatia and Slovakia are placed under the administration of the transport minister.
2. The whole of the system is divided into five district managements, at the head of which is a director.
3. The traffic of the whole system is regulated and directed by the former directorates.
4. The maintenance of the present traffic and the acquisition of the material required are directed by the transport minister.
5. The latter must in the first place provide for military transport.
6. For the purpose of ensuring the regularity of military transport, station commanders are to be stationed in the main stations.
7. Until the end of the war an agent shall be appointed to assist each directing body for the purpose of issuing to the personnel of trains and working services the necessary instructions.
8. The transport minister shall direct the rapid reorganization of railway traffic.
9. Should offers of Hungarian labor prove insufficient, the transport minister shall have the right to requisition, at the expense of the Hungarian state, other Hungarian workmen showing the necessary aptitude for the work.
10. The transport minister is authorized to procure all the tools, plant and material for the construction of bridges.
11. He will take the necessary steps with the French Government to provide that all the railway systems in Serbia and Croatia be placed under the administration of the said minister.
12. In order to ensure as rapid a resumption as possible of traffic on the destroyed systems, steps shall be taken to ensure that the personnel of the Serbian State Railways, on active service, shall be liberated therefrom and placed at the disposal of the transport minister.
13. Necessary credits shall be allotted to the transport minister to cover the expenditure incurred by the execution of railway construction.
14. Until complete demobilization the whole of the railway personnel shall be subject to military law in the event of any disturbances or breach of discipline.
15. The minister of transport and war shall take the necessary steps for the purpose of carrying out the modifications required for the application of the Order of 1908 dealing with the interior.

Equipment and Supplies

Locomotives

The St. Clair Terminal is asking prices on three switching locomotives.

The Sewell Valley has ordered one 2-8-2 type locomotive from the Baldwin Locomotive Works.

The Pennsylvania Railroad has authorized the building of 50 passenger locomotives at its Altoona shops.

The Jamaican Government Railway have ordered three 4-8-0 locomotives from the Canadian Locomotive Company.

The United Verde Copper Company has ordered two 0-6-0 switching locomotives from the American Locomotive Company.

The Broken Hill Proprietary Company (Australia) has ordered two 2-8-2 locomotives from the Baldwin Locomotive Works.

The Terminal Railroad Association of St. Louis has ordered fifteen 0-6-0 type locomotives from the American Locomotive Company. These locomotives will have 22½ in. by 30 in. cylinders, and a total weight in working order of 204,000 lb.

Freight Cars

The Paulista Railway (Brazil) is inquiring for 450 freight cars.

M. A. Hanna & Co., Wilkes-Barre, Pa., are inquiring for 50 mine cars.

The Gulf, Mobile & Northern is in the market for 250 box and coal cars.

The Virginian is inquiring for 1,000 steel coal cars of 100 tons capacity each.

The South African Railways are asking prices on 10 cattle and 60 drop side cars.

The Missouri, Kansas & Texas is asking prices on 300 10,000-gal. capacity tank cars.

The Cie Francais de Chemins de Fer au Dahomey (French Soudan) is inquiring for five cars.

The Chile Exploration Company, New York, is inquiring for 50 ore cars for export to Chile.

John Dunn, Son & Co., 44 Whitehall Street, New York, are in the market for 200 or 300 freight cars for export.

The Maryd Coal Company, Hazelton, Pa., has ordered 30 mile cars from the American Car & Foundry Company.

C. U. Snyder & Co., Chicago, have ordered 25, 8,050 gal., 50-ton truck tank cars from the Pennsylvania Tank Car Company.

The Conley Car Company, Pittsburgh, Pa., has ordered 25, 8,050-gal., 40-ton truck tank cars, from the Pennsylvania Tank Car Company.

The West Penn Power Company, Pittsburgh, Pa., has ordered 10 hopper cars, of 55 tons capacity, from the Pressed Steel Car Company.

The Hately Brothers Company, Chicago, has ordered three 10,050 gal., 50-ton truck tank cars, from the Pennsylvania Tank Car Company.

The Wilhoit Refining Company, Springfield, Mo., has ordered 10, 10,050-gal., 50-ton truck tank cars, from the Pennsylvania Tank Car Company.

The A. E. Staley Manufacturing Company, Decatur, Ill., has ordered ten 8,050-gal. 50-ton truck tank cars from the Pennsylvania Tank Car Company.

The Gillican Chipley Company, Inc., New Orleans, La., has ordered ten 8,050-gal., 40-ton truck tank cars, from the Pennsylvania Tank Car Company.

The Burkburnett Refining Company, Wichita Falls, Tex., has ordered 50, 8,050-gal., 40-ton truck tank cars, from the Pennsylvania Tank Car Company.

The Colonial Collieries Company, North American building, Philadelphia, Pa., has ordered 75 mine car bodies from the American Car & Foundry Company.

The American Railway Equipment Company, Philadelphia, Pa., is inquiring for ten 50-ton steel gondolas, ten 50-ton flat cars and from 40 to 50 50-ton hopper cars.

F. R. Phillips & Sons Company, New York and Philadelphia, are in the market for 3,600 car wheels and 1,800 axles to be mounted; also for 200 steel car frames 37½ ft. long and 300, 30-ft. long, for export.

The Union Tank Car Company has placed orders for 5,500 all steel tank cars of 10,000-gal. capacity each, as follows: 3,500 to the Standard Steel Company, 750 to the Pressed Steel Car Company, 750 to the Cambria Steel Company, 500 are to be built by the Union Tank Car Company at their own shops. The 3,500 tank cars is the largest order ever placed with any individual company, and 5,500 is the largest ever placed by any individual company.

Passenger Cars

Alberto Vales, New Orleans, La., is inquiring for 30 street-railway cars for export to Mexico.

The Seaboard Air Line is inquiring for 2 postal cars and for 5 combination baggage and mail cars.

The Nashville, Chattanooga & St. Louis is inquiring for one baggage and mail car and four baggage cars.

The Texas & Pacific, reported in the Emergency Bulletin of November 6 as being in the market for 50 coaches, 5 diners, 12 baggage and express and 2 mail cars, has ordered this equipment from the Pullman Company.

In the *Railway Age* Emergency Bulletin of October 20, under the heading of freight and passenger car inquiries, it was erroneously stated that the New York, Chicago & St. Louis was inquiring for 11 passenger cars. The error was editorial, the Nashville, Chattanooga & St. Louis being the inquirer.

Iron and Steel

The Erie Railroad Company is inquiring for from 20,000 to 30,000 tons of rails.

John Dunn, Son & Co., 44 Whitehall Street, are inquiring for about 10,000 tons of heavy steel rails and accessories for export.

Mitsui & Co., 65 Broadway, New York, are inquiring for 2,200 tons of 85-lb. rail for the Tientsin-Pukow Railway, and are also inquiring for 500 tons each of 12-lb. sections, 16-lb., 20-lb. and 25-lb. of light rails for export to Japan.

F. R. Phillips & Sons Company, New York and Philadelphia, has ordered 300 tons of 50-lb. rails and the necessary accessories from the United States Steel Products Company, and has also ordered 2,500 tons of rails from the United States Steel Corporation, for export to Brazil.

Signaling

The Pennsylvania Lines West of Pittsburgh have ordered from the General Railway Signal Company an electric interlocking for Leetonia, Ohio, 52 working levers, and 20 spare spaces.

Supply Trade News

O. P. Wilson, assistant general manager of the **Norma Company of America**, New York, has been elected vice-president of that company.

The Chicago Pneumatic Tool Company, Chicago, on October 1, removed its Birmingham office from 801 Brown Marx building to 1925 Fifth avenue, north.

Ballentine will remain as southern sales manager and will be assisted by **E. J. Wilkie**, who for many years has been connected with the sales department at South Milwaukee.

of the board; **W. H. Brevort**, president; **Charles McNeill**, vice-president; **L. K. Diffenderfer**, treasurer, and **S. H. Bell**, secretary. The headquarters of the company are at 120 Broadway, New York.

The **Replogle Steel Company** was incorporated recently in Delaware to take over the rights and property of the Wharton Steel Company, Wharton, N. J., and the Wharton & Northern Railroad. The new company, in addition to the production of iron, ore and pig iron, will maiufacture steel products. The officers are: **J. Leonard Replogle**, chairman

The **Bucyrus Company**, South Milwaukee, Wis., has moved its southern sales office from New Orleans, La., to Birmingham, Ala., room 212, Jefferson County Bank building. **C. N.**

The **Vapor Car Heating Company of Canada, Ltd.**, with headquarters at Montreal, Quebec, has taken over the business of the Canadian branch at Montreal of the Vapor Car Heating Company, Inc., of Chicago.

A. Clark Moore has resigned as vice-president of the **Safety Car Heating & Lighting Company**, Chicago, to become associated with the **Globe Seamless Steel Tubes Company**, with temporary headquarters at Chicago. **J. H. Rodger**, western manager of the Safety Car Heating & Lighting Company, will assume the duties of Mr. Moore without change of title.

The **Permanent Railway Tie Corporation** has been incorporated in Delaware, with a capital of $5,000,000. The office of the corporation in Delaware is with the United States Corporation Company, 311 S. State street, Dover. The following incorporators are all residents of New York: **Joseph A. Silver**, 835 West 178th street; **Edwin L. Carpenter**, 140 West Sixty-ninth street; **Charles H. Phelps**; **Elmer E. Studley**, and **Lawson Sanford**, 17 Battery Place.

William S. Hart, assistant general superintendent at the factory of the **Hazard Manufacturing Company**, Wilkes-Barre, Pa., has been appointed district manager in charge of the Chicago sales office and warehouse, succeeding **Albert W. Gabriel**, district manager for a number of years, who has retired to go into other business. Mr. Hart entered the employ of the Hazard Manufacturing Company in 1886, serving successively as machine runner in the wire rope mill, assistant foreman and foreman. He was transferred to the Pittsburgh branch in 1907, and was for several years assistant district manager there. In 1917 he returned to the factory to take the position of assistant general superintendent.

The **Bossard Railway Signal Corporation**, Troy, N. Y., has been organized to market a system of signaling invented by **Gisbert L. Bossard**, president and general manager, and **Rudolph Zaugg**, advisory signal engineer and director of the new company. The other officers are **W. Edward Hamilton**, vice-president; **John L. Lehman, Jr.**, secretary; **M. J. O'Sullivan**, treasurer, and **Guy F. Swinnerton**, legal advisor and director. The company is capitalized for $150,000, of which $50,000 is preferred and $100,000 common stock. President Bossard is an engineering graduate and has acquired an intimate knowledge of railway signal equipment covering a period of 10 years in that and allied industries. Mr. Zaugg is in charge of the engineering department of the federal railroads in Switzerland, and is an authority on railway signal equipment in that country.

The **Buda Company, Chicago**, has opened branch offices in Buenos Aires, Brazil, London, England, and Paris, France. **J. H. Maher**, departmental manager at the Buda Company's Harvey, Ill., plant, has been appointed sales representative in charge of the Buenos Aires office, with temporary headquarters at the Savoy Hotel, Buenos Aires. **Colonel R. S. Chapman**, recently discharged from the British Army, has been appointed sales representative and manager of the London office, which is at 10 Gloucester Place, Portman Square, London, W. I. **A. Conro Fiero**, connected with the sales force of the home office of the Buda Company, has been appointed sales representative in charge of the Paris office. His headquarters will be 29 Rue de la Rochefaucauld, Paris.

A. C. Allshul, in charge of the Milwaukee, Wis., office of **Joseph T. Ryerson & Son**, Chicago, has been appointed branch manager of its new warehouse plant at Buffalo, N. Y., this company having recently bought the warehouse plant, stock and good will of the Ferguson Steel & Iron Company, Buffalo. The property covered by the purchase at Buffalo includes a main building of about 100,000 sq. ft., divided into three spans, served by several bridge cranes, together with a large crane-served yard, office building, garage and storehouse. Plans are being made to carry out extensive improvements and for the enlargement of the property this coming winter. The Ryerson Company now has plans for warehouse service at Chicago, New York, Detroit, St. Louis and Buffalo.

After the meeting of the stockholders of the **American Locomotive Company** on October 28, **Andrew Fletcher**, president, said that the formation of an export combination of four large railway equipment concerns is now in the hands of the lawyers, and that it would be completed soon. Mr. Fletcher said that the organization was being framed under the terms of the Webb-Pomerene act, permitting combinations in export trade. The work has proceeded rather slowly, inasmuch as the companies are exploring new ground. The enterprise will be confined strictly to the exportation of railway equipment, the idea of a general export financing corporation having been abandoned as too radical a departure. The other companies associated in this undertaking are the **Baldwin Locomotive Works**, the **American Car & Foundry Company** and the **Standard Steel Car Company.**

Trade Publications

Steam Motor.—A description of the steam motor is given in bulletin No. 5, issued by the Steam Motors Company, Springfield, Mass. The bulletin contains 23 pages of descriptive material and many illustrations showing the parts and construction of the motor and the method of its application. The motor is a steam turbine designed for use in direct connected centrifugal pump and blower units.

Locomotive Cranes.—An illustrated folder has recently been issued by the Erie Engine Company, Erie, Pa., which contains short descriptions and illustrations of the various applications of the type-B Erie locomotive crane to dredging, trenching, loading materials, hoisting, etc. Tables and diagrams of the dimensions of this equipment and the capacities, weights, etc., are also given.

Window Fixtures.—Catalogue W-19 of the O. M. Edwards Company, Inc., Syracuse, N. Y., contains 64 pages and should prove of practical value to car designers. It contains considerable detailed information about the fixtures and the service for which the various designs are best adapted and by means of drawings clearly shows their application to single and double sash windows. All of the detail parts, such as sash balances and brackets, sash locks, racks and lifts, compression devices and weather stripping, are shown in numerous sketches and photographs.

Financial and Construction

Railway Financial News

BALTIMORE & OHIO—Paul M. Warburg of New York has been elected a director to succeed his brother, Felix M. Warburg.

CHICAGO & EASTERN ILLINOIS.—The receiver has been authorized by the United States District Court, at Chicago, to refuse the offer of the director general of railroads of $3,280,000 annual compensation for the period that this road has been under control. The order entered directed the receiver not only to refuse the offer of $3,280,000 annual compensation, but to demand compensation from the director general by bringing the case before a board of referees appointed by the Interstate Commerce Commission with power to fix the amount due the road. Federal Judge George A. Carpenter, who rendered the decision, based his findings on the premise that during normal periods the road has earned greatly in excess of the amount offered, on the basis of profit during the three year period prior to 1918, when the road was being reorganized.

OREGON, CALIFORNIA & EASTERN—This company has placed on file in the office of the county clerk at Bend, Ore., a trust deed in favor of the Portland Trust Company, Portland, Ore., covering all property the company now owns or may acquire, to secure a bond issue for the construction of new lines from Bend, Ore., to Klamath Falls, from near Silver Lake to Lakeview, from near Millican to Crane, and from this line to Burns and Narrows.

Railway Construction

CANADIAN PACIFIC—The Board of Railway Commissioners of Canada has authorized this road to construct a three-track ferry slip with a moving leaf on the south shore of Burrard Inlet, Vancouver, B. C.

CHICAGO, ROCK ISLAND & PACIFIC.—This road is now replacing its bridge crossing the Des Moines river, south of Des Moines, Iowa. The work consists of replacing four 150-ft. through trusses with three 150-ft. riveted through truss spans of heavier design and a pile approach.

ERIE RAILROAD—A contract has been given by the Erie Railroad to the Arthur McMullen Company, New York, for building the substructure of a bascule bridge over the Passaic river at Newark, N. J. Bids will be asked for in the near future for the steel work of the superstructure. The bridge will be 434 ft. 6 in. between abutments and will consist of three plate girder spans with a Strauss lift span of 180 ft.

GRAND TRUNK—This road is building a passenger station at Gravenhurst, Ont. The main building will be 68 ft. by 25 ft. with a 15-ft. addition for baggage. The construction will be of concrete with walls of brick to the sill line and a frame superstructure.

KANAWHA, GLEN JEAN & EASTERN.—This company is laying track on its extension from Mount Hope, W. Va., along Mill creek to the new mines of the Lee Coal Company, 1.25 miles. Contracts for grading and ballasting were let in the latter part of August to A. Keathly, Longacre, W. Va. The maximum curvature is 10 deg. and the maximum grade is 3.4 per cent compensated. The work included about 22,000 cu. yds. of solid rock excavation. The principal traffic on this line will be coal and timber.

ST. LOUIS-SAN FRANCISCO—A two-story brick and frame freight depot, with office facilities in the second story, will be erected at Okmulgee, Okla., at a cost of $50,000. A contract for the construction has been let to Charles Cunliff, St. Louis, Mo.

Railway Officers

Railroad Administration

Federal and General Managers

M. P. Blauvelt, assistant regional director of the Allegheny region, has resigned to accept other service.

J. B. Carothers, assistant to the federal manager of the Baltimore & Ohio, Western Lines, with headquarters at Cincinnati, Ohio, has had his jurisdiction extended over the departments of fuel and locomotive operation.

Operating

W. M. Archer has been appointed superintendent of the Blue Ridge at Anderson, S. C., succeeding **J. R. Anderson,** deceased.

H. F. Gibson has been appointed trainmaster of the Aberdeen division of the Chicago, Milwaukee & St. Paul at Aberdeen, S. D. succeeding **H. M. Gillick,** promoted.

C. J. Kavanagh, superintendent of the Detroit, Toledo & Ironton, with headquarters at Springfield, Ohio, has been promoted to general superintendent with the same headquarters.

T. M. Bryden, has been discharged from military service and has resumed his former duties as chief despatcher on the Chicago, Rock Island & Pacific, with headquarters at Pratt, Kans.

Major Fred Brastrup has been discharged from military service and has returned to the Northern Pacific as trainmaster of the Seattle division with headquarters at Seattle, Wash.

F. E. Summers, superintendent of the Slaton division, Atchison, Topeka & Santa Fe, at Slaton, Texas, has been transferred to Emporia, Kan., succeeding **C. T. McLellan,** retired under the pension rules of the company.

H. R. Lake, acting superintendent on the Atchison, Topeka & Santa Fe, with headquarters at Wellington, Kan., has been appointed superintendent, succeeding **J. C. Schaffer,** deceased.

F. J. MacKie, assistant division superintendent of the Atchison, Topeka and Santa Fe at Wellington, Kan., has been appointed superintendent of the Slaton division with headquarters at Slaton, Tex., succeeding **O. J. Ogg,** transferred.

J. S. Walker, Jr., has been appointed assistant trainmaster at Rock Hill, S. C., of the Southern and associated railroads, with jurisdiction over the territory from Kingsville, S. C., to Marion, N. C., including the Sumter and Gaffney branches.

W. F. Thiehoff, assistant to the general manager of the Chicago, Burlington & Quincy Lines West, with office at Omaha, Neb., has been appointed assistant general manager of the Lines West, with the same headquarters, succeeding **G. W. Holdredge.**

Frank McCabe has been appointed superintendent of terminals of the Southern and associated railroads, Eastern District, with headquarters at Charleston, S. C. The portion of Reads' Branch not included in the North Charleston Corporation and to the west switch at Ten Mile will come within Mr. McCabe's jurisdiction.

J. P. Quigley, superintendent of the Western division of the Western Pacific, with headquarters at Sacramento, Cal., has been appointed superintendent of transportation and telegraph, with office at San Francisco, Cal., succeeding

E. W. Mason, whose promotion to general manager of the Western Pacific was announced in the *Railway Age* of September 5, page 490.

John A. Streyer, assistant general manager of the Macon, Dublin & Savannah, with headquarters at Macon, Ga., has resigned to become vice-president of the R. F. Willingham Corporation, Cannery and Storage Warehouses, of Macon. With the exception of four years, Mr. Streyer has been in railroad service since 1890, when he became messenger in the traffic department of the Georgia, Southern & Florida, after which he was promoted to clerk in the general freight office, and in 1894, to assistant chief clerk in the claim department. From 1894 to 1898 he engaged in mercantile business in Macon, but returned to railroad service in October of that year as traveling freight and passenger agent of the Macon & Birmingham Railway. In 1901, he was appointed commercial agent of the Macon & Birmingham; a few months later general agent, freight and passenger departments, and promoted in 1904 to general freight and passenger agent. The road from which he has just resigned secured his services as general agent in February, 1904, a position he held until 1914, when he was appointed general freight and passenger agent and in 1916, traffic manager of the same road. In 1918 he became assistant general manager as told above.

H. B. Voorhees, whose appointment as manager of the Baltimore & Ohio, New York Terminals, Baltimore & New York, Staten Island Rapid Transit and Staten Island Railroad, was announced in the *Railway Age* of Sept. 26 (page 657), was born in Saratoga Springs in 1876 and at the age of twenty graduated from the Rensselaer Polytechnic Institute as civil engineer. His first railroad service was with the Philadelphia & Reading, whose staff he joined in 1897 as assistant supervisor. The next year he was promoted to supervisor and later became respectively assistant trainmaster and trainmaster. In 1901 he went to the Baltimore & Ohio as assistant engineer and while in the service of that company became successively division engineer, assistant to the general superintendent of transportation, superintendent and general agent, assistant to president, general superintendent transportation, general superintendent, general superintendent transportation and manager, the position he held at the time of his recent appointment.

H. B. Voorhees

Edward C. Potter, assistant general manager and federal treasurer of the Brooklyn Eastern District Terminal, has resigned to become resident manager at New York for E. Atkins & Co., raw sugar merchants of Boston, Mass., and Havana, Cuba. Mr. Potter was born in New York in 1885 and received his education in St. Paul's School, Concord, N. H. and Harvard University, being graduated with the class of 1906. After two months' service in the sales department of the American Sugar Refining Company, he entered the employ of the Brooklyn Eastern District Terminal in September, 1906, and until his recent resignation, has served that company continuously as, respectively, car sealer, tally man, billing clerk and cashier; being appointed in 1908 agent of the Delaware, Lackawanna & Western at the Brooklyn Eastern District Terminal; becoming assistant general manager of the whole terminal in February, 1909, and vice-president in charge of traffic, in October, three years later. When the terminal was taken over by the railroad administration, Mr. Potter again entered the operating department as assistant general manager and federal treasurer. In addition to the above, he has been an active member and often chairman of many transportation and commercial committees, as well as social bodies identified with traffic matters in New York and Brooklyn. Furthermore, he is well known as a writer on transportation subjects, some of his volumes being, "The Union Freight Terminal," "Railway Traffic Departments" and "Freight Handling in the Port of New York."

Financial, Legal and Accounting

E. C. Davis, acting federal treasurer of the Detroit, Toledo & Ironton, has been appointed federal treasurer with headquarters at Detroit, Mich.

George S. Patterson, general solicitor of the Pennsylvania, Eastern Lines, with office at Philadelphia, Pa., has resigned, effective December 1. Mr. Patterson was born in Philadelphia, on October 10, 1868, and graduated from the Germantown Academy in 1884. Four years later he was graduated from the University of the Pennsylvania, academic department, and in 1891 from the law department. He entered railway service in 1900 as assistant solicitor of the Pennsylvania and in 1902 became assistant general solicitor. Upon the reorganization of the legal department of the road in November, 1907, he had his title changed to assistant general counsel and on January 1, 1912, was elected to the position from which he has just resigned. In addition to his legal work for the Pennsylvania, he was chairman of the committee of counsel appointed by the presidents of the 38 eastern railroads to handle the presentation of the five and fifteen per cent rate cases instituted before the Interstate Commerce Commission in 1913 and 1917.

G. S. Patterson

E. P. Bracken, general manager of the Chicago, Burlington & Quincy and the Omaha & Kansas City, with headquarters in Chicago, has been promoted to federal manager of the following railroads, succeeding **C. G. Burnham,** who has resigned to resume the position he held prior to government control as executive vice-president of the Chicago, Burlington & Quincy Railroad Company and the Colorado & Southern Railroad Company; the Chicago, Burlington & Quincy; the Quincy, Omaha & Kansas City; the Toledo, Peoria & Western; the Illinois Terminal; the Davenport, Rock Island & Northwestern; the Rapid City, Black Hills & Western; the Missouri & Illinois Bridge & Belt; the Rockport, Langdon & Northern; the Paducah & Illinois; the Winona Bridge; the St. Joseph Union Department; the Hannibal Union Depot and the Keokuk Union Depot. Mr. Bracken entered railway service in 1887 as a gang foreman on the Lincoln division of the Chicago, Burlington & Quincy. From 1888 to 1905 he was successively extra gang foreman on the Wymore division for one year, roadmaster for 13 years and trainmaster for 3 years. From 1905 to 1906 he was assistant superintendent of the Lincoln division and from the latter date until May, 1909, when he was successively superintendent of the Lincoln, Sterling, Sheridan, Brookfield and Galesburg divisions. The following year he was appointed general superintendent of the Wyoming district and from 1910 until 1912 was assistant general manager of the Lines East of the Missouri River with headquarters at Chicago and in 1917 was elected vice-president in charge of the operating department. When the government assumed control of the railroads, he

was appointed general manager of the Chicago, Burlington & Quincy and the Omaha & Kansas City.

Traffic

John M. Hughes, eastern land agent of the Northern Pacific with office at Hudson, Wis., has been appointed land commissioner with office at St. Paul, Minn. The position has been newly created.

D. G. Gray, assistant traffic manager of the Baltimore & Ohio, Western Lines, with headquarters at Chicago, Ill., has been appointed general traffic manager of the Western Maryland with headquarters at Baltimore, Md.

A. E. Buck, chief clerk to the general freight agent of the International & Great Northern, with office at Houston, Tex., has been appointed division freight and passenger agent of the International & Great Northern, the Galveston, Houston & Henderson and the Houston & Brazos Valley, with the same headquarters.

H. E. Heller, assistant general freight and passenger agent of the Chicago, Burlington & Quincy, with headquarters at Kansas City, Mo., has been appointed general freight agent of the Missouri district with headquarters at St. Louis, Mo., succeeding **William Gray,** who has resigned. **Frank A. Hart,** division freight agent with office at Kansas City, has been promoted to succeed Mr. Heller.

George A. Upton, agricultural and industrial agent of the Baltimore & Ohio, with office at Cincinnati, Ohio, has been promoted to foreign freight agent, with office at Chicago.

Lee H. Landis has been appointed industrial commissioner for the Western Pacific, the Tidewater Southern Railway Company and the eep Creek with headquarters at San Francisco, Cal.

D. L. Gray, traffic assistant of the Eastern region, United States Railroad Administration, with offices at the Grand Central Terminal, New York City, and the La Salle Street Station, Chicago, will take over the duties formerly discharged by G. H. Ingalls, following whose recent resignation the position of senior traffic assistant was abolished. **James Webster,** freight traffic manager of the New York Central, with office at Chicago, will supervise the Chicago office during the absence of Mr. Gray.

Thomas D. Guthrie has resigned as assistant general freight agent of the Georgia Southern & Florida to become traffic manager of the Southern Wholesale Grocers' Association, Inc., with headquarters at Jacksonville, Fla. Mr. Guthrie began railroad work in 1905 with the Southern and has also given service to the Georgia Southern & Florida, Macon & Birmingham, Hawkinsville & Florida Southern, associated lines of the Southern. As a railroad man he has held successively such positions as mail correspondent, statistician, tariff and rate clerk, chief clerk to general freight agent and assistant general freight agent.

Engineering and Rolling Stock

R. Tawse, master mechanic of the Detroit, Toledo & Ironton at Jackson, Ohio, has been promoted to superintendent of motive power and equipment, with the same headquarters.

J. O. Hackenberg, division engineer of the Pennsylvania, Eastern Lines, at Wilmington, Del., has been appointed principal assistant engineer, Southern division, succeeding J. C. Auten, granted leave of absence.

F. M. Sloane has been appointed district engineer of the Rocky Mountain, Missoula and Idaho division, of the Chicago, Milwaukee & St. Paul Lines West of Mobridge, at Butte, Mont., succeeding **C. T. Jackson,** transferred.

H. L. Moore, road foreman of engines of the Southern Pacific at Tucson, Ariz., has been appointed road foreman of engines of the Coast Division, Southern Pacific, with headquarters at San Francisco, Cal., succeeding **C. H. Holdredge,** promoted.

George H. Brown, principal assistant engineer at Altoona, Pa., has been appointed assistant engineer, maintenance of way, bridges and structures, succeeding **G. W. Snyder II,** promoted. **T. J. Skillman,** division engineer at Jersey City, N. J., has been appointed Mr. Brown's successor.

Guy Franklin Egbers has resigned from service with the Russian Railway Service Corps and returned to the Northern Pacific as master mechanic, Pasco division, at Pasco, Wash. **Christian A. Worth,** acting master mechanic at Pasco, has resumed his former position as road foreman of the Pasco division.

F. T. Rice, chief joint inspector of the Fort Worth railroads, has moved his office from the first building north of the Fort Worth & Denver City roundhouse to 108 West Front street, Fort Worth, Texas. Hereafter all mail for the Joint Car Association as well as for Mr. Rice should be directed there.

Colonel E. B. Cushing has been discharged from military service and has resumed his duties as engineer maintenance of way of the Southern Pacific Lines, the San Antonio & Aransas Pass, the San Antonio, Uvalde & Gulf and the Trinity & Brazos Valley, with headquarters at Houston, Tex., succeeding **C. R. Morrill,** who has been re-assigned.

E. W. Smith, superintendent motive power of the Pennsylvania, Central Division, at Williamsport, Pa., has been transferred to Altoona, Pa., as acting superintendent motive power, relieving **R. K. Reading,** granted leave of absence because of illness. **John J. Davis,** general foreman machine shops at Philadelphia, has also been transferred to Altoona, succeeding **Henry S. Schumn,** assigned to other duties because of illness.

I. A. Uhr, inspector of electric signals on the St. Louis-San Francisco, with headquarters at Springfield, Mo., has been promoted to signal engineer, succeeding **R. E. Trout,** who has resigned to become general manager of the Primary Battery division of the Thomas A. Edison Co., Inc. Mr. Uhr was born at Atlanta, Ill., on July 5, 1883. In 1904, after several years' employment with a local telephone company, he became connected with the Kinlock Telephone Company, St. Louis, Mo. The latter part of the same year he became foreman of a line gang for the Union Switch & Signal Company, in charge of the installation of signals between Cleveland, Ohio, and Chicago on the Lake Shore & Michigan Southern. He was transferred to Indianapolis, Ind., in the employ of the same company, in July, 1907. From 1908 to 1909 he was a wireman on the Galveston, Harrisburg & San Antonio. In May, 1909, he again became connected with the construction force of the Union Switch & Signal Company as a foreman in the installation of automatic block signals on the St. Louis-San Francisco. In February of the following year he was appointed supervisor of the Ozark division of the St. Louis-San Francisco, and in March, 1914, he became inspector of electric signals for the entire system, which position h eheld until his recent promotion.

I. A. Uhr

EDITORIAL
Railway Age

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Cuba's Cane Railways

In this issue will be found the first of a series of three articles on the railways owned by the sugar plantations of Cuba. These lines, few of which are sizable in themselves, are, however, in the aggregate, an important part of the transportation facilities of that great sugar producing island. So important are they in fact that their total length amounts to 4,633 kilometres, or 750 kilometres more than Cuba's standard gage public lines. The sugar cane railways are owned in nearly all cases by the sugar mills to which they transport the cane, and at any rate the cars and locomotives which run over them are supplied by the mill or "sugar central." This naturally means that they are operated only as a subsidiary feature of the "centrals," so that Cuba has a large net work of railways that are run not nearly so much with a view to their efficiency as railways, as the efficiency of the industry they serve. This does not detract from their importance, for as the articles will clearly bring out everything, big and little, depends on getting the cane to the "centrals" and in keeping the grinding going on without interruption of any kind. The cane railways are of various gages and the types and kinds of equipment they use vary within the widest limits. The articles will bring out these factors and show how their subsidiary operation to the "centrals" has resulted in giving them a secondary aspect in many ways. They will show, for example, the lack of repair facilities even on the lines belonging to the better mills, the lack of care given to the locomotives and cars on the cane railways and the difficulty of including provision for new railway equipment and supplies in the company's requisitions for machinery and material. The Cuban cane railways do, however, present a large market for railway supplies, although one which does not prove as easy to cultivate as might be wished.

Refinements in "Safety-First"

"Too much care cannot be exercised by station employees in handling baggage trucks. . . . The matter has been called frequently to the attention of agents. . . ." These are the main points in a letter to chairmen of safety committees, which has been sent out by H. M. Mayo, superintendent of safety on the Southern Pacific lines in Texas, advising them of the fatal injury (on another road) of Miss Julia Heinrich, an opera singer, when a passing train struck a truck which had been left standing on the station platform too near the track. What can the safety-first man do, in a case like this, more than he is doing? This is typical of those misadventures which occur so infrequently that the average employee will get into trouble, because of them, only once in a life time, if ever; for dangers occurring so rarely all the admonitions, lectures, circulars, and letters that can be thought of afford but a poor preventive. This, as we all know, is the chief underlying reason why safety-first effort cannot always bring 100 per cent results. Logically, the safety-rule with baggage trucks is for the man in charge to leave them out of his sight only when they are placed on the part of the platform farthest from the track and are blocked so that no wind can start them. With this, as with many other safety rules, the hurried (or the lazy) baggageman must carry it out many times when he feels sure that there is no necessity for such extreme precaution. But can the superintendent require any less? And can he require it with reasonable hope of success unless he employs a sufficient number of cold-hearted inspectors to discover a good share of the instances of flagrant neglect of the rule? The only businesslike way to keep trucks three feet clear of the danger line is to insist on their being kept three yards from it—or farther. Mr. Mayo desires that "all agents be additionally cautioned and requested to keep this feature of their station operation constantly and prominently before employees . . ."; but the practical-minded station agent will be disposed to call this an impossible requirement—except as he can make his words concrete by applying them (as we have suggested) to actual trucks, every day. The specially commendable thing about this circular is the fact that it is devoted to this one accident. The whole safety-first movement may be considered as the giving of emphasis to precautions which ordinarily would not be emphasized. How far can this be carried? How frequently, and in how great variety, can such special admonitions be promulgated without defeating themselves by their numerousness?

Training of Employees

It is gratifying to note that not a few railroad officers are doing some real hard thinking in connection with the order recently issued by the Division of Operation, looking toward a more comprehensive training of shop apprentices. It is high time that some actual forward steps were taken by the railroads generally, not only in the training of shop apprentices, but also in the education and training of all employees, new or old. Campaigns in safety first, better car and train loading, fuel conservation, etc., have demonstrated conclusively, time and time again, that much inefficiency and carelessness are due to a lack of knowledge on the part of employees as to just how best to do their work. The *Railway Age* has repeatedly directed attention to this; and yet comparatively few railroad officers have caught the spirit and profited thereby. The Santa Fe has excellent apprenticeship courses in the mechanical department and before the war had planned to extend its educational work to other departments. While the training of a man in a complicated and difficult trade requires time, intensive and limited campaigns have their uses. They may be conducted with excellent results in all departments for new employees; and they are in many cases useful for men who have been in the service for some time and have had considerable experience. The value of such courses was clearly demonstrated in the training of certain technical branches of our army during the war. One reason for the success of the apprentice movement on the Santa Fe was the vision of President Ripley and the unfailing and consistent support which he gave to the movement. The New York Central started a splendid shop apprenticeship system on its lines in 1906; it is still accomplishing fair results, but the movement suffered considerably because of a change in management a number of years ago and a

subsequent lack of the hearty support which was given to this work in its early stages. So great is the problem and so large the possible returns that any board of directors can well afford to give it personal attention; to endorse the movement and see that successive managements carry it out consistently. For this reason it is desirable that the officer in charge of the educational work on any large railroad should be a big man and should report direct to the chief executive.

Protection Against Pay Check Frauds

In the course of miscellaneous discussion during the annual convention of the Railway Financial Officers, the question of protection against pay check frauds was brought up by L. E. Katzenbach, federal treasurer of the Great Northern. The treasury departments of the railroads spend each year considerable sums of money on various safety devices to protect their pay checks, but none of them are entirely satisfactory. Special water-marked paper or other safety paper is used, check writing machines are purchased and used, one after another, and the railroad treasurer is continually on the lookout to throw further safeguards around the pay checks, but frauds still occur. Check writing machines are a source of expense, and as Mr. Katzenbach said, the salesmen of each new device can demonstrate that a clever forger could raise a check written by previously designed machines. Furthermore, there is the ever recurring case of human error, where a check is made out either to the wrong man or to a name which is not on the pay rolls at all. Obviously, in such cases, responsibility rests on the railroad company and not on the bank. A suggestion for doing away with this source of expense in connection with safety devices for checks and with the loss incurred despite safety devices was that a bonding company should be paid a certain premium for taking the responsibility for all losses from whatsoever source, connected with fraud in cashing pay checks. The additional expense of safety devices for writing checks could be entirely done away with, and it is said that some bonding companies are willing to assume not only the risk of a raised check or the signing of one man's name by another man, but also such risks as are incident to making out a check to the wrong man or to a name not on the pay rolls. There is something more involved in this kind of insurance than the mere spreading of risks. It has been found that both with burglar insurance and with the bonding of employees, the knowledge on the part of a would-be criminal that he will be hunted down by the organized forces of the insurance company, is a strong deterrent to criminal action. Railroad treasurers have no nationally organized bureau for such work as this, and the suggestion made at the meeting of financial officers is well worth consideration.

Highway Crossing Protection

THE large number of highway grade crossing accidents occurring throughout the country creates a problem that should receive more consideration from the railroads and the municipalities than it has been given in the past. The majority of these accidents are the result of carelessness upon the part of automobilists and others using the highways. To realize that this is true and to see the chances taken by the average person, it is only necessary for one to watch the traffic passing over almost any railroad crossing.

The railroads have in many cases provided some kind of protection at certain crossings where the conditions are particularly adverse although some roads have been less progressive along this line than others. The type of protection which should be used cannot be determined in a haphazard way because conditions at one location may require the use of a watchman; while another place may need a watchman and gates, and at still other locations some type of audible or audible and visual warning may serve the purpose. The audible warning proved more or less efficient before the advent of automobiles but with their increasing use this method of protection has become less effective as very often the warning cannot be heard above the noise of the engine in the car. To overcome this condition an audible and visual indication has been used to advantage at many crossings.

One of the main considerations in protecting highways is to attract the attention of those using the crossings and this can perhaps be best accomplished by means of a moving visual indication since a moving object attracts attention quicker than a still object. That this is perhaps the best method which has been developed to this time is indicated by the fact that the United States government is using a flashing light in many cases in the light house service as a warning to navigators.

With the increasing number of automobiles each year accidents will normally become more numerous and it is of vital importance that the railroads and the municipalities cooperate closely in effort to lessen the number of these accidents. As a first step, it is essential that careful consideration be given to the selection of the type of protection which will best serve the purpose for which it is intended at each individual point.

Whatever Is Worth Doing Is Worth Doing Well

NOT LONG AGO a division engineer complained bitterly of the grade of bridge paint furnished him, paint which was made by the road under the direction of the company chemist. The poor quality of this paint, as he understood the situation, was not the result of incompetency on the part of the chemist. Instead it arose from potential competition between the company paint plant and the paint manufacurers. To justify the "home made" product it had to be turned out at a cost that compared favorably with prices on the commercial product quoted to the purchasing agent, with the result that quality was sacrificed for unit price.

Another illustration of this same short-sighted policy was noted in a case where the question of outside competition did not enter. The superintendent of a railroad timber treating plant was taken to task by an associate from another road for the indifferent character of some of the treatment observed in an inspection of his plant. In reply he frankly admitted that there was room for considerable improvement, but unfortunately his superiors seemed to be more concerned about the plant investment charge against each stick of timber than in thoroughness of the treatment. To get better results it would be necessary to hold the charges longer in the retorts and he would be severely criticized for the resulting decrease in output.

Of all the arguments presented by those who advocate that railroads manufacture a large part of their own supplies, the one which has been most favorably received is the idea that under company production, the incentive for profit being absent, all interest would be centered in the output of a high quality product. While the two examples given above are not presented here with the idea of establishing the fallacy of this theory, they serve to indicate a tendency that must be watched. Whether produced by railway employees or purchased in the open market, there can be no economy in the use of an inferior article. In the case of the timber treatment the cost of the thorough preservation may be considered unduly high by the management, but the

losses consequent to the use of poorly treated timber may be many times the difference between the cost of good and bad treatment. Under some circumstances it may be entirely proper for a railroad to continue the use of an article made in its own shops at a greater cost than it could purchase the nearest equivalent produced outside, but surely if the railroad plant can compete with the commercial plant only by turning out a shoddy product, it ought to be abandoned.

The Weak and the Strong Road Problem

JOHN E. OLDHAM, of Merrill, Oldham & Co., Boston, in his discussion of the report of the Committee on Railroad Securities of the Investment Bankers' Association, makes an analysis of the bills now pending before Congress for the solution of the railroad problem, which reduces differences of opinion to their lowest common denominator. In Mr. Oldham's opinion, there are two essentially different remedies for providing adequate rates. One is to include in the legislation restoring the roads to their owners a specific rate of interest which shall be allowed to owners of railroad securities based on some valuation of the property, and the other is to leave the determination of this rate to a transportation board or other governmental agency.

Assuming that either one of these two courses is taken, we still have the weak and the strong road problem, so-called. It is in the discussion of this phase of the subject that Mr. Oldham brings out a point which has not been generally discussed. Mr. Oldham's contention is that, broadly speaking, the weak and the strong road problem resolves itself simply into a matter of the financial structure of different companies. In so far as the properties themselves are concerned, there is no great difference between the so-called strong roads and the so-called weak roads. The strong roads have good credit, the weak roads have poor credit, not because the strong roads have a much better railroad property, which can be operated at a much lower ratio of expenses to earnings, but because the margin of safety above fixed charges is much greater with the strong roads than with the weak roads. Mr. Oldham figures that there is not more than a difference of ten per cent between the operating ratio of the very strong roads and the operating ratio of the very weak roads.

This, of course, is a question of fact. Operating men who have labored under the disadvantage of inadequate facilities, light, power, obsolete shops and bad grades, in competition with a road having adequate facilities, modern power and greatly reduced grades, will be inclined to feel that Mr. Oldham is laying far too little stress on the physical characteristics of different roads. On the other hand, an examination of the income account of typical weak and strong roads during the test period will bear out Mr. Oldham's contention to a surprising extent. Furthermore, given good credit, even the roads with physical disabilities would tend in a comparatively short time to overcome this difficulty through modernization of their plant.

As long as the roads remain independent, as they were prior to government operation, if Mr. Oldham is right the strong and the weak road problem will remain only if the financial structures of the companies remain as they now are. Were all the weak roads to go through receivership and drastic reorganization, with a readjustment of their capitalization, so that fixed charges would call for but a small proportion of the total available operating income in normal times, the weak and the strong road problem would be solved. This is assuming, of course, that Mr. Oldham's contention is entirely correct.

Wholesale receiverships, while it might in the long run work out to the advantage of the transportation systems of the United States, would work hardship on individual investors, and might prove disastrous to the whole credit structure of industrial life. On the other hand, the weak and the strong road problem will be perpetuated indefinitely unless something can be done to restore the credit, or rather to establish the credit of the weak roads. It is generally argued that a valuation based on the present market price of railroad securities, which was to be used as a basis for taking over the roads by the government, would be quite unfair to investors in railroad securities. The government has depressed the price of all railroad securities through its policy of railroad regulation, and it would therefore be taking advantage of its own wrong-doing in taking over railroad securities at this depressed market price. Mr. Oldham, however, argues that, roughly speaking, the government's actions have affected all roads. The valuation of securities of one road, as compared with another, on present or rather average market prices of securities is not unfair, either to the weak roads or the strong roads. Therefore, if the roads were to be combined into a dozen or twenty or more systems, they could with equity be put into such combinations roughly on a comparative market valuation of their securities. In fairness to Mr. Oldham, it should be said that this is carrying his argument somewhat further than he does himself, but it would appear to be the logic of his argument.

Assume that such consolidations be made, with a wiping out of railroad financial structures with an undue proportion of interest bearing securities, then the question of what to do with the surplus earnings of the strong roads would have disappeared. There would be no large surplus earnings, for the simple reason that rates would not have to be fixed to take care of weak roads. One of the two principal differences of opinion in the proposals now before Congress would, therefore, have been done away with.

Mr. Oldham's analysis of the situation is searching, and the conclusion which he reaches is drastic, but both analysis and conclusion deserve careful consideration. It might be pointed out that in the reorganization of bankrupt railroad properties success has generally been obtained by drastic measures, and failure has often been the result of a desire to preserve an unsound financial structure. Mr. Oldham's contention rests on the assumption that what applies to the reorganization of a single railroad property would apply also to a readjustment of the affairs of the entire transportation system of the United States.

How Not to Promote Efficiency

MANY students of American railway transportation are firmly convinced that the roads could have been operated more effectively and economically during the war period under private control than under government administration if the private managements could have enjoyed equal freedom from statutory restrictions. However, any one having a thorough knowledge of the facts, appreciates fully that the expenses of railway operation under private management would have increased in a ratio at least partially commensurate with those obtained under the United States Railroad Administration, as a consequence of the pressure for increased wages. On the other hand, not many railroad officers would be willing to admit that conditions of employment under private management would today be surrounded by detailed rules and working conditions like those which have been thrust upon the railroads by the United States Railroad Administration.

With respect to the negotiations recently consummated between Director-General Hines and the officers of the United Brotherhood of Maintenance of Way Employees and Railway Shop Laborers, there can be no argument on the

justice of the award to the maintenance of way men of privileges equivalent to those already granted to other classes of employees. The fault in this regard would seem to lie in the initial recognition of such basic principles as the eight-hour day, punitive overtime and other features of the standardized agreements.

A study of employment in the maintenance of way department made several months ago demonstrated that the eight-hour day is not an unmixed privilege. Reports from maintenance of way officers in various parts of the country indicated that many trackmen preferred the longer work day because of the greater earnings and that under some circumstances the railroads were being placed at quite a disadvantage in competition with other sources of employment that offered the men ten-hours work.

But even the eight-hour day and the high hourly wages paid are of secondary consideration. The real cloud that darkens the horizon of the railway officer who is ambitious to improve the efficiency of his department is the working agreement. How fruitful this can be in throttling initiative has been anticipated by the operations of the seniority clauses of the supplements to order No. 27, which have practically eliminated the possibility for improving personnel in cases of reductions in force, promotions, etc., since the rules favor the oldest man, irrespective of relative efficiency. Like all agreements fostered by union labor, the all-important factor is the basic principle of standardization i.e.—standard compensation for the standard workman, with no distinction between the dullest drone and the best man in the gang. With such conditions imposed upon the maintenance of way department, the possibilities for marked increases in the efficiency of the work are not what they might be.

New Books

The Story of the Old Colony Railroad. By Charles E. Fisher, 196 pages, illustrated, 6 in. x 9 in. Bound in paper. Published by the Author. Taunton, Mass.

This is a book which will delight every old employee of the Old Colony, and all of the old employees' intimate friends. The early history of the railroads of New England is always interesting, because of the great variety of facts, scenes and incidents found on every page; and the Old Colony is by no means the least interesting of these early enterprises. It includes the four-mile Quincy railroad, of wooden rails, built in 1826, the first railroad in America. Mr. Fisher evidently is the son of an old-time employee, and his book might perhaps be best described as a transcript of a station agent's, a shopman's or a general office clerk's diary for half a century; possibly the diaries of the author and his father. He gives very full notes from 1844, when the company was chartered, down to the absorption of this road in the New York, New Haven & Hartford; and a good deal of matter of later date. The illustrations are mainly photographs of locomotives. This is a field which has been pretty well worked already, but the present volume contains some illustrations of engines not published elsewhere. The locomotive history of this road is not without general interest, J. N. Lauder, who was president of the Master Mechanics' Association in 1880-82, having been at the head of the Old Colony motive power department for many years.

The Panama Canal reports that for the month of October, the tolls for vessels passing through the canal amounted to $661,000, which is the highest sum on record; the highest preceding month's tolls was recorded in May, 1918, when $644,000 was collected.

Letters to the Editor

Test Their Sincerity

San Antonio, Tex.

To the Editor:

Reading your editorial on page 237, August 8, in reference to the historic "basic eight-hour day" struggle of three years ago, the thought occurs to me that it is time for a showing of sincerity on the part of the brotherhoods as to their representations made at that time, when they were not demanding more pay, but shorter hours. While the chiefs are in consultation over further demands, it is time to ask how the "basic eight-hour day" is working. From all directions come authoritative statements, led off by the President and voiced by Director-General Hines, that "the Railroad Administration is firmly convinced that the eight-hour day is the *natural right* of railroad workers."

W. S. Carter, who is president of the Brotherhood of Locomotive Firemen and Enginemen, and who holds the position in the railroad administration of director-general of labor, complained to his brothers in 1915 that those who enjoy the "social distinction" of seniority, "demand the right to do two men's work in order to earn two men's pay." He cited an instance where one man "made 365 round trips in one year; and at the same time on that same railroad they had cut the firemen's list; there were hundreds and hundreds of men hungry and their families hungry; and yet they call this a brotherhood!", he exclaimed in disgust.

It is apparent that similar conditions still exist notwithstanding the "basic eight-hour day" legislation. Grievance committees are demanding that train crews be taken off while seniority men are making many hundreds of miles over the basic eight-hour day, which would represent 3,000 miles a month in freight service and 4,500 miles a month in passenger service. Now is the time to have a showdown on this question. The brotherhoods should be asked to take action in line with Paragraph 5 of General Order 27, in which Director General McAdoo said: "Since the application of the increases hereby granted will tend in individual cases to give increases, greater than is appropriate or necessary, to those train and enginemen who make abnormal amounts of mileage, and who therefore already make abnormally high monthly earnings, the officials of each railroad shall take up with the respective committees of train and enginemen the limitation of mileage made per month by employees paid upon a mileage basis, so as to prevent employees now making such abnormal mileage from profiting by the wage increases herein fixed greatly in excess of employees habitually making a normal amount of mileage."

Director-General Hines, in Supplement No. 16 to General Order No. 27 under Passenger Service, Article II, Basic Day, says: "One hundred and fifty miles or less (straight away or turn-about) shall constitute a day's work." Again in the same supplement under "Freight Service. Article VI, Basic Day and Overtime, (a) "In all road service except passenger service where under mileage schedules a more favorable condition exists 100 miles or less, eight hours or less (straight away ro turn-around) shall constitute a day's work."

It is conceivable even that many of the returning soldiers who have fought for democracy in Europe may be among those who are left without a job through the selfishness of those who demand the right to ignore the basic eight-hour day and to make two men's pay by doing two men's work.

Alex. Campbell.

Short Bridge in Ghent, One of the Few of Structural Steel Picture Was Taken on June 2.

The Reconstruction of the Belgian Railways

War Loss of $265,000,000—Practically All Lines in Operation Now—Opportunities for American Business.

By Robert E. Thayer
European Editor of the *Railway Age.*

London, November 4, 1919.

TAKEN AS A WHOLE the railways of no country, with the exception of the railways of Russia, suffered during the war to the same extent as the railways of Belgium. During the war those lines that were not directly under German control were operated by the military forces of the Allied armies. With the signing of the armistice, the control of the railways was gradually taken over by the civil railroad administration which entered upon its duties with the railways in a very much dilapidated condition. During the last part of the war, when the Germans began to realize that they were playing a losing game, they entered upon a program of destruction of the railways in Belgium, for the purpose of further crippling that nation economically, with that German thoroughness with which the whole world is familiar. The extent of the destruction was limited only by the time the Germans were given by the advancing Allies and by the facilities they required to handle the retreating forces.

Bridges, buildings, shops and track were destroyed and such materials as could be conveniently taken away were carried forward in the retreat. Shops were robbed of their tools and belting; the cars and locomotives which had to be left behind were left in an extremely dilapidated condition, and the locomotives were for the most part unfit to run. The signalling had either been dismantled or fundamentally altered to meet the needs of the German military forces; telephone and telegraph apparatus had disappeared or was entirely destroyed; interlocking plants were practically of no use, and in fact no detail of the railways was left undisturbed. It was this condition that faced the Belgian Railway Administration on the signing of the armistice, and the manner in which it entered upon its program of rehabilitation is well representative of the industry and perseverance of this small nation.

Destruction of Permanent Way and Buildings

A total of about 1,500 kilometers (approximately 1,000 miles) representing about 35 per cent of the whole line was destroyed at the time the armistice was signed, of which 1,100 kilometers (approximately 700 miles) was main line. This figure, however, does not represent the total amount of destruction done to the lines during the war, for as will be seen from the map, which shows the extent of damage at the time of the armistice and the lines that had been partially rebuilt for the services of the army up to the time of the armistice, a considerable length of line was repaired by the Allied forces before the armistice was signed.

There was but a small amount of damage done to the line which can be charged directly to the fighting, as will be seen from a study of the map. Between the line extending from Ostend through Thourout, Roulers and Courtrai, and the frontier lies the territory in which the lines were destroyed as a result of battle. In addition to this there was some damage done on account of the fighting in the region of Liege, Namur and in the vicinity of Antwerp. The remainder of the damage done to the lines can be attributed to the policy of organized destruction followed by the German army which includes that of wilful destruction and the removal of the tracks for service elsewhere during the German occupation of Belgium.

The territory which suffered most from unwarranted destruction was that lying directly west of a line through Ghent, Ath and Mons. In this district the destruction was most complete. The line was destroyed and all permanent struc-

tures demolished including bridges, stations, water works, shops, etc. Perhaps the most glaring example of wanton destruction which had not the remotest claim to destruction for military reasons was that of the destruction of a number of bridges in an uncompleted line extending from Brussels to Ghent, on which no rails had been laid.

At the time of the armistice, Belgium lacked rail communication with the Allied forces and there was a territory over 30 miles deep over which all communication had to be carried on over extremely poor roads. The devastated region included the great industrial works and coal mines which were so necessary to the country for reconstruction and greatly augmented the rehabilitation work.

The Germans did a large amount of damage to important construction work. The number of important bridges totally destroyed was in the vicinity of 250. One tunnel was blown up, being completely demolished at both ends and at three intermediate points. The great amount of damage done to the masonry work is well illustrated by the photographs. The most important bridges destroyed were those

A Masonry Culvert Near Angre Destroyed by Mines Set in Its Walls in Three Places.

at Huy 150 metres (490 ft.) long and one at Namur 100 meters (327 ft.) long. Other important bridges were destroyed at Boons, Waelhem, Duffel, Termonde, Breedene, Bruges and Grammes. There were destroyed in addition several highway bridges and two important viaducts at Meirelbeke-les-Ghent and the Morelle bridge at Tournai.

Among important buildings destroyed are those of the shops and engine houses at Walcourt, Eecloo, Tournai, Merirelbeke, Audernaerde, Anseghem, Hoboken and Ostend. These buildings were destroyed by burning. Other shops and engine houses were badly damaged, including the car works at Brussels and the locomotive shops at Luttre and Ghentbrugge.

In very nearly all of the shops regardless of whether they were completely destroyed or not, the best machine tools, belting and hand tools were removed by the Germans. Part of the old tools remained intact at the shops of Braine-le-Conte, Piteon, Jemelle, Arlon and Courtrai. At the car works at St. Nicholas and the main locomotive shops at Cuesmes all the up-to-date equipment had been removed while much of the equipment remaining at these shops had its essential parts missing. In the main, it can be stated that nothing was left that could be removed except the old types of machines which were unfit for important work.

Throughout the country the water supply plants were systematically destroyed even to the extent of blowing up canals at various points.

Even the railway stations were not evacuated without having been damaged and practically all the equipment relating to the operation of freight yards such as signaling towers, switches, etc., were left in an inoperative condition.

Destruction of Signals

As has been previously stated the Germans left the signal system in a very much disorganized condition. Not understanding the method of operation and not being able to coerce any of the Belgian railway men into operating the

Tournai Suffered Particularly. This Shows the Collapse of the Morelle Bridge.

signal plant, vast changes were made and an almost complete new system that could be operated by the Germans was installed during the four years of occupation of Belgian territory. A large amount of the equipment was either removed or damaged and due to the changed traffic conditions during the war, the entire arrangement was made inadequate for civil use of the Belgians. The signals were very much

Another Bridge in Ghent Which Is Typical of Belgian Bridges.

simplified, and a great many of the signals and interlocking apparatus were eliminated.

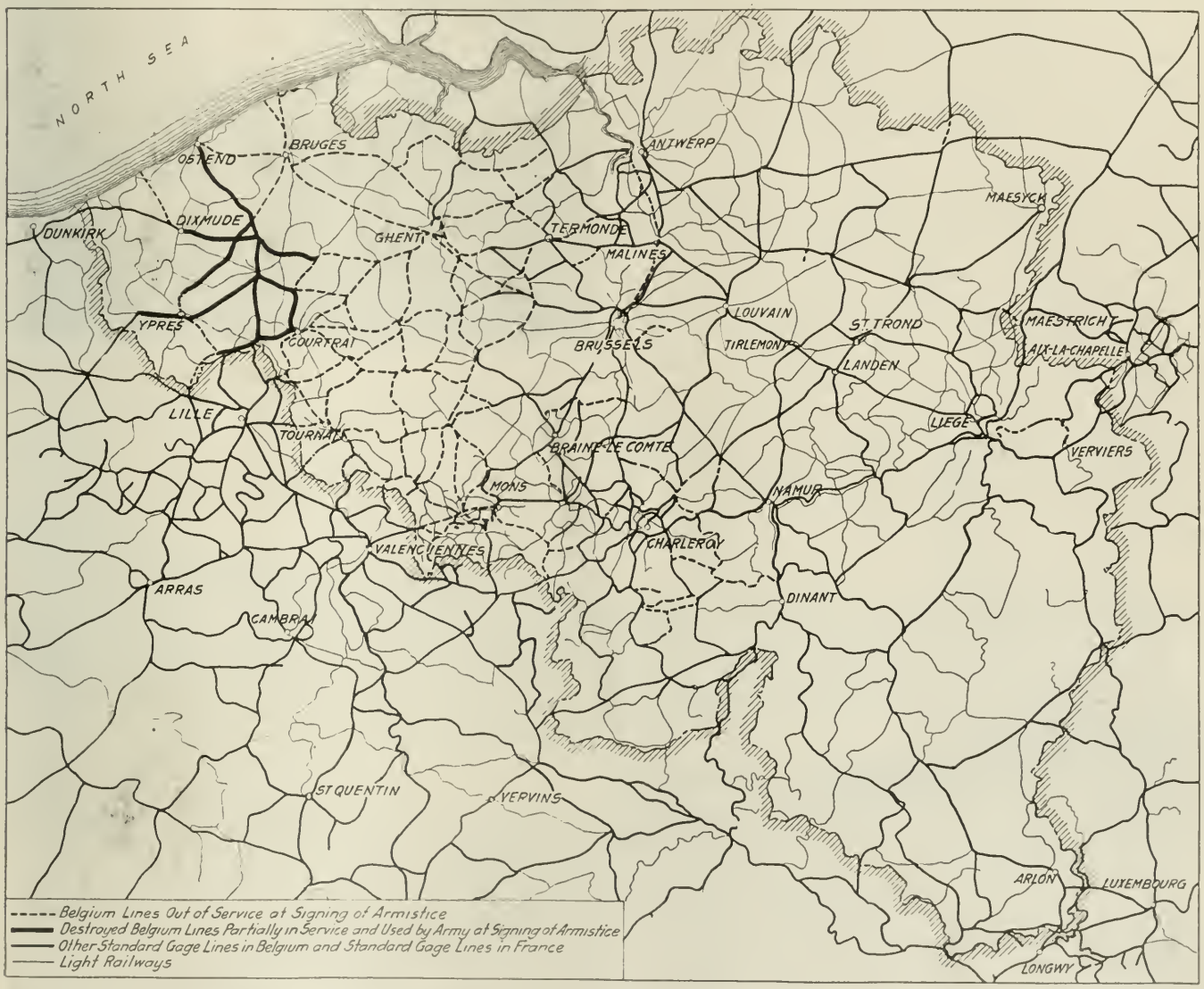
On the cessation of hostilities the railways used the signaling system as it was found, where possible, and in other cases the former signals were partially re-established. Trouble was experienced in this respect because a great many semaphores and much of the mechanical and electrical safety appliances had been removed. In order to ensure safe operation of trains on main lines, a station to station telephone block system was installed which had to be further developed by the re-establishment of the regular system as traffic increased.

Prior to the war, Belgium had in the neighborhood of 4,400 locomotives, 10,000 passenger cars and 92,000 freight cars, and at the time of the armistice there were only about 1,700

locomotives, about 4,000 passenger cars and a very small number of freight cars, all of which were in a very lamentable codition. The locomotives were very much neglected and many of them had some of their parts missing. The Germans left some locomotives fired up without water in the boilers which did considerable damage to the fireboxes, and at the end of December, 1918, 1,200 locomotives were put out of order. To make matters still worse there was considerable difficulty in getting satisfactory equipment from Germany under the terms of the armistice. The damage done to the passenger cars showed the same desire for wanton destruction. Windows were broken, roofs were in bad shape, coal for immediate needs and some had none at all. Great difficulty was experienced in replenishing these yards because of its being impossible for a period to re-establish regular coal trains.

The oil situation for lubricating and lighting was also serious. Quantities of lubricating oil, however, were discovered among the stores the Germans did not have time to remove but this was not adequate and an emergency supply had to be obtained from England.

Among other things lacking were copper for staybolts, wires, firebox plates and tube sheets. The Germans removed the brass tubes and oil boxes from locomotives and



Map of the Belgian Railways, Showing Their Condition at the Signing of the Armistice. The Condition of the French Railways Is Not Indicated.

the air brakes and lighting apparatus were in extremely bad condition, and even the upholstery was ripped from the seats. The heating apparatus had been removed and the supplies in the stores were destroyed. Where the electric light dynamos had not been removed they were impossible to run because no belts were available. The result of this made traveling in Belgium during the past winter extremely uncomfortable and hazardous to health.

Lack of Supplies

As in the case of the track and equipment, the supplies left behind by the Germans for operating trains were exceedingly low. Most of the coal yards had only enough supplies of white metal, zinc and lead. Even the fire brick for locomotive fireboxes, transmission pulleys, rubber hose for washing boilers and for air brake connections, etc., were not available.

The Work of Reconstruction

The rehabilitation of the Belgian railways involves a very large expenditure and the budget, which is shown in the table, for the operation for the year 1919, calls for credits to the amount of 1,137,827,000 francs ($227,565,404) of which 736,103,000 francs ($147,221,000) is chargeable directly to the war. In addition to this the budget calls for 597,338,944 francs ($119,468,000) for expenditures in ar-

rears which is also chargeable to the war. Thus the war has cost the railways of Belgium about $265,000,000. Approximately $100,000,000 is requested for repairing the roadway and $25,000,000 is required for rehabilitation of shops, tools, etc., and $20,000,000 for the maintenance, repairing and renewing of the cars and locomotives.

The first problem of the civilian administration as soon as it became organized after the signing of the armistice was that of re-establishing communications between important points and of bringing the railroads back into operation at the earliest opportunity. At the outset it had to get together such railway rolling stock as could be used. The military forces required a large amount of equipment and still controlled a large territory over which no trains could be run by the civilian administration without military authority. This greatly hampered the reorganization of train services. As the military authorities found opportunity, the operation of the lines and equipment was turned back to the civil management.

There were some 30,000 cars loaded with war material which had to be unloaded and storage space was difficult to find. Therefore the freight cars were cleared but very slowly. In addition to this the enemy left behind in the station yards stocks of explosive bombs, munitions, etc., which presented a real danger to the traffic and serious accidents occurred until the military authorities were able to clear away this material. At the end of the year, however, in spite of these difficulties 330 passenger trains were in operation and shipments of food were handled in such a manner that no undue hardship was caused throughout the country. From November 11 to December 29, 1918, over 270,000 tons of coal, food stuffs and other goods were handled by the civil authorities. On December 12, 1918, the first public time table was published including 155 trains. The service has since been rapidly developing until adequate service is now being obtained.

So rapid has been the work in the reconstruction of 1,500 kilometers of destroyed lines that there is now approximately only 200 kilometers out of operation. The supply of cars and locomotives has been augmented by those claimed from Germany and those returned from France, so that now there are approximately 4,000 locomotives and 75,000 freight cars in operation. There is, however, a shortage of about 30,000 cars.

In reconstructing the lines every attempt has been made to put in permanent structures and only where immediate service was required and the damage was large was any temporary construction used. The illustrations show clearly the manner in which the bridges and viaducts are being rebuilt and also indicate the thoroughness of the destruction by the German armies.

At the beginning of the reconstruction work, the Belgian government was severely hampered by the lack of rails and steel, particularly on account of the fact that none of the steel works were in a condition to operate, and it was not until the early part of June that the first blast furnace was placed in operation. As regards the masonry and brickwork, however, they were particularly fortunate in finding large quantities of cement which had been left by the German army and plenty of bricks and sand were available. It was found possible to use some of the steel work from the destroyed bridges for the construction of the few steel bridges. The work was done by contractors on a cost plus basis with 10 per cent profit. Steel workers were brought from available points and worked on a schedule of 66 hours a week in order to push the reconstruction work through as rapidly as possible. The industry of the workers was quite remarkable and spoke well of the esprit-de-corps of the Belgian workmen and their willing help in re-establishing the trans-

All That There Is Left at the Station of Hollain. Bent Rails Will Be Noted by the Platform. The Belgian Workmen Are Applying Their Screw Spikes.

The Station at St. Pierre Was Thoroughly Destroyed. This Illustration Shows the Viaduct After the Debris Had Been Removed.

portation system. Most of the bridges built for the railways were of brick construction; very few steel structures being used as permanent installations.

Machine Tools

The rehabilitation of the railway shops destroyed by the Germans presents a very large problem. There was a sufficient amount of equipment available to operate the shops

Site of the Bridge Over the Rietgracht at Avelghem. This Was in the Battle Zone and in the Original Photograph Barbed Wire Entanglements Are Faintly Discernible in the Background.

at one-third capacity during the summer. The additional machines required will be met by what can be reclaimed from Germany and by advantageous purchases from the American government. As regards the former it was stated by the Belgian Minister of Economic Affairs on September 21, that since April 1, machinery valued at 2,884,000 fr. had been recovered from Germany. All of this, however, does not apply to railroads. The terms under which machinery will be obtained from the American government have already been published, namely, at the 1914 prices plus 55 per cent F.O.B. Antwerp, with three years in which to make a settlement. There will undoubtedly be opportunities for the sale of the more special types of railway machine tools which must be purchased, as many of these were absolutely destroyed. Furthermore, as in all Europe and England, there will be an increased demand for labor saving machines due to the increased cost of labor.

Electrification Program

The electrification of the Belgian railways which has been mentioned in these columns previously presents another feature in the reconstruction program. Inasmuch as there is such a large amount of reconstruction work to be done, the adoption of electrification becomes a much easier problem. A commission has been formed under the guidance of the government and special committees have been working on the plans with a view of determining the extent to which electrification will be carried out and the system to be used, but in this case, as in others, much depends upon the fall elections as any radical change in the government is liable to result in a reorganization of the railway administration. On this commision are French engineers who have made comprehensive studies of electrification, the benefits of which will accrue to the Belgian commission. There is no question but what electrification will be carried forward but as to detailed plans nothing is known. Previous studies have indicated that Ostend, Ghent and Antwerp would be the most logical points for super-power stations with four additional power stations between Liege and Lille. Ostend, Ghent and Antwerp are so located that fuel can be transported to the power stations by water, and the four power stations between Liege and Lille are contiguous to the coal district.

Another View of the St. Pierre Station with Construction Well Along. This Picture Was Taken April 3, 1919.

Reconstruction of the Signal System

As has been stated above, the Germans during their occupation of Belgium so destroyed the signal system that practically the whole of it will have to be rebuilt. It is estimated that the cost of rebuilding will be about 80,000,-

000 francs ($16,000,000). It is believed that with the facilities at hand in Belgium it will be unnecessary to go out of that country for material, with the exception of the purchase of electric cables. In order to get some idea of the work to be done, the following brief description of the signaling system as it was before the war is given:

The danger points of the line were protected by semaphores with square ended blades and these signals were repeated at a distance of 800 meters or approximately 2,600 ft., with semaphores with pointed blades. When a stop and distance signal were at the same point they were placed on the same signal mast with the principal signal below as in England. In the newer signal work the upper quadrant position signals were used.

At all the junctions and in a large number of stations the levers were centralized in interlocking cabins. There are about 1,000 of these cabins having a total of nearly 20,000 levers. The majority of the interlocking apparatus was of the Saxby mechanical type. Double wires were used in most cases for operating the signals and at a certain number of the cabins there were used for operating the switches.

THE 1919 BUDGET OF THE BELGIUM RAILWAYS

Items	Expenses necessary for normal operation (Francs)	Expenses made necessary by the war (Francs)	Total credits required (Francs)	Expenses in arrears. (These are also chargeable to the war) (Francs)
ORDINARY SERVICES				
Salaries and Indemnities for officials and Staff	815,311	.....	815,311	3,388,644
Remuneration to servants and wages of workmen	182,000	.....	182,000	764,500
Printed matter, tickets, stationery, etc.	5,179,170	1,000 000	6,179,170	80,000
Subsidies to insurance and retirement funds	265 500	.....	265,500	.....
Special workmen benefits	163,000	.....	163,000	160,000
Conferences expenses, including International Railway Congress.	23,000	.....	23,000	.....
Medical attendance including "First Aid" training	125,000	.....	125,000	70,000
PERMANENT WAY AND WORKS				
Salaries and indemnities of officials and staff	3,715,851	.....	3,715,851	13,509,492
Wages of minor foremen, workmen, etc.	14,168,991	.....	14,168,991	55,224,483
Tires, rail and other accessories for permanent way	19,200,000	500,000,000	519,200,000	2,699,000
Tools, implements and cost of maintenance of railway property	31,203,742	125,000,000	156,203,742	57,205,611
LOCOMOTIVE AND ROLLSTOCK				
Salaries and indemnities of officers and staff	3,598,551	.....	3,598,551	15,293,841
Wages of workmen	46,590,698	.....	46,590,698	175,392,960
Bonuses for economy and regularity	3,818,626	.....	3,818,626	14,171,678
Fuel and other car and locomotive supplies.	117,911,000	5,040,000	122,951,000	5,300,000
Maintenance, repairs and renewals	78,306,455	100,067,000	178,373,455	71,058.000
TRANSPORTATION				
Salaries and indemnities of officers and staff	31,148,844	.....	31,148,844	110,638,088
Wages of workmen, guards and cartage	24,899,041	.....	24,899,041	55,689,284
Bonuses for regularity.	1,484,908	.....	1,484,908	6,329,235
Working expenses	13,937,853	4,846,000	18,783,853	423,000
Commercial advertising.	394.000	150,000	544,000	30,000
Loss and damage (indemnities for accidents that have already occurred)	2,130,000	.....	2.130,000	.....
Bonuses to employees who have detected false declarations of freight	10,000	.....	10,000	50,000
AUDITING AND COLLECTION OF RECEIPTS				
Salaries and indemnities of officers and staff	2,299,270	.....	2.299.270	9,273,228
Wages of servants and workmen	153,212	.....	153,212	587,900
Total	401,724,023	736,103,000	1,137,827,023	597,338,944

A number of installations for operating switches and signals by electricity have also been placed in operation, notably at Antwerp, Brussels, Ghent, Alost, Charleroi, Marchienne, Louvain, Namur and Vilvorde. In all the yards the switching was done by means of signals.

The absolute block system was used on the important lines with lock and block apparatus for a track normally closed. There were about 2,500 of these signals. Contrary to the practice in many countries a hand magneto was used to produce an alternating current instead of batteries. The single track lines were operated by means of a telegraph block system, but the lock and block signals had been put in places where these lines joined the double track lines in order to ensure greater safety.

A Masonry Bridge Near Andregnies.

The Germans not being familiar with this system, changed all this. The plans of operation on main line track were based on the regularity of schedule rather than on signals, and the existing block signals of the Belgian railways were not used and in most cases were destroyed or removed. Although the Germans left a certain number of masts in position they generally removed all but one of the signal blades.

Another Example of Bridge Destruction.

They also allotted certain tracks for special service where previously these tracks had no definite assignment. They eliminated a large amount of signals and terminals and all the interlocking apparatus.

The re-establishment of the signaling system of the Belgian railways has been placed under the direct charge of L. P. A. Weissenbruch, who is developing a more refined signaling system than that which was previously used, the details of which are not yet available.

Rehabilitation of Cars and Locomotives

The greatest problem of the Belgian railways as regards equipment was that of obtaining cars and locomotives and repairing those which it already had. After some difficulty Belgium received some 2,000 locomotives from Germany and about 80,000 cars, out of the 5,000 locomotives and 150,000 cars that were to be turned over to the Allies by the German government under the terms of the armistice. Of the cars about 5,800 were passenger and the remainder freight. It will thus be seen that the great majority of the equipment

Destruction of a Bridge Between Avelghem and Audenarde.

on Belgian lines was German equipment which presented a serious problem in maintenance.

As before stated the equipment left behind by the Germans was in a dilapidated condition and all the shop resources were at once put to work on its repair. Contracts were let with Belgian locomotive builders to repair 900 locomotives by January 1, 1920, but it is improbable that this will be done. With the crippled condition of the shops on the railways, these were only running to about one-third capacity a short time ago, and not much help was obtainable from that source.

Some 200 locomotives and 9,000 cars have been purchased

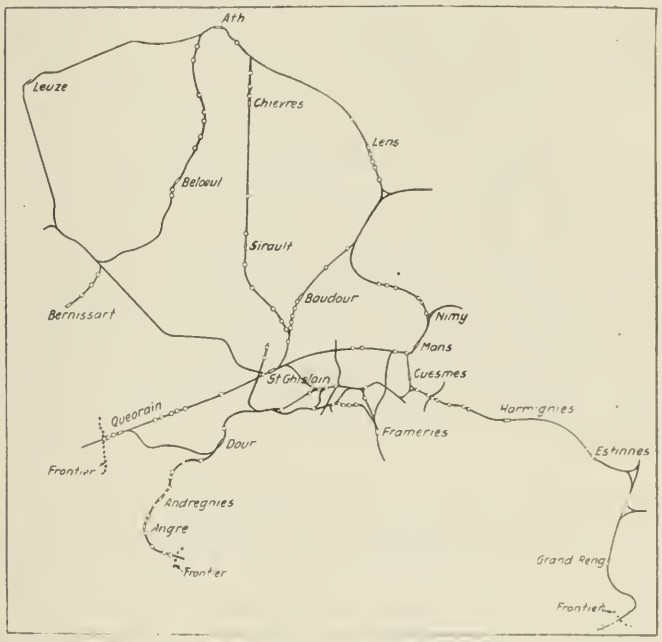
A Masonry Bridge Ready for Rebuilding.

from America, but these are not sufficient properly to rehabilitate the railway. It is the desire of the railway administration to return the cars and locomotives to Germany and demand money with which to buy standard equipment to its own designs, but no decision as to this has yet been made. On March 1, there were about 2,900 locomotives on the Belgian railways of which 1,700 were in working order. On August 1, there were approximately 4,300 locomotives of which 2,560 were in working order.

Prospects for American Business

The above account of the devastation done to the Belgian railways during the German occupation indicates that Belgium presents a wonderful market for railway supply manufacturers, but there are several circumstances which affect the situation, particularly as regards the United States. In the first place, the Belgian railways being state owned must of necessity cater to the home industries. And in the second place the political situation is such at the present time that although the present railway administration has formed definite plans of procedure, it must wait before going too deeply into their development until the elections show which party is to be in power, for the coming elections which will be held on November 16, are very much in doubt. In addition to this there has been some talk about removing the railways from direct control of the state, and placing them in the hands of private companies for their operation. A bill has been introduced for the formation of a company called the Regie Nationale de Chemins des Fer en Belgique.

Furthermore, the quantity of business given to various



Some of the Railways in the Vicinity of Mons. Each Small Rectangle Indicates an Important Station and Each Small Circle a Destroyed Bridge.

countries will depend to a very large extent on the credits that are offered by those countries. It has been stated that England, for instance, has loaned the Belgian government £50,000,000 ($250,000,000) for a term of 25 years. Undoubtedly this will serve to throw a large amount of the Belgian business to England.

Switzerland is also a lively competitor of the United States. Most representatives of American concerns in Belgium have been asking 75 per cent cash with an order notwithstanding the adverse rate of exchange, while the Swiss firms have been extending credits.

As a practical solution of the credit situation the American Chamber of Commerce, Paris, suggests that American manufacturers obtain credits for the purchase of raw products in the United States, that they themselves carry the manufacturing expense, that they sell in francs at an average pegged rate of exchange in Belgium and leave the proceeds of the sale in Belgium until such time as conditions might warrant their withdrawing it. The Chamber argues that the amounts involved would naturally be a great deal smaller

than purchase credits and the plan would result in many advantages to the American manufacturer.

It is also stated that there is in the hands of the Belgian government 7,000,000,000 marks which at the normal rate of exchange would amount to $1,750,000,000. This was, it is reported, bought from the inhabitants at the remarkable price of 1.20 francs to the mark, and the government refuses to let this money go at the present rate of exchange of the mark. (At the present time a mark can be purchased in Belgium for .35 francs.) The government's action in this matter clearly indicates that this money will be used for purchases from Germany as soon as the political situation will permit.

Another thing which has affected particularly the equipment manufacturers in the United States, is the American press reports of a combination entered into between various prominent equipment builders there to facilitate the matter of credits between Belgium and the States. The Belgian government having heard of this report is inclined to look upon it as a trade agreement for the regulation of prices for equipment to Belgium. It will be highly desirable to remove this idea from the minds of the government officials there, for this rumored combination has already had a detrimental effect on American business. As a result of it the Belgians look with suspicion on all prices quoted from America. That equipment will be bought here is quite certain.

As regards machine tools the greatest field of the American manufacturer is in the sale of machines particularly adapted to railway work and machines of improved designs which will reduce the cost of labor and produce a good article cheaply.

It is believed that Belgium will go out of the country for large orders in so far as it is possible for its local industries to get foreign business. In other words, it intends to act as a back stop for its industries, keeping them filled with orders and at the same time leave them free to regain and develop their foreign business which has suffered so greatly during the war.

Colonel Kennedy's Annual Luncheon at Ragged Edge

THE RAILWAY AGE is not much given to chronicling purely social events even when they are participated in by the railroad and railway supply fraternity, but the luncheon given by Colonel Moorhead C. Kennedy at his country home, "Ragged Edge," near Chambersburg, Pa., on October 4, was so interesting, so unique and so largely attended by men in this paper's particular field that it must be mentioned. The luncheon was something more than a social event. It was also a high personal tribute to Colonel Kennedy. It is probable that the only other time on which an equal number of prominent railway men ever got together on a purely social occasion was the dinner given to President E. P. Ripley of the Santa Fe by his friends on his seventieth birthday.

Three special trains were run to Chambersburg to take Colonel Kennedy's guests there; one from Philadelphia, one from Baltimore and one from Pittsburg. The number of guests was about 300 and there were included large numbers of railway presidents, federal managers and other railway officers. There is danger of being invidious in mentioning only part of the guests on an occasion of this kind, but the *Railway Age* ventures to mention "as among those present" the following: Governor Sproule of Pennsylvania; Governor Davis of Virginia; United States Senator Pomerene of Ohio; Samuel Rea, president of the Pennsylvania Railroad; E. T. Stotesbury, chairman, and A. T. Dice, president of the Philadelphia & Reading; C. R. Gray, president of the Western Maryland; W. H. Truesdale, president of the Lackawanna; F. D. Underwood, president of the Erie; W. T. Nooman, president of the Buffalo, Rochester & Pittsburg; E. E. Loomis, president of the Lehigh Valley; Ralph Peters, president of the Long Island Railroad; S. M. Felton, president of the Chicago Great Western; W. T. Tyler, director of operation of the Railroad Administration; B. L. Winchell, Southern Regional Director; Robert Bridges, editor, Scribner's Magazine; T. DeWitt Cuyler, chairman of the Association of Railway Executives; H. H. Westinghouse, chairman of the Westinghouse Air Brake Company, and so on.

How did Colonel Kennedy succeed in getting about 300 men of such prominence to leave their daily tasks and journey to Chambersburg to have lunch with him? Colonel Kennedy and his father, Thomas Benton Kennedy, before him, have been the moving spirits on the Cumberland Valley Railroad almost ever since it was built. Colonel Kennedy became vice-president of the road in 1889 and president in 1913, and since its consolidation with the Pennsylvania System he has been resident vice-president. In 1901, when he built his house and moved to Ragged Edge, he started the custom of giving an annual luncheon to some of his friends, and, with the exception of 1905, the year when his father died, he always gave a luncheon until 1917. In that year he entered the United States Army and was appointed Deputy Director General of Transportation with headquarters in London. Therefore, he gave no luncheons in 1917 and 1918.

At his first luncheon there were not more than 30 or 40 guests, but the number has grown year by year until his luncheon has become a big annual affair in the railroad business. Geographically, Chambersburg is located at about the cross roads between the East and West and the North and South, and this enables him to get together a good many men of prominence from these different directions. The location of Chambersburg would not be sufficient by any means, however, if it were not for the great reputation which Colonel Kennedy has acquired as a host and also the reputation he has acquired for always having good weather. On the sixteen occasions when he has given luncheons he has never had a bad day. Regardless of the kind of weather which has preceded or followed, on his luncheon days it has always been warm and sunshiny, so that he has been able to serve his luncheons on the lawn excepting one year when it was not quite warm enough and he served in the house and on the verandas. When he first built his house it was only a slight frame building 24 feet square, where he and his family spent the summer months, but at different times he has added to it until he has made it his permanent home the year round.

On the occasion of the luncheon on October 4 last the guests on their arrival climbed the tall hill on which "Ragged Edge" stands and were greeted by Colonel Kennedy and Mrs. Kennedy. After this there was informal conversation and visiting until lunch time. The luncheon was novel in the respect that there was no speech-making, but just eating, conversation and some occasional singing by the "old-timers." After luncheon the guests spent some time walking around the grounds and visiting some more, after which they returned to their trains.

Colonel Kennedy's luncheons have been always very simple and informal, which probably is one of the reasons why they have come to attract so many prominent people. It is no derogation from Colonel Kennedy's qualities as a host to add that one reason why so many attend is that the trips to and from his home on the special trains and the meetings at his house give those who attend opportunities to renew from year to year acquaintanceships with a large number of persons that they do not have opportunity to see at other times.

Railroad Regulation Bill Passed by House

Roads Have Some Friends in Congress but Labor Organizations, Commissions, Shippers and Waterways Have More

WASHINGTON, D. C.

THE ESCH BILL, H.R. 10453, described in its title as providing for the termination of federal control of railroads, for the settlement of disputes between carriers and their employees and to further amend the act to regulate commerce, was passed by the House of Representatives on November 17 by a vote of 203 to 160, with 69 not voting, largely by a party vote, the Democrats being opposed to the bill because it provides for a six months' continuation of the guaranteed standard return. The bill was then sent to the Senate where it was referred to the committee on interstate commerce. The text of the bill is published elsewhere.

Consideration of railroad legislation was technically started in the Senate on November 19 just before the adjournment when Senator Cummins moved that the Senate proceed to the consideration of his bill as in committee of the whole. The motion having been agreed to, the bill was temporarily laid aside but it was thus made the unfinished business for consideration at the regular session in December. As soon as the bill encounters obstacles in the Senate and it becomes apparent that it cannot be completed before the end of the year it is planned to introduce a temporary resolution and complete the permanent legislation later.

The hopes of those who had sought for the introduction of some radically new principles into the system of railroad regulation to improve railroad credit must now be transferred to the Senate because during the week of debate the House surrendered some of the most important provisions of the bill as reported by its committee to the demands of the railroad labor organizations, those who object to too much curtailment of the powers of the state railroad commissions, the waterway advocates, and those who object to any legislative instruction to the Interstate Commerce Commission as to the elements of a reasonable rate.

The bill was introduced in the House on November 8, favorably reported by the committee on interstate and foreign commerce on November 10 and its consideration was begun on the floor on November 11 under a rule making it the continuing order of business until its final passage. Sessions were held from 10 a. m. until 10 p. m. and the most important features of the bill were hotly contested throughout. On the general question of whether the roads should be returned to private management there was very little difference of opinion, although several of the recognized spokesmen for organized labor urged the plan for an extension of the period of government control.

The committee bill was based on the original Esch-Pomerene bill introduced in the House at the beginning of the session, which was largely the work of the Interstate Commerce Commission and represented its ideas as to desirable amendments to the act to regulate commerce. As reported, the bill represented many important changes from the original bill and several new features adopted by the committee after hearings extending throughout the summer and at the suggestion of representatives of the railway executives, the Railroad Administration, the commission, shippers, business men, and others that have been working with the committee. Some of the most important changes added during the last week of work on the bill by the committee after it had received the tentative draft prepared by a sub-committee, were struck out by the House before the bill was passed. More than 100 pages of proposed amendments to the original bill were considered by the committee.

The bill is very different from the Cummins bill reported by the Senate committee, as it leaves the regulating authority centered in the Interstate Commerce Commission, (except as it may be interfered with by state commissions), whereas the Senate bill would confer some functions of the commission and many new functions on the transportation board. Many of the details of the two bills, however, are similar. The House bill contains no provision for a transportation board, no prohibition against strikes, no provision for federal incorporation nor for compulsory consolidations, and no definite standard of return to be considered in the fixing of rates. At the last session of the committee a provision was inserted by a vote of 9 to 8 that "in reaching its conclusion as to the justness and reasonableness of any rate, fare, charge, classification, regulation or practice, the commission shall take into consideration the interest of the public, the shippers, the reasonable cost of maintenance and operation (including the wages of labor, depreciation and taxes), and a fair return upon the value of the property used or held for the service of transportation," but this section was entirely eliminated by the House.

Principal Provisions of the Bill

As passed the bill provides for a six-months' extension of the guaranteed rental for railroads that within 60 days file applications for increased rates, and for a funding for not to exceed 10 years of the indebtedness of the railroads to the government for capital expenditures ordered by the government during federal control estimated at $775,000,000, but it first deducts from that amount all indebtedness of the government to the railroads to the extent permitted by the standard contract, leaving other indebtedness of the roads to the government to be evidenced by demand notes. A fund of $250,000,000 is created by the bill from which to make loans to railroads.

While the bill is largely devoted to broadening and rounding out the regulatory powers of the Interstate Commerce Commission, it also gives the commission discretion to remove some of the restrictions heretofore placed on the railroads and contains some provisions of this kind which have been strongly urged by the railroads, including the removal of the prohibition against pooling and consolidation upon approval of the commission as in the interest of better service to the public, economy in operation, or otherwise of advantage to the convenience or commerce of the people. Also the period during which the commission may suspend a change of rates is reduced from four to 10 months to 120 days. The commission is empowered to fix minimum rates. It is also provided that extensions of an existing railroad, or the construction of a new line, or the abandonment of a line, shall not be permitted until there shall have been obtained from the commission a certificate of convenience and necessity.

The commission is given the supervision of security issues and much broader powers than it has heretofore possessed in its regulation of rates and of car service.

The elimination of the rule of rate-making leaves in effect merely the old rule that rates shall be "just and reasonable."

Wage Orders of Railroad Administration Confirmed

Aside from this, probably the most violent change made in the committee bill by the House was the substitution for the labor provisions of the bill, which provided for boards

to adjust wage disputes and also for the assessment of damages against a labor union or a railroad for damages caused by a strike or a lockout in violation of a contract, of an entirely new plan, proposed by the leaders of the railroad labor organizations, which neither provides for arbitration nor against strikes. It was generally discussed as providing for a method of voluntary adjustment by a continuation of the boards of adjustment established by the Railroad Administration but in fact it gives to the boards of adjustment jurisdiction over wages, which is now in the hands of the director general and an advisory wage board, and also creates similar bi-partisan commissions on labor disputes to which may be taken appeals from the adjustment boards, without any provision for a final decision in case of a deadlock. In addition it confirms for the future "all decisions of a general character heretofore made by the United States Railroad Administration affecting the questions of wages, hours of service or conditions of employment," and also decisions applying to individual carriers, which are to remain in effect until superseded by mutual agreement, or by the decision of a board of adjustment or a commission on labor disputes, in accordance with the terms of the bill.

The new labor provisions, offered in an amendment by Representative Anderson of Minnesota after statements had been made that they represented the views of the labor leaders, were adopted by a vote of 161 to 108 after a substitute for the committee provision proposed by Representative Webster, which contained a prohibition against strikes, had been voted down by a vote of 151 to 75.

Several other amendments were adopted to reduce the extent to which the committee bill would have curtailed the authority of the state commissions, particularly one affecting the car service sections, which Chairman Esch of the committee said would ham-string the federal authorities and take the vitality out of the car service act.

Vigorous efforts were made, but unsuccessfully, to eliminate the provisions for a guaranty for six months and making an application for a rate advance a prerequisite for a guaranty. The guaranty provisions, at the suggestion of Director General Hines, were made subject to a direction to the Interstate Commerce Commission to limit the expenditures for maintenance which may be charged to operating expenses to the amount provided for in the standard contracts.

One of the first amendments adopted was proposed by Representative Lanham providing that the period of federal control shall not be computed as a part of the period of limitation in actions against carriers or in claims for reparation to the Interstate Commerce Commission for causes of action arising prior to federal control. Such a provision was included in the bill, S. 641, which was vetoed by the President on November 18.

Funding of Indebtedness

A lively controversy was aroused by an amendment offered by Representative Denison of Illinois as a substitute for the provisions in Section 205 regarding the funding of the carriers' indebtedness. The plan in the committee bill would allow the funding for 10 years, at the same rate of interest allowed the carriers on capital improvements made during federal control, of the indebtedness of the carriers to the government for additions and betterments made by the Railroad Administration during federal control, while other indebtedness would be evidenced by demand notes at 6 per cent, and indebtedness of the government to the carriers would be set off against the amounts for which they would be required to give demand notes.

Mr. Denison's amendment provided for the plan proposed by the Division of Finance of the Railroad Administration, which had been rejected for the other plan by the committee, under which the government would first set off against the additions and betterments the amount of its indebtedness to the carriers which is deductible from the standard return under the standard compensation contracts, after allowing the railroads sufficient to take care of fixed charges, regular dividends and working capital (to the extent that the money due is sufficient for these purposes).

Mr. Denison argued, from data furnished by the Railroad Administration, that under his plan there could be deducted from the $775,000,000 estimated for additions and betterments (excluding equipment), a total of $415,016,000 of indebtedness of the government to the carriers, leaving only $360,000,000 to be funded, whereas under the plan contemplated in the bill only $133,911,000 could be deducted. The result would be, he said, that under his plan the Railroad Administration would require an appropriation of only $171,000,000 to square its accounts, whereas under the other plan it would require $303,355,000 and under the plan of the Senate bill an appropriation of $415,451,000 would be required. This led to a protracted debate in which many members took the position that it was only plain common sense to subtract what the government owes the roads from what they owe it, while those who defended the committee plan pointed out that what the government owes the railroads is for current purposes while the indebtedness for additions and betterments represents capital which would ordinarily be represented by long-term securities.

A letter from Director General Hines to Chairman Esch advocating the plan proposed by the Division of Finance and represented by the Denison amendment was read, in which he argued that the rate of interest to be paid by the government to the railroads on capital improvements should bear no relation to the interest they should pay the government, for which he suggested 6 per cent. He pointed out that the plan of the committee bill, which represented the views of the railway executives, would work out unequally in the amount of working capital it would allow the various roads and he contended that the railroads should be encouraged to obtain money through private financing instead of invited not to repay the government as rapidly as their financial resources might permit.

Representative Sanders of Indiana, one of the advocates of the plan of the bill, said: "It is not enough to say that we are opposed to government ownership unless we are willing to make private ownership a success. Reduced to its simple terms, the question is whether you are going to give a period of 10 years to these carriers to meet these obligations, which would have been in ordinary times long-term obligations or whether we are going to make them pay now, and send them into the market to raise large sums of money at the time of the termination of federal control."

Representative Merritt of Connecticut presented a letter from Alfred P. Thom, counsel for the railway executives, in reply to Mr. Hines' letter, in which he argued for the same rate of interest on both sides of the account and against the plan of offsetting part of the rental against the capital expenditures. Chairman Esch of the committee supported the Denison amendment, which was adopted by a vote of 134 to 69.

State Rights Preserved

The question of state rights came to the fore in connection with Section 206, providing that the existing rates shall continue in effect until changed "by or pursuant to authority of law." Representative Sweet of Iowa proposed an amendment inserting the words by "state or federal authorities respectively," which was adopted by a vote of 73 to 11.

A similar question came up in connection with the section giving the Interstate Commerce Commission extensive powers over car distribution and car service and Representative Sweet secured the adoption of an amendment providing that nothing in the act should impair or affect the right of a state

"to require just and reasonable freight and passenger service and the fair exchange and distribution of equipment for intrastate business." This was adopted by a vote of 95 to 39 and later confirmed on a record vote by 193 to 77.

Also, in connection with the authority of the commission over extensions of lines, an amendment was adopted that the commission's authority shall not extend to the construction or abondonment of any line located or to be located wholly within one state.

Representative Sims led a vigorous fight against the extension of the guaranty for six months, in which he was supported by a large number particularly from the Democratic side, but his motion to strike out the section was defeated by a vote of 114 to 72. There was particular objection to the provision that as a prerequisite to receiving the guaranty a road should apply to the Interstate Commerce Commission for an increase in rates within 60 days. It was explained that this was to prevent a road from resting on its guaranty. Chairman Esch said the six months' period had been fixed because the commission had advised that it could pass upon the rate advance in that time after allowing for two months for notice and preparation. Before the final passage of the bill a motion by Mr. Sims to recommit it to the committee with instructions to strike out the guaranty section was defeated 200 to 165.

An amendment proposed by Mr. Esch was adopted to provide that the contract between the American Railway Express Company and the director general shall remain in effect during the guaranty period so far as it constitutes a guaranty against an operating deficit.

Labor Disputes

Probably the most fiercely contested question in connection with the consideration of the bill was that involving the method of dealing with labor disputes. The committee bill had proposed a railway labor adjustment board to consist of one representative for each union and a similar number of representatives of the carriers, and a railway board of labor appeals to be composed of three representatives of the employees and three of the companies, to adjust and decide labor controversies and to study the relations between carriers and their employers. It contained no prohibition of strikes or lockouts but it did contain a provision making either a railroad or a union liable for damages for a breach of contract of hire.

This had been objected to by representatives of the railway labor organizations and their friends in Congress as more objectionable than the anti-strike provisions of the Cummins bill, but it was not sufficiently drastic for many Representatives and a strong fight was led by Representative Webster of Washington for an amendment providing for a board of railroad wages and working conditions whose findings would be final and binding, and making it unlawful for any group of employees to enter upon a strike pending the decision of the board. It also would make individuals, groups of employees or labor unions liable for damages for breach of contract by a strike or for any breach of findings and conclusions of the board. The plan also provided for the continuation of the three boards of adjustment organized by the Railroad Administration.

The same amendment had been offered in committee and, according to a member, had received only 2 votes out of 21. It proved too drastic for the members of the House and was defeated by a vote of 151 to 75 to substitute the amendment introduced by Representative Anderson of Minnesota, which it was stated represented the views of the labor organizations, and had been proposed in the committee by Representative Sweet. The Anderson amendment was then adopted, 146 to 117, and in a roll call vote before the final passage of the bill this was confirmed by a vote of 253 to 112.

The fact that the Anderson amendment confirms all the acts of the Railroad Administration relating to wages and conditions of employment was almost entirely overlooked in the discussion, although attention was called by Representative Winslow and others to the fact that it provides no permanent investigative body as to the relations of carriers and employees and that it provides but one method of getting a dispute considered by a board of adjustment, namely joint action by a union and a carrier initiated by the employees. There is no provision by which either a union or a carrier alone can refer a dispute to the board. It is provided that, after a failure to settle a controversy through the usual channels, if the contention of the employees' committee is approved by the chief executive officer of the organization, "then the chief operating officials of the carrier and the chief executive officer of the organization concerned *shall* refer the matter" to the proper boards, and "no matter will be considered by the respective boards of adjustment unless officially referred to them in the manner herein prescribed." Apparently the hands of a railroad would be completely tied in any effort to get rid of some of the extreme examples resulting from the blanket wage orders of the Railroad Administration which have been complained of.

Representative Madden of Illinois offered an amendment, which was defeated, providing that no carrier shall enter into or be bound by an agreement with a labor organization that excludes "native born American citizens," meaning negroes. Representative Madden also proposed an amendment to prohibit the issuance of free transportation to families of employees, which was defeated 58 to 8.

In connection with the discussion on the labor provisions, Mr. Esch referred to the statement sent to the press and to members of Congress by the railway labor leaders in the Plumb Plan League to the effect that the labor provisions on the bill as reported had been dictated by Wall Street. He said that no influence outside the committee room had dictated a single line or phrase of it.

Representative Rayburn of Texas also referred to the statement issued by the Plumb Plan League. He said: "The statement that labor representatives were not consulted and were not given a full hearing upon this bill, and the further statement that Wall Street wrote any provision of this bill is a slanderous lie." He also called attention to the fact that Edward Keating, a former member of Congress, who is acting as manager of the Plumb league is also drawing a government salary as head of a commission on reclassification of government salaries.

Representative Madden aroused a controversy which took some time to dispose of by introducing an amendment requiring carriers to furnish equal and identical accommodations regardless of "race, color or previous condition," aimed against the Jim Crow laws of the southern states, which was voted down 142 to 12.

Representative Sims revived the old controversy over the long and short haul clause by proposing an amendment to prevent fourth section relief to meet water competition. This was rejected by a vote of 97 to 50.

Mr. Sims also led the fight against the provisions in Section 407 authorizing the Interstate Commerce Commission to permit pooling and consolidations. An amendment by Representative Hudspeth of Texas to provide that nothing in the act shall relieve any carrier from obedience to the constitution and anti-trust laws of the state of its creation or in which it may operate was rejected, 63 to 32. An amendment by Representative Briggs of Texas to strike out the paragraph relieving carriers from the operation of the anti-trust laws in cases approved by the commission to enable them to perfect unification, consolidation or pooling was rejected. An amendment by Representative Black of Texas to strike out "economy in operation" as one of the reasons for which the commission could authorize consolidation or

pooling was rejected 64 to 33. Mr. Sims' amendment to strike out the entire section relating to consolidation and pooling was rejected 73 to 20.

Waterway Provisions

Several of the waterway advocates endeavored unsuccessfully to amend or strike out section 408 which authorizes the commission to permit the continuance of water line ownership by railroads other than through the Panama Canal when in the interest of the public. Representative Small of North Carolina obtained the adoption of amendments to Section 411, which authorizes the commission to require the establishment of physical connections between the rail lines and docks, striking out the words which would give the commission jurisdiction over docks irrespective of the ownership of the dock. The amendments were adopted en bloc by a vote of 102 to 51 and later confirmed on a record vote by 148 to 97.

Another amendment by Mr. Small to strike out a paragraph authorizing the commission to establish through routes and joint rates between and over rail and water lines and to determine conditions under which such lines shall be operated was adopted 81 to 59. Mr. Small said: "Water is free and water lines ought to be free."

The states' rights advocates made another fight against the adoption of Section 415, which provides for a method of cooperation between the state and federal authorities, where the relation of state to interstate rates is brought into issue, along the lines of the plan proposed by the Interstate Commerce Commission and endorsed by the state commissioners' association, but various amendments were rejected.

Section 417, which contained the proposed rule of rate-making, was stricken out by an amendment by Representative Barkley of Kentucky by a vote of 115 to 42, although the rule was warmly defended by Representatives Sanders of Indiana, Parker of New York, Montague of Virginia, Denison of Illinois, Little of Kansas, Merritt of Connecticut and Watson of Pennsylvania. After the section had been eliminated Mr. Sims offered as an amendment his bill to limit the salaries that may be charged to operating expenses to $20,000 a year, which was rejected 38 to 80.

The proposal to increase the salaries of members of the Interstate Commerce Commission aroused some discussion. An amendment to change the figure to $10,000 was rejected by a vote of 50 to 120 and one by Mr. Sims to make the figure $20,000 was rejected by a vote of 4 to 139. There was also some objection to the proposal to allow the commission to fix the salary of its secretary and an amendment to strike out the provision was agreed to but a committee amendment fixing the salary at $7,500 a year was adopted.

An Army Substitute for the Plumb Plan

A novel solution of the railroad problem which combined with it the advantage of offering jobs to a number of returned soldiers was proposed, apparently seriously, by Representative Evans of Nevada. He said that government operation of the railroads had failed because the railroad managers sought to disgust the public with government operation. Therefore he suggested that the governor of each state nominate five enlisted men from his state and from those thus nominated there should be selected a president, auditor, secretary, seven directors and 230 traveling inspectors, who should be given full power, authority and credit to maintain and operate the railroads until they are upon a sound financial basis and out of debt to the government.

Chicago's Anti-Smoke Campaign.—In a letter directed to C. M. Kittle, federal manager of the Illinois Central, Dr. John Dill Robertson, health commissioner of the City of Chicago, commended the road for its efforts in reducing the smoke evil against which the city is conducting a drive.

Hours of Service Reports; Annual Summary

INSTANCES OF EXCESS SERVICE, involving potential violations of the federal hours of service law were reported by railroads in the fiscal year ending June 30, 1919, to the number of 150,393; of which 149,660 were on roads which [usually] have reported more than 25 instances each. These totals appear in a statistical analysis which has been issued by the Interstate Commerce Commission, and which, for the roads reporting 25 cases or more, gives details for each road.

The final totals in this summary are given separately for each of five years; and we have inserted the word "usually" because of the uncertain or irregular basis on which the smaller roads are excluded. The 733 cases representing the difference between the larger and the smaller numbers above mentioned, were on roads which reported fewer than 25 instances for each of five successive years; while the roads named individually in the five-year table are those which have reported more than 25 instances in some one of the past five years. Some roads reported fewer than 25 instances for each of the four preceding years, but in 1919 reported more than 25; while others have reported in the year 1914 more than 25 instances, but fewer than 25 in each of the five succeeding years. The totals for the five years reported are as follows:

1919	149,660	1916	97,311
1918	263,279	1915	77,885
1917	134,638		

Table 1, for the last fiscal year, giving data concerning men in train service, shows a total of 21,952 instances where men were on duty continuously over 16 hours and not over 17 hours; 21,943 over 17 hours but not over 18; and 12,817 over 18 but not over 19 hours; and so on down to the column reading 24 hours to 25 hours, in which the total is 976; and no fewer than 258 instances are classed as over 36 hours. Forty of these were over 65 hours. The total number in this table is 78,169, of which 14,023 instances were attributable to causes arising after the men had been on duty 14 hours.

Table 2 shows, for each road, the causes of the delays recorded in Table 1. Of the total number of instances 78,169, nearly one-third, or 24,556, are entered under the head of derailments. Engine delays, largely mechanical defects, are charged with 6,547 instances; adverse weather conditions, 2,769; congestion of traffic, 4,631; coupler and drawbar defects, 12,881.

Table 3 shows instances of excess service in 1919 of trainmen who were on duty more than 16 hours in the aggregate—not continuously—and of telegraph operators on duty more than the prescribed length of time—nine hours in offices operated continuously and 13 hours in other offices. The columns covering continuously operated offices contain a total of 66,133 instances, and those representing the 13-hour offices contain 1,333 instances.

Table 4 gives totals for each of five successive years. The total above mentioned, 149,660, for 1919, is made up as follows:

Trainmen on duty for longer than 16 consecutive hours....	78,883
—Returning to duty after 16 hours' continuous service without having 10 consecutive hours off duty.....	237
—Returning to duty after aggregate service of 16 hours without having had eight consecutive hours off duty..	217
—Continuing on duty after aggregate service of 16 hours..	2,685
Telegraphers on duty more than nine hours in continuous offices	66,265
On duty more than 13 hours in day offices.....	1,373

This summary shows the facts as reported by the railroad companies, under oath; and neither the classification of causes nor any other facts shown have any relation to the question of whether the excess service was or was not excusable under the law.

Requisites of Adequate Railroad Legislation

Financing Roads During Transition Period; Adequate Revenues Necessary for Permanent Period

ALFRED P. THOM, counsel for the Association of Railway Executives, has filed with members of the House Committee on interstate and foreign commerce the following memorandum in respect to certain salient features of the proposed railroad legislation:

"In our opinion it is obvious that the proposed railroad legislation has to deal with two distinct periods: First, the period covering the interval between federal control and the time when such a relationship between revenues and expenses is established as will put the roads on a self-sustaining basis. This may be called the 'Period of Restoration'; and second, the period succeeding the 'Period of Restoration.' The latter may be called the 'Permanent Period.'

The Period of Restoration

"1. Entirely aside from the question as to whether there is any blame, and, if so, where the blame lies, in respect to the situation that will confront the railroads at the end of federal control, it will be universally admitted that, during federal control, the relationship between revenue and expenses has been so disturbed that something must be done to restore a proper relationship between them, if the roads are to survive under private management. This will involve a readjustment of the rates, and we think that, as this dislocation occurred during federal control, the duty rests upon the government to make the necessary readjustment. We ask that the duty to make this readjustment be imposed by statute upon the Interstate Commerce Commission, and, of course, unless interstate commerce is to bear a disproportionate part of the burden, the readjustment should cover both state and interstate rates.

"Pending this readjustment, the standard return or rentals should be continued, to cease as soon as the readjustment is made. If it be insisted that a time limit should be put upon this readjustment of rates, we think that the limit should be a year, with the understanding that the guaranty shall cease as soon as the readjustment is made.

"2. In the transitional period the companies will be confronted by a very considerable indebtedness incurred by the carriers to the government during federal control. Under Section 6 of the federal control act, the government could and did impose indebtedness upon the carriers for additions and betterments, and, under Section 7 of the federal control act, carriers could not issue any bonds, notes, or other securities, without the approval of the government. In this way, the financial management of the carriers was practically put in the hands of the government during federal control. The result is a large indebtedness of the carriers to the government for additions and betterments, some of it approved by the carriers and some incurred notwithstanding the carriers' disapproval.

"It is manifest that these capital expenditures for additions and betterments cannot be provided for out of current income. No railroad can have a current income sufficient to provide for its capital expenditures for additions and betterments.

"It is likewise manifest that the duty of providing adequate transportation, which the carriers must assume at the end of federal control, will confront them with very serious difficulties. The properties have been taken from them for governmental purposes for a period of two years. In that time their organizations have necessarily become demoralized, much of their ordinary traffic has been diverted to other lines, and their equipment is widely scattered because of its having been used indiscriminately on other lines wherever needed. The problem of a successful resumption of their transportation duties is thus, at best, difficult. It is impossible to anticipate success if they undertake it with empty treasuries. They must have not only an amount sufficient for ordinary working capital, but sufficient, in addition, to take care of the extraordinary expenses which they will be under in rebuilding their organizations and in re-establishing themselves in respect to their traffic.

"It is manifestly in the public interest that they shall be in a condition to perform successfully their transportation duties. The uncertainties of the future in respect to the system of regulation deprive them for the moment of even the ordinary credit, which, in the best of times, is not adequate. Some provision must, therefore, be made for the capital indebtedness which they owe to the government. We ask that it be funded for a period of not less than 10 years and at a reasonable rate of interest.

"In Section 4 of the federal control act it is provided that for the use of such additions and betterments as have been put upon these properties during federal control, the President shall allow compensation at a reasonable rate per centum, to be fixed by him upon the cost of such additions and betterments and extensions as were made by the carriers during federal control with the approval, or by order, of the President. It is for the cost of such additions and betterements that the carriers will owe the government at the end of federal control, and it is this indebtedness, in large part, which is to be funded.

"In paragraph (d) of Section 7 of the standard contract the President is likewise authorized to fix the rate of interest that is to be paid by him upon such cost. We think it manifestly just that whatever interest the President fixes as reasonable upon the cost of these additions and betterments for their use during federal control, should be accepted as the reasonable rate at which the indebtedness should be funded, and we ask that the rate be fixed during the funding period at the same rate that the President fixes as reasonable during federal control.

The Permanent Period

"1. It is, and must necessarily be, the controlling object of Congress to establish a system of regulation of these carriers which will insure to the commerce of the country adequate facilities and service. The basis of any such system must be an assured credit, and there can be no credit without an adequate and stable rate structure.

"It thus becomes a condition precedent to any successful system of regulation, that there shall be an assurance to the investing public of revenues to these carriers adequate to attract the necessary investment. The prime interest which Congress, therefore, has is to create a system that will insure revenues which the investing public will accept as adequate to attract their investments, and thus to provide for the future of transportation. While the object to properly protect existing investments is a very high one, that is not the first duty of Congress. Congress must deal successfully with the future of transportation, and must rely on the system which it adopts for this purpose to properly take care of existing investments. It must not make existing in-

vestments its prime and only duty, for that might not deal adequately with the future; whereas it can not deal successfully and adequately with the future without providing for due protection to legitimate investments which now exist.

"The first test to which Congress must subject any proposed system of regulation, is the test of whether or not that system will command the confidence of the investing public, for to the investing public a successful appeal must be made.

"When it is considered that Congress has received the assurance from every investing source that the old system of unlimited discretion in the Interstate Commerce Commission has not prevented an alarming decline of credit; when it is remembered that this is reflected in each of the leading plans proposed to Congress—in the Warfield plan, by subjecting the discretion of the Interstate Commerce Commission to a fixed statutory percentage on values as a guide to rates; in the Chamber of Commerce plan, by likewise subjecting the discretion of the commission to a permanent rule of a fixed percentage on values; and in the railway executives' plan, by securing from an independent board, charged with the obligation to see that transportation facilities and service are adequate, a certificate of the amount of revenue that it is necessary for rates to provide; it must be seen that the conviction is widespread, and, outside of governmental circles, universal, that something must be added to the discretion of the Interstate Commerce Commission, if the confidence of the investing public is to be attracted.

"2. In view of these incontestable facts, we submit that, at least, an assurance should be given to the investing public of a rule of rate-making which shall be precise and definite, and shall contain a statutory assurance that the proper elements in determining what revenues rates shall provide will be properly considered by the regulatory body. We do not think that there can be a legitimate doubt that the revenues, considered in respect to average conditions in a traffic group, should be adequate to provide (a) for expenses of operation, including labor and taxes; (b) for a fair return upon the property used or held for the public service; and (c) for a basis of credit to attract the new capital needed for facilities and service which the commerce of the country must have. We think further that, in the present condition of inadequate credit under the system of unrestricted discretion in the commission, it is necessary to provide an authority whose express statutory duty it shall be to see that the facilities and service in transportation are up to the requirements of commerce; to study the credit of the carriers with reference to their needs in order that they may be able to provide such facilities; and to certify the facts to the Interstate Commerce Commission, which should take them as their guide in rate-making.

"3. It is, in our judgment, also necessary to avoid taking away any part of the earnings of a railroad from lawful rates. In our opinion to do so would be unconstitutional, but it is not proposed to restate here the reasons for that view.

"If it is constitutional, it is all the more dangerous, because there would be no relief from it in the courts. The consequence of the assertion in the proposed law of a legislative power to take all the earnings of a road at lawful rates above a limit fixed at the discretion of this Congress, would be that the next, or a succeeding, Congress might take still more, until the point of acknowledged confiscation is reached. The railroad industry would thus be the only industry subject, at the present time, to the assertion of such a power, and the question would be whether the investing public would seek the one subject in the field of industry where the amount of its earnings at lawful rates might be taken away at legislative discretion or caprice. To engraft this principle upon the system of railroad regulation would be to implant in it the seeds of its own death, because no industry can survive when it is thus discriminated against, and thus made unattractive to the investing public.

This aspect of the matter has been developed in our testimony from the standpoint of rates, but it is equally clear that, irrespective of rates, the proposal is both indefensible and destructive. For example, let us take two roads costing exactly the same amount, and doing exactly the same business at exactly the same rates. One of these roads is well managed. The money spent upon it has been used in reducing grades, in eliminating curves, in acquiring engines with greater motive power, and in other directions which promote economy. The money spent upon the other road has not been wisely spent. The *net* result of the two will be entirely different—the difference not being due to dofference in cost, or to difference in business, or to difference in rates, but entirely due to difference in financial management, in wisdom of conception, and, in operation—one may earn precisely the amount Congress may be willing for it to retain, the other more. The proposal is to take from the better managed road all that it earns over a given figure, and reduce it to the dead level of the other road. Outside of the question of law or morals, such a proposal would absolutely destroy enterprise, initiative and good management, and these elements of advantage to the public would be thus withdrawn from the public service.

"Moreover, to adopt this principle would be to open the door to socialism. If the principle can be applied to railroads, which are now regulated by public authority, no answer can be made to the effort to apply it to any subject which may hereafter be regulated, such as fuel, manufacture of essential articles, or even money. If the rate on money, as it even now is, is regulated by public authority, is it not easy for the legislative authority to declare that the interest rate is made as high as it is out of consideration for those weak financially, that it is too high for the strong, and that a part of the earnings of the strong at the legal rate must be 'recaptured' and taken away?

"We respectfully urge that the policy of taking away from a railroad what it earns at lawful rates, no matter to what purpose it may be applied, should not be adopted.

"4. Having provided for adequate revenues, the question arises as to where these revenues are coming from. It is manifest that they should not all be provided by any one class of traffic. They should not all come from interstate commerce, nor should they all come from the state commerce of these interstate carriers. No view can be sound which does not properly distribute the burden of raising these revenues equitably among all the commerce of the carriers, state and interstate. How can this equitable distribution be made? There can be no assurance of equity if one authority fixes one class of these rates, and another authority, or authorities, fix the remainder. There must be some way of bringing the two together.

"The constitutional duty and power to regulate interstate commerce rests upon the national government, and it should be at least the ultimate authority to supervise the distribution of the burden of raising the needed revenue over all the traffic of interstate carriers.

"Moreover, it is well known that many interstate rates can not be fixed or collected unless state rates are fixed in proper relationship to them. This is manifest from every rate situation in the country. If, then, state rates are not fixed in proper relationship to interstate rates, and interstate rates, either actually or practically, have to give way, it is the states that are regulating interstate commerce, and not the national government.

"There must likewise be a prompt method of making this relative adjustment. Interstate commerce can not be allowed,

without serious injustice to those engaged in it, to bear, for any considerable period, a disproportionate part of the burden. From the experience of the Interstate Commerce Commission in administering the Shreveport principle, it is manifest that, under that system, the readjustment of state and interstate rates into a proper relationship will be so indefinitely prolonged as to amount to a denial of justice. We, therefore, ask that, on a *prima facie* showing that state rates are not bearing their just proportion of the burden of producing the necessary revenue, the Interstate Commerce Commission be given the power of suspension, subject to proper reparation to any shipper found ultimately to be prejudiced by such a ruling. We have prepared with much care a provision on this subject which will be found in the supplemental memorandum filed with the Senate committee, and is hereto attached as an exhibit.

"We have mentioned here only some of the salient features of the proposed legislation.

"We, therefore, respectfully ask that, in respect to certain salient features of the proposed legislation, provision be made, as to the period of restoration.

"For a readjustment, by the government itself, of rates, state and interstate, so as to establish a proper relationship between the revenues and the expenses which have been increased during federal control;

"That, until this is done, the standard return shall be continued, with a limit, if a limit be insisted on, of one year; and

"For the funding of the indebtedness of the carriers to the government for additions and betterments at the same rate of interest as the President fixes as reasonable under Section 4 of the federal control act, or under paragraph (d) of Section 7 of the standard contract.

"As to the permanent period: That a rule of rate making be established which shall express, as a plain statutory requirement, the elements that must be considered by the rate-making power, and that the commission, in making the rates, shall be guided by the expert advice of a board specially charged with the responsibility of seeing that transportation facilities and service are adequate, and of ascertaining and certifying to the commission the amount of revenues the carriers need in order to provide them; and

"That the burden of providing these revenues shall be properly distributed by a single authority, which in the nature of things, can only be the national authority—between all the traffic, state and interstate, of the interstate carriers, so that no class of traffic shall be unduly burdened, and no carrier shall be required to furnish service of any class at less than reasonable compensation. To this end we ask the adoption of the provision to be found in the supplemental memorandum, filed with the Senate committee, and hereto attached."

The suggested provision attached as an exhibit is as follows:

"For the information of the commission, every carrier subject to the provisions of this act shall file with the commission, from time to time, schedules showing all its individual or joint rates, fares, charges, classifications, regulations and practices for the transportation of passengers or property wholly within one state; and shall likewise file with the commission copies of all laws and orders of any state railroad commission or other state authority regulating rates, fares, charges, classifications, regulations or practices of said carrier for the transportation of passengers or property wholly within one state. The commission may determine and prescribe the form, time and manner within which said schedules, orders, and acts shall be filed with it.

"The commission shall confer with the authorities of any state having regulatory jurisdiction over the class of persons and corporations subject to this Act with respect to the relationship between rates, fares, charges, classifications, regulations or practices of carriers subject to the jurisdiction of such state bodies and of the commission; and to that end it is authorized and empowered, under rules to be prescribed by it, and which may be modified from time to time, to hold joint hearings with any such state regulating body, on any matters in which the commission is empowered to act, and where the rate-making authority of a state is or may be affected by the action taken by the commission. The commission is also authorized to avail itself of the co-operation, services, records and facilities of such state authorities in the enforcement of any provision of this Act.

"Whenever, either upon the complaint of any carrier, or of any person interested, or upon the initiative of the commission itself, there shall be brought in question any rate, fare, charge, classification, regulation or practice or any body or level of rates made or imposed by authority of any state on a carrier engaged in interstate commerce, the commission shall cause such state, or states, to be notified of the proceedings.

"The commission, after full hearing, shall, as to carriers engaged in interstate commerce, make such findings and orders as will, in its judgment, remove any undue inequality, or undue or unreasonable advantage, preference, or prejudice as between persons, localities, commodities, or other traffic, in state and interstate or foreign commerce, respectively, or any undue, unreasonable, or unjust discrimination against interstate or foreign commerce, which, on the part of carriers engaged in interstate commerce, are hereby forbidden and declared to be unlawful, and such findings or orders shall be observed, while in effect, by the carriers affected thereby, and the commission shall make the rates, fares and charges, or the minimum and maximum of such rates, fares and charges, and any classification, regulation or practice which, in its judgment, will remove such inequality, advantage, preference, prejudice, or discrimination.

"Pending such hearing and consideration, the commission, if it be made to appear to its satisfaction by informal evidence, that any rate, fare, charge, classification, regulation, or practice, or any level or body of rates, applicable to state traffic of a carrier engaged in interstate commerce, constitute an undue inequality, or an undue or unreasonable advantage, preference or prejudice as between persons, localities, commodities, or other traffic, in state, or interstate and foreign commerce, or any undue, unreasonable, or unjust discrimination against interstate or foreign commerce, shall suspend such state-made rate, fare, charge, classification, regulation or practice, or body or level of rates, and direct the carrier, until further order of the commission, to maintain such relationship between state and interstate rates, fares, charges, classifications, regulations, or practices, as to the commission may seem reasonable and just; but, in the event of such suspension and such direction to a carrier, the commission shall make reasonable requirements as to payment of any amount of reparation that may thereafter be ordered by the commission, within one year after the date of final action of the commission in the premises."

The Fourth Industrial Safety Congress of New York State is to be held at the Hotel Onondaga, Syracuse, on December 1, 2, 3 and 4. James M. Lynch, president of the State Industrial Commission, Albany, issuing the call for this congress, urges employers to be present in person; or at least to send their foremen and brightest employees.

Steamers between New York and Asia.—Robert Dollar, of San Francisco, president of the Dollar Steamship Company, has bought 14 acres of land at Hunt's Point, adjacent to New York harbor, for a ship terminal, with the intention, it is understood, to establish a steamship line between New York and Asiatic ports by way of the Panama Canal.

International Trade Conference

PROBLEMS OF WORLD-WIDE trade relationships brought together in Atlantic City, N. J., October 20 to 25, more than 50 delegates from England, France, Italy and Belgium to confer with representatives of American business. The meeting was held under the auspices of the Chamber of Commerce of the United States. For the first three days of the meeting the delegates met in secret session with representatives of certain American industries and with committees covering certain aspects of the work of the conference, while during the latter part of the week the meeting consisted of general sessions attended by several thousand American business men.

With the exception of the British commission, which explained that Britain had no reconstruction problem that it was not in a position to solve of itself, the delegates from the four countries explained in detail the progress that had been made in reconstruction in the industries of their respective countries and showed of what their remaining needs consisted. The problems of credit, the exchange situation, the demands for coal and steel, and of shipping, were considered in particular. Special attention was given to the problem of credits and a strong sentiment in favor of the assistance permitted in the Edge bill now pending in Congress, was particularly noticeable. Considerable attention was also given to a proposed league of business, suggested by Eugene Schneider, head of the French commission, and it is expected that something of this kind will be worked out whereby there will be an international board of directors consisting of two delegates from each member nation of the league of nations.

The committee on reconstruction supplies is typical of the several committee reports and contains considerable data concerning the requirements of railway supplies. The report said:

"Belgium—The Belgians need from us, and principally, first of all, money; then tools, coal, coke, oil, machinery, railroad engines and lumber.

"Italy—Italy's reconstruction problem is principally agricultural, due to the fact that about 90 per cent of her people are engaged in agriculture.

"England—England, as stated by its reconstruction supplies committee, has no reconstruction problem which it is not fully qualified to take care of itself.

"France—The French committee presented an interesting and surprising statement of the reconstruction work which has already taken place in France and tended to show that unemployment is diminishing rapidly, agricultural reconstruction has progressed substantially, the people of the country are going back to work in a most gratifying manner, transportation facilities, such as railroads and canals destroyed during the war, are rapidly approaching their pre-war consideration, immense new public works, transportation, drainage, harbors, etc., are being projected, and in general, the French situation as regards industry and commerce is far and away in advance of what is rather generally believed in this country to be the case.

"The French committee stressed the importance of proceeding along reconstruction lines which will recognize sound economic principles. They propose to buy where the buying is best, and to sell where they can do so with greatest benefit to France.

"They emphasize the importance which their deposits of iron will have in the work of French reconstruction and referred to the great quantities of lumber, wheat and other materials to be found in the French colonies and which would be transported to Europe in French ships.

"They need, as do Belgium and Italy, money, lumber, machinery, automatic car couplers and railroad signal systems and other improvements in their transportation situation."

England was represented at the conference by a commission of some nine members headed by Sir Arthur Shirley Benn, at one time British vice-consul at Mobile, Ala., managing director of Hunter, Benn & Co., a member of Parliament and chairman of the Belgian Relief Commission.

France was represented by some 19 French business men, led by Eugene Schneider, the head of the great iron and steel works of Schneider & Co., at Creusot, France.

The head of the Italian delegates was Count Max Lovatelli, naval attache of the Italian Embassy at Washington, and the party consisted of 19 members.

Florimond Hankar, director of the National Bank of Belgium, and interested in a number of Belgian industrial concerns, was the head of the Belgian party which consisted of six leading business men.

Orders of the Regional Directors

TRANSPORTATION COMMITTEES.—By order 241 of the Southwestern regional director, transportation committees are created at St. Louis, Mo., Wichita, Kans., Little Rock, Ark., Oklahoma City, Okla., Fort Worth, Dallas, San Antonio, Waco, Houston, and Galveston, Tex., Shreveport, La., Joplin, Mo., Wichita Falls, Tex., and Tulsa, Okla., to study terminal operation. Each committee is to consist of at least three members who will work under the direct supervision of terminal, federal and general managers of the roads interested.

Employment of Men in Train and Engine Service.—The Northwestern regional director, file 42-1-87, requires that men entering the service to fill the position of brakemen, flagmen, baggagemen, switchmen and firemen must be able to read and write; will be required to pass uniform examination and will comply with the regulations governing the use of standard watches.

Intensive Loading of Potatoes.—Freight Car Distribution Notice 16 of the Northwestern regional director contains instructions for the reinstating of distribution rules in effect last year for the handling of potatoes. This action has been taken in view of the fact that the potato crop this year is considerably larger. Reports indicate that the loading is not in all cases as heavy as conditions warrant. Standard box cars, including those lined and fitted with false floors and equipped with stoves are to be distributed for loading on a minimum basis of 750 bu. per car; and heavier loading than this be secured wherever possible.

Placarding Cars.—By circular 251 of the Southwestern regional director shippers are allowed to placard cars to indicate the side from which they should be unloaded. This will facilitate the placing of cars for unloading with the least possible switching.

Notice of Timetable Changes.—Order 244, canceling Order 80 of the Southwestern regional director, requires federal managers to announce changes in the schedules of trains which carry passengers, by posting printed notices ten days in advance at all stations at which changes are made; and if folder timetables are reissued a supply of the folders should be in the hands of each agent before the effective date of the new schedules. Order 243, canceling Order 79 of the Southwestern regional director, contains similar instructions and grants authority for the advance notice of the changes in schedules in newspapers. These announcements are to appear not exceeding three times in any one paper; the space occupied is not to exceed two newspaper columns in width and the length is to be only such as may be necessary to give a proper display of the essential information.

Government Ownership on the Plumb Plan*

"More Vicious Than Any Project of This Nature Ever Put Forth By Any Exploiting Wall Street Promoter"

By George C. Sikes

THE ADOPTION OF A PERMANENT POLICY of ownership and unified operation of the railroads by the national government I regard as one of the greatest needs of the country. Therefore, I claim the right to be heard at a conference called in the name of public ownership. However, what I have to say is likely to be displeasing to many in attendance at this gathering, for seemingly the champions of the Plumb plan are in the majority here. But I wish to voice my protest and to warn the genuine public ownership men and women in this meeting that endorsement by them of the Plumb plan will be an act of folly.

For years I have been studying suggested franchise arrangements put forth by privilege-seeking private corporations and have been criticizing such suggestions with the view of protecting public interests. I think I have some familiarity with such matters. In my opinion, the Plumb plan is more vicious than any project of this nature ever put forth by any predatory transportation magnate or exploiting Wall Street promoter. As a public ownership measure, the Plumb plan is a perversion and a fake. It represents an attempt to perpetrate a colossal confidence game on the American public and on the advocates of government ownership. The Plumb plan propaganda, in so far as it wears the mask of public ownership, is misleading, hypocritical and essentially dishonest.

The author of the plan, Glenn E. Plumb, has been given to ingenious activity before in similar lines—usually for the glorification and advantage of Plumb. When I first heard of the man he was trying to break into the street railway game in Chicago. He sought to capitalize popular opposition to Charles T. Yerkes then—much as he is trying to capitalize popular opposition to the raliroads now—as a means of furthering his own schemes as a traction promoter. Mr. Plumb has never been a consistent advocate of public ownership. His aim now, as heretofore, is the transfer of control from one group of selfish private interests to another group of selfish private interests; not for transfer of control from private hands to agencies of the public as a whole.

"Exploitation Is Exploitation"

Exploitation is exploitation, whether by capitalistic promoters or by a group of organized workers. The idea that exploitation is all right if carried on in the interest of certain labor groups may be accepted in Russia. But such doctrine will be spurned by any land that remains steadfast in its adherence to democracy. Autocracy is autocracy, whether the autocrat be a selfish labor group, or a plutocrat, or a kaiser, or a czar. Whenever the workers of a country in large numbers, in selfish disregard of the public welfare, accept the principle of autocracy in the hope that they may benefit from its application, there is danger that the country may fall under the control of the autocracy of the opposite extreme. It was inevitable that the excesses of the French Revolution should produce a Napoleon. If stories from Russia are to be accepted as correct, it cannot be doubted that the conditions there must lead sooner or later to reaction and to some form of despotism. If dependence is to be placed on might, rather than on right, labor rule in any land must be short-lived. Labor can hope to share effectively in control of governmental affairs for any considerable time only by making its cause as broad as the public welfare and by acting in accord with the principles of democracy. Henry George, in memorable words, voiced the true principle when he was a candidate for mayor of New York some years ago, with strong labor backing. While espousing labor's cause, he refused to be regarded as the candidate of labor, in the narrow sense of the term. "I am not for working men," he said, "I am for men."

It is a far cry from the time when Henry George uttered that sentiment, with the approval of labor, to the present, when important labor groups, differentiating themselves from the general public, are brazenly bent upon exploitations for their own selfish benefit, in accordance with the spirit of Prussianism. Psychologically speaking, it looks as if the Germans had won the war. The spirit of Prussianism was never so rampant in the United States as it is today. Certain employing and business interests are more arrogantly autocratic than they ever have been before. And some spokesmen for labor groups are just as bad, if not worse. In a battle between an autocracy of capital and autocracy of labor, I do not believe labor can win. Labor's only hope lies in democracy, in making common cause with all who stand for right and justice and the broad public welfare.

An Effort to Prussianize American Labor Movement

The Plumb plan is an effort to Prussianize the labor movement in America. It is an appeal to certain groups of workers to stand for exploitation of the general public for their own selfish interest, coupled with a deceptive, false appeal to public ownership advocates to help on the undemocratic move.

Under the Plumb plan, if put into effect, the United States will buy the railroads and pay for them. It will not retain control and operate the roads itself in the public interest, however. Instead, it will immediately turn them over, free of charge, to a corporation, under an irrevocable 100-year lease or franchise arrangement, to be controlled by a board of fifteen directors. Five of these fifteen directors will be named by the President of the United States. The remaining ten, or two-thirds of the board, will be selected by the railroad officials and employees. Mr. Plumb seeks to give the impression that the five members of the board of directors to be chosen by employees designated as officials would have a status corresponding somewhat to that of representatives of owners; that their interests would be antagonistic to the interests of the classified employees. This impression is entirely false, of course. Under private ownership, railroad officials represent the owners. But under the Plumb plan, by which the government will own the properties and vest their control in a board of 15 directors, of which it will name but five members, the interests of officials and of employees described as classified employees will be substantially identical.

Not content with providing an arrangement under which the government, after buying the roads, would vest their control in a board of directors dominated by railroad employees, the Plumb plan places the control of salaries and wages absolutely in the hands of a board composed entirely of representatives of those who are to draw pay from the

*An address delivered before the Public Ownership Conference at Chicago on November 16.

railroads. And then, after fixing their own wages, the employees are to participate in a profit-sharing arrangement. If absurdity could go to more extreme limits, my imagination is unequal to the task of conceiving what they might be.

It is said power is left in the Interstate Commerce Commission, under the Plumb plan, to fix rates. This rate-fixing power, if it could affect wages at all, could operate to keep them down only by first depriving the government of any returns whatever upon its enormous investment in railroad property.

On top of all else, the Plumb plan provides that the lease or franchise arrangement under which the employees are to manage the railroad properties in their own interest, shall have a life of 100 years, and be practically irrevocable during that period. What business have public ownership advocates standing for 100-year franchise grants to any kind of a corporation representing mainly private interests?

"All the Public Is to Do Is Hold the Bag"

The Plumb plan is called a public ownership plan. All the public is to do, however, is to hold the bag. It is to furnish all the capital for the purchase of the roads, and then immediately divest itself of control for a 100-year period.

The Plumb plan is so grotesquely absurd and immoral that I do not see how it can command any support whatever. It is another sign of the craziness of the times that such a plan does have advocates in considerable number. That it can ever have the support of the country as a whole seems incredible. As I see it, advocacy of the Plumb plan under the name of public ownership is discrediting public ownership.

If I am any judge of public opinion, the sentiment for government ownership of the railroads is not as strong right now as it has been in the past. I believe a referendum vote at this time would show a majority of the American people to be opposed to government ownership, and to be in favor of the early return of the railroads to their owners. I further believe, however, that public ownership sentiment will begin to develop rapidly again soon after the return of the railroads to private management.

"Fake Plans Can Only Hurt the Cause"

What public ownership advocates should do is to have a program for government ownership and operation of the railroads, to be pushed as opportunity may offer. Fake plans and selfish schemes falsely labeled public ownership can only hurt the cause. If this gathering is a genuine public ownership body it will condemn the Plumb plan as spurious, and stand for government management as well as government ownership of the railroads.

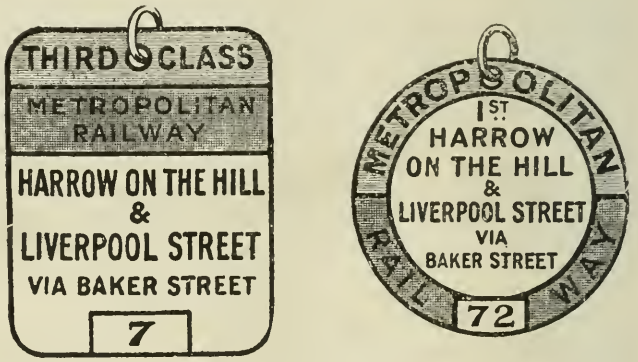
I am aware that some public ownership advocates who see faults in the Plumb plan are drifting with the Plumb plan movement, because it has an organized force behind it, in the hope that the plan will be modified and made more acceptable before it is put into effect. I contend that the Plumb plan is so faulty that it should receive no support from disinterested citizens; that as it comes to be better understood by the general public it will be regarded with marked disfavor; and that a program so changed as to be meritorious but still bearing the Plumb plan label, would be doomed to defeat. To permit the organized public ownership movement to become a mere annex to the Plumb plan propaganda must tend to make that movement an object of derision. If the railroad brotherhoods will not join in an effort to bring about the ownership and permanent operation of the railroads by the government, in the interest of the country as a whole, public ownership advocates should refuse to co-operate with them.

The mechanism for which the Plumb plan makes provision is far too complex to work well. Instead of having a purchase board, a board of directors, a wage board, and the Interstate Commerce Commission, each with important independent powers, there should be but one body, with full authority, subject to supervision by Congress and the President, to acquire and manage the properties. The railroad workers might properly have minority representation in such a body.

I sympathize with the desire of labor for a larger voice in the management of industry. It seems to me, however, that that desire must seek its satisfaction, through development of the co-operative idea, mainly in competitive productive industry, with a measurable output. Railroad transportation should not be looked upon as a business, but as service. It is akin, in this respect, to the postal system, the fire department and the school system. It should not be run upon competitive lines, but it should be dealt with as a public monopoly. The suggestion that the railroad employees be allowed to run the railroads in their own interest, after purchase by the government, is even less defensible in some ways than would be a suggestion that the teachers should manage the schools, or that firemen should direct the affairs of a city fire department, in such a way as to insure primarily the promotion of the interests of the teachers or of the firemen.

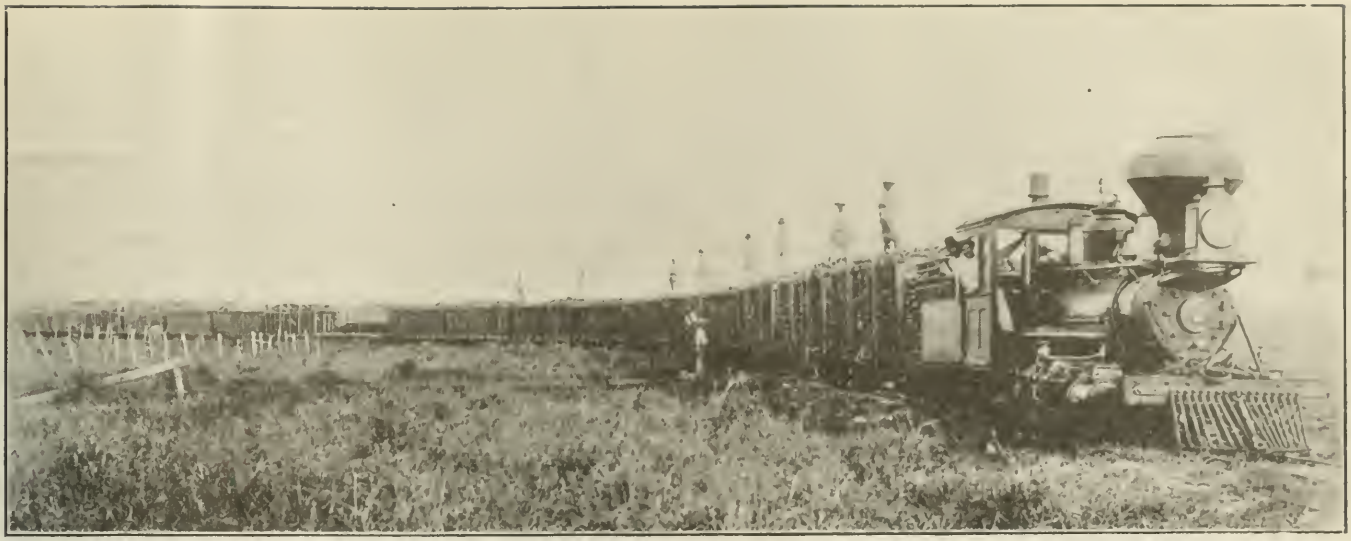
Passenger Tickets of Metal

Enameled metal tickets are in use on the Metropolitan Railway, of London, for passengers traveling every day. Circular disks about 1¼ in. in diameter are used for first class, and disks with straight sides and round corners, about like an old-fashioned American brass baggage check, are used for third class. These tickets have been introduced as an experiment, and will be furnished to any passenger



who will buy one for twelve months, and will apply for it a month before it is needed. The designs are enameled in red, white and blue, the colors being arranged to facilitate identification of different issues. Each ticket has a small ring by which the holder can suspend it from the outside of his coat.

The Kansas City Northwestern ceased operation on November 1, for the second time in three months because of financial difficulties. The decision of 90 yardmen, mechanics and blacksmiths to strike precipitated the last stoppage. Increased cost of coal, wage demands and the prospect of a coal famine contributed to the financial difficulties of the road according to E. H. Campbell, general superintendent. The road is 158 miles long, from Kansas City, Kan., to Virginia, Neb.



Ready to Start for the Mill—a Narrow Gage Cane Train "Loaded to the Guards"

Cuba's Sugar Cane Railways a Large Market*

The Importance and Extent of the Sugar Plantation Lines. Possibilities for Improvements

By John P. Risque

Part I—General Description

ALMOST ANY RAILROAD MAN in Cuba from a *chuchero* (switchman) up, knows that *"la Zafra,"* the Spanish term for the sugar cane harvest, is one of the most potential words on the island. At that important season of the year, which commences about the first of December and lasts until June, all hands and wheels are urged to keep moving 24 hours a day. The switchman referred to and anybody else concerned with the big job of transporting 29 million tons of sugar cane to 195 mills, knows that the "harder the grind the more sure the reward"—and all hands perform accordingly. Nobody knows the meaning of the season better than the *jefe locomotoras* of a plantation, in whose charge is generally found from two to 17 locomotives. The *maestro carpintero* (master carpenter) likewise appreciates the significance of the approach of the country's annual event, for the preparation of all the cane cars is up to him. Their sense of responsibility is well developed; they are aware of the penalties involved by a forced shutting down of the mill for any reasons which could be traced to the locomotive or car departments.

The Main Lines

The principal public lines of Cuba are of 4-ft. 8½-in. gage and are familiarly known in the cane growing districts, as the *"linea principal."* Aside from 13 small and independent companies, which operate about 700 kilometers all told, the *linea principal* is composed of two systems with 3,163 kilometers of line. The western properties comprise the United Railways of Havana, an English corporation, which with its subsidiaries, composes two-thirds of the total, or 2,113 kilometers. These subsidiaries are the Cuban Central Railways, the Western Railway of Havana, the Havana Central Railroad and the Mariano Railway, the two last named being lines electrically operated.

The tracks of the United lines run as far east as the city of Santa Clara, a point which is nearly half-way down the island from west to east. From that point the Cuba railroad, composing the other third of the main line mileage, is an American corporation operating to the eastern end of the island. Between them they maintain fast and frequent train service from Havana, near the western end of the island, to Santiago de Cuba on the extreme eastern end, and intermediate points. The Pullman cars which are provided are always well patronized. Although non-vestibuled, built of wood and mounted on two four-wheel trucks, they are thoroughly comfortable, carry a buffet and provide excellent accommodation. Branch line service is generally convenient and comfortable and as fully dependable as some of our own. First-class day coaches are similar to those on the roads of the United States, and third-class cars, which appear in a majority on each passenger train, are chiefly comprised of old cars, but thoroughly clean and equipped with wooden seats.

With the exception of the third-class cars referred to, which are of unquestionable value in handling the vast army of workers which moves to and from the plantations twice a year—and in considerable numbers at all times of the year—an American railroad man would, as far as the physical equipment is concerned, feel quite at home on a Cuban train. If he should stop at any way station on the main line to observe operations he would recognize American standards at the station and on the right of way. However, if he should write down his impressions of a few railroad customs which he found there, and with which he was unfamiliar, prominent among these notes would probably appear some reference to bright red pilot beams and number plates which characterize the front ends of the United's locomotives—efficient warnings against head-on collisions. A description and possibly a sketch of cast iron water tanks would interest the "boys" in the water service back home.

*This is the first of three articles on the sugar plantation railways of Cuba.

Main line "turn outs" at stations would contribute to the interest of the collection, and in matters of operating, despatching, etc., he could observe much. For lack of any better method of relieving his feelings he could scribble a few caustic comments in plain English on the subject of the station agents who open their ticket windows as the train pulls in, regardless of the size and impatience of the crowd of patrons assembled in the waiting room and on the platform.

He would be interested in, and would probably make note of, the fact that a half a dozen or more empty or loaded cane trains had gone through in quick succession, each drawn by a different type of locomotive whose lettering proclaimed it as belonging to a different owner.

These are the private cane trains, operated by the respective plantations, more or less remote from the main line, which use the *"linea principal"* in their trips to and from distant fields in search for cane for their respective mills.

Extent of the Cane Railways

Records show that privately owned plantation lines exceed the main lines of the island by about 750 kilometers, there being a total of 4,633 kilometers of cane railways, in the service of which there are about 1,200 locomotives and unknown thousands of cars. Two-thirds of the trackage is of 3-ft. gage and some of it is narrower. The balance is 4-ft. 8½-in. Of the total mileage noted, one company operating 17 large plantations owns 1,200 kilometers alone, 380 of which is narrow gage.

A Sugar Mill "Batey"

Tiempo Muerto

Upon completion of the *"Zafra"* in the month of June, the mills shut down and the all-pervading stillness of *tiempo muerto* (dead time) which follows is as noticeable by contrast to the busy harvest season just past as a sudden cessation of the island's famous breezes which rarely ever fail to blow. A visit at this time to any plantation and its mill, known as the *"ingenio"* or *"central,"* completes the evidence that for the time being "everything is off." The annual crop is ground, the sugar and molasses is stored or shipped and the entire personnel—cutters, railroaders, mill hands and others—are gone; some to play, some to work in stores in the cities and perhaps some to run jitneys in Havana—the latter occupation being a pleasant pastime and fully as lucrative as working at the mill.

Long lines of empty and more or less dilapidated cane cars are lined up on tracks near the mill and leading to the fields. The "central's" three, or five, or ten locomotives, as the case may be, may be found under shelter of the sugar mill roof if there is room, or backed onto the most available switch regardless of protection against the weather. There they will stand until *tiempo de reparacion,* or the repair season, arrives about the middle of September. An examination of these engines offers mute testimony to their six months' battle in the fields—24 hours a day—day in and day out with infrequent stops or none at all for boiler washing and the necessary running repairs. Damaged or missing pilots and a dented front cylinder head casting here and there testify to a *choque* (collision) or two, and tell-tale mud on a smokestack, dome casing or jacket would lead to the inference that its owner had failed to negotiate a difficult kink somewhere in the track and had lain upside-down in the field until a crew could be spared to go out to bring it in.

Devoid of even the simplest types of cranes, as these plantations usually are, this frequent job is both arduous and costly. If the *jefe de moviemiento* of the *jefe locomotoras* or the *maestro carpintero*—being the traffic superintendent, the locomotive chief and the car foreman respectively, the "big three" of a railroad end of a large plantation—are still on the job, the keeper of the *ingenio store, el bodeguero,* will know about it. But at this unseasonable time, he will probably admit that *tiempo muerto* has set in in its most aggravated stage and that if *Senor Administrador* (the general manager) has remained, there is no welcome on the mat for people who want to do business; they had better come again.

The last named gentleman is as truly a potentate as ever existed. He is sometimes the owner, but always the boss. His authority is unquestioned and respected, and it not infrequently happens that he is regarded with affection and esteem by every worker on the job—many of whom he has known for years.

The *administrador* is the logical buyer; it is he who in the last analysis, signs or vetoes *pedidos* and requisitions of importance, even though converts must first be made among the department heads of the mill. Frequently it will

be found that the *jefe maquinista* or chief engineer of the mill is an authority on purchases and acquisitions of new methods, including renewals of locomotives and cars and revisions or additions of facilities for their repair—but these organizations vary with the individual mills.

At some plantations the locomotive and car men report to the chief engineer; at others they report direct to the *administrador*. The former official is a good man to cultivate in either case.

As has been pointed out, *tiempo muerto* is a bad time

The Original Cuban Switch Engine

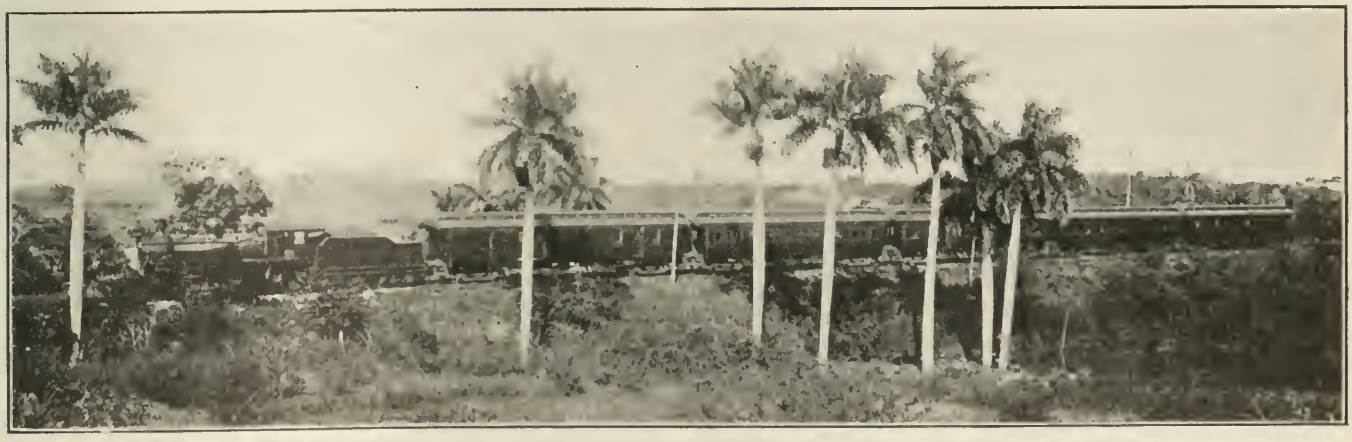
to seek business among the sugar mills of Cuba. Logically it would seem, to the uninitiated, to be the psychological time and it might be, if tradition had not decreed otherwise. If the closing of the mill were followed immediately by a thorough inventory of damaged equipment and the writing of necessary requisitions, the result of such action would doubtless obviate many costly delays in the arrival of all classes of materials indispensable to the next start of operations. But as stated before, tradition relegates this job to more than two months after the shut-down. Even if the management should attempt to advance the requisition date, it would be difficult to find men who would volunteer for the job at any price. Six months' hard labor with many operatives on 12-hour shifts and more, often finds the June vacation due in the minds of the operatives before it arrives.

The passing of *tiempo muerto* is manifested in the middle of August by renewed activity along the main line. Freight trains increase in numbers and length. Conspicuous among the loads appear machinery and building materials with an occasional trainload headed for plantations with far-sighted management. A month later passenger business "comes back" with the advance of the army of returning workers whose arrivals give renewed impetus and hope to the traders in the sugar mill towns. Before the end of September *tiempo de reparacion*—the great preparations for the coming crop—is under way and shortly thereafter, the orders for almost every conceivable kind of supplies are forwarded to the principal centers of supply.

Material Rodante

This is the term for rolling stock. Narrow gage locomotives follow a conventional design and vary slightly. They are principally of 2-6-0 or 2-8-0 types and are represented by the various American models which are illustrated and described in locomotive builders' plantation locomotive catalogs. Outside and inside driving boxes appear, and late models have Walschaert valve gears. Copper fireboxes and tubes, which existed in large numbers, are being replaced by steel and charcoal iron, owing to the high price of copper. Air brakes, vacuum brakes, and electric, carbide and oil headlighting vary according to the tastes of the *jefe locomotoras* and his persuasive powers. Two-inch horizontal steam pumps located on the running board are popular, being used to draw water from shallow ditches along the right of way and supplant injectors when the latter fail to work. Tenders are mostly eight-wheel and are provided with ample water spaces. Standard gage engines vary from wheezy old high wheel Moguls of the vintage of 1880 to modern superheater Consolidations equipped with many modern devices. Belgian 2-6-0 types with elaborate smoke stacks and screw reverse gears and Moguls from the Henschel and Borsig factories in Germany are to be found.

One of the latest German contributions just prior to the war comprised two Moguls, German throughout with the exception of American bar frames—a wise provision as neighbors with engines equipped with European plate frames have found out. The German locomotive man found favor in Cuba, not so much because of his types, but on account of his business policy. He was ready to make almost any kind of a business bargain, even to putting his engines to work to earn their cost. He thus made a great quantity of sales in spite of the remoteness of his base of supplies for repair parts.



The Cienpiegos Express on the United Railways of Havana

That the great war did not overlook contributing its quota of misfortune, even to the selection of cane engines, is witnessed by the presence of familiar old "has beens" from lines in the states. Many of these "thoroughly rebuilt" specimens look as if they were too feeble to venture out of the "batey." Some of them are ex-passenger engines which did their bits with fast schedules in the 90's. Their late owners apparently did not have the heart to relegate them to the scrap pile where they most legitimately belonged,

but were willing to prolong their miserable lives—for a consideration. There is this to be said, however, that these "second-handers" made it possible for some mills to tide over a season and to secure cane. If they had been compelled to rely upon the world's war-time production of locomotives they would have gone without. It is unfortunate, however, that unscrupulous dealers on the island, and off of it, took advantage of the situation and succeeded in selling types and materials that were wholly unfit for the service. As a consequence of promiscuous "hit and miss" locomotive buying, the general run of mills with five or more engines will enjoy a variety. Tubes vary with each type, not to mention numberless varieties and sizes of everything else on the engines. One of the most infrequent and encouraging sights on the island is the plantation with its locomotives all alike—or so nearly so as to simplify one of the most difficult problems with which they have to deal —maintenance and the procurement and stocking of supplies.

No One Can Tell What Interest Rates Will Be

F. J. Lisman, of F. J. Lisman & Co., New York, has sent the following letter to Albert B. Cummins, Chairman of the Senate Interstate Commerce Committee, and to John J. Esch, Chairman of the House Committee on Interstate Commerce:

The principal object of present railroad legislation is intended to be, as I understand it, the rehabilitation of the credit of the railroads in order to enable them to get the necessary additional capital required for purposes of expansion.

As a specialist dealing in railroad securities for about 30 years, I am somewhat familiar with the finances of nearly every railroad company in the United States, and having this information, I want to state emphatically that the 5½ per cent return will not attract capital under present conditions.

I will now proceed to prove this statement as concisely as possible by giving you the prices at which the securities of some of our best railroads are now selling.

Atchison, Topeka & Santa Fe 4s, due 1955, are selling on the New York Stock Exchange, at 69, at which price they pay about 6.15 per cent, taking re-payment at par 36 years hence into consideration.

Baltimore & Ohio Southwestern Div. 3½ per cent bonds, due 1925, are selling on the New York Stock Exchange at prices to pay over 7 per cent. The 5 per cent general mortgage bonds of the system are selling at 71 paying 7 per cent.

Chesapeake & Ohio, 4½s and 5 per cent bonds are selling at prices to pay considerably over 6 per cent.

Chicago Milwaukee & St. Paul bonds are selling at prices to pay over 7½ per cent.

Some of the Chicago, Rock Island & Pacific bonds can be bought at prices to pay over 9 per cent.

Chicago & Western Indiana 4s, a closed first mortgage on an important terminal in Chicago, are selling at a price to yield 6½ per cent.

Denver & Rio Grande System. The first mortgage bonds are selling on a 7½ per cent basis and junior issues which are paying their interest are selling at prices to pay over 9 per cent.

Erie Railroad. Various issues of this system can be bought at prices to pay 10 per cent.

New York Central System. Some of the direct mortgage bonds of this system, like the consolidated 4s, are selling at a price to pay 5¾ per cent.

The 6 per cent Convertible Debenture bonds are selling at 96.

New York, New Haven & Hartford 4 per cent main bonds, that is—Central New England first 4s, are selling at 59, yielding over 7 per cent.

Norfolk & Western 6 per cent debentures are selling on a 5½ per cent basis.

Pennsylvania Railroad. The 5 per cent bonds of this system are selling on a 5.40 per cent basis, and sold a few days ago on a 5.50 per cent basis.

St. Louis-San Francisco prior lien bonds, $70,000,000 of junior securities paying interest back of them, are selling on a 7 per cent basis and some of the junior securities, paying interest, are selling at prices to pay from 10 per cent to 12 per cent.

To the best of my knowledge, there are at the moment three railroads whose securities are not selling below a 5½ per cent basis, and they could not sell any substantial quantity of bonds better than a 6 per cent basis. I refer to Chicago & North Western, Chicago, Burlington & Quincy and Delaware, Lackawanna & Western.

New York city and many other tax-exempt bonds are selling at prices yielding from 4.40 per cent to 5 per cent. Government bonds pay approximately 4¾ per cent at present. Capital will not buy taxable securities and cannot be attracted to taxable securities, unless it gets a yield equal to 4¾, plus the average income tax and in addition thereto some compensation for whatever risk is incurred.

It does not seem reasonable that the railroads should be allowed to earn a return which is less than money is yielding in the open market. Suppose you owned a farm and had a tenant farmer whom you wanted to go ahead and develop and improve said farm and to buy a good team of mules How far do you think this tenant would get if you gave him $500 to buy this team of mules when other people were paying $600 for the same mules? I think you will agree with me that the tenant would not get the mules, and your farm would not be improved.

Unless the suggested rate of interest is changed, the proposed bill is worthless and useless.

I wish to offer the following constructive suggestion. The board of directors of the Federal Reserve Bank is a body nominated by the President with the advice and consent of the Senate. These gentlemen compose the only financial board, which keeps in close touch with the money market and which always knows what would be a fair rate of interest from time to time. Why should not the fixing of a fair return be left to this very competent board?

Practically all of the bonds above named were originally sold to investors on a 4 per cent to a 4¼ per cent basis. The present low price level is due:

1. To the general demand for money the world over, which has made itself felt before the war.

2. To the war and consequent large borrowing by all governments.

3. The extraordinary low price in many ways is due to the uncertainty of the future of the railroads.

Legislation will overcome the third cause but it cannot and will not overcome the first and second causes. No man living under present conditions of the world knows what a fair rate of interest for prime securities is going to be two or five years hence. The directors of the Federal Reserve Bank, however, are unquestionably the best judges of what is a fair rate of interest for borrowers to pay from time to time. Why, therefore, not let them determine this point?

The Utah Legislature has passed a law authorizing the State Public Utilities Commission to grant certificates of convenience and necessity to railroad corporations. The ruling becomes effective on December 5, 1919.

Investment Bankers' Association of America

Report of Committee on Railroad Securities; Weak and Strong Road Problem Analyzed

THE ANNUAL CONVENTION of the Investment Bankers' Association was held in St. Louis on October 20, 21 and 22. John E. Oldham, vice chairman of the committee on railroad securities, presented the following report of his committee:

At the convention held at Atlantic City in December of last year, the association placed itself on record as opposed to the policy of government ownership and operation of the railroads and in favor of their return, as early as possible or practicable, to private ownership under such altered methods of regulation as would insure sound railroad credit and an adequate system of transportation.

It may be said that for some years prior to the taking over of the railroads by the government railroad credit had become so depreciated and doubtful that even the strongest railroad companies were having great difficulty in financing their requirements. There were many who believed that under the circumstances the transportation requirement of the country could not be met unless private credit were supplanted by government credit and that the solution of the problem of satisfactory and adequate transportation was therefore to be found only through government ownership.

At the time the resolutions of the association were passed it appeared probable that there would be an early termination of federal control and it was expected that the question of public or private ownership would at once become a vital public question. It was found, however, that public sentiment was already undergoing such a change in regard to public management in general that at no time during the year has there appeared to be any real danger that Congress would adopt a government ownership plan. Even the proposition of the Railroad Administration for a continuance of federal control for a period of five years for the purpose, as stated by the director general, of establishing more clearly the relative merits of private and government management, was so generally opposed by shippers, railroad managements, the Interstate Commerce Commission, and the public generally that the proposal was not given serious consideration even by the Congressional committee to whom it was referred. There appeared to be great apprehension lest a continuation of federal control would result in an indefinite postponement of the return of the railroads to private management and that government ownership would be the inevitable result. Had the extension of time been proposed with a view to meeting the many difficult problems incident to the transition from federal to private control, without making the eventual return to private management more difficult or more doubtful, it is possible that the opposition would not have been so universal. In view of the circumstances, the committee has not felt called upon during the year to concern itself seriously with the question of government ownership.

Bills Before Congress

A number of bills have been introduced into Congress based upon the plans prepared by various associations, but it does not seem probable that any of these bills will be enacted into legislation without material revisions and changes, for opinions are still at variance on some questions which are of fundamental importance.

These questions have particularly to do with methods of rate-making. They bring up for consideration the relative advantages of incorporating a definite, fixed rule of rate-making in the legislation itself or of incorporating a clear and well defined statement of principles only leaving the application of these principles to the commission which will have jurisdiction over rates and further to be applied in accordance with the facts and circumstances as they may exist from time to time.

The question, therefore, is whether Congress shall at this time determine some fixed minimum rate of return on some unknown value as a measure of a fair return, or whether it will place the responsibility of sustaining credit upon some governmental commission, indicating more clearly than heretofore the principles which the commission will be expected to follow in reaching its conclusions in regard to rates which will be adequate to sustain credit.

A further matter to be considered in connection with the method of rate making is the question of limiting the income of all carriers alike to the same fixed return on some value to be established and making provision for the "recapture" as it is called by some, or "confiscation" as it has been termed by others, of the excess income above the established return whether such excess arises from foresight and good business judgment or from superior management and more efficient operation.

The differences in point of view in regard to these matters are indicated by the provisions for rate making and disposition of so-called excess earnings set forth in the several bills which have been prepared embodying the suggestions of the railroad executives, the Transportation Conference, the National Association of Owners of Railroad Securities and the Senate Committee on Interstate and Foreign Commerce.

Other bills have also been introduced including the Esch bill, which represents the point of view of the Interstate Commerce Commission and the Plumb bill, which is largely in the interests of labor.

The four bills to which special reference is made are the ones which have been given the most serious consideration and the committee in its report will confine itself largely to a discussion of the provisions contained in these bills. These bills all recognize the same fundamental difficulties and differ substantially only in the methods of meeting these difficulties. They agree that successful railroad policy must first of all create conditions which will assure the extension of railroad facilities to meet the industrial and commercial needs of the country. To meet the conditions, they recognize that the credit of the railroads of the country generally, individually and collectively, must be placed on a sound and satisfactory basis.

It is natural under the circumstances that much of the controversy in connection with the various plans should enter upon the proposed method of rate making and the determination of a standard by which an adequate return be measured.

Weak and Strong Roads

To provide rates which will permit the less favorably situated roads to prosper without providing too generous a return for the roads more favorably situated, especially as rates must of necessity be uniform for all roads operating in the same territory, is generally conceded to be the most vital problem to be solved. To meet this problem the National Association of Owners of Railroad Securities proposed that the country be divided into rate making districts and that a fair return should be measured by a return which would be adequate for the average road in each of the districts. It proposed that the aggregate property investment of all the

roads in each district should serve as a basis for computing the return and that 6 per cent on this aggregate investment should constitute the aggregate income for the roads in the district as a whole. It, however, recognized, because of the disparity in operating and financial conditions, that even though the return were adequate for the railroads taken as a whole, there would still be railroads with advantages above the average which would receive a larger return than would be justified if the rates were made only with a view to providing a fair return on the investment in these roads; and also that there would be railroads below the average which would not receive a return commensurate with the fair investment in their properties. It is proposed, therefore, that earnings above 6 per cent in individual cases should be treated as excess income, only a part of which should be retained for the benefit of the owners of the properties and that the balance should be disposed of in ways from which railroad employees and the less successful roads would benefit.

The National Transportation Conference, also recognizing the difficulty of providing an equitable return for both the strong and the weak roads under uniform rates, attempted to solve the difficulty in the same way, determining the aggregate income on the basis of a 6 per cent return on the aggregate property investment of the roads as a whole in each rate-making district.

The essential difference in the plans of the National Association of Owners of Railroad Securities and of the Transportation Conference in regard to matters relating to rate making have to do with determining what part of the income shall be considered excess income in individual cases and the purposes for which this income may be used.

The Transportation Conference or Chamber of Commerce plan, recognized the contention that the so-called excess income tax, determined upon the basis of existing property investment in individual cases as provided in the National Association of Owners of Railroad Securities or Warfield plan, would be a discrimination against the conservatively managed and financed properties in favor of the roads which have been less conservative in their accounting methods. That a railroad which had a large property investment, due to unsound accounting practices, and larger than would be justified by a fair valuation of its property, would distribute less in the form of excess income than a railroad of equal property value which had been more conservative. It, therefore, proposed that the excess income should be determined on the basis of relative earning capacity rather than upon a valuation determined by the existing property investment standing on the books of the individual companies. The Chamber of Commerce plan also provided that a substantially larger part of the so-called excess income should be conserved for the benefit of the properties on which the earnings originated than was provided in the Warfield plan, as a measure of protection to the investors in these properties and contained no provision for the distribution of any part of this income for the benefit of employees.

The Railroad Executives also sought to determine a fair return on the basis of average conditions. They were opposed however to the principle advocated by the other two plans mentioned, that the amount of income necessary to support credit should be determined by any fixed rate or return on property investment. They provided that the amount of income necessary for an adequate return should be left largely to the determination of a transportation board created by the bill and that this board should be instructed to study the conditions under which capital could be obtained; should acquaint itself with the credit position of the individual carriers and with a broad and comprehensive view of the situation should certify to the Interstate Commerce Commission from time to time the amount of income necessary to sustain railroad credit upon a proper basis; that the recommendations of the board should serve as a guide to the Interstate Commerce Commission in its consideration of rates, and rates should be made and adjusted with a view to producing the amount of income recommended by the board unless good cause could be shown for overruling its recommendations.

The Railway Executives take issue with both the Chamber of Commerce and Warfield plans in the matter of distributing the so-called excess income of the strong roads for the benefit of the weak. They contend that it would be unconstitutional to deprive the owners of the successful roads of the income obtained under competitive rates which have been recognized as reasonable by the Interstate Commerce Commission and that the entire earnings should be retained for the benefit of the owners of the properties on which they originate.

The Cummins bill is in line with the other proposals to the extent that the rates should be determined with a view to average conditions. In its original draft, although it is our understanding that the revised bill will probably be changed in this respect, it did not provide for any fixed return but left the matter, as in the case of the Railway Executive bill, to be determined by a Transportation Board, subject to review by the Interstate Commerce Commission. It however contains an excess earnings provision which appears to follow the suggestions of the Warfield plan more nearly than that of the Chamber of Commerce plan as far as the proposed uses of such income is concerned. It is probable that the provisions of the original bill will be changed in this respect also and eventually be brought more in line with the suggestions contained in the bill of the Chamber of Commerce. The determination of the value of the property to be used as a basis for determining the so-called excess income is to be left with the Interstate Commerce Commission.

The National Transportation Conference, the Association of Railway Executives and the Cummins bills are much in accord in providing for the eventual consolidation of existing systems in the several districts into a limited number of strong competing companies, as the best means of meeting the problem of the strong and weak roads, believing that in this way the disparity in operating and financial conditions can be so equalized that the newly constituted systems will be able to earn substantially the same rate of return upon their property investments.

Consolidation or Excess Income Taxation

If these expectations were realized, there would be but little difference in the amount of surplus income of the individual roads and the necessity of making any provision for the disposition of excess income would be correspondingly lessened.

The question to be considered, therefore, is whether the so-called problem of the weak and strong roads is more easily and more satisfactorily solved by removing the disparity in conditions through a consolidation of the properties on such terms as may be reasonable and fair to all concerned, or to allow the disparity in conditions to remain and attempt to provide in some way for a fair distribution of the so-called excess incomes which must necessarily accrue to the more favorably situated railroads under these circumstances.

A study of the essential provisions of these bills taken as a whole seems to indicate that the future railroad policy of the country is likely to be developed along lines which will bring about greater unification of ownership and operation resulting in the consolidation of many existing lines now in competition, these consolidations being undertaken not only for the purpose of simplifying ratemaking through the equalization of conditions of competition but also for the purpose of elimi-

nating waste in operation and preventing unnecessary duplication of facilities. With this in view the proposed legislation universally provides for permissive consolidations and in some cases, after a lapse of a stated period, for compulsory consolidations. To facilitate consolidations the bills all contemplate the removal of restrictions imposed by the Sherman anti-trust law, the majority of them also contain provisions for compulsory federal incorporation in order to remove some of the difficulties occasioned by the conflict of federal and state laws. As a further indication of the tendency toward greater unification it may be pointed out that the proposed legislation quite generally provides for greater common use of terminals, equipment and other facilities, as well as the pooling of traffic under proper restrictions when not incompatible with the public interest.

In the matter of supervision over issues of securities as well as in the matter of control over the expenditures of the proceeds of these securities, there is little difference of opinion, the bills providing that such supervision and control shall rest with the Interstate Commerce Commission.

The Labor Problem

It is obvious that a railroad program cannot be complete or successful which does not insure continued and uninterrupted railroad service and in order to accomplish this, conditions surrounding labor must be satisfactory, wages paid for labor must be as liberal and working conditions as attractive as in other lines of industry. Settlement of labor grievances must be determined promptly by a fair and impartial consideration of the circumstances without resort to strikes and the proposed legislation accordingly provides for boards of arbitration on which labor interests will have proper representation. It may be said that if the point of view and attitude of the railroad employees is fairly represented by the Plumb bill, which is prepared in the interests of labor and which seeks to nationalize the railroads and establish a policy of complete domination of transportation by the labor interests, it seems very doubtful if any of the provisions for arbitration proposed in the bills which have been discussed will be satisfactory from the labor standpoint.

While the progress which has been made during the past year toward a sound permanent policy of railroad regulation may be viewed with some satisfaction, there is, nevertheless, serious danger that adequate provision may not be made for the stabilization of credit during the time which must necessarily elapse before the permanent policy can become effective. The early discontinuance of the guarantee of the standard return as proposed by some of the bills seems to indicate that the difficulties which the weaker systems will have in re-establishing their former status in the field of transportation are not fully appreciated. Not only have the traffic departments of many of these systems been largely reduced or become inoperative but their business generally has been seriously disarranged and to some extent diverted to other systems.

Furthermore, the policy of the administration in the matter of compensation of employees will render it difficult for many roads to regain their former position. While rates can be established which will offset the total increase in wages when applied to the railroads as a whole, the effect of the policy of equalizing wages will render it difficult to distribute the benefits arising from the increase in rates proportionately among the systems to accord with the increase in wages in individual cases.

It is obvious under these circumstances that the increase in wages which has taken place will prove a greater burden to some systems than to others.

It should be understood that before the railroads were taken over by the government, railroad wages were made with relation to the cost of living and wages for similar employment in different communities. The demand of the railroad employees that the same kind of work should be equally compensated regardless of the cost of living and wages for similar employment in different communities was acceded to by the administration and the railroads will doubtless be returned to their owners with this method of determining wages in force. As the responsibility for this situation is the result of a wage policy adopted by the Railroad Administration the government should assume the responsibility for sustaining the credit of the roads affected until the owners of these properties have had an opportunity to adjust themselves to the conditions created by this policy. It is evident that this adjustment can take place only by return to the policy of determining wages as heretofore based on the cost of living and the average wages for similar employment in the communities served or by averaging the cost for the railroads as a whole, which would in part be accomplished if consolidations or properties took place in line with the permanent policy proposed.

The Transition Period

It seems probable that it will take a much longer time than the few months proposed to bring about these adjustments whichever method is adopted. Not only as a measure of justice, but also because of the importance of maintaining railroad credit generally, consideration should be given to continuing the standard return as the simplest way of guaranteeing credit until it is assured that conditions pertaining to the railroads not only as a whole but to the railroads individually, have approached more nearly to those which prevailed prior to federal control or until the new relationships, which are to be established between the railroad lines with the permanent policy proposed, are more nearly completed.

In brief, it may be said that the credit of many railroads during the period of federal control has been dependent entirely upon the guarantee of income provided by the standard return and a discontinuance of this guarantee under circumstances which will render it impossible for a considerable number of railroads to maintain themselves in independent operation will contribute to the further unsettlement and lack of confidence in railroad securities generally. It is further likely also to bring direct losses to the government which might be avoided if credit generally were sustained and capital were thus made available with which to liquidate the many millions of obligations due the government.

While it is desirable from all points of view that the financial relationship between the government and the railroads should be terminated as promptly as possible after the relinquishment of federal management, at the same time if the policy toward railroad rates and revenues is carried out as provided in the legislation the income derived from transportation from the railroads as a whole should be sufficient to guarantee the government against any loss occasioned by the continuance of the standard return. If the rates are not sufficient to guarantee the government against loss, income would not be sufficient to provide the necessary income for the railroads to sustain their credit and it would thus be clearly demonstrated that the proposed legislation had failed to meet its most important objective. It furthermore provides the simplest method of disposing of the problem of the so-called excess income during the time which will elapse before normal conditions are restored.

The result of the consideration and study which your committee has given to this subject confirms the position taken by the Association in connection with the original appointment of the committee that government ownership or operation is both impracticable and unwise and is not in the permanent interest of the railroads, the general pub-

lic, the shippers of labor, and it is our opinion that this conclusion is shared by an increasing number of people and that it can be safely said that public sentiment is, at the time, overwhelmingly against it.

The question of railroad credit is of such momentous and all-embracing importance that its proper solution may be said to be a *sine qua non* to the development and preservation of the prosperity of the country and to all its individual citizens. The committee therefore feels that there must be incorporated in any plan which is finally adopted such conditions as will enable the railroads confidently to appeal to the general public for new money necessary to the development of the situation by the sale of stock as well as bonds and it is well known that stock cannot be sold except where the opportunities exist for a satisfactory return on the investment commensurate with the risks involved.

In conclusion, we wish to record our opinion that a very satisfactory development of public sentiment has taken place during the past year and that the country, as a whole, has a much more normal conception of the railroad problem than perhaps ever before and is more disposed to attack the problem and its solution without passion or pre-conceived prejudices.

We feel that the country is especially to be congratulated on the conscientious intelligent manner in which the subject has been approached by the committee in both houses of Congress. These committees in their personnel have the advantage of experience on the subject of a number of the members who have, by previous service on congressional committees, familiarized themselves with the large problems involved; and we have a feeling of considerable confidence that when the congressional measures are prefected they will exhibit the result of trained intelligence and conscientious effort to solve the problem in a recognition of the vital relations which this mammoth industry bears to the fundamental prosperity of the country. The attitude of the committee also warrants the view that, before final action is taken, the most considerate hearing will be given to such further suggestions or views as may be presented.

The report was signed by Allen B. Forbes, chairman.

Discussion

Mr. Oldham after presenting the committee report discussed it from his own individual point of view in part as follows:

I think this question of the transition period is a most important one, and I do not think it has been fully considered from the standpoint of labor and of the equalization of wages. I think in a general way that we understand that wages have not only been increased, but they have been equalized. But just the bearing of that on the different railroads, as I have said, I do not think is fully appreciated.

Now, that is the problem that is going to be met by the railroads when they are turned back, and it is quite apparent to me if that condition has to be met, while there was a disparity in the operating costs of roads operating in the different communities a uniform rate of wages will apply so unequally, that we are going to find that there will be an even greater disparity when the railroads are turned back because the operating expenses of some roads will have increased very much more in proportion than others. But I think we are going ahead, the legislation appears to be going ahead on the assumption that if we have a basis for rate making which will allow the average railroad to prosper as soon as those rates are put in effect the railroads ought to be self-sustaining. Now, the rates may be sufficient to make them self-sustaining as a whole. You may easily grant an increase in rates which will offset the total increase in wages, but it is a question of some getting more and some getting less, and if we are to have a proper solution of the railroad problem, we must have not only 60 per cent of the railroads with credit, but a full 100 per cent of the railroads must have credit. I think the real problem is a problem of whether we are going to consolidate these railroads or whether we are not. If what we get is only a little more income, I believe that when we turn these railroads loose to operate independently, leaving substantially the same number of railroads that we have operating now, you are going to have just as you have now, about 60 per cent of the railroads, when I say 60 per cent I refer to the portion of the railroads doing 60 per cent of the business, that are properly organized financially, that is, with a proper relation of stock and bonds, and they will be able to finance themselves if you give them a little more liberal rates. But, on the other hand, you are going to have the other 55 to 40 per cent of the railroads not less favorably situated in a large majority of the cases with a large proportion of bonds and a small proportion of stock not represented, perhaps by the face value of the stock, but represented by its market value. That is the real equity, and you are not going to solve the problem unless you undertake to put through plans of consolidation in such a way that you will remedy this question of railroads that have not the proper kind of financial organization, because an increase in rates won't put them in a position where they are going to have credit. I think that is the fundamental thing, I think the question of the fixed return is less important. There is a difference of opinion on the subject, I don't know how the committee would stand on that question.

I think the tendency is towards these consolidations into relatively few systems, and I think there is some confusion in thought in regard to the strong and weak roads. We hear these roads referred to as the more favorably situated and the less favorably situated, and a uniform rate which will permit both to prosper and to equalize conditions we provide for the excess income to be taken away from the strong for the benefit of the weak. The consolidations, if they take place, will serve to equalize the conditions, I believe, as proposed in the plan.

But the difficulty is, when we get talking about these strong roads and the weak roads, we start out with the assumption that the weak roads are less favorably situated from a traffic standpoint, unable to support themselves on the same rate, etc., and after we have gotten through with that then we make the application by classifying every road that has poor credit as a weak road.

Now a large part of those roads which we are accustomed to term weak roads, if they were properly financed and had a proper relation of stocks and bonds would be strong roads. If you should make a comparison of the kind of business they did, the way they did their business, the cost of operation and the amount of money they put back into the property, you would not find a substantial difference between those roads from the strong roads, and you would not discover the real difference until you investigated and saw how they distributed their income, and then you would find that the weak roads were the roads that were distributing practically the same total to the public in the form of interest charges that the strong roads were distributing in both interest charges and dividends.

And that is about what the difference is. But I am satisfied that the difficulties of the strong and weak roads can be overcome best through the plan of consolidation which is the fundamental part of the Transportation Conference plan, and which is the most prominent feature, in my judgment, of the Cummins bill, which has now been acceded to by the railway executives, and if anyone wishes to know their position I would rather they would learn the position of the railroad executives by reading the testimony of Judge Thom before the House Committee than to interpret the

position of the railroad executives, perhaps, from the pamphlet of Judge Lovett and some others. They would see that they have come together, practically, those three organizations, for a consolidation of the railroads of the country into a relatively few strong competing systems and I believe in making this statement, again, I wish to qualify as not representing the views of the committee one way or another, representing simply my own views on that particular point, but I believe that the consolidation of these railroads along the lines which have been suggested, will be the greatest step forward in solving the railroad difficulties.

Railroad Fire Losses in 1918

THE FIRE LOSS AND PROTECTION SECTION of the Railroad Administration has compiled a bulletin recording the fire losses and their causes sustained on 419 railroads under federal control during the year 1918; the percentage that the number of losses from each cause bears to the total number of losses and the percentage that the amount under each cause bears to the total amount of losses sustained. These have been classified for better reference under two general headings, one giving the causes of fires to buildings and their contents and the other the causes of fires to rolling equipment and its lading.

The bulletin says in part: "The details of causes and their relative importance should be carefully studied, so that each cause may be fully understood and the proper remedies applied. The causes are all more or less common and a large majority readily preventable. Every building, car, or piece of property that is destroyed by fire is a distinct loss and an interference to operating efficiency, and the large aggregate of fire loss is a serious charge against the railroads' expenses. The reduction in the fire waste can only be accomplished through the enforcement and acceptance of individual responsibility and the correction of defects which produce fires."

There were 20,628 fires reported, with a total estimated loss of $12,263,220, divided $6,777,410 on buildings and contents and $5,485,810 on rolling stock and lading. This total aggregate of loss included the large item of losses arising from damage to property of others along the line of railroads assumed to have been caused by sparks thrown from locomotives, there being 9,923 fires attributed to this cause, with aggregate loss of $1,610,190, the largest item from any single cause. The total loss from locomotive sparks was nearly three millions, as follows:

	Amount	Number
Railroad property	$567,685	1,203
Property of others along line	1,610,190	9,623
Rolling stock	644,370	1,172
Total	$2,822,247	12,298

Hot coals dropped from locomotives caused 369 fires, amounting to $100,364 loss, while locomotives dropping oil caused eight fires, amounting to $168,666 loss. This group of losses with the above from sparks from locomotives shows the locomotive to be an "excessive culprit" in creating fire waste.

Under buildings and contents losses 116 losses were occasioned by lighting defects, with a loss of $85,766 (not including electricity); and 527 losses through heating defects, with a loss of $254,920. Carelessness was the direct cause of 392 fires, aggregating $236,167, although the majority of fire losses may be said to have been produced through that same general cause. Through the careless handling of oils, paints, etc., 50 fires caused a loss of $20,125. Carelessness in smoking or the use of matches caused 162 fires to buildings and contents, with a loss of $118,458, and 90 fires to rolling equipment, with loss of $51,170, a total of 252 fires of this origin, with a total loss of $169,629, and no doubt many of the "unknown" origins might be attributed to the same cause. Miscellaneous causes including spontaneous ignition and the large number of "unknown" causes produced 1,683 fires. Sixty-nine fires were occasioned through electrical defects, causing a loss of $160,352.

Under "transportation hazards" (fires to rolling stock and lading) a large amount of loss was produced through sparks thrown from locomotives as noted above, there having been 1,172 fires with $644,370 loss. The largest individual amount of loss from any one cause was from wrecks, collisions, and derailments, there having been 194 fires with loss of $1,152,742. Car heaters contributed 56 fires, or $27,959 loss; exposure fires, 180, or $251,828 loss; hot lading, 615 fires, $94,136 loss; forest fires, 17, or $413,732 loss; and there were 1,226 fires of unknown origin with $1,541,269 loss.

The bulletin calls upon employees to study this statement with care and exert their individual interest and effort in reducing the large fire waste.

Plumb Paper Alarmed

LEADERS OF "LABOR," the weekly newspaper published by the Plumb Plan League, were advised in the issue of November 8 that "the railroad interests are preparing to jam through Congress the biggest steal in the history of frenzied finance" and are asked to lend their support to defeat this purpose by writing to their Congressmen and Senators telling them to vote against the Cummins bill and the Esch bill on the ground that "both measures validate eight billions of watered stock." The article makes no differentiation between the two bills, although they differ widely.

The article says the Cummins bill contains "the infamous anti-strike clause which would shackle labor," while the Esch bill does not contain this clause but "in other respects is worse than the Cummins bill." This presumably refers to the provisions for assessing damages against a labor union for breaking a contract. The article adds that both bills instruct the Interstate Commerce Commission to tax the American people a sufficient amount to pay dividends on the eight billions of watered stock which, the article says, "means an increase of from 25 to 50 per cent in freight and passenger rates and, according to Director General Hines, would add five billion dollars to the cost of living in this country." This is said to mean $250 for every family of five in the nation, but the article fails to state whether it would be a 25 per cent or a 50 per cent increase that would do this.

Readers of the paper also are advised to tell their Congressmen and Senators that they want them to vote to continue government control of the railroads for at least two years. It says that Samuel Gompers and the chiefs of the 14 railroad labor organizations recently made known their views on this point to the "labor group" of the House of Representatives in a formal conference and later issued an address to the people of the country in which they stated:

"1. That American labor will exert its influence to the utmost within the limits of the Constitution to defeat the vicious anti-strike provisions in the Cummins bill and other measures of similar character.

"2. That in the opinion of American labor the return of the railroads to private ownership at this time would be a grave mistake. Under plans proposed for the return of the railroads to private operation it would be followed by increase in freight and passenger rates of over 25 per cent. Either result would shake the industrial fabric of the nation

at a time when a war-sick world is looking for moral, financial and political leadership.

"3. In order to avoid these calamitous consequences, the members of Congress were urged to introduce legislation continuing government control of the roads for two years from the conclusion of peace. This will afford the American people an opportunity to consider the many solutions of the railroad problem which have been put forward.

"The railroad question affects the lives of all the people of our country, who should be given opportunity to acquaint themselves with the various solutions proposed, that a mature judgment may be reached. This problem should not be a subject for hasty consideration and decision.

"It was agreed that the legislation suggested on these questions would be drafted at the earliest possible date, and it would be presented and pressed very earnestly in both Houses of Congress, and that every effort possible will be made to defeat all legislation which aims to deny to the wage-earners their right to self-expression in matters affecting their freedom."

Since that time Representative Sims, who introduced the bill providing for the Plumb Plan, has introduced a bill providing for a two-year extension of the period of federal control, but his two years date back from December 31, 1919, rather than from the conclusion of peace. The present federal control law is limited to 21 months after the proclamation of peace.

The Accident Prevention Drive

A. F. Duffy, manager of the Safety Section of the Division of operation, United States Railroad Administration, has issued bulletin No. 9 giving data concerning the work of the Section for the month of August, and a summary of the statistics of accidents for the two weeks ending with October 31, the period of intensified attention to accident prevention which prevailed throughout the territory of the railroads operated under federal control.

The number of persons employed on these railroads in October, 1919, somewhat over two million, being a little larger than in October, 1918, the number killed *in the two weeks was 33 per cent less*—84, as compared with 126 in the corresponding fortnight last year. The number injured fell from 5,102 to 2,371, and the total casualties per hundred employees from 0.266 to 0.119.

The bulletin gives these totals and percentages for each road reporting, and summarizes the whole by regions as below, the different regions being tabulated in the order of their respective percentages of decrease in casualties per 100 employees.

August Casualties.—The number of employees killed, as reported to the Safety Section, on all of the government operated railroads in August, was 150, as compared with 304 in August, 1918; and of injured, 11,370, as compared with 14,421. In the month of August, 1,629 safety meetings were held, with an aggregate attendance of 24,804. The number of copies of safety bulletins, circulars, etc., posted on bulletin boards in the month was 71,447, in addition to which pamphlets and other pieces of safety literature were distributed to the number of 719,287.

Five Persons Were Killed and 143 injured—five fatally, on October 29, in the derailment of northbound train No. 50, on the Southern Pacific, San Joaquin division, near Vincent, Cal. The engineman, the fireman, one passenger and two trespassers were killed. The train was derailed on a 10-deg. curve, descending grade, the engine, two baggage cars and five coaches being overturned. This is the first serious train accident in which a passenger has been killed on the lines of the Southern Pacific in eleven years. The cause is believed to have been excessive speed.

Employees Killed and Injured October 18-31, 1919

Region	Total number of employees		Employees killed		Employees injured		Total casualties to employees		Employee Casualty Decrease	Casualties per 100 employees		Decrease per 100 employees
	1918	1919	1918	1919	1918	1919	1918	1919		1918	1919	
Northwestern ...	280,676	289,764	16	12	624	271	840	283	557	.299	.098	.201
Allegheny	406,059	437,717	37	11	1,250	540	1,287	551	736	.312	.122	.187
Southern	268,048	277,038	13	14	509	201	622	215	407	.233	.078	.165
Central Western.	320,100	342,557	12	10	749	284	761	294	467	.238	.086	.152
Pocahontas	59,478	61,478	9	3	106	50	115	53	62	.193	.096	.107
Eastern	449,043	460,622	27	25	1,038	597	1,065	622	443	.237	.135	.102
Southwestern ...	175,703	186,295	12	9	526	428	538	437	101	.306	.232	.074
Grand total..	1,959,107	2,055,471	126	84	5,102	2,371	5,228	2,455	2,773	.266	.119	.147

Scenes on the Government's Alaska Railroad. Yards, Offices and Commissary Departments of the Engineering Commission. New Freight Shed and Depot in Foreground

Doings of the United States Railroad Administration

Operating Statistics for September—New Instructions Covering Interline Waybilling of Freight

WASHINGTON, D. C.

The Operating Statistics Section has published figures covering the financial results of operation for the month of September for all Class I roads in federal operation. These comprise 231,993 miles of road, or 97 per cent of the total of 240,177 miles of road federally operated. The condensed income account is as follows:

	Month of September		Increase or decrease	
	1919	1918	Amount	Per Cent
Operating Revenues....	$492,442,654	$482,676,967	$9,765,,687	2.0
Operating Expenses. ...	393,854,580	364,922,933	28,931,647	7.9
Net Operating Revenue	98,588,074	117,754,034	d19,165,960	
Taxes, Rents, etc.....	20,843,679	18,704,905	2,138,774	
Net Operating Income..	77,744,395	99,049,129	d21,304,734	
Operating Ratio	80.0	75.6	4.4	

Note—d indicates decrease.

One-twelfth of the annual rental amounts to $74,352,976, so that the net profit to the government was $3,391,419 for these properties, but the September expenses include an estimate of the increases in wages recently granted the shopmen which are retroactive to May 1, 1919. Consequently, September expenses include $16,000,000 applicable to the months of May to August, inclusive, and the net profit to the government for the operations applicable to the month of September was approximately $19,000,000. The expenses for September, 1918, include about $9,000,000 back pay applicable to prior months, but they do not, on the other hand, reflect the increases to agents, telegraphers, trackmen, clerks, enginemen and trainmen, and the recent increase to shopmen referred to above, granted subsequent to September, 1918, which are included in the September, 1919, expenses.

The results for the nine months ended September 30th, were as follows:

	Nine months ended Sept. 30		Increase or Decrease	
	1919	1918	Amount	Per Cent
Operating Revenues ...	$3,731,186,885	$3,500,522,249	$230,664,636	6.6
Operating Expenses...	3,156,958,295	2,822,556,678	334,401,617	11.8
Net Operating Revenue.	574,228,590	677,965,571	d103,736,981	
Taxes, Rents, etc.....	172,163,481	163,683,255	8,480,226	
Net Operating Income.	402,065,109	514,282,316	d112,217,207	
9/12 of Annual Rental	594,823,808	594,823,808		
Operating Loss	192,758,699	80,541,492	112,217,207	
Operating Ratio	84.6	80.6	4.0	

Handling of Claims Shows Improvement

Reports both as to the number of loss and damage claims and overcharge claims presented and as to loss and damage freight claims and overcharge claims remaining unsettled just compiled for recent months show a very gratifying improvement in every respect, according to a statement authorized by Director General Hines on November 10. The number of both classes of claims received in the three months ending September 30 and the number of claims remaining unsettled in the three months ending September 30 show a decrease as compared with the preceding three months.

As to loss and damage freight claims presented, the number in the three months period ended June 30 was 1,035,981 and for the three months period ended September 30 was 1,002,642 or a decrease of 33,339. As to overcharge freight claims presented, the number in the three months period ended June 30, 1919, was 347,945 while during the three months ended September 30, 1919, the number was 332,736 or a decrease of 15,209.

Unsettled loss and damage freight claims are checked up on the basis of the number on hand for four months and over and unsettled, whereas overcharge freight claims are checked up on the basis of the number unpaid and unsettled for more than three months. As of June 30, 1919, the number of unsettled loss and damage freight claims on hand for four months and over and unsettled was 251,585 while the number on hand, four months and over and unsettled as of September 30, 1919, was 167,928 or a decrease of 83,657. The number of overcharge freight claims as of June 30, 1919, more than three months old and unpaid was 24,254 and the number of overcharge freight claims more than three months old and unpaid as of September 30, 1919, was 14,699 or a decrease of 9,555.

The figures given above by regions follow:

NEW LOSS AND DAMAGE FREIGHT CLAIMS RECEIVED

	3 Months ended	
Regions—	June 30, 1919	September 30, 1919
Eastern	286,419	270,369
Allegheny	168,831	168,600
Pocahontas	25,0"0	19,104
Southern	159,051	146,031
Northwestern	159,704	169 103
Central Western	142,607	138,691
Southwestern	94,299	90,744
Total	1,035,981	1,002,642

OVERCHARGE FREIGHT CLAIMS PRESENTED

Region—	June 30, 1919	September 30, 1919
Eastern	62,009	55,082
Allegheny	43,070	40,953
Pocahontas	4,804	4,712
Southern	48,943	47,578
Northwestern	70,580	75,034
Central Western	74,237	69 139
Southwestern	44,302	40,238
Total	347,945	332,736

UNSETTLED LOSS AND DAMAGE FREIGHT CLAIMS ON HAND FOUR MONTHS AND OVER

Region—	June 30, 1919	September 30, 1919
Eastern	80,641	54,303
Allegheny	46,154	29,934
Pocahontas	1,561	1,021
Southern	47,235	30,548
Northwestern	47,600	36,004
Central Western	20,819	12,113
Southwestern	7,575	4,005
Total	251,585	167,928

OVERCHARGE FREIGHT CLAIMS UNPAID AND THREE MONTHS' OLD OR MORE

Region—	June 30, 1919	September 30, 1919
Eastern	5,977	3,557
Allegheny	5,242	3,083
Pocahontas	762	381
Southern	3,694	1,831
Northwestern	3,391	1,949
Central Western	3,331	2,737
Southwestern	1,857	1,161
Total	24,254	14,699

Instructions Covering Interline Waybilling of Freight and Accounting for Freight Charges

In order that the freight revenues at the end of federal control may be stated and allocated between the director general and the corporation in a manner comparable with the stating and allocating of freight revenues at the beginning of federal control, Director General Hines has issued General Order No. 64, in which General Orders Nos. 11 and 21 are canceled, and the following instructions are made applicable to the waybilling of freight on and after December 1, 1919, and the apportionment and settlement of freight revenues thereon:

1. The waybill forms and the methods of waybilling described in General Order No. 60 shall be continued.

2. Interline waybills shall be made for all freight covered by joint through rates; freight not covered by joint through rates shall be waybilled to junction stations except that interline way-

billing arrangements which were in effect immediately prior to federal control will be continued.

3. Complete routing must be shown on each waybill when made, in the space provided therefor. Each forwarding junction agent must stamp each waybill in the space provided therefor and in the order there shown. Such stamps must show the name of the forwarding carrier, the date, and the junction station.

4. Waybills for carload freight must move with the cars; waybills for less carload freight must move with the cars when practicable; otherwise, they shall be mailed in accordance with the requirements of each carrier to junction, transfer, break-bulk or destination station. When waybills for a solid car of less carload freight are mailed, a separate waybill for the car movement must be made on standard form, in duplicate, showing destination and complete routing, and bear notation:

"Merchandise Car. Waybills
Mailed to....."

The original car movement waybill shall accompany the car, the duplicate shall be placed on top of the revenue waybills, all securely fastened together and mailed as outlined above. Agents receiving merchandise waybills without car shall take immediate action to locate car and forward waybills in accordance with the information obtained, and connecting carrier's requirements to junction, transfer, break-bulk or destination station. Single waybills which become separated from the freight shall be promptly mailed to destination. Forwarding junction agents must stamp car movement waybills in the manner provided in paragraph 3.

5. When miscellaneous charges of any character, collectible from consignee, accrue in transit, they shall be covered by "Advances Only" waybills, which shall clearly describe the services for which the charges are made. Such waybills and regular waybills shall be cross-referenced to each other, and the amount and character of the charges shall be noted as information on the regular waybill in the lading column; the "Advance Only" waybill shall be securely attached to and move with the regular waybill when possible.

6. All waybills shall be stamped as of the date of arrival of freight at each junction. Settling carriers in preparing interline accounts shall make separate abstracts for all waybills dated prior to January 1, 1920, and shall show, immediately under each waybill entry, the name of junction through which shipment passed, and the date such shipment reached each junction, as indicated by stamps on waybill. Separate division statements and interline summaries need not be made for waybills dated prior to January 1, 1920. The total of abstracts covering such waybills should be included on division statements with total of abstracts covering waybills dated subsequent to that date. Interline accounts shall be analyzed in audit offices, and revenues from less carload freight that would have been rebilled or settled in junction settlement accounts under practices in effect in December, 1917, and which arrived at junction stations before midnight December 31, 1919, shall be allocated to federal account. There shall also be allocated to federal account, the revenues on all carload freight which arrive at junction stations before midnight December 31, 1919, provided such an allocation was made as of December 31, 1917.

7. In apportioning revenues between carriers, the following shall be observed:

(a) When joint through rates and agreed published divisions or percents are in effect, such divisions or percents shall be used.

(b) When joint through rates are applied, for which divisions or percents have not been arranged by interested carriers, the revenue shall be apportioned on the basis effective in December, 1917.

(c) When freight is moved via routes not authorized by tariffs, all revenue shall be apportioned between carriers on basis of actual mileage, allowing to originating and destination carriers an additional twenty (20) miles each, recognizing established arbitraries.

8. Destination carriers shall completely revise waybills as to rates, classifications, extensions, footings, weights, etc., thus insuring correctness of the revenues based on tariffs applicable, and they shall account to interested carriers for their respective proportions of such revenues in the manner herein prescribed. If flagrant or continued errors are observed by destination carriers, the attention of waybilling carriers must be called thereto. Waybill correction notices shall not be issued to waybilling carriers unless advances or prepaid charges are involved.

9. All waybills dated prior to December 1, 1919, which are included in settlement for December, 1919, or subsequent months, shall be subject to the provisions of this order.

10. Accounting Circular No. 85, dated April 5, 1919, is hereby canceled, and effective with accounts for November, 1919, the plan of Audit Office Interline Freight Settlement prescribed in 1917 Synopsis of the Railway Accounting Officers Association shall govern, except as hereinafter provided.

EXCEPTIONS:

(a) Where corrections are made on waybills, correction notices shall not be issued unless advances or prepaid charges are involved.

(b) The correction minimum between carriers shall be one dollar, instead of twenty-five cents.

(c) The settling carrier shall retain original abstracts and division statements, sending first carbon copy to waybilling carrier and legible copies to each intermediate carried, in time to reach them not later than the 18th of the succeeding month.

(d) Tracing for unreported waybills by intermediate carriers shall be limited to carriers whose methods of accruing revenue make such action necessary.

(e) For all carload shipments, car initials and numbers shall be shown on the interline abstracts; if transferred enroute, the ex-car initials and number shall also be shown.

(f) The forms prescribed in Accounting Circular No. 85, adapted to the requirements of the plan, shall be used.

11. Interline Freight Accounts shall be audited, records shall be checked to establish unreported waybills; abstracts shall be checked against division statements; arithmetical calculations and bases of apportionment, including arbitraries, shall be verified.

12. Junction settlements shall be made periodically on gross or net basis in accordance with practices in effect at December 31, 1917.

13. General Order No. 55 and Accounting Circular No. 76 are hereby canceled. Effective with overcharge and agency relief claims paid or settled on or after December 1, 1919, apportionment between carriers shall be made in accordance with the rules of the Railway Accounting Officers Association, published in the 35th report.

14. Interest payments shall be apportioned between carriers on the same basis as the overcharges.

15. This general order shall not be comstrued as affecting the relations between the public and the carriers.

Passenger Traffic in August

The number of passengers carried one mile in August was 4,375,694,522, according to the monthly report of the Operating Statistics Section. This was an increase of 8.8 per cent over August, 1918. For the eight months ending with August 31 the number of passengers carried one mile was 28,793,142,453, an increase of 6.3 per cent.

Number of Bad Order Cars Being Reduced

Steady and gratifying progress continues to be made in connection with the bad order car situation, according to a statement authorized by Director General Hines.

Excluding cars held out of service as not worth repairing, bad order cars had fallen on November 15 to 130,833 or 5.2 per cent. The figures since October 4 have been:

	No.	Per Cent
October 4	172,210	6.9
October 11	169,343	6.7
October 18	163,986	6.5
October 25	156,372	6.3
November 1	146,702	5.8
November 8	136,238	5.4
November 15	130,833	5.2

Including cars held out of service as not worth repairing, the number of bad order cars has decreased to 150,133 or 5.9 per cent on November 15. The figures since October 4 follow:

	No.	Per Cent
October 4	191,656	7.6
October 11	188,308	7.4
October 18	183,070	7.2
October 25	175,348	7.0
November 1	166,514	6.5
November 8	155,564	6.1
November 15	150,133	5.9

General News Department

William T. Payne, far eastern manager of the Canadian Pacific Ocean Services, Limited, Yokohama, Japan, has been decorated by the Emperor of Japan with the Order of the Eastern Sun, in recognition of his services toward promoting international commercial relations and the improvement of navigation facilities.

W. G. Lee, president of the Brotherhood of Railroad Trainmen, in a recent statement says that during the years 1917, 1918 and 1919, out of 1,322 benefits paid by the brotherhood for deaths due to accidental causes, 400, or nearly one-third of the entire number, were due to the one cause of falling from or being knocked from trains.

Five robbers who boarded a southbound passenger train of the Yazoo & Mississippi Valley at Memphis, Tenn., on the morning of October 11, were foiled by the alertness of a yardmaster, who saw the men board the train and telephoned to West Junction in time to have the train stopped. Several packages were taken from the express car, the messenger being bound. A former railroad employee was arrested, later, and is said to have made a confession.

The American Association of Engineers has announced a membership drive throughout the United States during the first two weeks of December. The clubs and chapters of this organization will divide their membership into teams, each of which will be assigned a certain territory. Telegraphic reports will be made to the central headquarters daily. Special prizes will be awarded to the clubs and members securing the largest results.

Senator Nelson, of Minnesota, has introduced in the Senate a bill, S. 3183, authorizing the Interstate Commerce Commission to investigate the warehouse facilities of railroads at Atlantic, Pacific and Gulf ports for the purpose of determining whether they are proper and adequate for prompt and efficient handling of grain and grain products, to determine what new facilities or additions to existing facilities will be reasonably necessary and to make proper orders requiring carriers to provide such facilities as are determined to be necessary.

The Canadian Pacific, following its custom of naming stations to perpetuate the names of officers and employees of the company, is naming several stations on new lines it is building in the west after officers and employees who were decorated for meritorious service during the war. Among the officers who have been so honored are J. A. Hesketh, assistant engineer, Winnipeg, Man.; W. M. Kirkpatrick, assistant freight traffic manager, Winnipeg; F. A. Gascoigne, superintendent of car service, Montreal, Que.; J. M. Thrasher, fireman, Kenora, Ont.; H. Neighbour, storeman at Winnipeg and L. B. Unwin, accountant at Schreiber, Ont.

The threatened strike of 12,000 members of the Brotherhood of Railway Trainmen in the Chicago switching district on October 30, did not materialize. Reports were circulated throughout the country that a strike vote was taken at a meeting of the 14 locals in this district on October 26. The report was given extensive publicity in the press. W. G. Lee, president of the organization, issued a statement from Washington to the effect that the threatened strike would be wholly unauthorized and without the sanction of the Brotherhood. However, on the day set for the strike several of the local brotherhood officers stated that a general strike vote had not been taken in the Chicago district and the report had gained circulation because a number of men acting on their own initiative held an unofficial meeting and sent their demands to Washington.

California, is the subject of an illustrated booklet for the information of prospective settlers and homeseekers, which has been issued by the Division of Traffic of the United States Railroad Administration. Governor William D. Stephens, writing the introduction, says that there is to be found within the limits of California every condition of soil and of climate existing in any other part of the nation. More nearly than any other State—even more nearly than many of the great nations of the earth—California is capable of sustaining a great population and supplying its every material want or need. The booklet contains 62 pages filled with information about what the Golden State will produce, available lands, irrigation and reclamation, climate and soil, roads, churches, schools, transportation facilities and co-operative marketing.

Boiler Makers' Annual Convention

The executive committee of the Master Boiler Makers' Association has announced that the next annual meeting of that association will be held at the Curtis Hotel, Minneapolis, Minn., May 25-28.

The Automobile Wins

The Holton Interurban Railway Company after substituting for an unprofitable steam train service a passenger bus service, the cars in which were equipped with a combination steel and rubber tire which permitted operation over either rails or the highway, has been authorized by the Railroad Commission of California to discontinue all service on its lines between El Centro, Cal., and Holtville. Both services have been financial failures, the public seemingly preferring automobiles which use the highways exclusively.

A Comprehensive Reform

A bill to require the railroads to coat their ties and roadbeds with "a suitable covering of hydraulic cement of good quality, which shall render the roadbeds practically waterproof and exclude water from coming into contact with the roadbeds and thus render them soft, unstable and dangerous for the operation of cars and rolling stock thereon and thereover," has been introduced in the Senate by Senator Thomas of Colorado. The bill, which is S. 3278, sets forth in the preamble that its purpose is "to more fully insure the safety of human life and property, to reduce the cost of transportation and to make the railways better both physically and financially." One section of the bill would make it unlawful for a railroad to lay any cross tie which shall have been artificially treated by any process by which any poisonous substance has been injected into the pores.

Chicago Telegraphers' Wages

Although a strike vote was ordered taken on October 30 by the 21 chairmen of the Order of Railway Telegraphers representing 23,000 men in the Chicago district, no strike of operators has materialized. The cause of the action was due to a delay in the application of interpretation 2 to Supplement 13 to General Order 27 which had the effect of increasing the hourly rate of pay of telegraphers on railroads where a 26-day month was in effect. This interpretation was issued by the Railroad Administration on August 16, but the railroads involved did not put the wage order into effect and referred the matter back to Director General Hines for modification. The executive committee of the various branches of the organization again submitted the question to the telegraphers employed on 21 roads in the Chicago district; and following conferences with Director General Hines the situation is reported settled satisfactorily to both the roads and the telegraphers.

Railway Revenues for September

The Interstate Commerce Commission's monthly report of railroad earnings and expenses, covering 186 Class 1 roads, and 17 switching and terminal companies, shows gross revenues for September of $498,762,533 and railway operating income of $81,675,721. The details are as shown in the table. Operating income amounted to $349 per mile of road operated, which compares with an average of $415 for September in the three-year test period ended June 30, 1917.

RAILWAY RETURNS FOR SEPTEMBER AND FOR NINE MONTHS.

	September				Nine Months			
	Amount		Per mile of road operated		Amount		Per mile of road operated	
	1919	1918	1919	1918	1919	1918	1919	1918
1. Average number miles operated	234,099.38	234,055.20	.....	.....	233,917.23	234,390.50	.....	.....
Revenues:								
2. Freight	$346,736,748	$342,101,018	$1,481	$1,462	$2,581,126,384	$2,460,544,553	$11,034	$10,497
3. Passenger	110,056,471	105,925,071	470	452	887,036,130	773,048,309	3,792	3,298
4. Mail	4,276,617	4,352,989	19	19	38,916,417	40,433,304	168	173
5. Express	13,135,286	13,753,762	56	59	83,551,706	89,982,589	357	384
6. All other transportation	11,756,939	11,626,208	50	50	93,033,474	93,623,278	398	399
7. Incidental	12,391,250	11,584,008	53	49	95,919,422	92,730,543	409	396
8. Joint facility—Cr.	606,725	508,213	3	2	5,064,277	4,317,093	22	19
9. Joint facility—Dr.	197,503	153,820	1	1	1,583,883	1,311,499	7	6
10. Railway operating revenues	498,762,533	489,697,449	2,131	2,092	3,783,083,927	3,553,368,170	16,173	15,160
Expenses:								
11. Maintenance of way and structures	69,036,844	60,220,089	295	257	575,122,124	459,627,192	2,459	1,961
12. Maintenance of equipment	125,628,378	118,263,735	537	505	887,499,174	780,130,283	3,794	3,328
13. Traffic	4,107,709	3,469,185	18	15	34,885,149	38,621,702	149	165
14. Transportation	186,951,947	177,483,809	799	759	1,588,243,519	1,485,674,281	6,790	6,339
15. Miscellaneous operations	4,365,408	3,418,062	18	15	35,653,538	28,864,246	152	123
16. General	10,515,524	9,217,497	45	39	92,712,304	82,700,729	396	353
17. Transportation for investment—Cr.	434,118	360,282	2	2	4,486,487	4,110,924	19	18
18. Railway operating expenses	400,171,692	371,712,095	1,710	1,588	3,209,629,321	2,871,507,509	13,721	12,251
19. Net revenue from railway operations	98,590,841	117,985,354	421	504	573,454,606	681,860,661	2,452	2,909
20. Railway tax accruals (excluding "War Taxes")	16,844,715	16,072,560	72	69	140,915,784	140,243,424	602	598
21. Uncollectible railway revenues	70,405	38,453	.....	.....	563,697	465,292	3	2
22. Railway operating income	81,675,721	101,874,341	349	435	431,975,125	541,151,945	1,847	2,309
23. Equipment rents (Dr. Bal.)	2,403,566	940,327	10	4	16,145,230	10,089,126	69	43
24. Joint facility rent (Dr. Bal.)	1,509,132	1,407,009	7	6	11,156,510	10,581,332	48	45
25. Net of items 22, 23 and 24	77,763,023	99,527,005	332	425	404,673,385	520,481,487	1,730	2,221
26. Ratio of operating expenses to operating revs.. %	80.23	75.91	.....	.....	84.84	80.81	.....	.....

§—Credit item.

Southern Pacific Loses Minor Oil Land Suit

The United States Supreme Court on November 17 sustained the government in its proceedings to cancel patents for about 6,000 acres of oil land in California, alleged to have been obtained by the Southern Pacific Company through fraud. The government thus becomes repossessed of the lands granted to the company in 1904 under railroad land grant laws which reserved mineral lands. The Federal District Court held that while there had been no actual discovery of oil on the land, surrounding conditions clearly indicated that it was valuable for oil and the Circuit Court of Appeals, which reversed this opinion, is now in turn reversed by the Supreme Court. The government contended that the company knew of the presence of oil, although in affidavits filed by its land agent the land was declared to be non-mineral. The opinion by Justice Vandevanter declares that the Southern Pacific officers were not acting in good faith; that they endeavored to obtain the property "by representing that the lands were not mineral when they believed the fact was otherwise."

"After considering all the evidence," he said, "we believe that it is adequately shown that the lands were known to be valuable for oil when the patent was sought and obtained; and by this we mean that the known conditions at that time were such as to reasonably engender the belief that the lands contained oil of such quality and in such quantity as would render its extraction profitable, and justify expenditure to that end. Regarding the company's contention that a general land office agent examined the lands and reported them as non-mineral, the court said the report was made in another connection and was not considered by the government in approving the company's selection. This report did not relieve the company from showing that the lands were not mineral, nor did the company understand that it had any such effect."

The decision does not affect the title of the Southern Pacific to about 162,000 acres of oil land involved in another suit, in which the district court sustained the company's claim and which the government has not yet appealed. The case just decided was regarded as the government's strongest case and it is stated that the facts in the case involving the more valuable tract are so different that the present decision affords no basis for drawing any inference in regard to the other case.

The lands involved in the suit now settled are situated in the Elkhills region of Kern County, California, near the town of McKittrick, about 50 miles west of Bakersfield.

Suit to return the lands to the government was started in 1910.

Guarding Against Forest-Fire Dangers

The construction of fire lines along the right-of-way of all railroads in the Northwestern region has been ordered by R. H. Aishton, regional director, as a precaution against field and forest fires caused by sparks from locomotives or from other causes. The rules have been approved by the Executive Committee of the American Railroad Association and are as follows:

"Disposal of inflammable material such as standing dead trees, logs, dead and rotten wood, brush, dry leaves and dry grass. This will involve burning over the right-of-way as often as may be necessary to keep it cleared of inflammable material. Where the right-of-way is less than 200 ft. wide and permission can be obtained from owners of adjoining land a strip should be cleared as above described of 100 ft. or more from the outside rail in each side of the roadway. If such permission cannot be obtained, then such right-of-way as is owned must be cleared to its full width.

"Continuous fire lines must be constructed at the outside edge of the clear strip consisting of a plowed or grubbed line not less than three feet in width which must be renewed yearly before the season of fire hazard, or as often as necessary to keep the soil exposed.

"Fire lines may be omitted where the railroad is paralleled by a stream or body of water not less than 20 ft. wide and not less than 100 ft. nor more than 200 ft. from the nearest track or where the railroad is paralleled by another railroad or a graded road not less than 100 ft. nor more than 200 ft. from the nearest track, or where in prairie regions the grass can be burned off clean in the fall, provided this can be done safely and effectively without plowing a fire line."

Traffic News

The Oklahoma Industrial League has been organized, to interchange ideas concerning traffic matters; H. T. Driscoll, manager of the Oklahoma Traffic Association, is president.

R. M. Field, manager of the traffic department of the Peoria Illinois Association of Commerce, has been appointed shippers' representative on the Chicago Western District Freight Traffic Committee, succeeding J. S. Brown, who has resigned.

The Boston & Maine announces that a general increase in local freight rates of about 25 per cent will go into effect on December 31. It is said that the Massachusetts State Public Service Commission approved this increase in April, 1918, but accounting difficulties had prevented earlier action.

George E. Clinton, chief clerk to the assistant general freight agent of the New York Central, with office at New York City, has been appointed traffic manager of the Sheffield Condensed Milk Company, Inc., and the Sheffield Farms Company, Inc., both of New York, with headquarters in that city.

Suits against the Southern Pacific and the Atchison, Topeka & Santa Fe for damages said to have resulted from non-delivery of cars for transportation of grapes in 1917, have been filed in the Superior Court at Sacramento, Cal., recently by the Earl Fruit Company, San Francisco, Cal. Aggregate damages in excess of $100,000 are asked.

J. R. Bremner, traffic manager of the Association of Commerce of Madison, Wis., has been appointed traffic manager of the South Bend (Ind.) Chamber of Commerce. Prior to his service in the industrial traffic field, Mr. Bremner was employed for 20 years in the traffic departments of the Chicago, Burlington & Quincy and the Union Pacific.

The Canadian Railway War Board in a recent circular calls attention to the practice in vogue on certain railways of using standard bill of lading forms for the conveyance of instructions from the consignor to the carrier covering the shipment and routing of empty tank cars without charges. There has been misunderstanding as to the responsibility of the carrier in such cases and the Board directs that the standard bill of lading forms be used only in connection with revenue bearing traffic. Billing instructions covering the movement of empty cars should be furnished by letter.

Wilmer W. Wood, traffic manager of the United States Cast Iron Pipe & Foundry Company, Philadelphia, Pa., has been appointed general freight agent of the Kerr Steamship Company, Inc., New York City. Prior to his seven years of service with the pipe company, Mr. Wood was connected with the traffic and transportation departments of the Pennsylvania Railroad.

Chinese merchants and students, to the number of 346, recently passed over the Southern Pacific from San Francisco to New Orleans (leaving San Francisco October 11) bound for South America to study commercial and educational methods. These passengers, traveling in a train of 15 coaches, were not allowed to step out of the cars while en route, guards being posted at all of the doors to guard against violations of the Chinese exclusion law.

The opinion of the Interstate Commerce Commission in the consolidated classification case has been turned over by the director of the Division of Traffic of the Railroad Administration to the Consolidated Classification Committee for analysis and report. It will be the duty of the committee to prepare for submission to the director general a modified consolidated classification which will not conflict with the views expressed by the commission, and which, if approved by him, could be promptly filed to supersede existing classifications.

As a result of the experiences of the city of Los Angeles, Cal., during the recent unauthorized strike of employees on the railroads entering that city the Los Angeles Chamber of Commerce, through its Board of Directors, has called on the Chamber of Commerce of the United States to start a national movement to make it a criminal offense for two or more persons engaged in public utility work to enter into a conspiracy to render such an industry impotent in order to compel settlement of some grievance. At Los Angeles two per cent of the population on strike paralyzed rail transportation and isolated the city from the rest of the country.

Improper storage of cotton is the subject of a vigorous note which has been issued by B. L. Winchell, regional director, Southern Region, United States Railroad Administration, and circulated among cotton growers and others in the southern states. Quoting data from a report prepared by the Department of Agriculture, Mr. Winchell declares that millions of dollars are lost every year through improper storage. A bale weighing 492 lb., stored flat on the ground for six months lost 232 lb., which, at 30 cents a pound, meant a loss of $69.60. The Agricultural Department made tests with seven bales. This bale during the test absorbed moisture until it weighed 912 lb., but at the end of six months, 232 lb. had moulded and was worthless. A bale standing on end on the ground lost 120 lb.; one on edge lying on the ground, but turned about once a week, lost 22 lb. A bale standing on edge and covered with tarpaulin lost only four pounds.

The Southern Pacific Company has protested to the United States Railroad Administration against the proposed change in fares which will make travel to the Pacific Coast from eastern states not bordering on the Atlantic much more expensive via New Orleans than over the more direct Ogden route. The Railroad Administration bases fares on mileage, but the protestant claims that this will lessen the available trains to California for a large part of the population of the United States, except on the basis of excess fares. While the distance from eastern cities to San Francisco via New Orleans is 1147 miles greater than by way of Ogden, the distance to Los Angeles via the Ogden route is but 188 miles greater than the distance to the same city by way of New Orleans. Objection is also raised to the mileage basis because of the other factors such as climate and scenic interest, which influence tourists. Finally, attention is called to the fact that, under the new rates, travelers eastward bound from California can reach points in the south by way of Chicago as cheaply as they can by way of New Orleans, although travelers from the East cannot reach California by the New Orleans route without paying additional fares.

Northwestern Transportation Committees

Special transportation committees have been appointed in the Northwestern region as follows: At Chicago, F. H. Rutherford, chairman, superintendent terminals C. & E. I.; W. W. Wade, assistant superintendent, M., St. P. & S. S. M.; A. E. Lloyd, superintendent Western Division, N. Y. C.; and Robert C. Ross, traffic manager, Joseph T. Ryerson & Son, Chicago.

At Duluth and Superior, Minn., H. J. Councilman, chairman, trainmaster, N. P.; W. D. Boyce, trainmaster, M., St. P. & S. S. M.; J. J. Nealey, trainmaster, C., St. P., M. & O., and F. S. Keiser, traffic commissioner, Commercial Club, Duluth, Minn.

At Portland, Ore., F. N. Finch, chairman, assistant general manager, O.-W. R. & N.; E. E. Lillie, assistant general manager, S., P. & S.; E. Lyons, general manager, N. P. Terminal, and J. H. Lothrop, secretary traffic and transportation association, Portland, Ore.

At Seattle and Tacoma, Wash., J. H. O'Neill, chairman, general superintendent, G. N.; I. B. Richards, general superintendent, N. P.; W. B. Foster, general superintendent, C., M. & St. P., and J. D. Mansfield, traffic commissioner of New Seattle Chamber of Commerce, Seattle, Wash.

At St. Paul and Minneapolis, Minn., P. L. Clarity, chairman terminal superintendent, G. N.; G. A. Van Dyke, terminal superintendent, C., M. & St. P.; L. A. Mixener, assistant general freight agent, C., St. P., M. & O. and Joseph H. Beek, traffic director, St. Paul Association.

Freight Movement November 10-17

According to a report on traffic conditions for the week ended November 17, made to Director General Hines, the revenue freight loadings and receipts from connections for the various regions were as follows:

Eastern Region, revenue freight loaded 203,653 cars, a decrease of 4,335 cars under corresponding week last year; receipts from connections, 242,032 cars, a decrease of 8,236 cars under last year; Allegheny Region—revenue freight loaded, 172,390 cars, a decrease of 32,607 over last year; received from connections, 166,223 cars, a decrease of 24,836 under last year; Pocahontas Region—freight loadings, 34,487 cars, a decrease of 1,594 cars under last year; receipts from connections, 15,737 cars, a decrease of 4,471 under last year; Southern Region—freight loadings, 109,566 cars, a decrease of 7,225 under last year; receipts from connections, 73,967 cars, an increase of 577 cars over last year; Northwestern Region—freight loadings, 139,103 cars, an increase of 10,430 cars over last year; received from connections, 73,249 cars, an increase of 1,647 over last year; Central Western Region—freight loadings, 116,323, an increase of 11,334 cars over last year; receipts from connections, 71,702, an increase of 12,727 over same week last year; Southwestern Region—revenue freight loadings, 61,624 cars, an increase of 7,054 over last year; receipts from connections, 51,753 cars, an increase of 6,066 over last year.

Anthracite Shipments for October

The record for anthracite shipments for this year was made in October, 6,560,150 gross tons, the largest record since August, 1918. Shipments exceeded those of September by nearly 880,000 tons, and showed an increase over October, 1918, of 273,784 gross tons. The total shipments for the present coal year have amounted to 41,000,250 gross tons as compared with 38,092,613 tons in the normal year 1916-17.

The shipments by railroads were as follows:

	October 1919	October 1916	Coal Year 1919-1920	Coal Year 1916-1917
P. & R.	1,240,001	1,206,570	7,939,838	7,182,849
L. V.	1,209,345	1,073,176	7,552,394	6,992,276
C. of N. J.	639,924	538,031	3,785,154	3,707,753
D. L. & W.	963,618	946,945	6,341,692	5,941,961
D. & H.	797,041	589,636	4,730,605	4,148,447
Penna.	465,544	480,920	2,926,615	3,226,469
Erie	698,613	623,383	4,500,633	4,301,230
N. Y. O. & W.	187,926	132,291	1,202,978	1,121,892
L. & N. E.	358,138	279,252	2,020,341	1,469,736
	6,560,150	5,870,204	41,000,250	38,092,613

Five Years' Troop Movements on Canadian Railways

In a memorandum addressed recently to the Minister of Militia of Canada, Maj.-Gen. J. Lyons Biggar, quartermaster general of the Canadian Army, set forth statistics regarding "the admirable services" of the railway and steamship companies in the movement of troops during the war. The following is the number of troops which have been carried by the various railways:

CANADIAN PACIFIC	Mobilization	Demobilization
Canadian troops	153,826	175,567
United States troops	54,810	.....
Chinese coolies for overseas	81,530	.....
French battalion, Serbian, Montenegrin and Polish reservists	16,103	.....
Imperial troops	.....	9,032
Total	306,269	184 599
GRAND TRUNK		
Canadian troops	200,273	105,259
United States troops	118,180	.....
Total	318,453	105,259
CANADIAN NATIONAL		
Canadian troops	339,172	267,436
United States troops	5,843	.....
Total	345,015	267,436

The number carried by the Canadian Pacific steamships was as follows:

CANADIAN PACIFIC	Eastbound	Westbound
Canadian troops	121,097	80,811
United States troops	18,407	2,120
Chinese coolies	37,034	3,120
Prisoners of war	1,424	.....
Total	177,962	86,051

Commission and Court News

Railway companies subject to the jurisdiction of the Board of Railway Commissioners for Canada have been granted an extension of time until September 30, 1920, within which to equip freight cars with safety appliances as required by a recent order of the Board.

Pursuant to a Senate resolution calling for information as to the present or prospective ownership or control by the Canadian government of railways in the United States the Interstate Commerce Commission has ordered a proceeding of inquiry and investigation.

The Interstate Commerce Commission's monthly report of railroad earnings and expenses, covering 186 Class 1 roads, and 17 switching and terminal companies, shows gross revenues for September of $498,762,533 and railway operating income of $186,675,721. The details are as shown in the table. Operating income amounted to $349 per mile of road operated, which compares with an average of $415 for September in the three-year test period ended June 30, 1917.

The Quebec, Montreal & Southern has been granted permission by the Board of Railway Commissioners for Canada to increase its standard passenger fares from 3.45 cents to 4 cents a mile between all stations. The application was accompanied by detailed statistics showing the deficits incurred on the road from year to year, the density, average journey and average fare as compared with all other Canadian railways and the percentage of general expenses to total operating expenses.

The Interstate Commerce Commission Bureau of Valuation has served tentative valuations in the cases of the Northern Dakota, the Savannah & Northwestern, the Talbotton, the Santa Fe, Raton & Eastern, the Evansville & Indianapolis, the St. Francois County Railroad (Missouri) and the Mississippi River & Bonne Terre. The commission has also announced a series of hearings on protests of carriers to its tentative valuations before Examiner Flynn at Washington, the case of the Flint River & Northeastern on November 5, the Louisville & Wadley November 6, the Wrightsville & Tennille November 7, and the Norfolk Southern November 17.

Inspection of Stationary Boilers in Canada

The Board of Railway Commissioners for Canada has requested Canadian Railway companies subject to its jurisdiction to file with the Board an expression of opinion on the question as to whether inspection of railway steam boilers other than locomotive boilers should be performed by provincial inspectors or otherwise. These expressions of opinion are requested because of the fact that the attention of the board has been drawn by provincial authorities to the existing conditions under which such inspections have not been performed by provincial inspectors in one or two of the provinces for the reason that the railway companies claim that in complying with the orders of the board they have fulfilled their obligations. The result has been, it is claimed, that the protection aimed at by the different acts is defeated and the public is not safeguarded.

Personnel of Commissions

U. G. Powell and V. E. Wilson, formerly of the Railway Commission of Nebraska, have resigned and formed a partnership for the practice of law, with office at Lincoln, Neb.

William Gerig, engineer at Anchorage, has been appointed assistant chief engineer of the Alaskan Engineering Commission, in place of W. C. Edes. Mr. Edes retains his office as chairman of the commission.

Charles W. Needham, assistant counsel in the Bureau of Law of the Interstate Commerce Commission, has been appointed solicitor of the Bureau of Valuation to succeed C. A.

Benton, who has resigned to succeed C. E. Elmquist as solicitor of the valuation committee of the National Association of Railway and Utilities Commissioners.

State Commissions

The State Railroad Commission of Wisconsin has undertaken a campaign for the elimination of dangerous grade crossings and Colonel H. M. Tripp, formerly associated with the Valuation Division of the Interstate Commerce Commission has been appointed grade crossing engineer, to conduct the campaign.

The Railroad Commission of California recently stated in an opinion, accompanying an order awarding the Ventura Refining Company reparation for overcharges on shipments of refined petroleum from Fillmore, Cal., to Los Angeles, Slauson and Colton over the Southern Pacific, the Atchison Topeka & Santa Fe, the Los Angeles & Salt Lake and the Pacific Electric, that "a more aggravated case of prejudicial and unreasonable treatment would be hard to find." The award, amounting to thousands of dollars, covers shipments of petroleum products made from January 1, 1916, to December 27, 1917, the date upon which the government took over the railroads.

Holding that the United States Supreme Court has sustained the contention of the Southern Pacific that the Railroad Commission of California has no jurisdiction in the matter of determining the switching limits of the railroads in San Francisco, Cal., or over the matter of carload rates between San Francisco and South San Francisco, the commission recently ordered a dismissal of the action brought against the Southern Pacific by the South San Francisco Chamber of Commerce. The action was originally brought to bring South San Francisco within the San Francisco switching limit. The case was heard in February, 1918, and subsequently a supplemental answer questioning the jurisdiction of the commission was filed by the Southern Pacific. This answer was later sustained by the Supreme Court, which held that the Federal government had the sole power over such rates.

Court News

Inexcusable Delay to Live Stock

The Texas Court of Civil Appeals holds that a railroad cannot justify 17 hours' delay in transportation of live stock on the theory that it was complying with the law forbidding the working of a train crew more than 16 hours at a time, since it will be presumed that the railroad company has more than one train crew available—K. C. M. & O. v. Cliett (Tex.), 207 S. W. 166.

Fire from Sparks—Kentucky Rule

The Kentucky Court of Appeals confirms the rule, first handed down in 1890 and never departed from, that if a railroad company in that state equips its locomotives with spark arresters, as required by Ky. St. §782, and operates them with due care, it will not be liable for damages occasioned by fires set from sparks.—Hartford Fire Ins. Co. v. Cincinnati, N. O. & T. P. (Ky.), 206 S. W. 628.

Licensees on Railroad Premises

The Arkansas Supreme Court holds that a person who, without being expressly or impliedly invited to enter a railroad station, entered the building to ascertain if certain friends of his were there was a mere licensee, and could not recover from the company for injuries caused by falling down an open stairway in a baggage office he had entered to ask a porter about his friends.—Rock Island v. Russell (Ark.), 206 S. W. 666.

Twenty-Eight Hour Law

A railroad delivered a shipment of hogs at the proper place according to the car tickets before the expiring of the time to unload under the 28-hour law. The consignees refused to accept the shipment, because the car tickets made by a connecting carrier did not agree with the bills of lading, which called for delivery at another point; and the time for unloading expired before the shipment could be redelivered. Further delay was caused by the refusal of another connecting carrier to accept the animals after the government inspector had ordered them unloaded for rest and feed. The federal district court for the Eastern District of Pennsylvania holds that there was no willful disobedience of the act, or even negligence, and that the carrier was not liable for the penalty.—United States v. Allentown Terminal R. Co., 256 Fed. 855.

United States Supreme Court

Workmen's Compensation for Facial Disfigurement.

The Supreme Court of the United States holds that a State, in administering a Workman's Compensation Law, may take into consideration, in ascertaining the amount of compensation, any substantial physical impairment attributable to the injury, whether it immediately affects earning capacity or not.

The cases in which the question arose involved the constitutionality and validity of the 1916 amendment to the New York Workmen's Compensation Act, section 15, providing that in case of an injury resulting in serious facial or head disfigurement the Commissioner may, in its discretion, award compensation, not to exceed $3,500. The defendants' sole contention was that this would deprive them of their property without due process of law. The court holds that the "due process of law" clause does not require the states to base compulsory compensation solely upon loss of earning power. Whether an award for such disfigurement should be made in combination with or independent of the compensation allowed for the mere inability to work is held a matter of detail for the State to determine. Mr. Justice McReynolds dissenting.—New York Central v. Bianc. Decided November 10, 1919.

Collecting Undercharges in Rates

A railroad delivered to a consignee two boxes of Indian relics shipped to him at Dayton, Ohio, from Los Angeles, Cal., the waybill specifying charges of $15, which the consignee paid on receipt of the goods. By the filed tariff the charge should have been $30. The railroad sued the consignee for the difference. The Supreme Court of the United States holds that under section 6 of the Act to Regulate Commerce, which controls the case, it was unlawful for the carrier to depart from the tariff rates. For the legal charges the carrier had a lien upon the goods and the consignee could become entitled to the goods only upon tender or payment of the legal rate. This may be a hardship on the consignee, but instances of individual hardship cannot change the policy of Congress to secure uniformity in rates. The court followed Louisville & Nashville v. Maxwell, 237 U. S. 94, where this rule was enforced as against a passenger who had bought a ticket from an agent of the company at less than the published rate. It was immaterial that the consignee did not become owner of the goods until after they were delivered to him. And the doctrine of estoppel could not be invoked to avoid the requirement of the act as to equal rates.—Pittsburgh, Cincinnati, Chicago & St. Louis v. Fink. Decided November 10, 1919.

Famous Georgia Railroad Taxation Case

The Supreme Court of the United States has just handed down what is probably the final decision in a litigation which has been before the court since 1874, between the Comptroller General of the State of Georgia and the Central of Georgia Railroad, in respect of taxes on the Augusta & Savannah and other Southwestern roads, leased in perpetuity by the Central of Georgia.

The opinion of the court, by Mr. Justice Holmes, which is substantially as follows, sets forth the course and result of the litigation. At last term it was decided that the Central of Georgia was exempt from liability as lessee of certain roads, 248 U. S. 525, as it had been decided a few terms earlier that it was exempt from taxation upon the fee of the same roads, 236 U. S. 674. A rehearing was granted on the question whether the exemption thus adjudged to exist extends to portions of the railroad let to the Central of Georgia by the Southwestern and the Muscogee railroads, which were assumed to be embraced in the decision, but which were not specially discussed. The consideration of the court was directed especially to the charter of

the Augusta & Waynesboro road granted in 1838 and having features characteristic of the conception of railroads then entertained. It was argued that the charters of the other lessors just named, granted at a later date, even when limiting the corporation's liability to taxation in similar words, should be construed in a different way.

The charters of the Southwestern and the Muscogee roads were not granted until 1845, and while like the earlier ones they provided that the said railways and its appurtenances and all property therewith connected, or the capital stock of the said railroad company, should not be subject to be taxed higher than one-half of one per cent upon its annual net income, they did not contain the provisions that showed the legislature in 1838 to contemplate indifferently a revenue derived from using, from sharing, or from letting the special privileges granted—provisions that were of weight in the decision of the court.

The Supreme Court is satisfied that between 1838 and 1845 there had been no such change in the policy of Georgia as to require the same words to be given a different meaning at the later date from that which the Supreme Court has decided that they had at the former. Circumstances had not changed when express power to let was given in 1852. The Muscogee was merged in the Southwestern under an act of 1856, but the exemption remained superior to legislative change. No real distinction could be made between the charter of the Augusta & Waynesboro and those of the Southwestern and Muscogee roads. The decision of last term, deciding against the state's contention, was therefore adhered to.—Central of Georgia v. Wright. Decided October 27, 1919.

Justices McKenna, Pitney, Brandeis and Clarke dissented, but without written opinion.

Two-Cent Fares—Division of Operating Expenses Between Freight and Passenger Services

When the Duluth, South Shore & Atlantic won its suit restraining the enforcement of the Michigan two-cent fare act of 1911 (repealed this year) the railroad was required to issue to all intrastate passengers receipts by which it agreed to refund, if the act should be held valid, the amount paid in excess of a two-cent fare. Later, the railroad was required to deposit, subject to the court's order, such amounts thereafter collected. The fund now on deposit exceeds $800,000, and the refund coupons are still outstanding. In order to determine the rights of coupon holders and dispose of this fund it was necessary to decide whether the act of 1911 was, as respects this road, confiscatory. The district court found that the two-cent fare would have resulted in a return on intrastate passenger business of less than two per cent during the six years ending June 30, 1917. The State contends that this was error, due partly to the district judge having included in his calculations property and operations which should have been excluded, and partly to his having adopted improper formulas for the division of common charges and expenses as between the freight and passenger services; and that if these specific errors were corrected it would appear that the two-cent fare would have been highly remunerative.

The Supreme Court of the United States has affirmed the decree of the district court. Regarding the formula adopted for dividing charges and expenses common to freight and passenger services, the court says that what method should be pursued in making such division is a very difficult problem to which railroad accountants, the Interstate Commerce Commission, and State railroad commissions have for years given serious attention. The Interstate Commerce Commission, upon its organization July 1, 1887, required the railroads to report operating expenses separately as between these services. The difficulties were so great and the results so widely discredited that the requirement was withdrawn in 1894. It was restored in 1915. In the interval railroad accounting had in this respect made gradual advances. Despite much patient study and the exhibition of great ingenuity no wholly satisfactory method has yet been devised. The variables, many of them due to local conditions, are numerous; and experience teaches that it is much easier to reject formulas claimed to be misleading than to find one apparently adequate. The science of railroad accounting is in this respect in process of development; and it may be long before a formula is devised which can be accepted as satisfactory. The court could not say that the lower court erred in adopting the method it pursued. —Gresbeck v. D. S. S. & A. Decided November 10, 1919.

Foreign Railway News

Colonel C. S. Coe, of St. Augustine, Fla., is reported by the Associated Press as having been appointed by the Jugo-Slav republic to take charge of railroad construction. Colonel Coe served during the war as commander of the Seventeenth Railway Engineers.

Railway Extension in Brazil.—Consul Edward Higgins, Bahia, Brazil, reports that work is to be resumed on the extension of the Estrada de Ferro de Nazareth, the legislature of the State of Bahia having opened a credit for the carrying on of the work. This line has in operation 221 km. (137 miles); 30 km. (19 miles) in course of construction, and 35 km. (22 miles) surveyed. Work on this extension has been suspended since June, 1918, because of the failure of the state to appropriate money for construction.

Deficit on the Swiss Railways

LONDON

An abstract from Modern Transport states that this year's deficit on the Swiss railways is estimated at £8,000,000.

Electrification on Railways in the Silesian Mountains

LONDON.

The London Technical Review gives an extract from the Elektrotechnische Zeitschrift by E. C. Zehme, in which it is stated that as the total available water power (9,400 kw. peak load) was not sufficient to run the railways, a generating station burning a local low grade coal was erected at Mittelsteine to supply single phase alternating current at 15,000 volts, 16¾ cycles.

The total length of the railways served is 500 km. of track, and the grades and curvatures are particularly severe.

Swedish Ferry Line to England

LONDON.

Detailed plans have been prepared, states the Technical Review, for transporting railway cars between England and Sweden. A daily service could be maintained by four boats, each country building two, and working them on the same lines to those now in operation between Sweden and Germany, that is, loaded cars are run on to rails laid on the deck of the ferry boats and landed on completion of the voyage without the goods breaking bulk. It has also been suggested that Norway and Denmark should join in the scheme, as this would considerably improve the return on the expended capital.

British Freight Cars for Belgium

LONDON

The Belgian Minister of Railways, states Modern Transport, has bought from the British Government, 8,750 freight cars, formerly used by the British Army, which are still in France.

Railway Construction in South America

LONDON.

An abstract from Modern Transport states that plans have been prepared, for the construction of the last stages of the Potosi-Sucre Railway, in Bolivia. The total length is 170 kilometers of which 50 are almost ready for service. The sum of 25,000,000 pesos, gold, is to be expended upon the electrification of the first zone of National railways in Chile. The Valparaiso-Santiago railroad is comprised in the zone. Construction upon the Trujillo railway, Honduras, between kilometers 46 and 66 has been completed and opened to public traffic. The Uruguayan Government proposes to extend the track of the Uruguayan Eastern railway from Punta del Este to Maldonado, a distance of five kilometers.

Railway Construction in Chosen

The American Consul General at Seoul, Chosen, reports that the Government General has granted permission for the con-

struction of two broad gage, light railway lines in North Chosen, primarily for the exploitation of the forests along the Yalu and Tumen Rivers, and the development of the mining industry in that region.

One line, the Chosen Forest Railway, will run from Hamheung, South Hamkyong Province, to Huchang, North Pyongan Province. The other railway, the Ryoko Takurin Tetsudo, will consist of two lines, one running from Komusan and the other from Kilju, North Hamkyong Province, to Haisanchin.

The total length of these lines will exceed 200 miles and involve a capitalization of about $12,500,000. The establishment of a paper mill at Hamheung is contemplated.

Railway Developments in Chile

London.

The London Times Engineering supplement states that the Public Works Department of Chile is preparing studies for important constructional work, including new railways, upon which $2,000,000 is to be expended for equipment. The completion of the new railway between the capital, Santiago and Valparaiso by way of Casablanca will be the first to be undertaken. It is estimated that the cost will be approximately 45,000,000 Chilean paper pesos or at the present rate of exchange would be £2,432,-432. This line it is proposed to work by steam, but the existing line between Valparaiso and Santiago will be converted to electrical operation in the near future.

Other work to be carried out includes the proposal of the construction of a line from Larrain Alcalde to Pichilemu, the project for a new reinforced bridge over the Maipo River, on the Paine-Talagante line, and the completion of the various plans and estimates for the railway from Los Angeles to Santa Barbara and Quilleco.

The Ayacucho-Cuzco Railway of Peru

Press despatches from Lima, Peru, report that criticism is being voiced regarding the government resolution of August 20, which stipulates that the gage of the Huncayo-Ayacucho-Cuzco Railway shall be one metre. Some of those interested in the project are inclined to believe that it should be the standard gage of 4 ft. 8½ in., the same that has been used on the Central and Southern Railroads.

It is claimed by others that the cost of construction entailed by the standard gage would be prohibitive. It is recognized that a uniform gage would be desirable, but since this is impossible the adoption of the meter gage would make it possible to link up the Government roads of Bolivia, Chile, Argentina and Uruguay.

The Ayacucho-Cuzco Railroad is one of the most important projects now being pushed by Peru, for it will open up a rich interior region and will also put the capital in railroad communication with the southern part of Peru and make unnecessary the ocean trip from Callao to Mollendo.

Railway Extensions in Morocco

London.

The London Times Trade Supplement states that the railways of the French Protectorate of Morocco extend today over a length of nearly 1,000 kilometres. The system is divided into two sections—respectively the Eastern and Western Moroccan Railways. These lines are all of narrow gage—60 cm.—and were constructed for military purposes, but are now open as commercial railways and for passenger traffic.

The Eastern section begins at Ujda, near the Algerian frontier, and is completed as far as a point between Taza and Fez. The distance from Ujda to Taza is 235 kilometres. Ujda is in turn connected with Algeria by an extension of the West Algerian Railway. Between Taza and Fez the line is nearing completion and should shortly be open to traffic. When trains run between these two towns there will be uninterrupted rail communication between Tunis and Casablanca.

The Western section extends over 622 kilometres. From Rabat-Salé the line runs north and east to Kenitra, Mekinez, and Fez (247 kilometres), and southwards to Casablanca and on to Oued Zem *via* Ber Rechid, with a branch from Ber Rechid to Kaid Tounsi and Ben Guerir. On both Eastern and Western sections trains run regularly. The recent extension of the line to Ben Guerir brings Marrakesh, the southern capital within 70 kilometres of the railhead, and on this section work is already in hand. It is expected that trains will be running to Marrakesh next year.

Over the River Bou Regreg between Rabat and Salé an important road and rail bridge is being erected which will do away with the existing inconvenience of the ferry and will form the connecting link between the lines Salé-Fez and Rabat-Casablanca.

In spite of the narrow gage of these lines they have rendered very important services in the opening up and trade of Morocco. The tariffs for passengers are:—First class, 50 centimes; second class, 30 centimes; and third class, .08 centimes per kilometre, with an allowance of 30 kilos of baggage free. Merchandise is carried at rates varying between 30 centimes and 50 centimes per ton per kilometer, according to classification of goods. These tariffs are the same all over the railways of the French Protectorate. These existing railways are only of a more or less temporary nature and are merely the forerunners of an extensive system of commercial lines, the construction of some of which is already in hand.

Tangier-Fez Line.

By the Franco-German agreement of November, 1911, it was stipulated that the Tangier-Fez line should be the first commercial railway to be constructed in Morocco. It was not, however, until 1914 that the concession of the line was accorded to a Franco-Spanish company. This line will have a total length of 310 kilometres, of which 240 are in the French Protectorate and the remainder in the Spanish with the exception of a few kilometres in the Tangier zone. In the French sphere of influence the greater part of the work has already been tendered for and is making good progress. The small section which falls in the Tangier zone and one of the three sections of the Spanish zone have already been put up to tender, and work will be begun almost immediately.

The importance of the Tangier-Fez railway cannot be exaggerated. It will form, when completed, the northernmost section of a great series of African railways, which will reach in time both the British and French colonies of West Africa, and doubtless extend beyond them in the future. It will connect Tangier, the port of Africa nearest to Europe, by rail with Tunis, and, when the Tunis Tripoli-Egypt rail is built, with Cairo. It will also greatly facilitate communication with South America. But its immediate result will be to connect Europe with the flourishing French Protectorate of Morocco. The entire absence of roads in the Spanish zone still renders overland communication always difficult and often impossible, and the only sure means of reaching the French Protectorate from Tangier is by a 12 hours' sea voyage to Casablanca. That the Spanish Government during its seven years of occupation has not yet built this 50 miles of necessary road through its zone gives little hope for the future of that portion of Morocco which has fallen to Spain's share.

Apart from the Tangier-Fez railway, the concession for the remaining commercial lines has been accorded to a consortium representing the great railway companies of France. The gage will be throughout 1 metre 44 cm. (4 ft. 8½ in.). The lines to be constructed are:

	Kilometres.
Casablanca-Kenitra	145
Kenitra-Petit Jean	85
Kenitra to a junction of the Tangier-Fez in the Gharb district	80
Casablanca Marraketh	240
Fez to Algerian frontier	320

The total length is 870 kilometres, serving all the principal centres and towns of French Morocco. There will be added to this system of broad-gage railways a network of light railways through the great grain-producing and mineral districts, by which produce and ore will find their way to the coast for exportation. It is a highly satisfactory program. It is already in hand and its speedy accomplishment can be confidently looked for.

Electrification of Railway From Stockholm to Gotenburg

London.

An extract from the Board of Trade Journal by the Technical Review states that preparations are now being made by the Swedish Railway Administration for the electrification of the

Stockholm and Gotenburg railway. A government bill providing for a grant for this purpose is to be laid before the Riksdag next session. The power required is estimated at 30,000 kw., and will be obtained from the Trollhattan and Motalastrom Falls at the rate of about 15,000 kw. from each. Transformer stations will be erected at about fourteen places on the line. The expenditure for the complete electrification is estimated at about 60 million kroner net. The work is to be commenced next year, provided that the necessary grants are made by the Riksdag, and should be completed in about three years. The journey between Stockholm and Gothenburg, after the electrification should take less than six hours instead of the present eleven hours.

Railway Notes from South Africa

(Special correspondence from Johannesburg)

August 11.

Now that peace has been declared, it is hoped that normal conditions will be restored at no distant date and that the Administration's long pending requisitions for rolling stock, will be completed in the near future. The resumption of excursion traffic, however, will be out of the question until the majority of the locomotives which are on contract have been delivered. The South African Railway Administration in March last had on order 187 engines. Besides there remain to be delivered 14 large bogie tenders, 414 coaches of various types, 203 of which are being constructed in South Africa, and 3,994 goods vehicles. During the fifteen months preceding June, 1919, there have been put in service 56 new locomotives, 30 new 3 ft. 6 in. coaches, consisting of 17 main-line saloons and 13 suburban coaches; 34 highsided 50-ton steel bogies, 5 bogie goods guard vans, 2 breakdown vans, 6 bogies and 3 short goods guard vans. The locomotive stock of the Union government as at the end of June last consisted of 1,566 locomotives of 3 ft. 6 in. and 52 of 2 ft. gage. The number of coaches in stock at that date was 2,632 of 3 ft. 6 in. and 93 of 2 ft. gage. The total wagon stock as at the end of March, 1919, was as follows:

Class.	8-wheel.	6-wheel.	4-wheel.	Total.
Wagons	10,389	207	16,253	26,849
Vans	203	6	488	697
Miscellaneous	120		497	617
Narrow Gage				515
Cranes				106
	10,712	213	17,238	28,784

One of the most striking features of the commercial development of the Union of South Africa is the rapid rise of the coal industry, the tonnage consigned from the various collieries of the Union for the financial year ended March 31, 1918, totalling 10,433,385 tons as compared with 4,438,385 tons despatched during 1906. The railway revenue derived from this commodity amounted to £3,083,204 for the financial year. The importance of the coal traffic can be gaged from the fact that for the year 1918-19, the percentages of earnings derived under the heads, Passengers and Coal, were respectively 27.55 and 20.18, the figures for the period April 1 to May 31, 1919, being in turn respectively 27.50 and 21.20.

In 1918 all the new lines authorized by Parliament in 1913—the second program of new construction since Union—were completed and it is anticipated that the districts now most in need of railway communication will be given due attention in the near future.

The question of the establishment of a grain elevator system in the Union is at present engaging the attention of the Administration, and an engineer has toured the various grain centres. His report will soon be in the hands of the government.

The question of electrifying certain sections of the Union's railway system has been under contemplation for some time past and is still a live topic.

The housing problem is at present exciting keen interest of railway employees. The 8-hour day or 48-hour week is being gradually introduced.

The establishment of a Conciliation Board is at present in Embryo. It is proposed that the board be constituted of five members nominated by the Minister of Railways and Harbors, one of whom to be chairman, and five members representing various sections of the service, one of the five to be vice-chairman.

Equipment and Supplies

Freight Cars

John R. Walsh, Savannah, Ga., has ordered three 8050-gal. tank cars from the Pennsylvania Tank Car Company.

The Delaware, Lackawanna & Western is figuring on remodeling some 1,900 of its old equipment to steel underframe box cars.

The Mid-Co Gasoline Company, Tulsa, Okla., has ordered ten 10-000-gal. tank cars from the Pennsylvania Tank Car Company.

The Conley Company, Pittsburgh, Pa., has ordered five 8050-gal. tank cars from the Pennsylvania Tank Car Company. This is in addition to 25 recently ordered from the same company.

Iron and Steel

The New York Central is in the market for 150,000 tons of steel rail for 1920 requirements.

Signaling

The Fort Wayne & Northern Indiana Traction Company has ordered from the Union Switch & Signal Company, Swissvale, Pa., a Saxby & Farmer interlocking for Bluffton, Ind.; eight levers.

The Union Pacific has ordered from the General Railway Signal Company two electric interlockings for Omaha, Neb., to take the place of machines installed several years ago, in Towers A and B. The larger machine will have 64 levers, and the other will consist of 37 levers added to a 40-lever machine now in service. The work of installation will be done by the signal company's men.

Miscellaneous

Sophus Berendsen, 15 Broad Street, New York, is inquiring for 300 railroad jacks for export to Denmark.

View of Talcahuano, Chile

Supply Trade News

The Southern Wheel Company, St. Louis, Mo., is considering plans for additions to its plant, to cost approximately $400,000.

The Chesapeake Iron Works, Baltimore, Md., have opened an office in the Woolworth building, New York, in charge of **H. L. Mode.**

The Bucyrus Steam Shovel Company, Evansville, Ind., is building an addition to its plant which will cost approximately $500,000.

K. C. Gardner, who has been appointed manager of sales for the Central district of the **Pressed Steel Car Company** and the **Western Steel Car & Foundry Company,** with offices in the Farmers Bank building, Pittsburgh, Pa., as was announced in our Emergency Bulletin of October 20, entered the employ of the Pressed Steel Car Company in 1901, and was connected with the operating department at McKees Rocks, Pa., until 1911. He was transferred to the New York office, remaining there for a period of eight years, and on January 1, 1919, returned to Pittsburgh as assistant manager of sales, Central district, which position he held until his recent promotion to the position of manager of sales of the same district.

K. C. Gardner

Frank D. Lyman, managing director of the Lyman Tube & Supply Co., Montreal, Que., died in that city recently at the age of 42 years.

Joseph E. Nelson & Sons, Chicago, contracting engineers, have moved their office from 118 N. La Salle street to 3240 S. Michigan boulevard.

The Engineering Service Corporation of Illinois, successor to the W. K. Palmer Company Engineers, has recently moved its offices into new quarters at 15 West Tenth street, Kansas City, Mo.

The **Ralston Steel Car Company,** Columbus, Ohio, has opened an office at 20 E. Jackson boulevard, Chicago, in charge of **Ford S. Clark,** formerly of the Philadelphia office of the concern.

J. M. Nelson, general superintendent of the **Algoma Steel Corporation,** with headquarters at Sault Ste. Marie, Ont., has resigned. **George Scholl,** superintendent of the rolling mills, will succeed Mr. Nelson.

The strike of the employees at the Hammond plant of the **Standard Steel Car Company** has been officially declared off, with the return to work of the blacksmiths. The car workers returned to work some time ago.

General Guy E. Tripp, chairman of the board of the Westinghouse Electric & Manufacturing Company, has been elected a director of the **American International Corporation,** to succeed J. Ogden Armour, resigned.

F. C. Wallace, of Pittsburgh, Pa., has withdrawn his resignation as president of the **Canadian Locomotive Company,** Kingston, Ont., and will continue in office. He has been granted a six-months leave of absence.

Construction work on the $1,500,000 addition to the plant of the **Scullin Steel Company** at St. Louis, Mo., is nearing completion. The addition includes rolling mills for merchant bars, reinforcing rods and structural shapes.

W. H. Scales, chief designing engineer of the **Lackawanna Bridge Company,** with headquarters at Buffalo, N. Y., has resigned to become associated with W. E. Russ, architect, of Indianapolis, Ind., as chief of engineering and construction.

A. W. Swan, of the sales department of the **Canadian Ingersoll-Rand Company,** Sherbrooke, Que., with headquarters in that city, has been appointed assistant secretary of the Engineering Institute of Canada, with office at Montreal, Quebec.

John Kopf, formerly associated with the Bureau of Air Craft Production, with headquarters at Dayton, Ohio, has been appointed manager of the engineering department of the **Duff Manufacturing Co.,** Pittsburgh, Pa., with office in that city.

The Chicago Heights, Ill., plant of the **Chicago Pneumatic Tool Co.** has been purchased by the Giant Truck Corp. Equipment other than the chassis manufacturing machinery of the Chicago Pneumatic Tool Co. has been removed to its Cleveland, Ohio, plant.

The **Roberts & Schaefer Company,** engineers and contractors, Chicago, has just closed a contract with the Saint Clair Terminal Railroad for building a reinforced concrete automatic electric locomotive coaling and sanding plant, for installation at Clairton, Pa.

Louis J. Schneider has been appointed general sales manager of the **Clark Tructractor Company,** Chicago. Mr. Schneider is a graduate of Stevens Institute of Technology, Hoboken, N. J., and is a member of the Society of Automotive Engineers, as well as the American Society of Mechanical Engineers. He has been closely identified for many years with the automotive industry, having served in the engineering department of the Hyatt Roller Bearing Company during 1911, and in the sales department from 1912 to 1916; during the early part of 1917 he was sales manager of the Jackson Rim Company, Jackson, Mich., and later in the same year he became sales manager of the Harrison Radiator Company, Lockport, N. Y., which position he resigned to take charge of the sales department of the Clark Tructractor Company.

L. J. Schneider

R. J. McComb and **J. L. Terry** have been appointed assistants to the president of the **Q & C Company,** New York. Mr. McComb has charge of the Chicago office in the Peoples Gas building, while Mr. Terry has charge of the St. Louis office, in the Railway Exchange building.

The **Keller Pneumatic Tool Company,** Chicago, has opened branch offices in Birmingham, Ala., Jefferson County Bank building, under the management of **H. I. Kahn;** Salt Lake City, Utah, Newhouse building, under the management of the **C. H. Jones Co.;** San Francisco., Cal., Los Angeles, Cal., and Portland, Ore., all under the management of the **Eccles & Smith Co.,** San Francisco.

Frank J. Walsh, mechanical expert with the Galena-Signal Oil Company, New York, has resigned to become secretary of the Douglas Wray Paper Company, Chicago. Previous to his service with the Galena-Signal Oil Company, Mr. Walsh was a division master mechanic on the Chesapeake & Ohio.

George R. Woods has resigned from the Allied Machinery Company of America, New York City, to become manager of the New York office of R. S. Stokvis & Zonen, Ltd., Rotterdam, Holland. Mr. Woods is now in Europe studying industrial and economic conditions and is to return to New York early in November.

Orville A. Pier has been appointed secretary-manager of the **National Association of Railroad Tie Producers,** with office at 205 Security building, St. Louis, Mo. **R. E. Hussey** continues his connection as secretary of the board of directors, with office at 1102 National Bank of Commerce building, St. Louis, Mo.

M. E. Allen has resigned as engineer in charge of sales for the **Central State Bridge Company,** Indianapolis, Ind., to become contracting engineer in charge of sales for the Federal Bridge & Structural Company, Waukesha, Wis., with headquarters in the reopened Chicago office of that concern, at 1228 Peoples Gas building.

The **International Railway Supply Company,** New York, announces that it has incorporated the **International Railway Supply Company of Cuba,** with **Otis R. Hale,** former locomotive superintendent of the United Railways of Havana, as manager. The office of the company in Havana is at Edificio Abreu, Room 501, corner Mercaderes y O'Reilly.

Joseph Beaumont, senior telegraph, telephone and signal engineer, of the Central District Bureau of Valuation, of the Interstate Commerce Commission, with headquarters at Chicago, has resigned to become connected with the **Casale Safety Device Company,** of New York, in an engineering capacity, with the same headquarters. Mr. Beaumont was born at Staffordshire, England, on October 10, 1874, and came to the United States in 1888. In 1892 he entered railway service in the mechanical department of the New York Central, with headquarters at New York City. From that date until 1898 he was successively machinist apprentice and journeyman machinist in the Mott Haven shops and stationary engineer in the Grand Central Station, New York City. The following year he enlisted for the Spanish-American War and served as a first lieutenant until 1899, when he entered the signal department of the Standard Railway Signal Company, now the General Railway Signal Company, Rochester, N. Y. In 1901 he was appointed general foreman in charge of construction and maintenance of all signal and electrical plants on the Buffalo division of the New York Central, with office at Buffalo, N. Y. From 1904 to 1906 he was assistant supervisor of signals and during part of the latter year was promoted to supervisor of signals on the same division with the same headquarters. In 1907 he was appointed principal assistant engineer of sales and installations of the General Railway Signal Company, later becoming supervisor of interlocking on the Atlantic Coast Line, with headquarters at Charleston, S. C. In 1908 Mr. Beaumont was appointed signal engineer on the Panama Railroad and from 1909 to 1910 he was superintendent of telegraph, telephone and signals and electric lighting and power. In 1910 he resigned to become supervisor of interlocking on the Chicago Great Western and in October of the same year became signal engineer, with headquarters at Chicago. In 1914 he was appointed senior signal engineer, Division of Valuation, Interstate Commerce Commission, Central District, with headquarters at Chicago, and in June of the next year was appointed senior telegraph, telephone and signal engineer, which position he held until his recent resignation.

J. Beaumont

The A. Gilbert & Sons Brass Foundry Company, St. Louis, Mo., has recently completed a two-story with basement addition, 25 ft. by 180 ft., to its plant. The basement is to be used for heating plant, wash rooms and lockers. The first floor for metal storage and melting room, and the second floor for office and wood and metal pattern department.

Joseph T. Ryerson & Son Company, Chicago, has purchased a block of property adjoining its plant in that city, with an area of 380,290 sq. ft. A brick foundry building valued at $100,000 located on the property and at present occupied by the Crane Company, Chicago, will be used by the purchaser as the first unit of an addition to their facilities.

J. M. Spangler, southwestern railroad sales engineer for the **National Carbon Company, Inc.,** Cleveland, Ohio, with headquarters at St. Louis, Mo., has been promoted to western manager of the railroad sales department with office at Cleveland. Mr. Spangler was born at Middleburg, Pa., on December 2, 1889. He was educated in the public schools of McConnellsburg, Pa., graduating from high school in 1906 and from the electrical engineering department of Pennsylvania State College in 1911. He began railway work in the signal department of the New York Central Lines in the same year. From 1913 until 1915 he was connected with the Railroad Supply Company, Chicago, as sales representative in the signal department. In 1915 Mr. Spangler was appointed southwestern railroad sales engineer of the National Carbon Company, Inc., which position he held until his recent promotion.

J. M. Spangler

Andrew W. Mellon, president of the Mellon National Bank Pittsburgh, Pa., and a director in the Aluminum Company of America, and **Eversley Childs,** chairman of the Barret Company, president of the Bon Ami Company and a director of the Hamilton Trust Company of Brooklyn, have been elected directors of the **Crucible Steel Company,** Pittsburgh.

Robert Field, central western sales agent for the La Follette Coal, Iron & Railway Company, La Follette, Tenn., with office at Cleveland, Ohio, has resigned to become manager of sales of coke, coal and pig iron for **Fairbank & Company,** Cleveland, with office in that city. The department was formerly in charge of George L. Fairbank, president of the company.

The Roberts & Schaefer Company, Chicago, has closed a contract with the Pere Marquette Railroad for the complete designing and construction of a 250-ton, three-track reinforced concrete automatic electric locomotive coaling and sanding plant at Plymouth, Mich., to replace a timber plant of other make, which was recently destroyed by fire. The contract price is $40,000.

John L. Bender has resigned as sales manager of the Anderson Forge & Machine Company, Detroit, Mich., to be-

come connected with the engineering department of the **C. A. S. Engineering Company**, at Detroit, which has been appointed sales agent of the Pollak Steel Company, Cincinnati, Ohio, as announced in the *Railway Age* of October 3, page 717.

Stockholders of the **Pullman Company**, at an annual meeting November 12, elected **Harold S. Vanderbilt**, of New York, to the directorate. The directors re-elected the retiring officers and approved a contract to manufacture 4,000 automobile bodies for $5,370,000 for the Packard Motor Car Company, Chicago, and also a $2,000,000 contract for phonograph cabinets for the Edison Company.

Russell W. Stovel, who recently returned from France, where, as lieutenant-colonel of engineers, he served as chief of the Terminal Facilities division of the Army Transport Service, has been appointed consulting engineer of **Westinghouse, Church, Kerr & Co., Inc.**, and as a member of that organization will devote his entire time to the company's electrical and mechanical work. Mr. Stovel has had an unusually comprehensive experience in electrical and mechanical problems connected with central power station and steam railroad electrification work, including the fundamental economics involved, the design, construction, equipment and operation. He was graduated from McGill University in 1897 with the degree of electrical engineer and the following year entered the employ of Westinghouse, Church, Kerr & Co.; he soon became an assistant engineer, then successively engineer in charge, mechanical engineer of the company, and finally managing engineer. In 1914, Mr. Stovel left Westinghouse, Church, Kerr & Co., to become managing engineer for Gibbs & Hill, consulting engineers, New York. For this company he had direct charge of the Paoli-Chestnut Hill electrifications of the Pennsylvania Railroad, the Elkhorn grade electrification of the Norfolk & Western, and the electrification of the New York Connecting Railway. While in France, Mr. Stovel occupied the responsible position of chief of Terminal Facilities division, in which capacity he had charge of all matters relating to the procurement, maintenance and operation of all terminal facilities under the jurisdiction of the American Transport Service. Mr. Stovel is a member of the American Institute of Electrical Engineers and of the American Society of the Mechanical Engineers.

R. W. Stovel

O. A. Phenix, associated with the sales department of the **United States Graphite Co.**, Saginaw, Mich., with office at Birmingham, Ala., has been promoted to advertising manager with office at Chicago, succeeding **George A. Cooper**, whose appointment as advertising and export manager of the **Detroit Lubricator Co.**, Detroit, Mich., with office in that city, was announced in the *Railway Age* of September 26 (page 655).

The **Independent Pneumatic Tool Company**, at its general offices, 600 West Jackson boulevard, Chicago, recently held a successful sales meeting at which branch managers and representatives from the North, South, East, West and Canada were in attendance. The meeting was in charge of Vice-President and General Sales Manager R. S. Cooper, other officers of the company in charge being: John D. Hurley, president; F. W. Buchanan, secretary; Adolph Anderson, assistant to president; F. B. Hamerly, works manager; Axel Levedahl, consulting engineer, and R. A. Norling, C. D. **Mudge & Co.**, Chicago, recently have opened at 4425 West 16th street in that city, a new plant for the manufacture principally of motor cars, with a capacity of 6,000 cars a year. The company heretofore has had its motor cars made in a plant at Atchison, Kansas. The new plant is located on the Belt Railway of Chicago and is so located and constructed that additions may be made to it which would treble its present capacity.

Charles J. Symington, who has been elected president of the **T. H. Symington Company**, New York, was born on February 2, 1883, at Baltimore, Md., and was educated at Amherst College. He entered the service of the T. H. Symington Company in 1908 as assistant manager, eastern sales, with headquarters at Baltimore, Md. In 1910 he went to Chicago as general sales agent and in 1912 was appointed vice-president in charge of sales with headquarters in New York. He became president of the Symington Machine Corporation in 1918, with offices in Rochester and Washington, supplying the government with approximately 12,000,000 75 mm. shells; vice-president of the Symington Anderson Company, manufacturing 75 mm. field pieces, and vice-president of the Symington Chicago Corporation, manufacturing 155 mm. shells. On October 22, 1919, he was elected president of the T. H. Symington Company, as noted above.

Paul M. Lincoln, for many years commercial engineer with the **Westinghouse Electric & Manufacturing Company**, has resigned from that organization to enter the consulting engineering field. Mr. Lincoln is an international figure in electrical engineering. It was he who designed and installed the first hydro-electric plant at Niagara Falls, and subsequently directed its operation for a period of six years. He was a pioneer in the high-voltage transmission line field and is today considered an authority on this subject. Among other notable inventions he perfected the Lincoln synchronizer for paralleling large electric alternators for which he received various medals and awards. Mr. Lincoln was elected president of the American Institute of Electrical Engineers in 1914 and has served for years on the board of managers and upon the Transmission Committee of the Institute. In his new capacity Mr. Lincoln will take up for the **Lincoln Manufacturing Company**, Cleveland, Ohio, the problem of motor drive for machinery, involving the determination of the proper type, characteristics and sizes of motors best adapted for direct connection to the various sizes and types of machinery.

P. M. Lincoln

Major C. E. Smith, formerly bridge engineer of the Missouri Pacific and more recently consulting engineer at St. Louis, Mo., has been discharged from the Construction Division of the United States army and has resumed the management of the firm of **C. E. Smith & Co.**, consulting engineers, with headquarters at St. Louis. A Chicago office has been established in the Steger building, in charge of **W. C. Curd**, who was engaged for a number of years in general railway work and was formerly drainage and water service engineer for the Missouri Pacific with office at St. Louis and more recently was connected with the Layne & Bowler Co., Memphis, Tenn., and the Wm. Graver Tank Works, East Chicago, Ill., in the department of water supply and purification. **W. B. Hudson**, assistant bridge engineer of the Missouri Pacific, with office at St. Louis, Mo., has resigned to become associated with C. E. Smith & Co.

Railway Officers

Railroad Administration

Operating

D. A. Gibson has been appointed trainmaster of the Iowa & Dakota division of the Chicago, Milwaukee & St. Paul at Murdo Mackenzie, S. D., with jurisdiction over the line from Chamberlin to Rapid City.

J. H. Johnson, on leave of absence, has resumed his duties as trainmaster on the Northern Pacific, with office at Minneapolis, Minn., succeeding **Frank L. Birdsall,** who has resumed his position as trainmaster at Duluth, Minn.

E. J. Worden, division superintendent on the Chicago, Burlington & Quincy, with headquarters at La Crosse, Wis., has been Transferred to acting superintendent of Aurora division, with headquarters at Aurora, Ill., succeeding **C. D. Peckenpaugh,** who has been assigned to other duties. **F. E. Haines,** assistant superintendent at Ottumwa, Iowa, has been appointed acting superintendent, succeeding Mr. Worden.

W. M. Thurber, superintendent of the Dubuque division of the Chicago, Milwaukee & St. Paul, with headquarters at Dubuque, Iowa, has been appointed superintendent of the Iowa & Dakota division, with headquarters at Mason City, Iowa, succeeding **H. H. Ober,** assigned to other duties. **A. J. Hasenbalg,** trainmaster of the LaCrosse division at Portage, Wis., has been appointed Mr. Thurber's successor and **W. G. Bowen,** Mr. Hasenbalg's successor.

Lieutenant-Colonel E. H. Shaughnessy, at one time general manager and acting director general of the advance section, transportation department of the A. E. F., has returned to the Chicago & North Western as trainmaster of the Galena division at Sterling, Ill., vice **R. J. Hall,** assigned to other service, effective November 1. Colonel Shaughnessy was commissioned a first lieutenant of Engineers May 28, 1917, and assigned to the command of Company E of the 13th Engineers. He was promoted to captain of Engineers on March 21, 1918, and, being detached from the regiment on June 28, reported to the director general of transportation, General W. W. Atterbury. He was promoted to major, Transportation Corps, on September 7, 1918, and to lieutenant-colonel on February 21, 1919. He returned to New York on September 26, 1919, and was released to the reserve October 20. For the time he was in France Colonel Shaughnessy was executive officer of the 13th Engineers in charge of operation while operating a military railway for the French Second Army. He was later general superintendent, eastern division, advance section of the transportation department (this containing the Chateau-Thierry sector) and after the divisions had been withdrawn from that sector was general superintendent western division of the advance section, then assistant general manager, general manager and acting deputy director general, all of the advance section. When G. H. Q. was done away with he went to Tours and acted as general manager of the transportation department, being released when the office was abolished on September 1, 1919. Colonel Shaughnessy on June 9, 1919, was awarded the Distinguished Service Medal for his services in France, being the only one, or at least one of the very few, in the Transportation Corps outside of General Atterbury and Colonel McCrea, to receive that honor. He has also been notified that the French authorities have proposed him for the Legion of Honor.

E. H. Shaughnessy

Engineering and Rolling Stock

A. L. Crew, road foreman on the Atchison, Topeka & Santa Fe, with headquarters at Los Angeles, Cal., has been promoted to general road foreman of engines, with the same headquarters, a newly created position.

F. P. Miller, master mechanic on the Chicago, Milwaukee & St. Paul, with headquarters at Marion, Iowa, has been transferred to Portage, Wis., succeeding M. F. Smith, who has been transferred to Minneapolis, Minn.

Lon Byers, terminal engine inspector on the Atchison, Topeka & Santa Fe at Needles, Cal., has been promoted to road foreman of engines of the first district of the Arizona division, with the same headquarters, succeeding **L. H. Ledger,** who has been transferred to the second district, with the same headquarters, succeeding **C. C. Reynolds,** who has been transferred.

C. C. Reynolds, road foreman on the Atchison, Topeka & Santa Fe, at Needles, Cal., has been transferred to the first and second districts of the Los Angeles division, with headquarters at San Bernardino, Cal., succeeding **J. C. Love,** who has been transferred to the third and fourth districts, with headquarters at Los Angeles, Cal.

Purchasing

G. V. Booth, storekeeper of the Detroit, Toledo & Ironton, has been appointed general storekeeper at Jackson, Ohio.

Special

H. A. Fidler, traffic manager of the Detroit, Toledo & Ironton, has been promoted to general traffic manager, with headquarters at Detroit, Mich; **F. E. Remsburg,** freight claim agent, has been appointed general claim agent at Detroit, Mich., in charge of matters pertaining both to freight claims and personal injuries.

Corporate

Executive, Financial, Legal and Accounting

O. J. Jackson has been appointed auditor of the Savannah & Statesboro, with headquarters at Statesboro, Ga.

J. L. Englehart, chairman of the Commission of the Temiskaming & Northern Ontario, with headquarters at Toronto, Ont., has resigned because of ill health.

Charles T. Airey, freight traffic manager of the Central of Georgia, has been appointed vice-president and traffic manager in charge of all traffic, with headquarters at Savannah, Ga.

Charles R. Capps, traffic assistant to the regional director of the Allegheny region, has been re-elected first vice-president in charge of traffic of the Seaboard Air Line Company, with headquarters at Norfolk, Va., the position he held prior to government control.

H. A. Scandrett, traffic assistant to the regional director of the Central Western region and assistant to the director of traffic and the commerce counsel of the Union Pacific System, with office at Chicago, has been promoted to valuation counsel and commerce counsel of the Union Pacific System, with the same headquarters.

George H. Minor, assistant general solicitor of the Erie, with headquarters at New York City, has been appointed vice-president and secretary succeeding David Bosman, deceased. Mr. Minor was born in 1866 in Deposit, N. Y.; graduated in 1886 from the Deposit Academy and four years later from Hamilton College, Clinton, N. Y. He began railroad service in the legal department of the Erie at New York in 1903, having been graduated from the Law Department of Lake Forest University at Chicago in 1895; admitted to the Illinois bar the same year and to the New York bar the following year. In 1904 he was appointed land and tax agent of the same road at Cleveland, Ohio, serving in that capacity until 1905 when he became assistant general solicitor, the position he held at the time of his recent appointment. Mr. Minor is the author of "The Erie System, Its Organization and Complete History," which was published in 1911.

G. H. Minor

Frank Hedley, vice-president and general manager of the Interborough Rapid Transit Company, New York, has been elected president of that company, succeeding **Theodore P. Shonts,** notice of whose death appeared in the *Railway Age* of September 26. In receiving this appointment, Mr. Hedley has achieved striking success in the work which he began in 1882, at the age of twenty, as mechanic for the Erie at Jersey City, N. J., having only recently arrived in the United States from England, where he was born and where he received no more than a common school education. However, it is believed that much of his ability may be attributed to the fact that he came from a mechanically able family, prominently identified with steam railroad and locomotive engineering in England. His granduncle, William Hedley, was the designer of the first locomotive traction engine ever built.

F. Hedley

Mr. Hedley left the Erie and worked for more than five years in the Manhattan Elevated Shops, going from there to the Kings' County Elevated in Brooklyn as master mechanic. In 1893, he was appointed superintendent of motive power and six months later general superintendent of the Lake Street Elevated in Chicago. The following year the construction of the Northwestern Railroad of Chicago was begun, and although he continued to perform his duties as superintendent of the Lake Street Elevated, he also, throughout the period of construction, about two years, served as a member of the staff of consulting engineers for the Northwestern. His success at Chicago attracted the attention of the Belmont interests in New York, and in 1903 he was offered the position of general superintendent of operation of the Interborough Rapid Transit, an office which he accepted, and it was mainly through his efforts that the carrying capacity of the Interborough was increased from about 250,000 to almost 2,000,000 persons a day. During the years that Mr. Shonts and he served as president and vice-president together, Mr. Hedley was always in close association with Mr. Shonts and he thereby acquired an intimate knowledge of the policies of the company.

George H. Ingalls, traffic manager of the New York Central, Western Lines, with headquarters at Chicago, has been elected vice-president in charge of traffic with headquarters in the Grand Central Terminal, New York city. Mr. Ingalls was born July 28, 1872, at Boston, Mass., and graduated from Harvard University in 1893. He began railroad work that year as clerk in the general manager's office of the Chesapeake & Ohio. In 1895 he became clerk to the general superintendent, Western division of the same road, and in November of 1896 clerk in the office of the president, a position he held until 1900, when he was appointed assistant to the president in charge of coal and coke traffic. From February 1, 1901, to November 1, 1902, he was with the Cleveland, Cincinnati, Chicago & St. Louis at Cincinnati, Ohio, serving as general freight agent. He then became general freight agent of that road, as well as of the Cincinnati Northern and the Dayton & Union, a position he held for four years and left in 1906 to accept the appointment of freight traffic manager, New York Central, Western Lines.

Geo. H. Ingalls

Engineering and Rolling Stock

A. C. MacKenzie, engineer maintenance of way of the Canadian Pacific at Winnipeg, Manitoba, has been transferred to Montreal, succeeding **Frank Lee,** transferred also.

J. R. Mackenzie and **T. E. A. Hall** have been appointed assistant engineers of the Canadian National with headquarters at Toronto; **R. B. Jennings,** appointed division engineer with headquarters at Toronto; **W. H. B. Bevan, S. McIlwain, T. Kearney** and **L. C. Dupuis,** division engineers with headquarters at, respectively, Ottawa, Capreol, Montreal and Quebec. **C. H. N. Connell** has had his title changed from division engineer at Quebec to district engineer, the name of the territory having been so changed.

Obituary

Charles H. Holmes, general auditor of the Wheeling & Lake Erie, died at his home in Cleveland, Ohio, on October 31.

Walter B. Scout, civil engineer of the Pennsylvania, with office at New York, died on November 11 at his home in Elizabeth, N. J.

C. C. Walker, assistant superintendent of transportation of the Chesapeake & Ohio, with headquarters at Richmond, Va., died October 26 at Richmond after an illness of several months.

William H. Killen, land commissioner for the Minneapolis, St. Paul & Sault Ste. Marie, with headquarters at St. Paul, Minn., died at Minneapolis on November 5, at the age of 62 years.

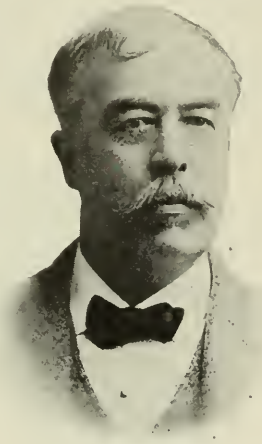
James M. Ashley, who had charge of the construction of the Ann Arbor, between 1878 and 1889, and who designed the first car ferries on the Great Lakes, died at his home in Toledo, Ohio, on November 3, at the age of 65 years.

David S. Wegg, formerly president of the Chicago & Northern Pacific and the Chicago & Calumet Terminal, solicitor for the Chicago, Milwaukee & St. Paul and general solicitor for the Wisconsin Central, died in Chicago, on November 18, at the age of 72 years. Mr. Wegg left railroad service to engage in the private practice of law in 1894.

A. J. Himes, assistant valuation engineer of the New York, Chicago & St. Louis, with headquarters at Cleveland, Ohio, died on November 3 in that city. Mr. Himes was valuation engineer until two years ago, when he was forced to retire from active management of the office because of ill health. **W. J. Bergen,** assistant valuation engineer at that time, was appointed, temporarily, valuation engineer, pending the outcome of Mr. Himes' illness. Mr. Bergen will retain the title and office of valuation engineer.

A. W. Giltzow, district superintendent of the Chicago southern district of the Pullman Company, with headquarters at Chicago, died on November 10 in that city. Mr. Giltzow was the oldest employee in the official family of the Pullman Company, having served 47 years. He entered the service in 1872 as an office boy in the Chicago office and held various positions until 1889, when he was appointed district superintendent of the Chicago southern district, which position he held until his death, at the age of 62 years.

Eugene Chamberlain, who recently retired as manager of the equipment clearing house of the New York Central Lines, with office at New York, died September 30 at his home in Mt. Vernon, N. Y., after a long illness. Mr. Chamberlain was in his 70th year. He began railroad service in Ohio with the Wabash. Some time after joining the staff of the New York Central he was appointed master car builder of the Western division, with headquarters at Buffalo. In 1893 he left railroad service to engage in commercial business, but in 1899 became superintendent of equipment of the Brooklyn Rapid Transit and five years later was called back by the New York Central to the position he held at the time of his death. In addition to the above, Mr. Chamberlain was a founder and a senior past president of the Central Railway Club of Buffalo. He was also past president of the New York Railroad Club and for many years active in what was formerly the Master Car Builders' Association and the American Railway Master Mechanics' Association, now known as Section III—Mechanical, American Railroad Association.



E. Chamberlain

Frank B. Montgomery, traffic manager of the International Harvester Company, Chicago, and president and general manager of the Chicago, West Pullman & Southern, the Illinois Southern, the Deering Southwestern and the Oswaco River, died in Chicago on November 24. Mr. Montgomery was born at Parkersburg, W. Va., on October 14, 1864. After considerable experience in the railway field he was appointed traffic manager of the McCormick Harvesting Machine Company in 1900 and from the formation of the International Harvester Company in 1903, until his death, he was president and general manager of the above industrial lines of that company.

John W. Renner, formerly controller of the Pennsylvania Company and the Pittsburgh, Cincinnati, Chicago & St. Louis, with office at Pittsburgh, Pa., died in that city on November 10. Mr. Renner was born at Petersburg, Pa., on January 1, 1845. He began railway work with the Pennsylvania Company as a clerk in 1861 and served in that capacity in different departments of the road for three years. In 1864 he became connected with the Steubenville & Indiana, now part of the Pittsburgh, Cincinnati, Chicago & St. Louis, as a clerk in the office of the general superintendent and in 1865 was promoted to private secretary to the receiver and supply agent. From 1866 to 1870 he was paymaster of the Steubenville & Indiana and the Pittsburgh, Cincinnati & St. Louis. From 1871 to 1874 he was general bookkeeper and chief clerk in the auditor's office of the Pittsburgh, Cincinnati & St. Louis and from 1875 to 1882 auditor of the same road. In 1883 he was appointed assistant controller of the Pittsburgh, Cincinnati & St. Louis and the Pennsylvania Company and in 1891 was appointed controller of the Pittsburgh, Cincinnati, Chicago & St. Louis and the Pennsylvania Company. In 1905 he was also appointed controller of the Vandalia. These positions he held until his retirement in January, 1915, under the pension rules of the company.

Edwin T. Lamb, federal manager of the Atlanta, Birmingham & Atlantic and president of that road prior to government control of the railroads, also federal manager of the Atlanta & West Point and Western Railway of Alabama, the Charleston & West Carolina, the Atlantic Terminal and the Georgia, died at Birmingham, Ala., on November 10 at the age of fifty-six years. Mr. Lamb was born June 29, 1863, at Richmond, Va., and attended a school affiliated with the William and Mary College. He began railway work at Newport News, Va., in 1881 as receiving clerk in the construction department of the Chesapeake & Ohio. He remained with that road for seven years as, respectively, chief clerk at the export pier at Newport News and joint representative of the Chesapeake & Ohio, the United States & Brazil Mail Steamship Company and the Ducal Line. From 1888 until March, 1890, he was agent of the Richmond & Danville, now part of the Southern, at Danville, Va. In March, 1890, he was appointed general forwarding agent of the same road in charge of deep water terminal at West Point, Va. He held that position until 1896 and was, during the same period, joint representative of the Old Dominion Steamship Company, Merchants & Miners Transportation Company, Clyde Steamship Company and the York River Line. In 1896, when the Southern absorbed the Richmond & Danville, he became general agent in charge of deep water terminal of the Southern at Norfolk, Va., during which time he organized and superintended the construction of the new terminal at that point and was also general agent of the Chesapeake Steamship Company. In November, 1906, he was appointed superintendent of the Norfolk division of the Southern, in addition to his other duties. From June 15 until June, 1910, he served as general manager for the receivers of the Norfolk & Southern and was then elected president and general manager of the Norfolk Southern, successor to the Norfolk & Southern. In 1912 he was appointed receiver and general manager of the Atlanta, Birmingham & Atlantic, with headquarters at Atlanta, Ga. In January, four years later, he was appointed president of the same road, a position he held until he was chosen federal manager as stated above.

E. T. Lamb

EDITORIAL
Railway Age

Table of Contents will be found on Page 5 of the Advertising Section.

Playing a Game

A. C. Woodbridge's article on fuel economy, which appears elsewhere in this issue, touches the real heart of the problem of fuel conservation. What interest has a fireman, engineer, hostler or other railroad employee in the abstract problem of saving coal? Unless he is woefully inefficient his wages go on just the same, whether he tries to economize or not; he is only one of a great number of individuals making up the railroad organization and unless he is very different from other humans he has a fair degree of selfishness; he is not deeply concerned in improving the efficiency of operation unless he will profit directly thereby. It must be assumed that in most cases he does not feel that he is a vital factor in the welfare of the corporation at large. The stockholder and bondholder are so far removed that to him they are entirely impersonal. Today he is working for the government, but apparently he regards that also as something vague and impersonal; he does not feel any strong sense of responsibility toward his fellow citizens whom the government represents. But, whatever the obstacle, an educational program directed toward the elimination of waste and the conservation of our national resources, is a plain and obvious duty. Reduce the fuel conservation program to a simple but direct form and couple it with a comprehensive campaign conducted in the spirit of playing a game and results will surely follow. Mr. Woodbridge tells how this has been done in the Allegheny region and gives a hint as to the concrete results which followed. Work performed in the spirit of drudgery is always poorly done. Invest the same task with the spirit of playing a game and it is done immeasurably better and with far less fatigue to the worker. Thus truth is self-evident, and yet for some reason, executives are backward in taking advantage of it or are not rightly constituted to put it into effect. Try the Philadelphia & Reading experiment and see what will happen.

The Coal Strike

One of the many unfortunate effects of the strike of the bituminous coal miners is its effect on export trade. The coal miners went ahead with their preparations for a cessation of coal mining with the reckless disregard of consequences which has of late been only too prevalent in struggles of this kind. They acted with absolute disregard of the welfare of the rest of the American people and have shown no qualms whatever about depriving their neighbors the country over of the fuel to keep from freezing during the winter, or of the tranportation to carry to them the foodstuffs wherewith to keep from starvation. The miners are preventing continuance of the sending of what little fuel we have thus far been able to send to the non-coal-producing countries of Europe. The present labor difficulty has a close resemblance to the labor difficulties abroad, particularly in the United Kingdom. There, while the press and other leaders of thought were emphasizing the necessity of increasing coal production to put England back on her feet industrially, and to make up the shortage of coal in Scandinavia, France and Italy, the Yorkshire coal miners, despite the pleas for them to increase production, struck. They thereby stopped coal production entirely in their district for several weeks, and were even so vindictive that they called out the pumpmen and stood ready to let the mines fill up with water and be destroyed. The ability to export coal is of the greatest advantage in export trade, and it is also essential to the welfare of the world that America should export coal to meet the fuel demands of Europe that Britain now is unable to supply. But export trade, or the welfare of American industry, and the fear that America and Europe may be compelled to close down their industries and freeze were apparently not included among the worries of the bituminous miners.

Railway Supply Exports

The figures showing exports of railway supplies which are compiled by the Division of Statistics of the Bureau of Foreign and Domestic Commerce and published in our Foreign Railway News column do not yet begin to show the increases that the supply trade has been expecting. As shown by the table below they mounted to high levels in May and June, but have not since retained that level. The lack of a greater quantity of exports, has resulted, of course, from the difficulties of the credit situation, for there have been no changes that take away from the United States the pre-eminent position that it has now occupied for some time as the best source of railway materials for the world. Nor has there been any evidence that the countries of the world that have been unable to secure railway equipment for some four or five years past have as yet made much progress towards having their wants satisfied. India and the United Kingdom are possible exceptions. Large orders for the railways of both these countries have been put on the books of the builders in Britain, although, of course, labor troubles—we refer particularly to the coal strike—may have prevented as large a production of cars and engines there as might have been hoped for. By way of speaking concerning the idea that we have hardly begun as yet to cultivate the world-wide markets that lie before us, particularly in the neutral countries, it is interesting to observe that Japan still remains one of our largest customers. We welcome this Japanese business, but it must be kept in mind that Japan is as likely in the future to be a competitor as a customer. But, be that as it may, and even if the totals of railway supply exports have not reached high figures, there is no reason to feel anything else than optimistic over the situation.

EXPORTS OF RAILWAY MATERIAL

Month.	Locomotives. No.	Locomotives. Value.	Freight Cars. No.	Freight Cars. Value.	Car Wheels and Axles. Value.
January	87	$3,076,543	....	.....	$278,393
February	85	2,584,269	583	$957,128	541,630
March	27	852,224	....	.....	686,281
April	55	2,193,168	1,005	1,913,728	946,304
May	97	4,040,551	3,008	6,268,078	769,733
June	78	2,356,909	5,055	13,675,186	2,740,479
July	17	422,775	1,926	4,146,923	.....
August	69	1,539,540	....	.....	1,362,546
September	78	2,326,339	1,774	3,538,002	1,013,440

The Esch Railroad Bill

THE PROVISIONS of the Esch railroad bill, as it was passed by the House of Representatives on November 17, are not adapted to encourage the expectation that the legislation for the return of the railroads to private operation which finally will be passed by Congress will solve the railroad problem. At the same time there does not as yet seem to be reason for being pessimistic regarding the final outcome. It is very doubtful whether the bill as passed expressed the real views of even those who voted for it. When it was originally reported from the Committee to the House it contained some very good provisions. It was not as constructive a measure as the situation demands, but its enactment into law would have substantially improved the old system of regulation. There is good reason to believe that many of the members who voted to eliminate some of its important provisions did so to placate certain classes of interests and not with the expectation that as originally passed it would finally become a law.

The Senate doubtless will pass a very different bill after Congress reconvenes. The two bills will then go to conference and the conference committee will report a bill. There is much ground for hoping that the bill reported by the conference committee will be a great improvement over the Esch bill.

Even as it was passed by the House the Esch bill contains a few good provisions. It authorizes the Interstate Commerce Commission to fix minimum as well as maximum rates. It extends for six months the government guarantees of standard return. It reduces to 120 days the time within which the Interstate Commerce Commission must pass upon proposed advances in rates. It gives the Interstate Commerce Commission discretionary authority to remove the restrictions placed by existing laws upon consolidations and agreements by competing railways. It also gives the Interstate Commerce Commission authority to regulate the issuance of railroad securities.

In some respects, however, the bill is very weak, and, indeed, in certain particulars it is no less than vicious. The most serious defect in the laws heretofore enacted for federal and state regulation of railways has been that they have not required, and the regulating authorities have not fixed, rates high enough to enable the railways to earn enough to raise the capital needed to enable them adequately to develop their facilities. The Esch bill as reported from Committee provided that "in reaching its conclusion as to the justness and reasonableness of any rate, fare, charge, classification, regulation of practice, the commission shall take into consideration the interest of the public, the shippers, the reasonable cost of maintenance and operation (including the wages of labor, depreciation and taxes), and a fair return upon the value of the property used or held for the service of transportation."

This provision was intended to give the Interstate Commerce Commission authority and instructions to so regulate rates as not merely to make them non-confiscatory, but as to make them sufficient to enable the railways adequately to develop their facilities. The provision was not well drawn for its purpose, but its adoption would have effected some improvement in the existing law. This provision, however, was stricken from the bill on the floor of the House. If the Esch bill as finally passed by the House should be enacted into law the act to regulate commerce would continue to require merely that rates shall be "just and reasonable."

Under the provision that rates shall be made "just and reasonable" the Interstate Commerce Commission has in the past so regulated rates that the net operating income of the railways and the new investment made in their properties has steadily declined. There is no reason for believing that under this provision the Commission would regulate rates any differently in the future from what it has in the past. Therefore, the enactment of the Esch bill into law would have no tendency whatever to encourage increased investment in railroad securities or a revival of the expansion of railroad facilities. The rate problem is the heart of the railroad problem and the Esch bill would contribute almost nothing toward the solution of the rate problem.

The provisions of the bill which are positively vicious are those relating to the settlement of labor controversies. The House made the most disgraceful surrender to organized labor which has been made since Congress passed the Adamson bill in 1916. The Esch bill provides for Boards of Adjustment and a Board of Railroad Wages and Working Conditions similar to those which now exist under government control. But these boards, which consist equally of officers and employees, have under government control only the power to conduct hearings and make recommendations to the director general, while under the Esch bill their decisions would be appealable to certain commissions which also would be composed equally of railway officers and railway employees. Just what could be done in case it was impossible to get the members of any of these boards and commissions to agree the bill does not specify.

The most extraordinary provision of the bill is one confirming for the future "all decisions of a general character heretofore made by the United States Railroad Administration affecting the questions of wages, hours of service, or conditions of employment," and also decisions applying to individual carriers, which are to remain in effect until superseded either by mutual agreement between the companies and their employees, or by the decision of a board of adjustment or a commission on labor disputes, in accordance with the terms of the bill. *The effect of these provisions is to fix forever as minimum wages and conditions of employment the wages and conditions of employment established by the Railroad Administration.* It would be impossible under them to reduce any wage or to change any condition of employment fixed by the Railroad Administration without the previous assent of the representatives of the employees; and it is needless to say that that assent would never be given. Will the people of the United States endorse a provision whose adoption would make it forever impracticable for any railroad company to reduce wages or change conditions of employment, regardless of what changes in wages or conditions of employment might be made in other lines of industry?

The Esch bill as passed would seem to indicate that the knowledge and thought of members of the House regarding railway matters are today no more advanced than they were ten years ago. Taken at its face value its passage indicates that the members of the House have learned nothing from the country's experience with government regulation or its experience with government operation.

We feel sure, however, as we have already indicated, that the Esch bill does not express the real views of a large majority of the members of the House, and certainly it does not express the views of members of the Senate. The bill which will be passed by the Senate probably will be a better measure.

If Congress should not finally pass a better bill than the Esch bill the immediate results of the return of the railways to private management would be wholly disappointing to the country and the ultimate result very likely would be government ownership; for private management cannot succeed as a permanent policy in the United States without the enactment of legislation which will greatly improve our system of railroad regulation.

Time for Action

THE RAILWAYS NORMALLY REQUIRE somewhat over two million tons of rails for renewals and for new construction. If they are to take up any considerable amount of the deferred work of either maintenance or additions their normal requirements for next year may be fixed at at least three million tons. The maximum production of rails in this country for all purposes, including traction lines and those in foreign countries, does not far exceed that figure. In other words, the indications are that almost the entire rail mill capacity of the country will be needed for the steam roads next year. In fact, with the unsettled labor conditions in that industry, which will undoubtedly reduce the output, the needs of the roads will be greater than the expected output, and the needs of other customers must also be satisfied. With an expected shortage, it would naturally be expected that those in charge of the properties would be making for the necessities of 1920, yet the government has only a small tonnage on order, on which rolling is expected to be completed this year, while it is either placing further orders or lifting the restrictions on the purchase of rails by the railway corporations themselves, although we are now entering on what has been officially announced to be the last month of government control. To prepare to meet this situation as far as possible, a number of the railway corporations are making reservations of space or placing orders with the mills for their requirements, with the proviso that they can be cancelled if the roads are not returned to their owners on January 1. The result is that the mills cannot begin rolling until this uncertainty has been removed.

Rail is a seasonal material in that it can be placed in track to best advantage in most parts of the country only between the months of April and October and particularly in the first three months of this period. Its early delivery is therefore important, for the delay now existing in the placing of orders will result in only a small part of the possible output for 1920 being secured in time to lay it most economically and in but little more than half of the normal requirements being delivered in time to lay it at all next season.

The end of federal control is less than a month off. There would seem to be no further reason for retaining control of the purchase of supplies such as this, unless this control is resolved into action. Continued delay is expensive and unfair to the roads. For this reason the ban on corporate purchasing should be lifted at once.

Prepare for Private Operation

IN HIS ADDRESS at the dinner of the American Railway Guild recently Director General Hines called attention especially to the conditions affecting transportation which will exist when the railways are returned to private operation. He emphasized the fact that before the government took over the roads the traffic had outgrown the facilities and that for various reasons which he mentioned the shortage of facilities has become intensified under government operation. He predicted that traffic will continue to be large for some years to come; and he anticipated that the return to private operation will be immediately followed by sharp competition between roads seeking to get back traffic which they have lost under government control and roads trying to keep that which they have gained.

We publish Mr. Hines' address elsewhere in this issue and we think it ought to be carefully read and pondered by every important railway officer. The description he gives of the conditions which will exist after the railways are returned to their owners undoubtedly is correct. There will be a large amount of traffic and insufficient facilities for handling all of it, regardless of how the railways are operated. The return to private operation will have a powerful tendency to revive strenuous competition. Competition is likely to involve the making of concessions by individual railways to shippers in respect to the loading, unloading and handling of cars. Competition in rendering better service is greatly to be desired, but competition which resulted in the granting of certain kinds of concessions to shippers might result disastrously for the railroads, the shippers and the public. For example, it has been possible to come as near to handling all the available traffic as has been done largely because during the stress of war the co-operation of shippers in loading freight cars heavier than ever before was secured. Already, however, the average load per loaded car has begun to decline. The average load per loaded car in the United States in September, 1918, was 30.2 tons, while in September, 1919, it was only 28.3 tons.

R. H. Aishton, regional director of the Northwestern region, has pointed out that had shippers loaded cars as heavily in September, 1919, as in September, 1918, there would have been equipment available for the loading of 7,437,547 more tons of freight than could be handled during that month.

This decline in loading was not the result of competition, but it shows the tendency of shippers to lose their zeal for heavy loading, and if under private operation the railways begin to grant them concessions in respect to loading there will necessarily be a further decline in the average load per loaded car and, therefore, a further decline in the amount of freight that the railways will handle. Freight car efficiency depends both upon the amount of freight loaded per car and on the miles per day that each car travels. Competition between the railroads is likely to have a tendency to cause them to enforce the demurrage rules less strictly, thereby giving shippers opportunity to delay cars for loading and unloading longer than they have during recent years. The effect of reducing the average miles traveled per car per day would be to reduce still further the amount of freight that could be handled with existing equipment.

It is desirable that there should be some revival of competition in service between railroads. Emulation in operating efficiency and competition in service have contributed greatly to enabling the railways of the United States to render as good service as they have at as low cost as they have. It is largely because the public believes competition will tend to improve service and keep down costs that it is in favor of returning to private operation. But one fact the officers of the railways must not, in the interest of the companies and the public, lose sight of under present conditions and that is that the facilities of the railways are today inadequate to handling the total business, and that any revival of competition which will even temporarily have the effect of reducing the amount of service which the railways can render with each car, locomotive, mile of track and yard, will restrict the total amount of business that they can handle; and a reduction of the total amount of business handled, accompanied, as it probably would be, by congestions and car shortages, would be extremely injurious to private operation, and therefore to the railway companies.

To strike the right balance between competition on the one side and co-ordination of operation on the other will be extremely difficult. It cannot be struck at all without the individual railways delegating control over certain features of operation and service to some body or bodies representing all of them. To any central body or bodies which the railways may create they should delegate sufficient authority to enable the objects sought to be accomplished. Under the old system of regulation it was very difficult to do this because any consolidation or combination of railroads which tended to restrict competition was illegal; and therefore even

if agreements were made it was impossible to enforce them by imposing appropriate penalties. It is entirely probable, however, that any new railroad legislation which may be enacted will modify or repeal the anti-trust and anti-pooling provisions, and that, therefore, the railways, perhaps with the sanction of the Interstate Commerce Commission, will be able not only to make agreements for the purpose of bringing about reasonable co-ordination of their operation, but also to provide and enforce penalties against roads which refuse to live up to the agreements.

The time when the railways will be returned to private operation is not very far distant. It was thought that the American Railroad Association would take some definite action regarding matters of the kind mentioned at its recent meeting in Chicago. It could not do so effectively, however, without the approval of the officers of the railroad corporations, and the officers of the corporations were not ready finally to commit themselves. Fortunately, the operating difficulties of the situation which will be presented after the railways are returned to their owners are becoming daily more generally understood and appreciated, and therefore there seems good reason to hope that provision will be made regarding such matters as the distribution of cars, the joint operation of terminals, the maintenance of consolidated city ticket offices, the limitation of competition in passenger service and so on.

The great danger is that the managements of the individual railroads will be so keen about engaging in competition the results of which they believe will be to their individual advantage that it will be impossible to secure the establishment and maintenance of arrangements for the co-ordination of the operation of the various roads which will be essential to the welfare of all.

New Books

Forest Products, Their Manufacture and Use. By Nelson Courtlandt Brown, professor of Forest Utilization, New York State College of Forestry, Syracuse, N. Y. 472 pages, 120 illustrations, 6 in. by 9 in., bound in cloth. Published by John Wiley & Sons, Inc., New York City.

This book covers a field in which comparatively little has been written heretofore, and gives considerable statistical and general information relative to the quantities of timber available in various forms, and the manner by which it is converted into commercial products, the more important processes and products being thoroughly described and illustrated. Because of the abnormal and more or less temporary conditions prevailing in the timber field at present, the subject is presented from a pre-war basis. Most of the information given was obtained through personal investigation by the author who was also able to secure considerable first-hand data on European timber conditions and processes, etc., having been a trade commissioner with the United States Lumber Trade Commission to Europe.

The following typical chapter headings are indicative of the scope of the book: Wood Pulp and Paper; Tanning Materials; Veneers; Cooperage; Cross Ties; Poles and Piling; Posts; etc. Owing to the magnitude of the subjects, the book is intended for a brief reference treatise preliminary to a more complete book or series of books to be published at some future date.

Our Pig Iron Output.—The United States now produces more than half of the entire pig iron output of the world, according to Commerce Monthly, the magazine of the National Bank of Commerce in New York. Thus, while in 1900 but 13,789,242 gross tons were produced, in 1918 our total output was 39,054,644 tons.

Letters to the Editor

Moving Pictures in Engineering Investigation

PITTSBURGH, PA.

TO THE EDITOR:

The communication of J. C. Marsh on page 292 of the *Railway Age* for August 15, entitled "The Motion Picture Machine as an Engineering Instrument"—recalls an experiment made by the writer on December 12, 1912. In an endeavor to study the deflection of track under loads a moving picture machine was used almost exactly as outlined by Mr. Marsh. The picture showed clearly the deflection of the rail, but on account of the inflammable films used at that time, it was not possible to make measurements of the amount of the deflection by stopping the movement of the film. From the experience obtained in the experiment mentioned above, I believe that with the non-inflammable films which are, or soon will be available, it is probable that the moving pictures will be of considerable value in engineering work.

D. F. CRAWFORD,
Vice-President and General Manager, Locomotive Stoker Company.

Some Railroad Clerks Still Underpaid

DECATUR, ILL.

TO THE EDITOR:

In your editorial on railway wages in the *Railway Age* of August 29, page 387, you state: "The wages of railroad employees already have increased more in proportion than the cost of living, and they are asking for increases which would make their total advances far exceed the increases in the cost of living."

While I do not wish to question your statement as to railroad employees in general, I feel safe in saying that if the employees were considered by classes, as is done by the Railroad Administration in granting wage increases, you will find an entirely different result in some cases. I think your statement is misleading, as it gives the impression that *all* railroad employees are now overpaid, which is not the case, except for some of the large labor organizations which have had strength enough to enforce their demands at the expense of the weaker organizations.

You show in your editorial that three different reports made by investigating committees gave the increase in food prices from June, 1914, to March, 1919, as 77, 80 and 71 per cent. Let us take an approximate average of 76 per cent and compare it with the increase in salaries granted clerks. Since June, 1914, my salary has been increased but 64 per cent, and under government control but 21 per cent, as against a very low estimate of 76 per cent in living expenses. My own case is no different from thousands of others who work in division and general offices. I find that the average percentage of increase in salaries of clerks since June, 1914, was approximately 65 per cent, and since government control about 20 per cent.

In making these averages I have used only the wages of clerks at division offices and the larger freight stations, as they are the men who are vitally affected, being situated as they are in the larger towns, and subject to high living costs.

Clerks at small outlying stations have all received an increase probably larger than the increased cost of living, but the men who live in large cities and towns are the men who are now suffering and cannot get what is justly due them from the Railroad Administration.

A CLERK.

What Will Happen When Railroads Are Returned*

Large Traffic Will Continue, Facilities Will Be Inadequate, and Railway Co-operation Will Be Necessary

By Walker D. Hines
Director General, United States Railroad Administration

As well as I can estimate the situation, I believe we are likely to have a large railroad traffic in this country for some time to come. During the war many of the normal demands of the public had to go unsatisfied; there was much building which had to be postponed and many sorts of activities had to remain in abeyance. The opportunity has now come to satisfy those demands and the building that is beginning to develop, and the other activities which are now getting back to a normal basis, create a demand for a very large railroad traffic. So I think the railroads must be prepared to handle a large business for a considerable period in the future.

Along with that I believe it is true of the railroads generally that it has not been practicable to provide the facilities necessary for the normal increase of business in this country, plus the exceptional increase which comes about by reason of business now making its appearance which has been kept in the background during the period of the war. I am discussing only additions and betterments including equipment which are chargeable to capital account. As far as the actual maintenance of the properties including the equipment is concerned the government is under contract to return the properties in substantially the same condition they were in when the Government took them over, and of course the government will fulfill its contract obligations in this regard.

In the year or two before federal control began, the railroad companies found it very difficult to provide the necessary additional equipment and to provide the usual proportion of additions and betterments. It was partly due to the difficulty of financing, partly due to the scarcity of labor, partly due to the high prices and scarcity of material. When federal control began, during the first year of that federal control what was done in the way of improvements and additional equipment was limited absolutely to what was regarded as necessary to promote the ends of the war and was also limited by the amount of material that was obtainable. The result was that in the year 1918 it was out of the question, under the war conditions, then existing for the Railroad Administration to make up any part of the shortage or provision of facilities which had taken place in the year or two more preceding Federal control.

Facilities Insufficient for Traffic

All that was done, as I view it, was no more than would have been necessary in a normal year in order to keep abreast of normal development of the country. So we entered the year 1919 still behind in the amount of improvements and in the amount of equipment and we had been unable to make up any of the shortage in those respects which had existed when Federal control began. When 1919 began we were than in sight of the end of federal control. Congress was very reluctant to put any more money into the railroads. They questioned very closely any plan for the government to spend any more money in improving the railroads or in acquiring additional equipment. That situation was intensified by the failure of the appropriation which Congress was willing to pass—that is, which the lower House was willing to pass. So that Congress adjourned on March 4 last without any appropriation for the railroad at all and forced a still more stringent restriction on improvement work than had been contemplated before. When the appropriation was finally made in midsummer it was still so limited that it was impracticable to expand the improvement program.

So, as we get to the end of the year 1919, we have not been able to make up any of the shortage in improvements and equipment which had occurred when the federal control began, and have not been able to make any satisfactory provision for 1919 because the nearness of the end of federal control and the absence of appropriations has made that impossible. So that the railroad companies will start in 1920 faced with a very large traffic, not only the normal increase in business, but this abnormal increase due to the resumption of ordinary business after the war, and with a plant which is considerably less ample than it ought to be to handle that business.

I look, therefore, for considerable difficulty to be experienced in handling the business, especially if we have large crops this coming year.

In that connection I want to say that it is my own judgment after observing this thing through federal control, that it will be highly expedient for the railroad companies to join in some common control of their equipment to such an extent as is necessary to make the equipment do the work to the maximum extent.

I think too that the permit system which has been developed during federal control and which has largely eliminated congestion through preventing shipments being loaded until they could be taken care of at destination is an exceedingly valuable aid to the service. I think it will go far to prevent the congestion which has been quite a usual thing in the busy time of the years preceding federal control. But in both of these respects, the pooling of equipment to whatever extent may be necessary, and in the thorough-going exercise of the permit system, I think the railroad companies are going to be confronted with two divergent motives, and I think the railroad companies will have to make some sort of compromise between the two in order to get adequate results. On the one hand there will be the motive to consolidate and unify these operations to whatever extent is necessary to handle the business. On the other hand, there will be the motive of competition.

Intensified Competition May Result

My own judgment is, we are going to see a competitive condition more pronounced than any we have seen for some years prior to federal control.

It seems to be perfectly natural that any railroad which, during federal control, has had increased business due to the relocation of traffic under federal control, is going to fight to the last ditch to hold that traffic and any railroad which, during federal control, has lost its traffic to some other railroad is going to fight to the limit of its power to get back that traffic. My judgment is that this is going to develop an intense competitive spirit, and how that spirit, which is perfectly natural under the circumstances, is going to be reconciled with a really effective joint control of

*From an address delivered at the dinner of the American Railway Guild, Chicago, November 18, 1919.

equipment and really effective supervision over the shipment of traffic, so as to prevent traffic being shipped until it can be taken care of at destination, how those two conflicting interests are going to be reconciled, I cannot see far enough in the stars to tell you. But it seems to me there will be very great difficulty to reconcile those t hings.

We will have a situation in which the railroad on which the traffic originates is perfectly willing to take it, but the railroad to which it is destined will be blocked if it is hauled. But under those circumstances it is going to be very difficult to get the railroad which originates the traffic to refuse to permit it to be loaded, simply on the chance it may result in congestion on some other railroad to which it is destined. Yet, without effective control in that respect, I think we will be confronted with a condition which will be disappointing to the publi and embarrassing to the railroad companies.

Labor Under Government Control

There is another matter I want to speak about, and that is the question of labor. That is a matter particularly where the public has attributed to the fact of government control all the phenomena which were due to the changes brought about by the war. There has been a tendency to charge up to the government the things that were chargeable to the war.

I think the most interesting illustration I have seen of that was last spring, when the press was full of criticism of the government for having increased the wages of railroad employees, the head of one of the big private industries of the country announced that in the last six years his labor cost per ton had increased 119 per cent. Nobody had claimed that the increased cost of running the railroads had been that much. The smaller increase made on the railroads was charged to government control. The larger increase made by this private industry was charged to the war. The smaller increase made on the railroads was an evidence of governmental inefficiency, the larger increase made in this private industry was an evidence of the efficiency of the private industry.

It was a very interesting illustration of that disposition to connect the most obvious aspects of the situation and stop at that. The real difference was that the private industry in question was able, by an increase of from 80 per cent, to 100 per cent in its prices to offset the increased wages, whereas the Railroad Administration, by an increase of 25 per cent in its prices, was not able to offset the increase in its wages. As a matter of fact, as I recently reported to the Senate, the average increase per hour in railroad wages at the present time as compared with December, 1917, has been 56 per cent, and I think that will not compare unfavorably with what has been done by private industries which have suffered the competition incident to war conditions.

The responsibility for dealing with these wage question has been one of the gravest and most difficult that has confronted me. Last summer, when it became evident that the continued increased cost of living was making railroad labor insistent upon very substantial increases in wages, I recommended to the President that he ask congress to provide a special tribunal to deal with those matters because I felt federal control was nearing the end and that it was unfortunate for this temporary railroad administration to undertake to pass upon these matters which would have such a vital bearing upon the situation after federal control was over and which would have such a vital bearing upon the general public interest. The president made that recommendation to Congress, and Congress was unwilling to to take any action. The Senate Committee on Interstate Commerce took the position that the President, through the director general, had ample power to deal with all such questions. Of course, technically, I did have the power, I didn't deny it, but I felt in the public interest it would be better to have a tribunal of a permanent character to deal with the matter rather than have it dealt with by a mere temporary agency. Being confronted with the responsibility, however, I had the task of having to discharge it to the best of my ability and in accordance with my conscience, and the result is that it has been necessary for me from time to time since then to pass upon various of these wage problems which would far more properly have gone to a permanent tribunal representing the public in a much more permanent sense than I could possibly do.

With respect to the labor situation, I do not want to hazard any forecast as to the future, except I do want to make the suggestion that the operating men of the Railroad Administration believe that a great deal has been accomplished by establishing the boards of adjustment which have dealt with the various grievances which have arisen, and the best information I can get and the best opinion I can form is to the effect that it will be decidedly in the interest of tranquillity in the handling of labor matters to perpetuate some agencies of that sort. I understand that the Esch Bill, as it passed the House, contains provisions establishing by law a machinery similar to that which the Railroad Administration has established, and I hope very much the matter will work but in some way so as to provide for dealing with matters of that sort, as I believe it is distinctly in the interest of promoting a common understanding.

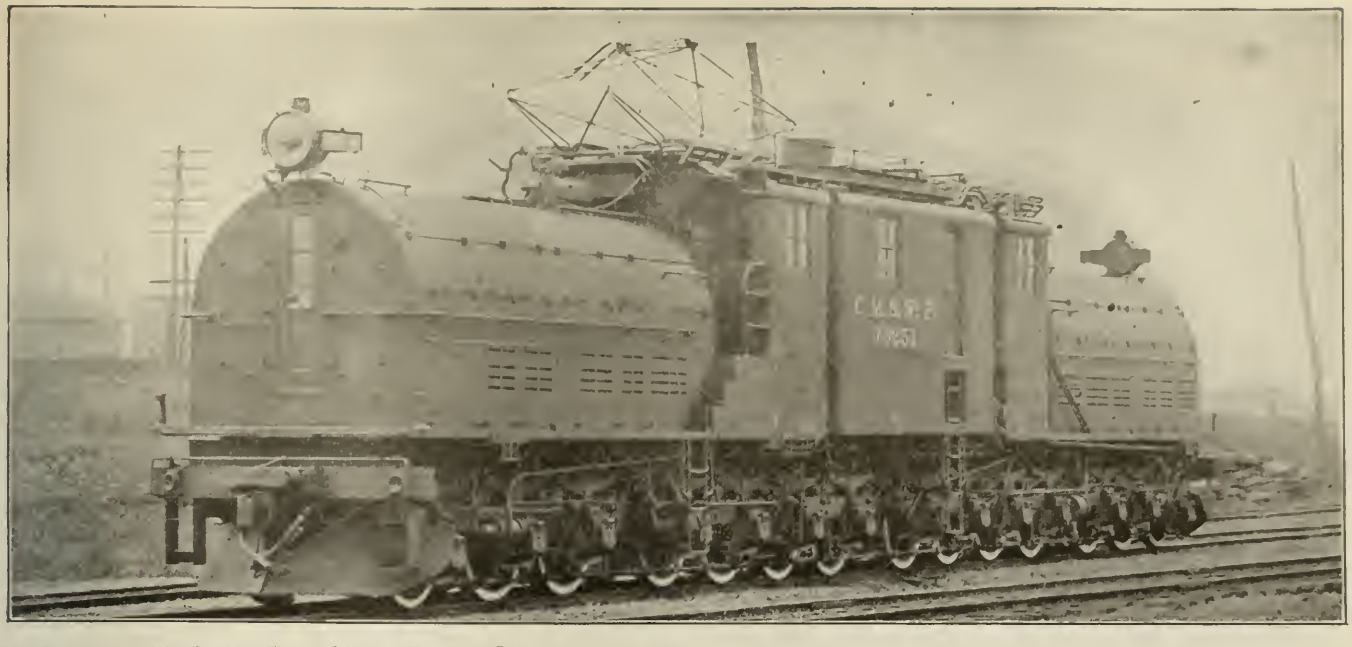
What Will Be Done About Rates?

I anticipate that when the question comes up as to a reasonable basis of rates, there will be a good many elements of doubt. Undoubtedly, the public has come to expect that a very great many economies will be brought about as soon as the railroads go back to private control, and I have no doubt that there will be very strong arguments presented to the Interstate Commerce Commission by shipping interests opposed to the increase in rates to the effect that the increase is not necessary because we are on the point of realizing very important economies, that the railroads were turned back to private control to obtain those economies and that it would be inconsistent to make an increase in rates on the idea that the economies will not be obtained when the whole theory has been that they would be obtained.

I am emphasizing that because I think that is the very practical situation that is going to develop in connection with this rate situation. I am not doing it to be a kill-joy on this pleasant occasion, but simply because I think it is a fact that you might as well face. We never have seen the time when an important rate increase has been adopted, except after the most thorough-going study and with the greatest reductance and after the fullest hearing by anybody who had occasion to object to it. I think you may well be prepared for the most emphatic objections along that line.

Undoubtedly, for the time being, the public is in the most friendly attitude toward the railroad companies, far more friendly than I have ever seen it in my railroad experience, which extends over a great many years, but you must not forget that the public is going to be expectant of great things in improving the service, of great things in economy in operation, and, when it gets right down to the time of facing a rate increase, it is going to go into the matter in pretty much the same way that it has always been gone into in the past.

Railway Statistics of the Dominion of Canada for the year ended June 30, 1918, show a total operating railway mileage of 38,879.



The Locomotive Weighs 265 Tons with 229 Tons on Drivers

Gearless Electric Locomotive for C. M. & St. P.

Five Units of This Type Will Be Used in Passenger Service Over the Cascade Electrified Section

FIVE ELECTRIC LOCOMOTIVES will soon be completed and placed in operation for passenger service on the Othello-Seattle-Tacoma electric zone of the Chicago, Milwaukee & St. Paul. They are of the 3,000-volt, direct current, gearless type. A test of one of the locomotives was described in the October 10 issue of the *Railway Age*.

The original electrification from Harlowton to Avery, 440 miles, has now been operating for a number of years under the bad weather conditions common to the Rocky and Bitter Root mountains. It is significant, therefore, of the success of the original installation, that the same system will now be used to meet the severe grades and snow conditions of the Cascade range.

The motive power now in service on the eastern electrified section consists of 42 locomotives for freight and passenger service and four switchers. Of this original equipment, the freight and passenger locomotives were practically the same and differed from each other only in the gear ratio between motors and driving axles.

The new locomotives are of an entirely different design, built distinctively for passenger service and possess some very interesting mechanical and electrical features. They will be used on the new Cascade electrification strictly for passenger service, and the present passenger engines will be adapted for freight service by changing the gear ratio. The locomotives are of the bi-polar gearless type, with motor armatures mounted directly on the driving axles. In this fundamental feature they follow the design of the gearless locomotives in use on the New York Central. The principal advantage of this method of construction is the simplicity of mechanical design, which eliminates gears, armature and suspension bearings, jack-shafts, side-rods, or other transmitting devices.

The new locomotives weigh 265 tons with 229 tons on drivers. They have 14 axles, 12 of which are driving and two guiding axles. The weight of the armature and wheels is the only dead weight on the track, and this is approximately 9,500 lb. per axle. The total weight on drivers, 458,000 lb., is 86 per cent of the weight of the locomotive, which being distributed among 12 axles, results in a weight of only 38,166 lb. per axle.

One of the most interesting and important features of the locomotives is the design of the leading and trailing trucks and the method of suspension of the cab weight upon them. The successive trucks are coupled together in such a way as to dead lead or break up any lateral oscillation which may be caused by inequalities of the track. The weight of the main cab is so supported on the front and rear trucks that any lateral thrust or kick of the leading or trailing wheel against the track is cushioned by the movement of the main cab, which increases the weight bearing down on the wheel at the point where the thrust occurs, and automatically reacts to prevent any distortion of the track. The result of this design is such as to give particularly good riding qualities at high speed. Exhaustive tests have demonstrated the remarkable riding qualities of the new locomotives at speeds as high as 65 miles an hour, which was the maximum speed permissible on the length of test track available. These tests also indicated that the locomotives will operate at higher speeds with equal success.

The locomotive is designed for handling in normal service a 12-car train, weighing 960 tons trailing, against a grade of two per cent at 25 miles an hour. This performance requires 56,500 lb. tractive effort, which is equivalent to a co-efficient of adhesion of 12.3 per cent of the weight upon driving axles. The wide margin thus provided between the operating tractive co-efficient and the slipping point of the wheels, as well as the ample capacity of the motors, will allow this locomotive to haul trains with as many as 14 cars in emergency. For continuous operation the locomotive is designed to operate at 42,000 lb. tractive effort at a speed of 27 miles an hour.

The total weight supported on driving axles is practically the same as that on the present geared passenger locomotives,

weighing a total of 300 tons. The table gives the principal dimensions, weights and capacity of the gearless locomotives.

Weight electrical equipment	235,000 lb.
Weight mechanical equipment	295,000 lb.
Weight complete locomotive	530,000 lb.
Weight on drivers	458,000 lb.
Weight on guiding axle	36,000 lb.
Weight on each driving axle	38,166 lb.
Number of motors	12
One hour rating	3,240 hp.
Continuous rating	2,760 hp.
Tractive effort—1 hour rating	46,000 lb.
Tractive effort—continuous rating	42,000 lb.
Tractive effort—2 per cent ruling grade with 960-ton train	56,500 lb.
Coefficient of adhesion ruling grade	12.3 per cent
Starting tractive effort—25 per cent coefficient of adhesion	115,000 lb.
Rate of acceleration starting 2 per cent ruling grade	0.48 m.p.h.p.s.
Length inside knuckles	76 ft. 0 in.
Length over cab	68 ft. 0 in.
Total wheel base	67 ft. 0 in.
Rigid wheel base	13 ft. 11 in.
Diameter driving wheels	44 in.
Diameter guiding wheels	36 in.

Motors

The motors are bi-polar, the two fields of each being supported upon the truck springs with full freedom for vertical play of the armature between the pole faces. The armatures are mounted directly on the driving axles. For full speed operation, the 12 motors are connected three in series with 1,000 volts per commutator. Control connections are also provided for operating four, six or twelve motors in series. Additional speed variation is obtained by tapping the motor fields in all combinations.

Regenerative electric braking on down grades is obtained by using four of the motors as generators to supply exciting current for the other eight, which then return power to the trolley. This reduces the size of the motor-generator set required for control, accessories and train lighting, and thereby effects an appreciable reduction in the weight of control equipment.

Secondary Apparatus

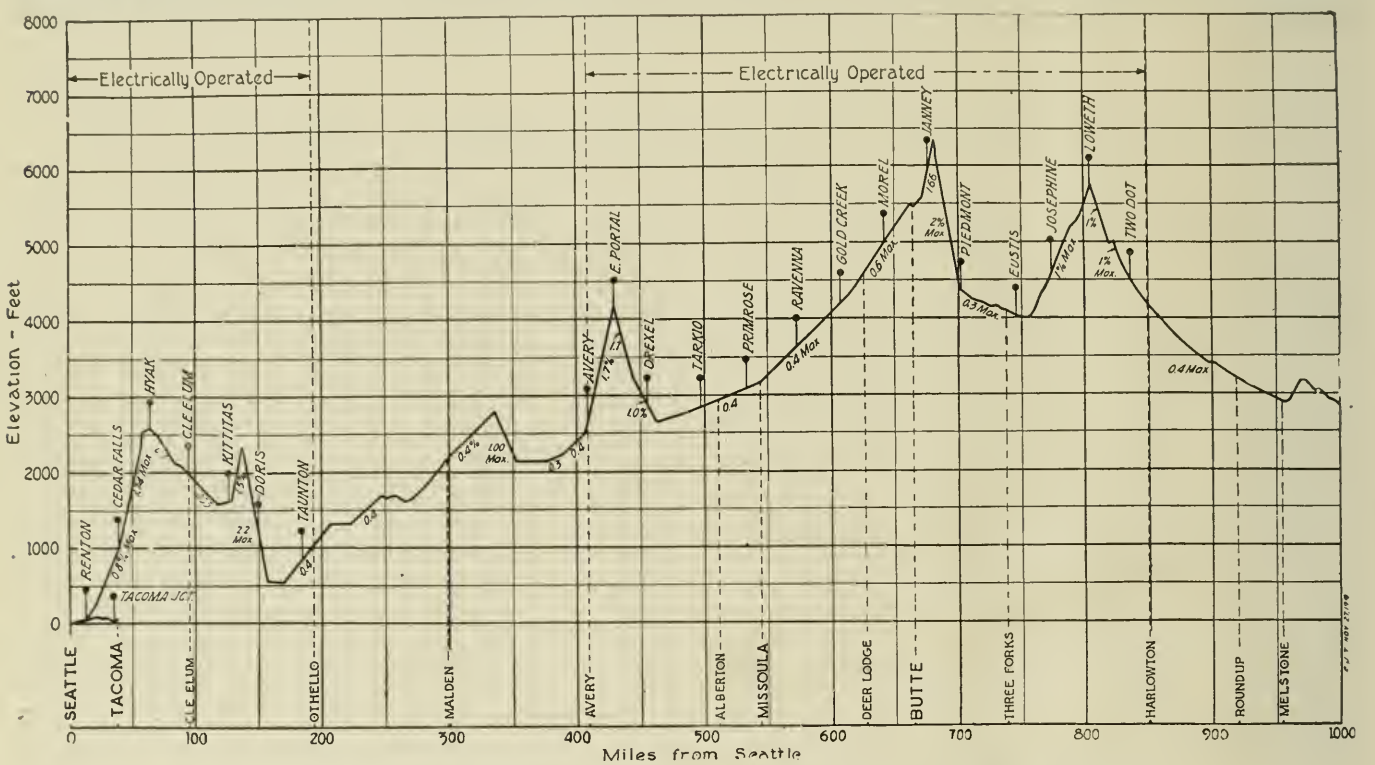
Cooling air for each pair of motors is supplied by a small motor-driven blower. This arrangement avoids the heavy duct losses encountered with a single large blower. The six blower motors may be operated six in series, or in two groups of three in series, thus allowing for two rates of cooling for the main driving motors.

The center cab is occupied by an oil-fired steam boiler for heating passenger trains and with accessories, including tanks for oil and water, circulating pumps, and a motor-driven blower for furnishing forced draft. This center portion of the cab may be lifted out in case the steam boiler is in need of heavy repairs.

In the curved end of one of the cabs is located a small motor-generator set operating in conjunction with an 80-volt storage battery in the other cab, which supply power for operating switches, contactors, lights and accessory apparatus. The battery is, in general, similar to those used on the passenger coaches. In the cab with the storage battery are also the 3,000-volt contactors and grid resisters and an air compressor driven by a 3,000-volt direct current motor. The high speed circuit breaker is placed in the cab which contains the motor-generator set.

Power for train lighting is obtained from the motor-generator set. A switchboard located in the operator's section of one of the cabs is equipped with switches, resisters and meters for controlling the train lighting circuit. The head end system of lighting is in use on the trains over this division. In the other operating cab is a small motor-driven air compressor, operated from the battery circuit, with sufficient capacity for raising the pantograph when first putting the locomotive in operation.

A slider pantograph, similar in construction to those now in use, is mounted on each of the operating cabs. This pantograph has two sliding contacts, giving a total of four on the slider with a double trolley. The pantograph and flexible twin trolley construction enable the locomotive to collect current as high as 2,000 amperes at speeds up to 60 miles an hour without noticeable arcing at the contact points. The second pantograph is held in reserve as a spare. Sand boxes, with pipes leading to each pair of driving wheels, are located directly beneath the pantographs outside of the operating cab.



Profile Showing the Two Electrified Divisions of the Chicago, Milwaukee & St. Paul

Control

The main driving motors are controlled by a reverser handle and two control handles. Within reach of the driver are also the straight air and automatic air brake valves, the sander, the bell ringer, several meters to show what the locomotive is doing, and a number of switches for the headlight, the cab lights, the cab heater, etc. The control handles are mechanically interlocked to prevent incorrect manipulation.

The meters indicate line voltage, speed, line current and field current. The needle of the ammeter which registers line current will swing in either direction and show how much current the motors are using or how much they are regenerating to the trolley. The ammeter which registers field current registers from zero to 400. The meter scale is black from zero to 200 and red from 200 to 400, to indicate to the operator that he must not run continuously with values of field current in excess of 200 amperes.

The diagram shows a profile of the road from Seattle to a point about 1,000 miles east, including the Cascade electrification, the Harlowton-Avery electrification and the intervening 220 miles. The new locomotives will operate over the section between Othello, Seattle and Tacoma, including 17 miles of 2.2 per cent grade from the Columbia river west, and 19 miles of 1.7 per cent grade between Cedar Falls and the summit of the Cascades. The traffic over this division consists of the heavy main line transcontinental passenger trains, "Olympian" and "Columbian," carrying from eight to twelve steel passenger coaches, which will be handled over the maximum grade without helpers. Freight pushers are already in operation on the 2.2 per cent grade, using two of the locomotives from the original electrification. It is expected that electrical operation during the coming winter will assist in overcoming many of the delays which are commonly met with during winter operation in this district.

These locomotives were built by the General Electric Company in the shops at Erie, Pa.

A. F. of L. Opposes Compulsory Arbitration and Return of Railroads

The American Federation of Labor has made public a series of replies by its vice-president, Matthew Woll, to questions put by Will H. Hays, chairman of the Republican National Committee, outlining the attitude of labor toward the present conditions of industrial unrest and various forms of proposed legislation. In reply to a question as to whether the Erdman act should be modified or strengthened or whether a new system for the settlement of industrial controversies should be adopted, Mr. Woll replied that evidently Mr. Hays had overlooked the fact that the Erdman act was repealed in 1913 and that the Newlands act has been substituted in its place. There is nothing particularly wrong with this enactment, he said, but the question might have been better framed had it asked what kind of railroad legislation should not be enacted. In this connection, Mr. Woll says:

"Without venturing into the problem of whether the railroads should be owned and controlled by private interests or by the government, I have no hesitancy in stating that whatever form of ownership or control may ultimately prevail that any and all legislation intended to enforce or promote compulsory arbitration or include anti-strike provisions should be defeated if we are going to be true to the ideals of freedom and democracy so clearly manifested during the war.

"While strained relations between employers and employes are to be deplored, while strikes are not desirable and are favored only as a final means of protest, the wage-earners cannot and will not admit of the right of any person or any legislative body to compel them to remain at work when for any reason whatsoever the conditions of employment become distasteful and unsatisfactory. The right to quit work after all other methods of adjustment have been exhausted is the concrete expression of individual liberty.

"The workers of America are not opposed to voluntary methods of arbitration; they are opposed to compulsory arbitration, which in fact means the fixing of wages, hours, and conditions of work by law. Such a condition and relation of employment is a denial of the rights of free men—the right to freedom of action—the right to freedom of contract. In fact, it is a return to involuntary servitude—industrial serfdom. There is nothing which is fraught with more danger, which results in more rank injustice and injury than compulsory arbitration and compulsory service.

"The Cummins bill now before Congress is the most un-American piece of legislation ever proposed by any one. It not only intends to return the railroads to private interests, but it likewise undertakes to guarantee to the railroad holders an income of 6 per cent on all their investments, whether these investments originally represented legitimate capital or merely water of every shade or color, while during the war the government only paid to the millions of patriotic investors in Liberty and Victory Loan bonds an income ranging from 3 to 4½ per cent interest.

"Besides attempting to place this heavy financial burden on the people, Senator Cummins and those associated with him further propose to turn the railroads back to these private interests with over two million of workers tied hands and feet to the railroads and the railroad interests. It is difficult to conceive a more vicious proposal than that which is now proposed to re-enact and re-establish serfdom and slavery.

"During the war, when the government found it necessary to take the railroads out of the control of private interests, these workmen were free, and as such responded in all their activities in a truly American fashion. Now that the war has ended, it is proposed to return the railroads to these self-same interests from which the government took the control, and in so doing deprive the loyal and patriotic American wage earners of their liberties and freedom. Under the cloak of industrial peace, Senator Cummins would impose involuntary servitude on the railroad workers and give added powers to private railroad interests over the lives of nearly two millions of wage earners.

"It is suggested that the government do not return the railroads to private interests for at least two years from the conclusion of peace, in order that the American people may have an opportunity to consider the many possible solutions of the railroad problem which have been put forward and so that a mature judgment may be reached and justice be done to all concerned."

Regarding profit-sharing, Mr. Woll says:

"Profit-sharing, as thus far proposed and practiced, is nothing more nor less than a sham and a fraud. In a competitive field of industry this method of compensation is not only impracticable, but will ultimately cause more friction and turmoil than any other method of compensation I know of. This method of rewarding labor for services given will not tend to equalize compensation for equal work performed; rather it will throw the question of compensation into a greatly confused state. In a monopolistic or semi-monopolistic enterprise profit-sharing can only serve as a cloak for excess profits under the guise of philanthropy.

"Profit-sharing and like methods of compensation now urged are designed principally to prevent organization of employes into trades unions and to tie the workers to their job as well as to compel them to labor under the most intensive strain of which they are capable, by an appeal to undue selfishness. Its very conception is an impressive indictment of the present questionable method of industry as a whole."

The Plumb plan is not mentioned in the letter.

A. R. A. Committees Present Progress Reports

Work Accomplished in Each Section Since Its Organization and Status of Present Studies Outlined at Chicago Meeting

PROGRESS REPORTS were made by each of the seven sections of the American Railroad Association at a meeting held in Chicago on November 18 and 19. In addition the Executive Committee of the association held meetings on November 17 and 18 and subsequently presented a report to the association outlining briefly the important features which have occupied the attention of the association since its last meeting on November 15, 1916, and the association's historical development. The report deals with the development in car service and car service rules, the co-operation obtained with military authorities during the war, the co-ordination of the various voluntary railroad organizations and the consequent reorganization of the association.

The report of the Executive Committee in addition contained the following facts and recommendations:

The president of the association has been authorized to appoint a committee of four to investigate and recommend a plan covering the preparation and publication of the records of the American railroad men in the war, both at home and abroad. T. C. Powell, director of the Division of Capital Expenditures, United States Railroad Administration; Howard Elliott, president of the New York, New Haven & Hartford; W. W. Atterbury, vice-president of the Pennsylvania Railroad; and Howard G. Kelley, president of the Grand Trunk, have been appointed members of this committee. A report will be promulgated as soon as the committee completes its labors in this connection.

In order to secure uniformity and in the interests of economy the general secretary has been authorized to act as agent in the publication of such tariffs as may be nationwide in application. Up to the present time a storage tariff, a tariff covering penalties for detention of equipment and a demurrage tariff have been filed by the general secretary and arrangements have been made for the filing of rules covering the handling of perishable freight and regulations governing equipment under private ownership. The suggestion has been made, and has been concurred in by the director general, that seven representatives of the corporations be appointed as advisory members of the Executive Committee. The director general communicated with T. DeWitt Cuyler, chairman of the association of Railway Executives, suggesting the appointment of seven corporate officers to become advisory members of the Executive Committee. Mr. Cuyler thereupon nominated and the Executive Committee elected the following as advisory members:

J. H. Hustis, president, Boston & Maine, representing the New England district; W. W. Atterbury, vice-president, Pennsylvania Railroad, representing the Trunk Line district; A. H. Smith, president, New York Central, representing the Central Traffic district; W. H. Finley, president, Chicago & Northwestern, representing the Western district; E. N. Brown, president, St. Louis-San Francisco, representing the Southwestern district; J. Kruttschnitt, president, Southern Pacific, representing the Transcontinental district; C. H. Markham, president, Illinois Central, representing the southern district.

The Executive Committee has authorized Section IV—Traffic to employ a chairman to devote all of his time to the interests of that section. The Executive Committee has also approved the election of C. W. Crawford to succeed George Hodges as chairman of the general committee of Section V—Transportation.

Attention has been directed to the question of securing greater efficiency and economy in the maintenance of way and structures department and the Executive Committee has therefore referred this subject to the general committee of Section II—Engineering, with instructions to have a study made of measures for obtaining higher efficiency and economy in the maintenance of way and structures department and present a plan which will effect the greatest economy and efficiency in the maintenance of way and structures department, both as to the handling of labor and material; also to present suggestions as to the units by which maintenance of way and structures work may be gaged, the recommendations to include suggestions as to improvements in supervisory methods and especially in the direction of educating supervisory forces to the importance of the subject.

The Executive Committee has appropriated the sum of $8,000 per year for two years for the expenditures of the Committee on Stresses in Railroad Track. In addition the committee has approved the appropriation of $7,500 for the continuation of the work of the rail committee beginning June 1, 1919.

Report of Section I—Operating

The Committee on Operating Rules has considered and made a recommendation upon a rule covering the use of dimmers on electric headlights.

The Committee has had referred to it a number of suggested changes in the Standard Code. The suggestions will be considered by the committee when a revision of the code is necessary.

Among the matters now being developed by the committee are the standardization of safety fusees and the standardization of bunting signaling flags.

A Sub-Committee has been appointed for the purpose of recodifying the existing questions and answers to the present Codes of Train Rules, Block Signals and Interlocking Rules.

The Committee on Grade Crossing Protection and Trespassing has given much study to the subjects which it has in hand and is unanimously of the opinion that it is essential and important to obtain National legislation pertaining to trespassing and the control of highway traffic at grade crossings. It has prepared separate statutes covering grade crossing protection and trespassing on railroads. These statutes have been submitted to the several committees of railroad counel for an expression of their views. A conference with the National Association of Railway Commissioners and the American Automobile Association will be held also in order that their advice and co-operation may be obtained.

The committee has recommended to the General Committee the adoption of the Nine Second Whistling Code which provides that in whistling for grade crossings, the two long blasts shall be of two seconds' duration and the two short blasts of one second duration each, with a one second interval between each blast.

The Committee on the Safe Transportation of Explosives and Other Dangerous Articles, which is also the Executive Committee of the Bureau of Explosives, has been active in the safe transportation of explosives and other dangerous articles during the continuance of the war.

The Committee is also making progress in the work of enforcing the requirements of Section III—Mechanical (M. C. B.) in the matter of tank car tests, safety valve tests, etc., which work, by direction of the Executive Committee, was turned over to the Bureau of Explosives in November, 1916.

Report of Section II—Engineering

The report of Section II—Engineering consisted in the presentation of new specifications for track scales, pre-

pared in co-operation with committees of other interested associations and a review of the action taken at the annual meeting of the American Railway Engineering Association. The scale specifications will be published in a later issue.

Report of Section III—Mechanical

The report of the general committee of Section III—Mechanical reviews its own activities and those of the section as a whole from the time of the first meeting of the temporary general committee on February 17, 1919, up to and including the last meeting of the general committee held on September 23 and 24, 1919. With the exception of the action taken at the meeting held on September 23 and 24, reports of these activities have all appeared in various issues of the *Railway Age*.

At the meeting held on September 23 and 24 the following resolution admitting the Master Car and Locomotive Painters' Association as a division of Section III—Mechanical was passed.

Resolved, that the secretary be instructed to notify the general secretary that the general committee of Section III—Mechanical accept the proposal of the Master Car and Locomotive Painters' Association to unite with the Mechanical Section of the American Railroad Association as the "Equipment Painting Division."

Letter Ballots

The recommendations contained in the reports from the following committees were considered at the annual meeting, were referred to letter ballot in accordance with the Rules of Order of this Section, and every recommendation adopted by more than the two-thirds majority required: Standard and Recommended Practice (A. R. M. M.); Standard and Recommended Practice (M. C. B.); Standard Blocking for Cradles of Car Dumping Machines; Loading Rules; Specifications and Tests for Materials (A. R. M. M.); Specifications and Tests for Materials (M. C. B.); Car Wheels; Car Trucks; Couplers; Welding Truck Side Frames, Bolsters and Arch Bars; Car Construction; Train Lighting and Equipment, and Train Brake and Signal Equipment.

The vote on the letter ballots was approved by the General Committee at a meeting held September 23 and 24, 1919, with the following exceptions:

The vote on the recommendation from the Committee on Car Trucks was approved with the exception that the General Committee ruled that the non-standard axle of the Norfolk & Western with 5¼ by 9 in. journals should be permitted on a limit load of 148,000 lb., and shown in the table of non-A. R. A. standard axles, also that in case of repairs on foreign lines, it would be permissible to replace this axle with the 5 by 9 in A. R. A. standard axle, in which case the cars should be re-stenciled to a limit load marking of 132,000 lb.

The recommendation from the Committee on Car Wheels providing that the letter "C" from the legend "M. C. B." should be chipped off when the wheels fail to meet the specifications, was considered, and the committee decided that the letter "C" should only be chipped off when the wheels fail to pass the thermal or drop test, or have some physical defect which impairs their serviceability.

Rules of Interchange

The report of the Committees on Arbitration and The Revision of Passenger Car Rules of Interchange were adopted on the floor of the convention, and the changes recommended in the Rules of Interchange approved by the Executive Committee at a meeting held July 31, 1919. These changes were then approved by the United States Railroad Administration, and the Rules of Interchange revised and issued to become effective November 1, 1919.

In addition, to the above, at a meeting of the General Committee held September 23 and 24, 1919, it was recommended that the labor rates shown in these rules be revised to conform to the rates at present in effect on the railroads under Federal control. This recommendation was approved by the Railroad Administration, and incorporated in the book as revised, effective November 1, 1919.

Loading Rules

At the annual meeting, the recommendations contained in the report of the Committee on Loading Rules were accepted and referred to letter ballot, with the exception of the recommendation for changes in the rule governing the loading of structural material, plates, girders, etc., on open cars (twin or triple loads), which was approved by the Convention and Supplement No. 1 to these Rules issued, effective August 1, 1919. The recommendations submitted to letter ballot were all adopted by more than the two-thirds majority required by the Rules of Order. The recommendations contained in the letter ballot from the Committee on Loading Rules, if approved, will be covered in an additional supplement, to be known as Supplement No. 2.

Tank Car Specifications

At the annual meeting held June 18-25, inclusive, the report of the Committee on Tank Cars was received, subject to action of the General Committee. At a meeting of the General Committee held September 23 and 24, the recommendations from the Committee on Tank Cars for changes in the Tank Car specifications (Standard), were approved, to be incorporated in a reissue of these specifications. In addition, several other proposed changes in the Standard Specifications were received from the Tank Car Committee and approved.

Manual of Standard and Recommended Practice

At a meeting of the General Committee held September 23 and 24, it was decided to issue the Manual of Standard and Recommended Practice of this Section in a separate loose-leaf volume instead of being included in the back of the Proceedings of the Annual Meeting. This will eliminate the reprinting of a great portion of these Standards each year, and will provide a better reference book for the mechanical departments of railroads and manufacturing companies. The Committees on Standard and Recommended Practice and Specifications and Tests for Materials have been designated to supervise the preparation of this manual.

Standard Form of Interchange Agreement

At a meeting of the General Committee held at Atlantic City, September 23 and 24, a standard form of interchange agreement was approved, to be executed by all subscribers to the Rules of Interchange to replace the present method of subscribing to these rules shown in the Rules of Interchange —Rules 128 to 130, inclusive. This form of agreement is shown below.

Agreement Adopting Interchange Rules

The Subscriber hereto adopts and agrees, jointly and severally, with each and all other parties (whether corporations, partnerships or individuals) owning or possessing railroad cars used for the transportation of commodities, which parties have respectively entered into agreements in effect similar to this instrument, that the Subscriber will abide by the Code of Rules governing the condition of, and repairs to, freight cars for the interchange of traffic, as formulated and promulgated by the former Master Car Builders' Association and by the American Railroad Association (Section III—Mechanical) or by either thereof (which rules are designated on the minutes of said Association's proceedings and are commonly known as "Interchange Rules"), and by each of said rules, and as well will abide by each and all decisions and interpretations of the Arbitration Committee provided for by said Code of Rules, until this agreement on the part of the Subscriber shall be terminated by three months' notice in writing filed with the General Secretary (or such other officers as from time to time shall be acting as Secretary) of said Railroad Association, or of such body as shall at the time have succeeded thereto.

Committees of Section III—Mechanical

At the meeting of the General Committee held September 23 and 24, 1919, the standing and special committees for Section III—Mechanical for the coming year were appointed.

Subjects Assigned to Committees

The following subjects have either been assigned to committees or are to be the subjects of individual papers:

1. Investigation of the proper number of crossties to be used on hopper coal cars. Referred to Committee on Car Construction.
2. The proper fibre stress to be employed in the design of helical springs for different diameters of steel wire from ¼-in. to 1½-in. diameter. The ordinary spring table calls for 80,000 lb. throughout for all sizes, but it is well known that this is not the manufacturers' practice, and in fact in many cases it is impossible to obtain a proper spring with the smaller sizes of wire. Referred to Committee on Specifications and Tests for materials.
3. Consideration of adopting the standard half tape sizes for cast iron and rough rolled steel wheels. Referred to Committee on Car Wheels.
4. That in the manufacture of steel wheels the wheels be machined to exact diameters. Referred to Committee on Car Wheels.
5. Repairs to superheater units. Referred to Committee on Superheater Locomotives.
6. Desirability of more water and steam space above the crown sheet. Referred to Committee on Design and Maintenance of Locomotive Boilers.
7. Equated tonnage ratings. Referred to Committee on Train Resistance and Tonnage Rating.
8. Design for coal space of locomotive tenders to allow the coal to flow within easy reach of the fireman, and to permit it to practically all feed into the hoppers of locomotive stokers. Referred to Committee on Mechanical Stokers.
9. Specifications for tank hose. Referred to Committee on Specifications and Tests for Materials.
10. Water glass fittings and mountings. Referred to Committee on Design and Maintenance of Locomotive Boilers.
11. Standard practice for beading tools for boiler tubes or fuse. Referred to Committee on Design and Maintenance of Locomotive Boilers.
12. Proper location of blow-off cocks in locomotive boilers. Referred to Committee on Design and Maintenance of Locomotive Boilers.
13. The comparative merits of hydrostatic and force feed lubrication for locomotive cylinders and steam chests and best method of application. Referred to Committee on Superheater Locomotives.
14. Front end netting and netting door and other draft appliances. Referred to Committee on Fuel Economy and Smoke Prevention.
15. The study of ash pit and coal chute operation including organization and supervision. Roundhouse operations as a whole. Referred to Committee on Engine Terminals, Design and Operation.
16. Modernization of existing old locomotives. Referred to Mr. G. M. Basford, President, Locomotive Feed Water Heater Co., New York, N. Y., with request that he prepare an individual paper on it.
17. Automatic hose connectors for freight and passenger equipment. Referred to Committee on Train Brake and Signal Equipment.
18. A study of locomotive operation from the point of view of a large investment. Referred to Mr. G. M. Basford, President, Locomotive Feed Water Heater Co., New York, N. Y., with request that he prepare an individual paper on it.
19. Electric arc welding in railroad repair shops. Referred to Committee on Autogenous and Electric Welding.
20. Combustion chambers for locomotive boilers; results as to fuel economy; difficulties in maintenance and other points of interest. Referred to Committee on Design and Maintenance of Locomotive Boilers.
21. Modernizing freight equipment. Referred to Committee on Car Construction.
22. Economical diameters of piston valves of superheater locomotives, with recommendation for Standard Practice in connection with various cylinder diameters. Referred to Committee on Superheater Locomotives.
23. What shape of exhaust nozzle will cause the highest vacuum and least back pressure in cylinders. Referred to Committee on Fuel Economy and Smoke Prevention.
24. Automatic coal weighing devices for locomotive tenders. Referred to Mr. J. S. Spurway, Secretary, New South Wales Government Railways and Tramways, Sydney, Australia, with request that he prepare an individual paper on this subject.
25. Snow fighting apparatus. Referred to Mr. C. E. Fuller, S. M. P. & M., Union Pacific R. R., Omaha, Neb., with request that he prepare an individual paper on this subject.
26. Designs, with complete lay-outs, for round houses of various sizes. Referred to Committee on Engine Terminals, Design and Operation.
27. Power Plants for both round house terminals and repair shops and suitable stokers for such power plants. Referred to Committee on Modernization of Stationary Boiler Plants.
28. Ash pit lay-outs for both dry and water pits. Referred to Committee on Engine Terminals, Design and Operation.
29. Adequate lighting of engine terminals for night work. Referred to Committee on Engine Terminals, Design and Operation.
30. Specifications for Mechanical Rubber Goods. Referred to Committee on Specifications and Tests for Materials.

Recommendations

The General Committee asked for approval of its action in handling the affairs of the Section and of the recommendations covered by letter ballots of the Section.

Report of Section IV—Traffic

At a meeting of the Committee on Standard Containers, Packing and Marking, held August 6, 1919, the question of the constantly increasing amounts paid out for lost and damaged freight received earnest consideration, and decision reached that some energetic and corrective measures be taken, whereupon a joint conference was held on August 27, 1919, with corresponding committees of the other sections, at which it was arranged to launch a campaign to better conditions, selecting for this purpose a few commodities or situations particularly susceptible, and in co-operation with the Operating, Transportation, Freight Claim and Accounting Departments, and the public, bring about remedies.

At a meeting of the Committee on Weighing and Inspection of Freight Traffic, held September 11 and 12, 1919, there was received from four different sources suggestions that something should be done to secure more accurate weights on less than carload freight, preferably by inducing shippers to declare on their shipping bills the correct weight so as to save the time taken in weighing over house scales and the consequent delay in loading, and to shippers' teams waiting to deliver their goods, especially in the rush hours. This would result in operating economies and the elimination of a great many freight claims for overcharge in weights. A conference will be held with corresponding committees of the Operating and Freight Claims Sections.

Report of Section V—Transportation

The General Committee has continued negotiations with the National Industrial Traffic League with respect to the National Car Demurrage Rules and recommended several changes in the rules and demurrage rates which have been made effective on all railroads throughout the United States. As a result of these changes there was difficulty in the application of certain rules and to secure uniformity the following curculars have been issued covering interpretations and recommendations formulated after consultation with the Interstate Commerce Commission and the League:

1931	issued November	14, 1918
1932	issued November	19, 1918
1954	issued July	1, 1919
S. V. 11	issued July	16, 1919
1959	issued September	17, 1919

As a result of joint conferences with the Committee on Demurrage and Storage of the League and representatives of the Interstate Commerce Commission, there has been completed a recodification of the National Car Demurrage Rules, the purpose of which is to bring the existing Instructions, Explanations and Interpretations into the rules themselves; to clarify the rules in accordance with lawful practice; to obviate the necessity for future interpretations, so far as may be practicable, and to secure uniformity in their application. The revised rules have received the tentative approval of the Interstate Commerce Commission. They have been submitted to the Railroad Administration, with the recommendation that they be made effective December 1, 1919, through the publication of a joint tariff for the account of all railroads in the United States, including the non-Federal controlled lines. This joint tariff will be issued by J. E. Fairbanks, general secretary.

Attention has been called to the difficulty of members in securing settlement for cars destroyed in Mexico as well as for per diem, repair bills, etc. To expedite the handling of this matter, conferences were held with the representatives of the National Railways of Mexico and the General Committee has submitted for ratification by the corporate officers of railroads, members of the Association, a form of agreement under which the National Railways of Mexico will make satisfactory adjustment.

The Committee on Car Service, acting jointly with the Committee on Records, has prepared a code of rules to govern the handling of cars under authoritative administration and has also prepared a revision of the Code of Per Diem Rules to eliminate so far as possible the large amount of work incident to adjustment of per diem discrepancy claims, etc. Owing to the importance of these subjects, the General Committee has submitted its recommendations to the Executive Committee. In accordance with the Rules of Order, it has also made recommendations to the Executive Committee on the following subjects:

Restoration of per diem settlements between roads under Federal control.

Demands for increase in mileage allowance on private refrigerator cars.

Application, enforcement and proper supervision of demurrage, storage and track storage tariffs.

Senate Committee Report on Steel Strike

Says Strikes Are Relic of Industrial Barbarism But Finds Some Autocracy on Both Sides

THE SENATE COMMITTEE on Education and Labor, which was instructed by a Senate resolution to investigate the steel strike and report to the Senate as to the cause and reason therefor, submitted its report on November 8, in which it finds some occasion for criticism of both parties as having given evidence of a lack of consideration for the great third party, the public. The committee says, however, that the underlying cause of the strike was the determination of the American Federation of Labor to organize the steel workers, and lays considerable emphasis on the fact that the strike resulted from a movement initiated, not by the steel employees themselves, but by an outside organization.

After discussing the events which led up to the calling of the steel strike on September 22 and quoting the correspondence relating to the demands upon the steel companies and the efforts of the President to bring about a postponement of the strike until after the Industrial Conference at Washington, the report of the committee, by Chairman W. S. Kenyon, says in part:

"We may say in passing that the statement in the letter to Mr. Gompers that seven of the organizers and members had been brutally murdered in cold blood during the past few days is false. Many statements in the letter to the President likewise are very greatly exaggerated or false.

"From the foregoing letters it would appear that the responsibility for continuing the strike under these conditions was assumed primarily by Messrs. John Fitzpatrick, M. F. Tighe and W. Z. Foster. None of them except Mr. Tighe were connected with the steel industry. It is not contended that the employees were permitted to pass on the President's request or were even consulted about it. These three organizers apparently were the only ones who were consulted at that time. The sole responsibility, however, for the refusal to postpone the strike at the President's request cannot be entirely charged to the three above mentioned. Five days after the labor leaders' letter to Mr. Gompers there was a meeting of all the 24 responsible leaders of the unions involved, and the testimony of Mr. Gompers and others shows that at the meeting to which several members came prepared to urge acceding to the request for delay all present, including Mr. Gompers, decided that further delay would result in the failure to hold the men from striking. The responsibility should, therefore, at lease be shared by all alike, Mr. Gompers included.

Wages

"The question of wages is not involved in the controversy. Few of the witnesses examined made any complaint as to wages. Some of them did contend that they should have 12-hour pay for 8-hour work, but most of them, while striking for an 8-hour day, claimed only a fair living wage. It is the opinion of the committee that, broadly speaking, the employees of the steel industry at the time of the strike were fairly well satisfied with the wages received, and that such question was not persuasive at all in any consideration of a strike. The average wages in July, 1919, were $6.27 per day. The wages of unskilled labor in 1914 for a 10-hour day were $2; in 1919, for a 10-hour day, $4.62. In July, 1914, the wages were $2.40; in July, 1919, for a 12-hour day the wages were $5.88. The lowest wage paid to grown men is 42 cents an hour for 8 hours, and 63 cents per hour, or time and a half, for all time over 8 hours. The lowest paid wages for unskilled labor amounts to $4.62 per day.

"It may also be said that most of the men speak highly of such homes as are furnished by the company. There is undoubtedly great need of more homes to be sold to the men in order to encourage home owning. They rent these homes at very reasonable prices, and the general condition of these homes seems fairly good.

"We find also little complaint as to lack of safety appliances, as to improved machinery or as to conditions in general outside of the long hours of work. In encouraging and assisting its employees to become owners of its stock; in guarding its employees against accidental injuries; in caring for the sick, and in sanitary precautions generally the work of the United States Steel Corporation at the present time is in the main admirable, and in refreshing contrast to the short-sighted selfishness that still persists in many manufacturing concerns.

Causes of the Strike

"The underlying cause of the strike is the determination of the American Federation of Labor to organize the steel workers in opposition to the known and long-established policy of the steel industry against unionization. The seizing upon this cause by some radicals who are seeking to elevate themselves to power in the American Federation of Labor will be discussed later, but were it not for the attempt to unionize the mills the strike in all probability would not have occurred.

Failure to Postpone Strike

"It would seem that the request of the President of the United States, backed up to a large degree by the request of the president of the American Federation of Labor to postpone the strike, should have been complied with. It is hardly sufficient answer to say that Judge Gary likewise declined to accede to the request of the President of the United States that he confer with the claimed representatives of the laborers of the United States Steel Corporation with relation to the strike. Both parties, it seems to us, are at fault in refusing to heed the request of the President, and evidences upon both sides a lack of that consideration for that great third party, the public, which is always the greatest sufferer in a strike of this character. The refusal of the labor leaders who seem to have been the guiding spirits of this strike to accede to the request of the President, even when backed to a certain degree by the president of the American Federation of Labor, lends weight to the idea that radical leadership, instead of conservative leadership, was taking possession of and guiding this particular strike. We regret that Mr. Gompers did not take a firmer position as to postponement.

I.

"In a hearing of this character it is natural that there be differences of opinion on the part of the committee as to some of them. Some of the most difficult and far-reaching problems of our industrial life come to the front as issues in this strike. Some of these questions will be discussed. The committee, however, present these propositions:

"(*a*) That the laborers in the steel mills had a just complaint relative to the long hours of service on the part of some of them and the right to have that complaint heard by the company.

"(*b*) That they had the right to have the representatives

of their own choosing present grievances to the employers. Some members of the committee believe that more friendly relations would be maintained between employer and employee if the representatives who are chosen to present grievances to the employers were actually working in the industry and that such repersentatives ought not to be from outside of the industry.

"(*c*) That behind this strike there is massed a considerable element of I. W. W.'s, anarchists, revolutionists and Russian soviets, and that some radical men not in harmony with the conservative elements of the American Federation of Labor are attempting to use the strike as a means of elevating themselves to power within the ranks of organized labor.

"A few suggestions as to these findings will be in order. The evidence disclosed that a percentage of the men work 8 hours; a larger percentage 10 hours, and a lesser percentage 12 hours, although there is dispute in the evidence as to this proposition. Judge Gary testifies that 34.8 per cent work 8 hours; 39.40 per cent work 10 hours; 26.52 per cent work 12 hours.

"We believe that a large majority of the men actually working in the mills work 10 and 12 hours per day. While there are spells of rest here and there through these long periods of 10 and 12 hours, yet the fact remains that the general rule is either a 10 or 12 hour day, during which the men are on duty.

"There has been some improvement in the steel industry in this respect, for some years ago a large percentage of the labor worked 10 and 12 hours a day and 7 days in the week. While the claim is made that the 7-day week has been abolished, except in emergencies, and the men who work on Sundays are allowed one week day for rest, the evidence on this point is conflicting.

"We believe where continuous operation is absolutely necessary the men should at least be allowed one day's rest in each week.

"The work in the steel mills is such that men must be constantly in attendance and the work does not stop. To change to an 8-hour day would mean three shifts instead of two. The steel corporation claims that it is impossible to get the men. And, further, that the men want to work more than 8 hours in order to get the additional pay, there being a basic 8-hour day as far as pay is concerned and time and a half for all time over 8 hours.

"It is true some of the workers testified that they wanted to work longer in order to get the increased compensation, but most of them seemed anxious for an 8-hour day with a living wage. The policy of working men 10 and 12 hours per day in the steel mills is, it seems to the committee, an unwise and un-American policy. There are many hundreds of thousands of employees in the steel mills, a considerable portion of whom cannot read, speak or write the English language.

"The 8-hour day is involved in the solution of this question. These non-English-speaking aliens must be Americanized and must learn our language, so the question of a reasonable working day is involved in the question of Americanization. Men cannot work 10 and 12 hours per day and attend classes at night school. It is the general consensus of opinion of the best economic writers and thinkers that the establishment of 8-hour-day systems does not diminish production. Nor do we think the claim made that an 8-hour day is impossible because the workmen cannot be secured for three shifts is tenable. An 8-hour day with a living wage that will enable men to support their families and bring up their children according to the standards of American life ought to be a cardinal part of our industrial policy, and the sooner the principle is recognized the better it will be for the entire country.

"The public also has an interest in the problem of an 8-hour day. Fatigue in human kind is a breeder of unrest and dissatisfaction.

II.

"As to subdivision (*b*) of the findings of the committee, namely, the right of the men to select their own representatives to present their grievances, there should perhaps be an exception made. The representatives selected should be those who believe in the principles of the American government. In the instance of Judge Gary refusing to receive a committee claiming to represent the men in the employment of the company, he could well have objected to receiving a man with the views of Mr. Foster. He did not put his refusal on that ground, but put it rather on the ground that the men did not represent the employees, though himself conceding that 10 to 15 per cent of the mills were probably unionized. It seems to us that even 10 to 15 per cent of the men had the right to select their own representatives and present their grievances to the steel company, and that they should have been heard. Judge Gary could have announced to them, as well as he did afterwards in his letters to the presidents of his subsidiary companies, that he would not deal with representatives of the unions, and that he considered the question one of open and closed shop; likewise, it seems to us unfortunate that Mr. Gary did not answer the letter of Samuel Gompers, the accredited representative of the American Federation of Labor and president thereof. Such things do not tend to harmonize conditions but rather to accentuate them. The proposition under discussion raises the question of collective bargaining, unionism, closed and open shop, and on these propositions there is much controversy.

"The committee is agreed that the principle of collective bargaining is a right of men working in industry. Collective bargaining has generally been recognized as a right of labor. It is apparently one of the effective methods that labor has used to secure its rights. The right of collective bargaining, however, should not be employed for the purpose of discriminating against any class of workmen, whether union or non-union men. Furthermore, the right when exercised should involve full responsibility on either side to abide by the terms of the bargain.

"Judge Gary seems to believe that the question of open and closed shop is involved in the general proposition. There may be two kinds of closed shop as we understand it—a shop closed against non-union men because they do not belong to a union and a shop closed against union men because they do belong to the union. One is a closed shop through the instrumentality of the men themselves who belong to the union and the other is a closed shop through the instrumentality of the employers. Both of such closed shops are un-American. The testimony taken does not disclose either class of closed shop existing in the steel industry. Men have the right in this country to work whether they belong to unions or not, and no body of men has the right to stop other men working because they do not belong to a union. On the other hand, men have the right to join unions and to speak through their unions, and employers have no right to prevent joining unions or to discharge men or make their positions untenable or unpleasant because they have done so. The doctrine of collective bargaining as generally understood is not recogized in the steel mills, and this has caused considerable dissatisfaction upon the part of many of the steel workers. The question of the open and closed shop would not be involved, except indirectly, until in fact there was a substantial unionization of the plants. However, Judge Gary takes the position that the organization and unionization of the plants of necessity results in the closed shop. The difficult proposition in this matter continually arising is this: Does collective bargaining through union

representatives result in a closed shop? If the unions would recognize the right of men to work and be treated as fellow workers, even though they do not belong to the unions, it would not of necessity result in a closed shop. The question is one of great difficulty, and the solution of it is not necessary in the view of the committee in order to present a report of conditions.

"The committee, not being entirely of one mind on the subject, presents the facts and the variety of opinions to the Senate.

III.

"The testimony as introduced and the study the committee has made of the situation lead them to the conclusion that while there were legitimate complaints as to long hours of service, that the strike has been seized upon by some I. W. W.'s, Bolshevists and anarchists to further their own interests, and that their influence in the strike has been powerful.

"The committee is of the opinion that the American Federation of Labor has made a serious mistake and has lost much favorable public opinion which otherwise they would possess by permitting the leadership of this strike movement to pass into the hands of some who heretofore have entertained most radical and dangerous doctrines. If labor is to retain the confidence of that large element of our population which affiliates neither with labor organizations nor capital, it must keep men who entertain and formulate un-American doctrines out of its ranks and join with the employers of labor in eliminating this element from the industrial life of our nation. Unquestionably, the United States Steel Corporation has had the support of a larger and of a wider circle in the country during the strike because of the character of some of the strike leadership. Labor organizations should not place the workingmen in the position of sympathy with un-American doctrines or make them followers of any such leadership. Such practice will result in defeating the accomplishment of their demands.

"Take the case of Mr. William Z. Foster. Mr. Foster is secretary to the committee composed of the 24 international unions managing this strike. His duties were substantially to act as secretary of the strike, to look after the organization of workers and to handle the finances. He is in the office at Pittsburgh and seems to be the general manager of the strike. While it is claimed that he has had little to do with it, it is quite apparent to the committee that he has more to do with it than any other man in its actual management. At the time of his writing "Syndicalism" he was wholly antagonistic to American labor unions, and especially to the American Federation of Labor. Soon after, however, he seems to have come to the conclusion that he could accomplish his aims and purposes better by boring from within, as he expressed it in one letter to Solidarity, the I. W. W. publication. Carrying out his doctrine of "boring from within," he became active in organized labor work and soon became a leader.

"We insert excerpts from his book showing that he believed that nothing was illegal if necessary to carry out his views. He advocated violence in strikes. He charged that the American labor movement was infested with hordes of dishonest officials. The evidence convinces the committee there has been little change of heart on the part of Mr. Foster and that he is now in the full heyday of his power in the 'boring from within' process.

"Such men are dangerous to the country and they are dangerous to the cause of union labor. It is unfair to men who may be struggling for their rights to be represented by such leaders. It prevents them from securing proper hearing for their cause. If Mr. Foster has the real interest of the laboring man at heart he should remove himself from any leadership. His leadership injures instead of helps. If he will not remove himself from leadership the American Federation of Labor should purge itself of such leadership in order to sustain the confidence which the country has had in it under the leadership of Mr. Gompers.

"Labor has done a great work in the war. It has stood nobly by the purposes of this country. It can not now afford to harbor men who in their hearts desire to destroy this Government.

There is inserted here a part of the declaration adopted during the war by the National and International Trade Unions of America and some extracts from articles by Mr. Gompers.

"There is a startling contrast between the words of Foster and these words. This is the language of the man who attempted to secure a postponement of this strike at the request of the President of the United States. The laborers were contending for American principles in contending for an eight-hour day. They cannot put the management of a campaign for American principles into the hands of men who do not believe in American doctrines and hope to succeed.

"There may be, in view of the radical utterances and actions of certain leaders, some warrant for the belief that the strike in the steel industry is a part of a general scheme and purpose on the part of radical leaders to bring about a general industrial revolution. The committee, however, do not go to that extent because they feel there were some real grievances. While Mr. Gompers did not originally participate in counseling or advising the strike, he subsequently indorsed it and put the power of his influence behind it. In view of his standing and patriotism the committee does not believe that he could be a participant in a movement involving such revolution.

IV.

"We have not discussed the 12 demands of the organizers, but only a portion of them. They were undoubtedly to be used as a basis for compromise, and we see no particular need in the discussion of any of them except those heretofore considered.

"Since the strike there has been complaint that the strikers have been denied the right of free speech and that the treatment by the officers has been brutal and that their treatment in the courts does not accord with the high ideals of American democracy. Officials should not hesitate to prevent meetings called together for the purpose of advocating the overthrow of the government. On the other hand, they ought not to be permitted to prevent men meeting and talking over their grievances and presenting to the men their arguments in favor of joining the union or refraining from joining the union. Incidents have been presented to the committee of the use of unnecessary force by police officers. Probably there will always be abuses in times of excitement, but apparently there have been cases of unoffending men and women arrested without reason by the officers, put into jail and in some cases fined by magistrates without warrant or justification. The action in many instances was such as to lead one side of this controversy to the belief that the officers of the law were acting on the side of the steel company. Such a situation is unfortunate and helps to breed discontent.

"As to the complaint of the action of the courts, we are inclined to believe that there is some ground for complaint and that the action of the magisterial courts in the taking of bonds and the forfeiting of bonds, in the arresting of people merely as suspicious characters and sending them to jail therefor, has not in every instance been justifiable. The courts should be very careful that they are not subject to just criticism for curtailing the rights of defendants.

"The foreigners whom the needs of our industries bring

among us cannot be dragooned into love for America and loyalty to its institutions. Public officials should always be ready to receive sympathetic suggestions for the relief of just complaints or violations of or interference with the legal or humane rights of labor, as well as the insistence upon a protection of the property rights of capital and the preservation of law and order.

V.

"We have thus far discussed the situation as pertaining to the employer and the employee. There is a third party, however, to all of this controversy—the great public. There is no place in this country either for industrial despotism or labor despotism. No one should be permitted to unjustly cause the great body of the public to suffer. Strikes are a relic of industrial barbarism, but at present strikes are apparently the only way for labor to secure even its just demands if employers refuse to grant them or to submit them to arbitration. It is not to the credit of our Nation that no way has been devised to settle these disputes outside of strikes. They are destructive and wrecking to the industrial life of the nation. Somebody has to pay the bill and in every instance it is the public. The public has a right to demand that capital shall not arrogate to itself the right to determine in its own way these industrial questions, and it is the same as to labor, and the duty is upon the Congress as representing the people to provide some means for the adjustment of these difficulties. This was done during the war through the War Labor Board and their action was fairly satisfactory.

"Before suggesting remedies the committee desires to make these observations: A large percentage of the strikers are foreigners. By this we mean unnaturalized citizens. Passing now the question of the responsibility for these men being here, it is suggested that, while America welcomes those who come from foreign shores who desre to become Amercan citizens and enjoy the great liberties and opportunities of American life, yet those who come for the purpose of stirring up trouble against this government and attempting to undermine it and overthrow it should be escorted to the water edge and shipped back to the land from which they came. If the laws are now sufficient such characters should be deported at once. If they are not sufficient Congress should immediately enact laws covering this serious situation. Men who try to destroy a government should not be permitted to appeal to that government to protect them in the processes of destruction.

"Another question closely involved is this: There are in this country working in the factories, mines, and mills thousands of men who can not read, speak, or write the American language. Many do not know and can not know the purposes and ideals of this Government. While in the Government, they are not a part of it. These men must be given the benefit of some education. They must be given the opportunity to learn the American language and start on the road to American citizenship.

Remedies

"While the committee was not under the resolution asked to suggest remedies, it feels it would fall short of its duty if it did not make some suggestions to Congress along remedial lines. Some of the suggestions are not directly involved in the steel strike, but they come to the minds of the committee from the evidence that they have taken and conditions they have observed.

"First. That a board or commission somewhat similar to the War Labor Board should be established. This board to have power of compulsory investigation; to have large power in mediation and conciliation and recommendations; not to the extent of compulsory arbitration, but before this board controversies could be heard, investigations made, and decisions rendered. That pending said investigation and decision no strike should be declared provided no employees are discharged for taking part in the controversy and provided further that all opportunity for the employer to take advantage of the delay has been removed; that the principle of collective bargaining and an 8-hour day should be considered by said board, and recommendations made to labor an industry in relation thereto; that the board should be in the nature of a federal industrial commission, seeking at all times not only to settle pending disputes but to help bring about a more harmonious condition between employer and employee.

There is good sense enough among the great body of the American people to bring about an adjustment of these difficulties. The great body of the American people believe in a liberal industrial system, in living wages for men employed in industry; wages that will permite them to raise their families according to the standards of American life and to enjoy recreation from hard, grinding toil; but the American people have no patience and will have none with any leadership that seeks to accomplish its purposes by barbarous methods of freezing or starving the American people. On the other hand, they are as much opposed to an autocracy of capital. Capital must be reasonable likewise. The employer must recognize that there is a new spirit in the world; that labor is not content to be merely a hewer of wood and a drawer of water, and that labor is fighting for a status in industrial life, and it is not concerned merely with wages.

"Why can not capital and labor co-operate and establish between themselves the doctrine of the square deal; cease to be suspicious of one another, join together and act together for the good of each other and for the well-being of the public at large? It is the hope of the world that military warfare has ceased. Have we not reason also to hope and insist that industrial warfare may cease? It can not without a spirit of mutual co-operation between capital and labor.

"Second. That an Americanization bill be passed by the Congress which will provide for the effective education and Americanization of the illiterate foreigners and native illiterates in this country. A bill of this kind has already been reported out of this committee and your committee urges an early adoption of the same by Congress.

"Third. It is observable in the strike districts that the men who own their homes are more contented and more interested in the affairs of the country. One real antidote for unrest in this country is home ownership. The work of the steel companies in building homes has been most commendable. It would not be out of place to suggest that it would be most commendable for the steel companies to use some of their large profits in extending the work of home building.

"Fourth. There should be a change in our naturalization laws which will require the naturalization and some education of all foreigners, at least to the extent of speaking the American language; that they should acquire such knowledge within a period of five years after they arrive, with proper limitations upon further immigration, giving to those already here a certain period of time in which to become naturalized, and if this is not done then deportation should follow.

"Fifth. An effective law should be passed dealing with anarchists, revolutionists, and all who would destroy the American government. There are too many Americans who love their country and are willing to give their life for it and who intend that all the doors of American opportunity shall remain open for the children of to-day and the children of to-morrow to permit a few thousand anarchists, revolutionists, and I. W. W.'s to keep on with their nefarious propaganda to destroy the government."

A Standard Gage Cane Train Backing Into the Mill.

Cuba's Sugar Cane Railways a Large Market*

The Importance and Extent of the Sugar Plantation Lines. Possibilities for Improvements

By John P. Risque

Part II. Locomotive Specialties and Supplies

IT WAS POINTED OUT, in the first article, that certain locomotives on a sugar plantation traveled on main lines in search of cane remote from the mill. In every *ingenio* where such engines are used, they are designated as locomotives for the "*linea principal.*" They are required to conform to regulations which govern the operation of all locomotives on the main lines and as such will be found relatively "up to date." Conditions allowed on an interior or strictly plantation engine cannot "get by" on the main line. Air brake equipment, coupler heights, packing, headlights, etc., are all expected to comply with the main line requirements.

Probably the most popular locomotive specialty in Cuba is the electric headlight. The *administrador* likes them because "they make day out of night" and facilitate night loading of cane. This advantage really seems to outweigh that of the increased safety and consequent efficiency of operation of the entire train and crew which the use of the electric headlight makes possible. Brick arches in some of the recent arrivals are respected as long as the supply of bricks holds out. Injectors and lubricators are pets by their various names, and blow-off cocks might as well be removed as far as the benefits accruing from their use are concerned. Superheaters are numerous and sufficiently abused and neglected to make their use a questionable economy, except where they are properly handled. In these rare cases their comparative showing makes them priceless. Front ends are watched carefully, owing to the frequency and disastrousness of cane fires.

Frequent cause of complaints regarding the introduction of specialties of all kinds from the United States is found in the persistence with which some manufacturers circularize their clients with English literature and instructions which are understood by all but about 95 per cent of the population. Coal, which was burned almost universally up to 1914, has now arrived at the prohibitive price stage and oil is taking its place. Conversions are now being made in large numbers, both on plantation and main lines, and it is expected that all of the locomotives on the island will eventually burn oil.

Cane Cars

This is a study in itself. To the uninitiated a cane car is merely a cane car, even though he recognizes that some have the top hung doors at the end and others at the side. On a plantation, however, the type of car and the name of the prospective builder of the next bunch of cars to be ordered is almost as interesting a topic of discussion as an argument about the qualifications of the next presidential candidate. End dump cars have no partitions. The cane is dumped through the top hung swinging gate or door at the end of the car when it is tipped up on end by the dumping platform at the mill. Side dumpers are partitioned in two or three compartments and are equipped with gates hung on the top rail on the side. As the car is tipped,

*This is the second of these articles on the sugar plantation railways of Cuba. The first appeared in the *Railway Age* of October 17, 1919.

the gates are released by latches at the bottom. In primitive wooden types, stakes only are used, the stakes being released one at a time by an individual stationed at the receiving hopper of the mill, who strikes the catches open with a wooden maul. Cars with no doors are unloaded by chains swung around the load and lifted by a hoist.

Practically all standard gage cane cars are equipped with automatic couplers and some have air brake equipment. Some of the narrow gage cars are of steel and have automatic couplers. Wooden narrow gage cars are mostly link and pin equipped; some have chains and some a home-made car coupling, and practically none have air equipment—nor is it required. Thefts of waste and oil are prevented in some cases by the use of patent journal boxes, whose lids can be locked securely by a socket wrench, and in the other extreme, thousands of journals are ruined annually through negligence and allowing journal box lids to be lost.

Cane Car Capacities

The *"linea principal"* is a transporter of cane in tremendous quantities, not only for plantations that have no rolling stock of their own, but for those which have overtaxed or insufficient and inefficient locomotives and cars. Privately owned cane cars have followed the main line constructional practices and circulars sent to *ingenios* by them in advance of the annual crop, outlining regulations for loading and charges, are effective in the matter of capacities. The average standard gage cane car is built to accommodate from 20 to 30 tons of cane; the narrow gage cars from 7 to 15 tons.

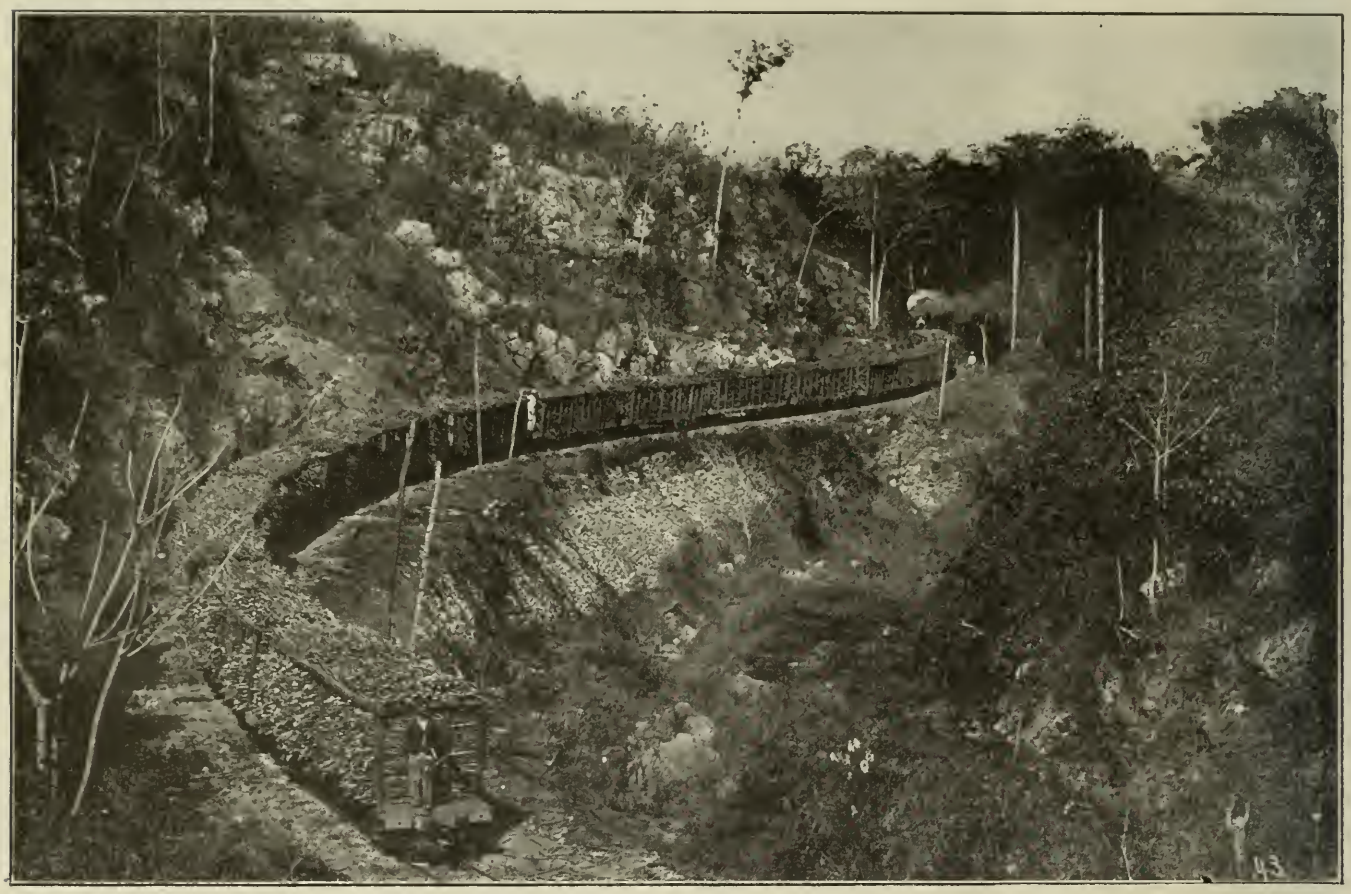
Sugar (box) cars and molasses (tank) cars are found on some plantations, but the main lines have handled a majority of the business.

Owing to the comparative shortness of the season of traffic and the low average speeds of trains, the roadbed of a cane railroad gets but little attention. Second-hand rails of from 50 to 70 lb. are used and are spiked to ties mostly secured from the United States. Stub switches are almost universal and answer the requirements. Bridges are of wood, culverts of corrugated iron or concrete. An overgrowth of weeds on the track is not discouraged in the least and aside from disguising a possible defect in the rails, does not seem to interfere with traffic.

Locomotive Repair Facilities

The average *ingenio* is conspicuously devoid of anything of the kind. A cinder pit or two which facilitates getting underneath the locomotive when the pit is not full of ashes or flooded with water may be found here and there, and it is said that there are one or two mills on the island which have locomotive shops equipped with cranes. If these buildings are not stored with bags of sugar instead of locomotives they are magnificent exceptions to the rule. Compared with the degree of efficiency attained by a cane mill which, extracting every particle of juice from the cane, returns the dry remains of what was once a stalk to the fireboxes of the mill's boilers, the science of the *ingenio's* transportation of its cane is in its infancy and the fact is recognized by competent engineers. This refers particularly to the neglect of locomotives and cars which compares with the treatment accorded binders and reapers by our own farmers; expensive machinery that is left to rust in the open fields from one harvest's end to the beginning of the other.

A large combination of sugar mills and plantations with over 1,200 kilometers of railway, owns 125 locomotives (and more than 4,500 cars), but possesses but one locomotive shop—merely a shed—at a mill where there are 16 locomotives. Plans have been reported under consideration for



A Cane Train En Route to the Mill

a locomotive shop, but demands for other equipment evidently supersede it. At another important mill belonging to this concern the rafters of a leaky wooden roof permit of the jacking up of but one engine at a time. There are seven large engines at that point. Before another locomotive can be jacked up by hand the first one must be rewheeled and moved. The nearest approach to anything like efficiency in the maintenance and repair of these 125 locomotives occurs at a mill where the eight standard gage locomotives can during the repair season be accommodated on temporarily laid tracks in the entrance of the mill whose crane runway is sufficiently extended to permit the lifting of entire locomotives and the handling of parts by the electric crane, whose principal function is intended to serve the mill's engines and other machinery. These "facilities" are more probably the result of accident than foresight.

Driving wheels loaded on flat cars can be seen en route during the repair season, bound for public repair shops located in the various towns. To the cost of having this work done on the outside, must be added the cost of loading, transportation, and unloading, with the assumption of the risk of late or non-deliveries which are known to accompany the performance of contract jobs. A sugar cane company, attracted by the apparent economies of reclaiming locomotive and stationary boiler tubes, sent an engineer to the states to make a thorough study and report on tube welding apparatus. His report resulted in the outright purchase and the installation of an elaborate and costly plant, which, when last seen, was stored with bags of sugar. Tubes are now being safe-ended on most plantations in the primitive manner of the blacksmith and the anvil; they do a good but costly job.

A constant source of irritation and excessive cost, incident to the overhauling of Cuba's cane engines, is the locomotive repair gang's entire dependence upon the mill's general machine shop. Ordinarily, it would appear to one who had not been compelled to struggle with the problem that the array of tools encountered in the shop of the average *ingenio* should be ample to take care of all the work—including that of the locomotives, whether there are two or ten. In some cases, even an engineer might be able to stretch his imagination sufficiently to conclude that the equipment was adequate. The mere physical existence, however, of an elaborately equipped machine shop for the care and repair of the mass of complicated machinery with which a sugar mill is equipped does not mean that the locomotive repairer will get a run for his money, for the mental attitude on this subject, from the standpoint of the manager, is "mill first—other repairs afterwards." Consequently, and obviously, if the machine room becomes crowded with mill work—as it usually does and stays that way—locomotive work gets the traditional Chinaman's chance.

The chief engineer of the mill thinks in terms of rolls and pumps and evaporators. Last minute pressure under threat of incomplete locomotives for the coming crop may direct his mind in temporary favor of the latter. Not infrequently the cost of transporting the cane to the mill is enhanced by the distant trudge in the mud from the repair track to the machine shop, often with heavy parts. One of the easiest calculations to make is that involving the possible tremendous savings in the cost of hauling sugar cane to mills, by the installation of necessary locomotive repair facilities—nothing elaborate, just plain but ample back shop facilities.

Celebrating the Completion of a Record Crop. Locomotives Are Accorded Honors, but Not Adequate Facilities

Labor

Wages and costs have increased in Cuba in the same proportion as they have in all other parts of the industrial world and the wages paid to competent locomotive repairmen and runners are no exception. In fact, the situation was rather aggravated by the exodus of Cuban workmen in great numbers to the well paying munition plants of the United States during the war. Spanish and Cuban workmen are competent, intelligent, and as a rule take pride in their work. On a small plantation a locomotive foreman will run an engine during the crop. On a large plantation he will generally supervise locomotive service during the *Zafra,* and his first-class machinists are engineers of the *"linea principal"* engines, second grade mechanics are runners of interior cane engines and helpers make good firemen for both. The plantation main line engineers are certified by examinations which they are required to pass before they can venture out of the mill yard onto the public lines.

The prevalence of unsatisfactory locomotive results in

many localities due to the principal contentions of this article—lack of facilities for proper repairs—has encouraged the growth of public repair shops which thrive in the various towns of the sugar belt. They take on all kinds of work for which the *ingenio* is unprepared, including general locomotive repairs, as well as the construction of complete boilers and fireboxes, or the attachment and fitting up of new fireboxes from the states—a frequent method of renewing a firebox. These shops are, as a rule, well equipped with modern facilities. Some of them have first-class pattern shops and foundries in connection, and a thorough inspection of Cuba's repair facilities would not be complete if it did not include the visiting of these several busy shops. Some of them are of considerable size and still growing, and are continually adding tools to their equipment.

The Zafra

Like the packers who claim to have capitalized every available product but the squeal from the carcasses of their

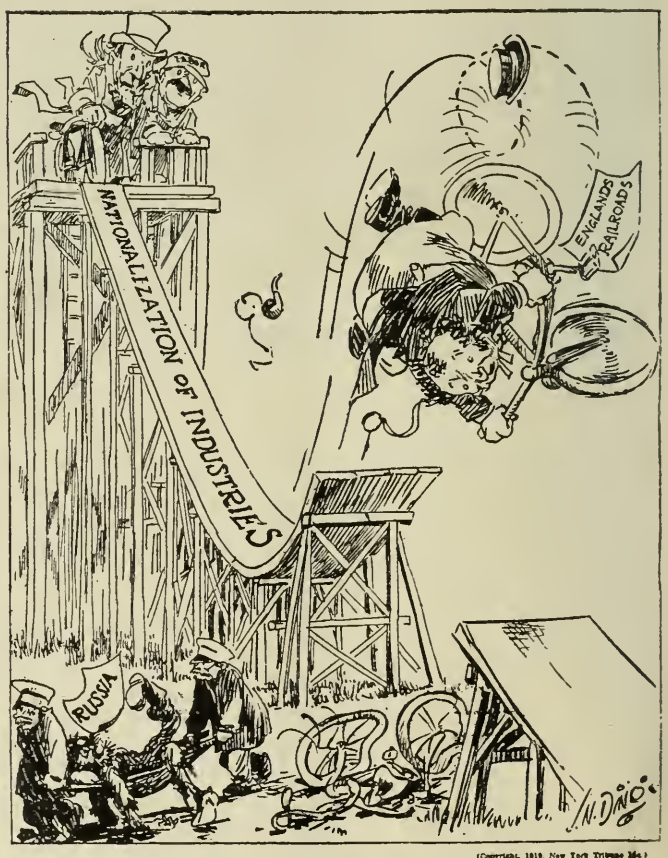
The Stake Opener with His Maul

animals, the cane mills make efficient use of every inch of the stalk which enters their hungry hoppers. In transporting the cane from the fields to the mill, however, there is vast room for improvement; there are "squeals" and other items that could well be saved and utilized. The railways and their equipment are the "ties that bind" the mills to their customers, the *colonos*. The latter are the colonizers—the actual cane growers—some of whom own their own fields, others of whom rent the fields and sell their cane to their favorite mill. Whatever the financial arrangement between the mill and the *colono*, the one is as dependent upon the other as both are dependent upon daylight. The cane railroad is their line of communication, regardless of the distance the *colono* may be from a mill; if the latter's cane is famous for its high yield, a little matter of 60 or 70 kilometers will not interfere in the least with a mill's endeavor to please that particular patron.

Along about December 1, *colonos* commence to notify the mill that their cane is ready to grind and that they want cars—and from that moment the annual cane transportation struggle is on. If the mill depends upon the main lines for locomotive and car service it is generally well served.

Equipment and Track Slightly Out of Date

Its requirements will have generally been considered in advance by all of the machinery of a well organized staff and equipment. When the call comes, trains are ready. If, however, the *"central"* is to fight the battle alone with its own material *rodante* the *colono's* luck will depend upon the *central's* progress in the repairs of its rolling stock previously referred to, or on the delivery from the contract shop.



Seems As If It Might Be a Good Idea for Us to Wait and See How Those Who Have Tried It Like It

Effective Methods of Reducing the Coal Bill

How Transportation Department Officers Are Promoting Fuel Conservation and Improving Operation

By H. C. Woodbridge
Supervisor Fuel Conservation Section, Division of Operation, U. S. Railroad Administration

THE COST OF FUEL placed on locomotives constitutes almost, if not quite, as great a transportation department expenditure as the now disturbing matter of wages. The growing cost of fuel and the national need for making the best possible use of the available supply has led to an appreciation of this fact by operating officers, many of whom formerly gave the problem the most perfunctory consideration, and they are now effectively promoting fuel economy. The methods being used vary considerably. All have for their purpose the enthusing of the whole operating organization to produce effective co-operative effort.

Enginemen, trainmen, despatchers and others experienced in the handling of trains are proud of their ability. Like all Americans, they enjoy fair tests of their skill and are keen enough and broad enough to improve their own methods from the experience of others. Furthermore, being human, commendation does not go amiss with them.

One way in which effective use of these principles has been made is shown by the two bulletins issued by R. T. Morrow, superintendent of the Pittsburgh division of the Pennsylvania. General Notice No. 57 reads as follows:

"During the week ending July 19, 1919, trips were made over the division in through passenger service on the number of shovelsful of coal as shown below:

Train number	Number of cars	Time made up	Number of shovelsful
2	9	..	389
2	10	20	441
601	7	6	323
601	8	8	331

"In freight service trips were made as follows:

Engine number	From	To	Number of cars	Adjusted tons	Number of shovelsful
1197	Pit.	Alt.	46	2490	1127
3641	Pit.	Alt.	50	2520	810
608	Cgh.	Wilmore	54	3210	163
1582	Cgh.	Wilmore	43	3100	163

"Why should a fireman with 46 cars, 2,490 tons, burn 317 shovelsful more coal passing over the same territory than a fireman with 50 cars, 2,520 tons? Likewise, why should a fireman with 43 cars, 3,100 tons, burn as much coal as another fireman with 54 cars, 3,210 tons?

"It is gratifying to note the improvement with stoker-fired locomotives. Recently a number of stoker-fired locomotives have been noticed making but very little smoke. This is indicative of efficient operation of the stoker by the firemen.

"Avoid making black smoke and blowing off at safety valves.

"Never work the locomotive harder than necessary to haul the train at the desired speed.

"Never place more fuel on the fire than is necessary to maintain the required steam pressure.

"The least amount of coal consumed, the least amount of work for the fireman.

"Pull together.

"Team work counts."

General Notice No. 58 presents a comparison of the locomotive fuel consumption per 1,000 gross ton miles in freight service and per passenger train car-mile in passenger service for the roads in the Allegheny region during the month of May, 1919, and closes with the following comment:

"The very satisfactory performance on the Pennsylvania Railroad, Lines East, in both passenger and freight service, as compared with other roads in the Allegheny region, is indicative of the efforts made by our enginemen, firemen and others who have to do with fuel conservation. They are to be congratulated as well as encouraged to still better the results, as we have a few competitors who have shown a better performance. Every effort should be made to continue to improve on the results we have thus far obtained."

These bulletins indicate very clearly that efforts to secure interest and added effort in the promotion of fuel economy need not be stereotyped. Some specific facts typical of everyday occurrences may be presented in such a way that a new interest is created in its significance, with the result that personal pride in accomplishing good work and the competitive spirit are aroused and fostered.

The following extracts from another bulletin issued by a division superintendent are also examples of the effective use of what might be considered unimportant occurrences in every-day railway operation:

"An engineman and fireman on a local passenger train . . . made seven successive eastward trips without permitting steam to blow off at the safety valve. This is a commendable performance.

"A short time ago there was a noticeable improvement in the emission of smoke from freight locomotives, but at present the black smoke of these locomotives seems to be on the increase. We dislike very much for the firemen to lose their reputation and trust an improvement will be effected."

Another bulletin issued by a superintendent is significant, in that it points out the effect of unfavorable operating conditions and of failure to maintain a locomotive in good condition, not in an academic way, but with concrete evidence on which to base the comment. This reads as follows:

"During the week ending August 2, 1919, trips were made over the division (on the same run in each case) in through passenger service on the number of shovelsful of coal as shown below:

Number of cars	Time made up	Number of shovelsful	Pounds of coal
10	..	368	7,728
10	4	385	8,085

"The above is very good work. The difference in the coal consumption was due to making up four minutes. This emphasizes the importance of giving the trains clear distant and home signals whenever possible and avoiding unnecessary slowdowns and stops.

Number of cars	Time made up	Number of shovelsful	Pounds of coal
9	..	311	5,598
9	..	386	8,106

"The difference in coal consumption was due to leaking superheater units, which resulted in the engine not steaming properly. This increased coal consumption emphasizes the importance of maintaining the superheater and otherwise keeping the engine in good steaming condition.

Number of cars	Time made up	Number of shovelsful	Pounds of coal
5	..	198	4,158
5	..	200	4,200

"This illustrates the result of competitive, skillful and co-

operative work on the part of the enginemen and firemen.

"In freight service trips (in the same direction) were made as follows:

Time consumed	Number of cars	Adjusted tons	Number of shovelsful	Pounds of coal
5 hrs. 20 min.	100	2,400	835	15,030
6 hrs. 11 min.	100	2,400	915	16,470

"The tonnage was the same, but the latter train, while it made a good run, met with delay. This emphasizes the fact that a free movement is always in the interest of fuel economy."

Another method which has been used to great advantage is the conducting of competition between divisions on the same system. Such competitions have been carried out between some of the divisions on the western lines of the Baltimore & Ohio, with the result at the end of May, 1919, that Superintendent Stevens of the New Castle division issued a bulletin to all employees of the division congratulating the enginemen and all others who contributed to the excellent showing which had been made during the month of April, and closing thus:

"On the strength of this I have challenged the superintendent of the Chicago division for a fuel contest for the month of June, and in order to have this division ahead of the Chicago division, it will be necessary for all of us to do our utmost to conserve fuel. This applies not only to the men handling the trains, but to sectionmen, mechanical men at terminals, train despatchers, operators and all others.

"I have been assured by both road foremen of engines that there will be no question but that we will beat the Chicago division. However, it will require everyone's efforts to do this. I know that you are as much interested as I am and very anxious to see what you can accomplish."

The challenge was accepted by Superintendent Jackson of the Chicago division. At the close of the contest the fuel accounting on each division was carefully checked by auditors from the general office, and a decision was rendered as follows:

Pounds of Coal

	Per 1,000 G. T. M.	Per passenger car mile	Per switch engine mile
New Castle division	145.6	11.14	95.2
Chicago division	114.7	10.98	125.5

On this basis the Chicago division won, but as regards the amount of coal consumed per unit of work done the New Castle division showed greater improvement during the month in question, as compared with the corresponding month of 1918, than was shown on the Chicago division, the comparison being as follows:

Percentage of Improvement
June, 1919, as compared with June, 1918

	Freight	Passenger	Switching
New Castle division	6.28	22	16
Chicago division	8.52	16	3.6

On this basis the New Castle division saved $1,000 more than was saved on the Chicago division.

Some conception of the interest which was taken in this contest and its effect on locomotive performance may be gained from the results of a trip made on the New Castle division on the last day of the contest. The locomotive was of the Mikado type, stoker-fired, having a tractive effort of 54,600 lbs. The complete trip of 147 miles westward and 60 miles eastward was made on three tons less than one full tank of coal.

	Westbound	Eastbound	Total and average
Locomotive-miles	147	60	207
Gross ton-miles in hundreds	3,776	1,728	5,504
Pounds of coal consumed	23,000	9,000	32,000
Pounds of coal per 1,000 gross ton-miles, actual	60.91	52.08	58.14
Total time on road	9 hrs.	3 hrs. 55 min.	12 hrs. 55 min.
Actual running time	7 hrs. 45 min.	2 hrs. 35 min.	10 hrs. 20 min.
Loaded cars in train	19	64	83
Empty cars in train	79	0	79

The competitive spirit still running high, the Chicago division on July 3 ran an engine of the same class a round trip in tonnage service on one tank of coal, with about 1½ tons remaining on the tender at the end of the round trip of 256 miles. The performance was as follows:

	Westbound	Eastbound	Total and average
Locomotive miles	128	128	256
Actual gross ton-miles in hundreds	3,950	2,778	6,728
Pounds of coal consumed	17,500	17,560	35,000
Pounds of coal per 1,000 gross ton-miles, actual	44.3	63.0	52.02
Scoops fired by hand	7	7	14
Number of times safety valve was raised	1	0	1
Time on road, total	6 hrs. 36 min.	5 hrs. 11 min.	11 hrs. 47 min
Loaded cars handled in train	70	2	72
Empty cars handled in train	1	97	98

Not at all daunted by this exceptional performance, another similar test was arranged by the superintendent of the New Castle division. This is considered one of the best performances ever made by a stoker-filled locomotive. The engine, a Mikado, having a tractive effort of 50,200 lb., stoker-fired, was run a round trip of 294 miles on one tank of coal, producing a gross ton-mileage of 807,300, with three tons remaining on the tender at the completion of the round trip. The data for this round trip is as follows:

	Westbound	Eastbound	Total
Locomotive-miles	147	147	294
Actual gross ton-miles in hundreds	4,364	3,709	8,073
Pounds of coal consumed	16,000	16,000	32,000
Pounds of coal per 100 gross ton-miles	36.66	43.14	39.64
Number of times safety valve was raised	0	0	0
Grates shaken and hook used	0	0	0
Total time on road	8 hrs.	9 hrs.	17 hrs.
Actual running time	6 hrs. 40 min.	7 hrs. 1 min.	13 hrs. 41 min.
Loaded cars handled in train	50	32	82
Empty cars handled in train	2	50	52

A fuel performance contest between the New Castle division and Illinois divisions was conducted during the month of August, and arrangements are being made for other similar competitions between divisions on both the Baltimore & Ohio Eastern and Western Lines.

Relation of Coal Consumption to Other Operating Economies

Philadelphia & Reading officials, impressed by the results of tests which showed that the coal consumption was increased by from 500 to 1,500 lb. for each stop of a full tonnage freight train, in March started an intensive campaign for the purpose of eliminating every unnecessary stop or slow down in freight train movements.

Performances on the various runs were carefully investigated, and in many instances opportunities were found to put into effect adjustments and modifications of operating practices which have resulted in a material improvement.

Many suggestions of value were obtained from engine and train crews, and these suggestions were given such consideration that most satisfactory co-operation developed. Open meetings with engine and train men were addressed by superintendents, chief despatchers and others, and improper practices were brought to light and corrected as a result of these meetings.

Arrangements to start freight trains at opportune times were put into effect, and the crews on many of these trains were given proposed schedules, consisting simply of a series of marks to aim at. The men were allowed "to get over the railroad" on these runs, and some most gratifying movements were made, clearly indicating the possibilities of which the officers have taken advantage.

Suitable bulletins showing the proposed and actual running time of trains aroused interest on the part of all who were concerned in train movement, and the despatchers have been greatly assisted by information and recommendations

sent in by wire from engine and trainmen en route. Commendatory letters from superintendents have encouraged co-operation and individual effort.

That the results obtained were real and decidedly substantial is shown in the table giving the results for the weeks ending June 7 and August 23, of the average time on the road and the cars and tons moved on several typical runs on the Reading division:

That the two periods are fairly comparable is evident from the fact that the freight tonnage movement was only approximately six per cent less in 1919 than in 1918 for the weeks shown. The effect on fuel consumption has been very marked, although an exact comparison of the two periods in this respect is impossible, due to the lack of fuel statistics for last year. Furthermore, the results have demonstrated the fact that whether such efforts in the operating department are directed primarily toward the end of saving fuel or to improve operating conditions, the results are the same. Fuel economy and good operation are synonymous terms.

COMPARISON OF TYPICAL RUNS SHOWING AVERAGE TIME ON THE ROAD AND CARS AND TONS HANDLED.

Between	Distance in Miles		Week Ending June 7				Week Ending August 23			
			Average Time		Average Haul		Average Time		Average Haul	
			Hours	Mins.	Cars	Tons	Hours	Mins.	Cars	Tons
Wyomissing Jct. to Phila.	60	1918	6	47	77	4280	6	45	77	4210
		1919	4	58	77	4581	5	22	78	5039
Phila. to Wyomissing Jct.	60	1918	6	15	71	2158	7	41	69	1775
		1919	4	58	80	1993	3	50	75	2170
Tamaqua to Manayunk	91-5	1918	10	27	61	3733	9	41	69	4130
		1919	7	11	74	4089	7	29	72	4504
St. Clair to Manayunk	91-5	1918	10	15	58	3689	9	53	63	4197
		1919	7	58	81	5419	8	02	77	5159
St. Clair to Bridgeport	78-8	1918	9	57	66	4255	9	32	69	4548
		1919	6	23	80	5470	5	56	80	5609
Manayunk to Tamaqua	91-5	1918	11	30	51	1589	11	29	59	1598
		1919	8	11	74	2032	7	40	70	2068
Manayunk to St. Clair	91-5	1918	10	36	59	1255	9	42	66	1426
		1919	7	48	81	1760	7	42	84	1850
Bridgeport to St. Clair	78-8	1918	10	42	59	1287	8	09	60	1272
		1919	4	57	87	1962	7	17	88	1922

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Scenes from Foreign Ports—Calloa, Peru

National Agreement for Maintenance of Way Employees

A national agreement covering rules and working conditions for employees represented by the United Brotherhood of Maintenance of Way Employees and Railway Shop Laborers has been signed between the director general and the officers of that organization, effective December 16, and to continue in force during the period of federal control. The request for revised rules and working conditions for these employees was made 10 months ago and has since been under consideration by a committee representing the regional directors and the employees and by the Board of Railroad Wages and Working Conditions. It has been understood for months that this agreement would be made effective prior to the end of federal control.

The agreement covers rules upon seniority, discipline, etc., and provides that there will be no change in the agreement during the federal operation until after 30 days' notice has been given by either party. Overtime for regular section laborers and other employees in this classification, except laborers in extra or floating gangs whose employment is seasonal and temporary in character, and certain employees whose positions do not require continuous manual labor, will be paid on the basis of time and one-half after the eighth hour of continuous service, exclusive of the meal period, thus applying the same principle which was established last year for important classes of railroad workers.

Heretofore such maintenance employees have been paid overtime at pro rata rates for the ninth and tenth hour and time and one-half after the tenth hour. Under the agreement laborers in extra or floating gangs whose employment is seasonal or temporary in character will be paid overtime at a prorata rate for the ninth and tenth hour and time and one-half after the tenth hour, whereas employees holding positions not requiring continuous manual laber such as track, bridge and highway crossing watchmen, signalmen at railway non-interlocked crossings, lampmen, engine watchmen at isolated points and pumpers will continue to be paid for their present hours of work a monthly rate equal to their present pay.

The following is the text of the national agreement:

Article I—Scope.

These rules govern the hours of service and working conditions of all employees in the Maintenance of Way Department (not including supervisory forces above the rank of foremen and not including the Signal, Telegraph and Telephone Maintenance Departments), shop and roundhouse laborers (including their gang leaders), transfer and turntable operators, engine watchmen, pumpers and highway crossing watchmen, except the following:

a. Employees provided for in the national agreement with the mechanical crafts, dated September 20, 1919.

b. Clerical forces and other employees provided for in Articles I and II, Supplement No. 7, General Order No. 27.

c. Boarding car and camp employees provided for in Supplement No. 18, to General Order No. 27.

They supersede all rules, practices and working conditions in conflict therewith.

It is understood that this agreement does not annul agreements already in effect with other organizations unless and until a majority of the employers concerned express a desire for a change.

Article II—Seniority.

Section (a) Seniority begins at the time the employee's pay starts.

(b) Rights accruing to employees under their seniority entitle them to consideration for positions in accordance with their relative length of service with the railroad, as hereinafter provided.

(c-1) Seniority rights of all employees are confined to the sub-department in which employed.

(c-2) Except as provided in Section (d) of this article and in Section (h), Article III, when force is reduced the senior men, in the sub-department, on the seniority district, capable of doing the work shall be retained.

(d-1) Seniority rights of laborers, as such, will be restricted to their respective gangs, except that when force is reduced laborers affected may displace laborers junior in service on their seniority district.

(d-2) Seniority rights of laborers to promotion will be restricted to the territory under the jurisdiction of only one supervisor or other corresponding officer, except that for laborers in the Mechanical Department, such rights will be confined to the place where employed.

(e) Seniority rights of employees of higher rank than laborers to new positions or vacancies will be restricted to the territory over which one superintendent, one division engineer, or one master mechanic, has jurisdiction. When force is reduced, foremen will have the right, before displacing other employees, to displace only foremen with the least seniority rights on their respective seniority districts.

(f) employees assigned to temporary service, may, when released, return to the position from which taken, without loss of seniority.

(g) Seniority rosters of employees of each sub-department by seniority districts, will be separately compiled. Copies will be furnished foremen and employees' representatives and be kept at convenient places available for inspection by employees interested.

(h) Seniority rosters will show the name and date of entry of the employees into the service of the railroad, except that names of laborers will not be included and their seniority rights will not apply until they have been in continuous service of the railroad in excess of six (6) months.

(i) Rosters will be revised in January of each year and will be open to correction for a period of sixty (60) days thereafter.

(j) Employees given leave of absence in writing by proper authority of the railroad, for six (6) months or less, will retain their seniority. Employees failing to return before the expiration of their leave of absence will lose their seniority rights, unless an extension has been obtained.

(k) When employees, laid off by reason of force reduction, desire to retain their seniority rights, they must file with the officer of the sub-department notifying them of the reduction, their address, and renew same each sixty (60) days. Failure to renew the address each sixty (60) days or to return to the service within seven (7) days after being so notified, will forfeit all seniority rights.

(l) Employees temporarily transferred by direction of the management, from one seniority district to another, will retain their seniority rights on the district from which transferred.

(m) In case of change in seniority districts, a relative proportion of the total employees affected will be transferred to and their seniority rights adjusted in the revised districts, by the management, with a properly constituted committee representing the employees.

(n) Employees accepting positions, in the exercise of their seniority rights, will do so without causing extra expense to the railroad, except as provided in these rules.

Article III—Promotions.

Section (a) Promotions shall be based on ability, merit and seniority. Ability and merit being sufficient, seniority shall prevail; the management to be the judge.

(b) In transferring employees to fill vacancies or new positions, the provisions of section (a) of this article will apply.

(c) Employees are entitled to promotion, only on the district and in the sub-department, over which their seniority rights prevail.

(d) Employees declining promotion shall not lose their seniority, except to the employee promoted and only in the next higher rank of service.

(e) Employees accepting promotion and failing to qualify within thirty (30) days, may return to their former positions.

(f) New positions and vacancies will be bulletined within thirty (30) days previous to or following the dates such vacancies occur, except that temporary vacancies need not be bulletined until the expiration of thirty (30) days from the date such vacancies occur.

(g) Promotions to new positions or to fill vacancies will be made after bulletin notice has been posted for a period of ten (10) days at the headquarters of the gangs in the sub-department of employees entitled to consideration in filling the positions, during which time employees may file their applications with the official whose name appears on the bulletin. The appointment will be made before the expiration of thirty (30) days from the date the bulletin is posted and the name of the employee selected will then be announced. New positions or vacancies may be filled temporarily, pending permanent appointment.

(h) The general rule of promotion and seniority will not apply to positions of track, bridge and highway crossing watchmen and signalmen at railway (non-interlocked) crossings, but, when practicable, such positions will be filled by incapacitated employees from any department and preference in filling and retaining these positions will be determined by the degree to which incapacitated for other work, seniority in the service of the railroad and ability to perform the work.

Article IV—Discipline and Grievances.

Section (a) Employees disciplined or dimissed will be advised of the cause for such action, in writing, if requested.

(b) An employee disciplined or who feels unjustly treated, shall upon making a written request to the immediate superior within ten (10) days from date of advice, be given a fair and impartial hearing within ten (10) days thereafter and a decision will be rendered within twenty (20) days after completion of hearing. Such employee may select not to exceed three employees to assist at the hearing.

(c) A transcript of an employee's evidence, when taken in writing, will be furnished only to such employee upon verifying and signing them.

(d) A copy of all the evidence taken in writing at the hearing will be promptly made available for use of a properly constituted committee, when required in handling cases on appeal, of which notice has been given in accordance with section (e) of this article.

(e) an employee dissatisfied with a decision will have the right to appeal in succession up to and including the highest official designated by the management to handle such cases, if notice of appeal is given the official rendering the decision within ten (10) days thereafter. The right of the employee to be assisted by duly accredited representatives of the employee is recognized.

(f) If the charge against the employee is not sustained, it shall be stricken from the record. If by reason of such unsustained charge, the employee has been removed from position held reinstatement will be made and payment allowed for the assigned working hours actually lost, while out of the service of the railroad, at not less than the rate of pay of position formerly held on or for the difference in rate of pay earned, if in the service.

(g) Prior to the assertion of grievances as herein provided, and while questions of grievances are pending, there will neither be a shutdown by the employer, nor a suspension of work by the employees.

(h) Employees serving on committees, on sufficient notice, shall be granted leave of absence and free transportation, for the adjustment of differences between the railroad and its employees.

Article V—Hours of Service, Overtime and Calls.

Section (a-1) Except as otherwise provided in these rules eight

(8) consecutive hours, exclusive of the meal period, shall constitute a day's work.

(a-2) For regular operation requiring continuous hours, eight (8) consecutive hours without meal period may be assigned as constituting a day's work, in which case not to exceed twenty minutes shall be allowed in which to eat, without deduction in pay, when the nature of the work permits.

(a-3) Regularly established daily working hours will not be reduced below eight (8) to avoid making force reductions.

When less than eight (8) hours are worked for convenience of employees, or when regularly assigned for service of less than eight (8) hours on Sundays and holidays, or when, due to inclement weather, interruptions occur to regular established work periods preventing eight (8) hours work, only actual hours worked or held on duty will be paid for except as provided in these rules.

(a-4) Except as otherwise provided in these rules only the hours between the beginning and release from duty, exclusive of the meal period, shall be paid for.

(a-5) Except as otherwise provided in these rules time worked on Sundays and the following holidays: New Year's, Washington's Birthday, Decoration Day, Fourth of July, Labor Day, Thanksgiving and Christmas shall be paid for at the pro-rata hourly rate when the entire number of hours constituting the regular week-day assignment are worked.

On roads where an agreement or practice more favorable to the employees is in effect such agreement or practice, in so far as it relates to this section (a-5) may be retained.

(a-6) Except as otherwise provided in these rules when assigned, notified, or called to work on Sundays and on the above specified holidays, a less number of hours than constitutes a day's work within the limits of the regular week-day assignment, employees shall be paid a minimum allowance of two hours at overtime rate for two hours work or less, and at the pro-rata hourly rate after the second hour of each tour of duty. Time worked before or after the limits of the regular week-day assignment shall be paid for on the actual minute basis at the rate of time and one-half time.

On roads where an agreement or practice more favorable to the employees is in effect such agreement or practice, in so far as it relates to this section (a-6) may be retained.

(a-7) Overtime for laborers in extra or floating gangs whose employment is seasonal and temporary in character, when engaged in work not customarily done by regular section gangs, such as ballasting and rail laying including the tie renewals incident thereto, and ditching or in improvement work such as bank widening, grade and line changes, rip rapping and similar work, shall be computed for the ninth and tenth hour of continuous service, exclusive of the meal period, prorata, on the actual minute basis and thereafter at the rate of time and one-half time. Such extra or floating gangs will not be used to displace regular section gangs.

(a-8) Overtime for regular section laborers and other employees except those covered in Sections (a-7) and (a-12) of this article shall be computed after the eighth hour of continuous service, exclusive of the meal period, on the actual minute basis at the rate of time and one-half time.

(a-9) Except as otherwise provided in these rules, employees notified or called to perform work not continuous with the regular work period, will be allowed a minimum of three (3) hours for two (2) hours work or less, and if held on duty in excess of two (2) hours, time and one-half time will be allowed on the minute basis.

(a-10) Except as otherwise provided in these rules, employees will be allowed time and one-half time, on minute basis for service performed continuous with and in advance of regular work period.

(a-11) Employees who have completed their work period for the day and been released from duty, required to return for further service may, if conditions justify, be paid as if on continous duty.

(a-12) Except as otherwise provided in this section, positions not requiring continuous manual labor such as track, bridge and highway crossing watchmen, signal men at railway non-interlocked crossings, lamp men, engine watchmen at isolated points, and pumpers, will be paid a monthly rate to cover all services rendered. This monthly rate shall be based on the present hours and compensation. If present assigned hours are increased or decreased the monthly rate shall be adjusted pro-rata as the hours of service in the new assignment bear to the hours of service in the present assignment, except that hours above ten (10) either in new or present assignment shall be counted as one and one-half in making adjustments. Nothing herein shall be construed to permit the reduction of hours for the employees covered by this section (a-12) below eight (8) hours per day for six (6) days per week. The wages for new positions shall be in conformity with the wages for positions of similar kind, class and hours of service where created.

Exceptions to the foregoing paragraph shall be made for individual positions at busy crossings or other places requiring continuous alertness and application, when agreed to between the management and a committee of employees. For such excepted positions the foregoing paragraph shall not apply.

(b) No assigned hours will be designated for employees, performing intermittent service, requiring them to work, wait or travel, as regulated by train service and the characttr of their work, and where hours cannot be definitely regulated.

(c-1) Employees' time will start and end at designated assembling points for each class of employees.

(c-2) The starting time of the work period for regularly assigned service will be designated by the supervisory officer and will not be changed without first giving employees affected thirty-six (36) hours notice.

(c-3) Employees working single shifts, regularly assigned exclusively to day service, will start work period between 6 a. m. and 8 a. m.

(c-4) Employees working single shifts, regularly assigned exclusively to part day and part night service, will start work period between 3 p. m. and 6 p. m.

(c-5) Employees working single shifts, regularly assigned exclusively to night service, will start work period between 6 p. m. and 9 p. m.

(c-6) For regular operations necessitating working period varying from those fixed for the general force as per sections (c-3), (c-4) and (c-5), the hours of work will be assigned in accordance with the requirements.

(d-1) When a meal period is allowed, it will be between the ending of the fourth hour and beginning of the seventh hour after starting work, unless otherwise agreed upon by the employees and employer.

(d-2) If the meal period is not afforded within the allowed or agreed time limit and is worked, the meal period shall be paid for at the overtime rate and twenty minutes with pay in which to eat shall be afforded at the first opportunity.

(d-3) Unless acceptable to a majority of the employees directly interested, the meal period shall not be less than thirty (30) minutes nor more than one (1) hour.

(e) To compute the hourly rate of monthly rated employees, the number of working days constituting a calendar year, multiply by eight and divide the annual salary by the total hours, exclusive of overtime and disregarding time absent on vacations, sick leave,; holidays, or for any other cause. In determining the hourly rate, fractions less than one-fourth of one cent shall be as one-fourth of one cent; over one-fourth and under one-half, as one-half cent; over one-half and under three-fourths, as three-fourths; over three-fourths as one cent.

(f) Employees required by the management to travel on or off their assigned territory in boarding cars, will be allowed straight time traveling during regular working hours, and for Sundays and holidays during hours established for work-periods on other days. When traveling in boarding cars after work-period hours, the only time allowed will be for actual time traveling after 10 p. m. and before 6 a. m., and at half time rate.

(g) No overtime hours will be worked without authority of a superior officer, except in case of emergency, where advance authority is not obtainable.

(h) Employees whose responsibilities and or supervisory duties require service in excess of the working hours or days assigned for the general force, will be compensated on a monthly rate to cover all services rendered, except that when such employees are required to perform work which is not a part of their responsibilities or supervisory duties, on Sundays, or in excess of the established working hours, such work will be paid for on the bases provided in these rules in addition to the monthly rate. For such employees, now paid on an hourly rate, apply the monthly rate, determined by multiplying the hourly rate by 208. Section foremen required to walk or patrol track

on Sundays shall be paid therefor, on the bases provided in these rules, in addition to the monthly rate.

(i) Employees temporarily or permanently assigned to duties requiring variable hours, working on or traveling over an assigned territory and away from and out of reach of their regular boarding and lodging places or outfit cars, will provide board and lodging at their own expense and will be allowed time at the rate of ten (10) hours per day at pro-rata rates and in addition pay for actual time worked in excess of eight (8) hours on the bases provided in these rules, excluding time traveling or waiting. When working at points accessible to regular boarding and lodging places or outfit cars, the provisions of this rule will not apply.

(j) Regular section laborers required to report at usual starting time and place for the day's work and when conditions prevent work being performed, will be allowed a minimum of three (3) hours. If held on duty over three (3) hours, actual time so held will be paid for.

Employees whose regular assignment is less than three (3) hours, are not covered by this rule. (This paragraph is to cover regular assignments such as care of switch lamps or other duties requiring short periods on Sundays or other days for special purposes.)

(k-1) Where special work is done outside of regular work period and extra compensation agreed upon, overtime will not apply.

(k-2) Employees will not be required to suspend work, after starting any daily assigned work period, for the purpose of absorbing overtime.

(l) Gangs will not be paid off for short periods when proper reduction of expenses can be accomplished by first laying off the junior men.

(m) Employes not in outfit cars will be allowed straight time for actual time traveling by train, by direction of the management, during or outside of regular work period or during overtime hours, either on or off assigned territory, except as otherwise provided for in these rules. Employees will not be allowed time while traveling, in the exercise of seniority rights or between their homes and designated assembling points or for other personal reasons.

(n) In emergency cases, employees taken off their assigned territory to work elsewhere, will be furnished meals and lodging by the railroad, if not accompanied by their outfit cars. This rule not to apply to employees customarily carrying mid-day lunches and not being held away from their assigned territory an unreasonable time beyond the evening meal hour. This rule will also not apply to employees temporarily transferred under Section (1), Article II.

(o) Employees taken away from their regular assigned duties at the request of the management, to attend court or to appear as witnesses for the railroad, will be furnished transportation and will be allowed compensation equal to what would have been earned had such interruption not taken place, and, in addition, necessary actual expenses while away from headquarters. Any fees or mileage accruing will be assigned to the railroad.

(p) An employee working on more than one class of work on any day, will be allowed the rate applicable to the character of work preponderating for the day, except that when temporarily assigned by the proper officer to lower rated positions, when such assignment is not brought about by a reduction of force or request or fault of such employee, the rate of pay will not be reduced.

This rule not to permit using regularly assigned employees of a lower rate of pay, for less than half of a work day period, to avoid payment of higher rates.

(q) The pay of female employees for the same class of work shall be the same as that of men and their working conditions must be healthful and fitted to their needs. The laws enacted for the government of their employment must be observed.

(r) Except as provided in these rules, no compensation will be allowed for work not performed.

Article VI—General.

Section (a) There will be no discrimination on account of membership or non-memebrship in an association of employees. Employees serving on committees will, on sufficient notice, be granted leave of absence and such free transportation as is consistent with the regulations of the railroad, when called for committee work.

(b) Except for temporary service, employees will not be transferred to another division unless they so desire.

(c) It will be the policy to maintain camp cars in good and sanitary condition and to furnish bathing facilities when practicable and desired by the employees and to provide sufficient means of ventilation and air space. All dining and sleeping cars will be screened when necessary. Permanent camp cars used for road service will be equipped with springs consistent with safety and character of car and comfort of employees. It will be the duty of the foreman to see that cars are kept clean. When necessary, in the judgment of the management, kitchen and dining cars will be furnished and equipped with stoves, utensils and dishes, in proper proportion to the number of men to be accommodated.

(d) The railroad will see to it that an adequate supply of water suitable for domestic uses, is made available to employees living in its buildings, camps or outfit cars. Where it must be transported and stored in receptacles, they shall be well adapted to the purpose.

(e) Employees will be allowed, when in the judgment of the management conditions permit, to make week-end trips to their homes. Free transportation will be furnished consistent with the regulations. Any time lost on this account will not be paid for.

(f) The railroads will furnish the employees such general tools as are necessary to perform their work, except such tools as are customarily furnished by skilled workmen.

(g) Employees transferred from one location to another, by direction of the management, will be entitled to move their household effects without payment of freight charges.

(h) Employees transferring from one location to another, in exercising their seniority rights, will be entitled to move their household effects, without payment of freight charges, only once in each twelve (12) months' period.

(i) Any privilege or practices, necessary to meet local conditions and not conflicting with any rules of these articles are not affected.

(j) This schedule of working conditions shall be printed by the railroads and any employee affected thereby shall be provided with a copy on request.

(k) Controversies arising over the application of this schedule of working conditions shall be referred to Railway Board of Adjustment No. 3, in accordance with the provisions of General Order No. 53.

(l) Rates of pay for the employees named herein authorized by Supplements Nos. 7 and 8 to General Order No. 27 including addenda and interpretations thereof, also any new rates which may hereafter be authorized by the director general, shall become part of this agreement and shall remain in effect during Federal operation until changed as provided herein.

It is understood that adjustment made by regional directors, under authority of July 9, 1919, in the rates of pay of certain foremen and assistant foremen covered by this agreement which rates were made to compensate for all services rendered, including overtime, are to be reconsidered by the regional directors and readjustments made, the overtime and other provisions of this agreement to be taken into consideration in making such readjustments and such readjusted rates to be made effective as of the effective date of this agreement.

(m) This schedule of hours of service and working conditions takes effect December 16, 1919, and except as otherwise herein provided, there will be no change in it during Federal operation until after thirty days' notice has been given in writing by either party to the other.

Shipping Delays Abroad.—Undoubtedly the shortage of trucks has of late caused much inconvenience to many sections of the community in South Africa, and it may be some consolation to the sufferers to know that the position elsewhere is worse than it is in this country. According to a recent cable acute congestion exists at the London docks, and it is stated that it will require 5,000 railway trucks to clear the arrears alone. It is pointed out that in pre-war days South African boats of 8,000 tons could enter the Thames, immediately dock, unload, reload, be headed round, and depart on the next voyage within a fortnight, whereas now it takes six weeks. The quays are overloaded owing to the insufficiency of trucks, and the transit sheds are crowded with Government imports.—*S. A. Railways and Harbours Magazine.*

William B. Wilson Opens the Meeting of the Industrial Conference in the Pan-American Building, Washington. Photo by Clinedinst

Industrial Conference Without Result

Labor Group Insistent in Demand for Recognition of Unions as Sole Representatives of Labor

THE INDUSTRIAL CONFERENCE of representatives of the public, employers and organized labor, assembled at Washington on October 5 at the call of President Wilson for the purpose of "bettering the whole relationship of capital and labor," was adjourned on October 23 after the labor group had withdrawn from the conference on October 22 dissatisfied with the attitude of the employers' group. The group representing the employers was virtually "locked out" on the following day when the conference was adjourned at the request of the President that the public group remain in session in an effort to carry out the original purposes of the conference. The public group adjourned on October 24 after making a report to the President recommending that a new conference be called. At a special session of the President's cabinet held on October 26 to consider the threatened coal strike, plans were considered for calling another conference. Apparently the only result of the conference, aside from the clarification of the principal issue involved, that of the recognition of the unions, was to widen the breach between capital and labor which it was intended to lessen.

The impasse came on a resolution recognizing the right of employees to organize and to bargain collectively, which the employers' group rejected by a vote of 10 to 4 on the ground that while they were willing to recognize both the right to organize and to bargain collectively, through representatives chosen by the employees, they were unwilling to endorse the interpretations put upon the resolution by the labor representatives that would confine the exercise of collective bargaining to trade and labor unions, and they insisted on the reservation of the right of the employer to refuse to deal with his employees except through representatives chosen by and from among their own number.

In the form in which the resolution was finally put by the employees' group it recognized the right of wage earners to organize without discrimination, to bargain collectively and to be represented by representatives of their own choosing in negotiations with and adjustments with employers. In this form it was approved by both the labor and public groups. The original resolution proposed by the public group had been voted down both by the employers and by the group that had offered it after representatives of the labor group had placed an interpretation on it confining its application to unions. A substitute resolution offered by the employers' group reserving the right to deal with their employees through "shop committees" or the so-called "company unions" which are so bitterly opposed by the big labor organizations was opposed both by the labor and public groups.

The labor representatives made it plain early in the meeting that they regarded the collective bargaining resolution as fundamental and declared that unless they could get it accepted they saw no object in further attendance at the conference, while the representatives of the employers took the position that for them to accept it in the forms in which it was offered and subject to the interpretations which they declared would be put upon it would amount to practical surrender to the trade unions affiliated with the A. F. of L. They laid much stress on the statement that 98 per cent of the industries in the country have less than 1,000 employees each, that the labor unions represent a minority of the workers and that in many businesses better relations can be maintained between employers and employees without the interference of outside representatives of unions.

The Steel Strike Resolution

The conference also voted down by a majority of the employers' and the public groups a resolution introduced by Samuel Gompers, president of the A. F. of L., and chairman of the labor group, providing for an arbitration of the steel strike by a committee appointed by the conference. A substitute resolution was proposed by the public group providing for a return of the steel strikers to work, their reinstatement by their employers and the election by the employees of each plant of their own representatives to confer with the employers; points of difference remaining unsettled to be submitted to arbitration by a committee appointed by the conference whose decision should be final. This had earlier been voted down by all three groups, by the labor group because it repudiated the unions that have called the strike and by the other two apparently because of unwillingness to having the conference used to protect the labor organizations

from the consequences of their action in calling the strike.

The introduction of the steel resolution had threatened to break up the conference almost at the start. It was referred to the general committee of 15, which reported it back to the conference without recommendation, announcing that the representatives of the employers and of the public on the committee had voted against it but that a majority was in favor of reporting it without recommendation. Thomas L. Chadbourne, Jr., then proposed the substitute resolution providing for the election of representatives by the steel employees and after this had been voted down an effort was made to steer the conference into less controversial channels by the discussion of collective bargaining. The issue involved in the refusal of Chairman Gary of the steel corporation to deal with the unions that had called the strike on the ground that they did not represent his employees was nevertheless inextricably involved in the entire discussion. While this was in progress Judge Gary went to New York and after conference with his associates returned with a statement reiterating his former position that he would not compromise on the principles of the open shop involved in his original refusal to deal with the officers of the unions.

Strong Pressure on Employees' Group

For several days the employers' insistence on a reservation of the right to deal with their own men subjected them to strong pressure from members of the public group, which supported the labor group until it learned that the latter had placed an interpretation upon the resolution which inhibited the idea that any body other than a trade or labor union could be included and that it was an invitation to the wage earners of the country to join no other organization. It thereupon proposed a substitute resolution recognizing the right of wage earners to organize "in associations of their own choosing" for collective bargaining. President Gompers of the American Federation of Labor protested against this change of attitude on the part of the public group because of the interpretation of one member of the labor group—who happened to be the secretary of the American Federation of Labor—but when given an opportunity to state the interpretation of the labor group he made no reply. Whereupon the conference by a vote of two groups to one voted against the resolution.

In concluding his speech to the conference before withdrawing, Mr. Gompers announced that the executive council of the federation had decided "to more fully, if possible, bring the moral and financial support of the workers of America to aid the iron and steel workers in their just contention for a conference with a view of collective bargaining."

The Reason for the Break

The fact that the conference was not likely to result in any agreement was strongly indicated by the wary attitude assumed from the start by the groups representing labor and the employers. To prevent a possible combination between either side and the public group, which included several members who would naturally be classified with one or the other of the other two groups, rules were adopted providing that no conclusion should be reached by the conference except by a majority vote of all three groups and that no resolution should be considered until it had first received the assent of one of the groups. No program had been planned in advance and under the rules adopted the conference had some difficulty in getting started.

A large number of resolutions proposing various plans for improving the relations between capital and labor were introduced and referred to various committees, but only one general resolution was adopted and only the strike and collective bargaining resolutions were brought to a vote. Both the labor and the employers' groups submitted statements embodying a series of principles which demonstrated very early the wide difference between the two groups because while the employers laid great emphasis on the desirability of the open shop principle, labor stood squarely on its demand for recognition of the unions as the sole representatives of labor as fundamental.

Railroad Representatives on the Conference

The public group in the conference consisted of 25 members, including three women selected in the name of the President. The employers' group included 17, of which five were selected by the Chamber of Commerce of the United States, three by farmers' organizations, two by the Investment Bankers' Association, five by the National Industrial Conference Board and two railroad executives. The organized labor group included 15 representatives of the A. F. of L. chosen by Mr. Gompers and four representatives of the railroad train service brotherhoods, but the representatives of the miners and the carpenters refused to attend.

B. M. Baruch of New York was elected chairman of the public group; H. A. Wheeler of Chicago, chairman of the employers' group and Mr. Gompers chairman of the labor group. Franklin K. Lane, Secretary of the Interior, was chosen chairman of the conference.

The employers' group included three railroad officers: L. F. Loree, president of the Delaware & Hudson, was one of the nominees of the National Industrial Conference Board; R. H. Aishton, regional director of the North Western region of the Railroad Administration, and C. R. Gray, president of the Western Maryland, were chosen as representatives of the railroads.

The four brotherhoods were represented in the labor group by H. E. Wills, vice-president of the Brotherhood of Locomotive Engineers, with W. S. Stone, grand chief, as alternate; Timothy Shea, acting president of the Brotherhood of Locomotive Firemen and Enginemen, with P. S. McNamara, vice-president, as alternate; L. E. Sheppard, president of the Order of Railway Conductors; and W. G. Lee, president of the Brotherhood of Railroad Trainmen. Bert M. Jewell, acting president of the Railroad Employees' Department of the A. F. of L. was chosen as one of the public group, but J. J. Forrester, president of the Brotherhood of Railway Clerks, was later substituted for him. W. H. Johnston, president of the International Order of Machinists, was a member of the labor group.

No subjects directly relating to the railroads was taken up. Mr. Loree took a prominent part in the opposition of the employers' group to the demands of the labor representatives and at one time during the discussion declared that the conference "had been maneuvering for five or six days on what seems to be rather a political than an economic situation" and that time after time when about to decide a question had been adjourned "in order that back door communications could be received." In this he apparently referred to the directing efforts of B. M. Baruch and Thomas L. Chadbourne of the public group, who were in frequent communication with the White House.

W. G. Lee and L. E. Sheppard spoke in behalf of the collective bargaining resolution, saying the principle had been recognized and had operated successfully in railroad service for 25 years. In reply to this, Homer S. Ferguson, president of the Chamber of Commerce of the United States, pointed out that the railroads had not been able to meet the demands of the labor organizations. "It seems to some of us," he said, "as if the United States had been meeting them for some time, and we do not notice that in the coal miners' district, with thousands of men organized, there is peace and tranquility."

When the American Federation of Labor officials withdrew from the conference the brotherhood executives re-

mained until the close of the day's session, explaining that they did so out of courtesy to the conference but would not return.

W. G. Lee said he hoped the conference would not adjourn until the question had been settled. "I have been hoping," he said, "that I could say to the 190,000 men I am speaking for that their instructions positively to me to do a certain thing by October 1 have been overlooked because of the President calling this conference."

Mr. Gray said he was very glad that the last people in the labor group to leave the conference were the railroad people, "because what has been said here about the relations over a great many years is true. My associate and I, who represent railroad management were classified with the employing group, but it was well known that all our lives we have dealt with organized labor. Now, we have conceived our duty in the employers' group to be one of a democratic gathering. We have all expressed our opinions there, and I have seen material progress made in this employers' group to the common viewpoint which I do not believe others fully appreciate. Now, that progress has been made. It was a deplorable thing that we could not have gone ahead. These gentlemen here never got where they are now in two and one-half weeks, and we did not get where we are in such time, but we have progressed to a proper evolution through all kinds of misunderstanding. We have been in each others' hair in these thirty years, time and again, but we usually got together in the end, as I had hoped this conference could get together in the end, upon some common understanding."

Labor Wants a Voice in Management

On October 15 L. E. Sheppard, president of the Order of Railway Conductors, introduced with the assent of the labor group a resolution proposing an extension of something like the Plumb plan of "tri-partite control" to all industries. The resolution declared the recognition by the conference that the three "equal and essential interests in organized industry," consumers, capital and labor, should share equally in the conduct of the management, and proposed the adoption of national laws requiring "all public service corporations operating under grants of privilege or monopolies," to be managed by boards of directors, one-third of whose members would represent the public, one-third the owners of capital, and one-third the workers employed in the industry.

This differs from the Plumb plan as proposed for application to the railways in that it says nothing about government purchase and Mr. Plumb does not provide for any representation of the owners of capital as such. His board would consist of one-third representing the public, one-third representing the classified employees and one-third representing the official employees, who would, however, not be in any sense representatives of capital. Mr. Sheppard also proposed that in "private industries not based on grants of privilege, franchise or monopoly, one-third of the directors should be elected by the employees."

In a statement issued after the adjournment, Mr. Loree said that the action of organized labor in withdrawing from the conference and "the whole history of the conference preceding it made it perfectly clear that if the American Federation of Labor can bring it about it will be impossible for any man to work in the United States unless he belongs to a trade organization within the A. F. of L."

Statement by B. M. Baruch

After two protracted meetings following the adjournment of the conference proper, Chairman Baruch of the public group on October 25 gave out the following statement:

"The Industrial Conference, as originally constituted, accomplished far more than appears on the surface before it finally was dissolved.

"First—It brought the issues involved home to the entire nation.

"Second—It demonstrated the great difficulties of a solution.

"Third—Its discussions have had the effect of setting the entire people thinking, and from this thought will come the solution.

"Fourth—There was brought home to all participants the intimate relations that exist between the farming interests and all industrial questions.

"Fifth—What was not brought out clearly was that both capital and labor owe to society—which is inclusive of capital and labor—a duty to produce in quantity at the lowest possible cost commensurate with the protection of both capital and labor, all of the 'things' that are necessary to keep up the proper, just, and humane standards of modern life.

"As the result of what transpired at the Conference sessions the people now realize that the industrial problem affects every one in every walk of life. I feel certain that the farmer will attain his proper place in the solution yet to be reached. All of the questions suggested go, not alone to the man and woman who works with his or her hands, but to all salaried people. These include, for instance, firemen, policemen, postal employes, and other workers in governmental, state and municipal lines, as well as the school teachers of the country. It is evident that the teacher has more to do with the upbringing and final moulding of good citizenship than any one else. All workers want not alone proper financial treatment, but recognition of their positions as part of the foundations of society itself. This recognition must come, not as a privilege granted, but as a matter of inherent right.

"The outcome of this conference must be, in my opinion, that there will be manifest an increasing effort on the part of employers to see that, not alone proper wages are paid but that the human rights of the workers are considered. The employer has certain rights which must be rocgnized and protected. Coupled with these rights is the obligation to see that all of his employes are accorded just treatment."

Public Group Reports to President Wilson

Following is part of the report to the President made by the public group:

"The public group, as was intended, differed from the other groups representing labor and capital in one important particular. It had not the homogeneity of interest of either of these groups; it represented rather a cross-section of American life. Among its members were employers of labor, large and small; farmers, capitalists, representatives of labor, socialists and professional students of social and industrial problems. Notwithstanding this diversity of interest and relation, there was manifested throughout an astonishing amount of agreement upon the most vital subjects. This we regard as a most hopeful sign for the future and an evidence of the possibility of a united action in the interest of the entire nation.

"The existence of the steel strike had the effect of focusing interest and attention upon present conflict as against constructive measures and agreement for the future, and made the calm discussion of such constructive measures difficult. Because it was manifestly impossible to dispose of this subject by agreement under the rules of the conference, which required concurrence of at least a majority of each of these three groups, the conference decided to defer action upon the question until the subject of collective bargaining was passed upon.

"After several days of earnest endeavor and numerous attempts at adjustment between the points of view of the several groups the conference failed to agree upon this issue.

"In this connection we deem it important to emphasize the

fact that the conference did not, at any time, reject the principle of the right of workers to organize and to bargain collectively with their employers. Neither the conference as a whole nor any one group in the conference opposed that right. The difficulty that arose and the issue upon which the conference failed to agree was not upon the principle involved, but upon the method of making it effective.

"In our judgment, even this difficulty would not have been insurmountable had the conference approached its task in another way.

"Obviously, the important principle of collective bargaining cannot be sharply separated from other elements in the great problem of the relation of employers and employed. The right of organization, the protection in the exercise of their lawful rights, of those who seek to organize the workers; the careful definition of the various forms of organization through which the right may be exercised, and the machinery necessary for adjusting disputes arising in connection with that right must all be taken into account in their proper relation.

"We believe that the right of workers to organize for the purpose of collective bargaining with their employers, through representatives of their own choosing, cannot be denied or assailed. As representatives of the public we can interpret this right only in the sense that wage earners must be free to choose what organizations or associations, if any, they will join for this purpose.

"In the recognition of the right of workers so organized to be represented by representatives of their own choice difficulties will from time to time arise. We believe that it would be possible for a properly constituted arbitral authority to adjust such difficulties with justice and fairness to all parties concerned.

"The abrupt termination of the conference prevented any discussion in the conference of the important matter of the right of workers to strike and of the methods whereby without destroying or impairing that right the public interest may be adequately conserved and protected. We are deeply impressed by the necessity of setting up some machinery for effecting the speedy adjustment of disputes arising between workers and employers, whether the latter be private individuals or firms, or public and governmental authorities.

"It is impossible to discuss in detail the numerous schemes for affording to workers representation in the regulation of the conditions of labor, the plans for profit sharing, the many forms of shop councils and the like. We respectfully suggest that a very great service could be rendered to the nation, to employers and employes alike if in the Department of Labor there were established a bureau for the purpose of gathering and making available accurate information concerning all such experiments and their results. Such a bureau could give expert advice and assistance to any persons desiring to undertake plans for bettering labor conditions in particular establishments.

"We do not believe that this group can at this time with advantage further proceed with the discussion of the great questions with which we have been dealing. It may well be, however, that a small committee selected by you, composed of persons of varied interests and points of approach, could take up the matter and prepare along some such lines as herein indicated a program which will be of value at the present time.

"Upon the presentation of the report of such a committee steps could be taken to give it practical effect through another conference, representing capital, labor and the public, if in the circumstances then existing it should seem to you to be wise."

La Follette for Continued Government Operation

CONTINUATION for five years of the present federal control of the railroads for the purpose of affording a more complete test of government operation was urged by Senator La Follette in a minority report on the Cummins bill, submitted to the Senate.

Senator La Follette said in part:

"It is very properly urged in the report, submitted by the majority of the committee, that railroad legislation should receive prompt consideration. Uncertainty regarding the status of the railroads, the period of government operation, the character of government control, if the roads are to be returned to the owners, must necessarily result harmfully to the railroads and to the public. Investors are timid about investing in railway securities the value of which may be affected by legislation in the near future. The railroad owners themselves are in doubt as to their relations to their property, and they are entitled to know what their status is to be for the next few years at least. I do not in the slightest degree underestimate the importance of dealing with this question as promptly as may be, but it will not relieve the situation to pass legislation hurriedly if it is wrong in principle, and will only serve to create new difficulties in the railway problem instead of solving those already before us.

"The avowed purpose of the President to return the roads to private control by the first of next January is, as I understand it, the reason why we are urged to pass legislation of this great importance through Congress within the next two or three weeks.

"Any bill attempted to be perfected and passed on this subject within the next 30 days will be a mere experiment, and must necessarily be an illy considered one. The House, which began its consideration of this subject early last summer through its Committee on Interstate and Foreign Commerce, has recently passed a bill which is opposed in all its essential features to this bill.

"As I shall show a little later, the Senate committee bill is revolutionary in character. It proposes to put into practice various doubtful innovations and radical experiments which, if they fail, will wreck the whole complicated scheme, leave the railway situation and its finances in an unsettled and chaotic condition, and involve the business of the country in confusion and disorder. There is no reason why we should be hurried in our consideration of the plan proposed in this bill, but every reason why we should proceed with the greatest caution.

"It is true that upon the legislation, for taking over the railroads, the Senate Committee on Interstate Commerce conducted extended hearings in 1917 and 1918, and upon the subject of government operation in January and February, 1919. Those hearings were, however, very general in character. The bill now before the Senate, with its novel provisions, was not then in existence.

"No general hearings were permitted by the committee upon the bill before the Senate, although representatives of the agricultural interests and others requested such hearings, with a view, as I am advised, of urging the consideration of extending the time of government operation, in order that such operation might be fairly tested under settled peace-time conditions.

"The committee did grant limited hearings on September 23 and 24 to the railway employees upon the provisions of the bill relating to strikes.

"The bill before the Senate was prepared by a sub-committee of five members of the Committee on Interstate Commerce during the extra session of the present Congress. The bill was presented to the full committee for its consideration

September 2, 1919, and was reported to the Senate in its present form October 23. During the time that the bill was under consideration by the sub-committee and the full committee the league of nations and the treaty with Germany were engrossing to a very considerable extent the time of all members of the Senate. It was, therefore, not possible for the committee to consider any plan of dealing with the railroad problem other than that proposed in the pending bill.

"I respectfully submit that the Senate and the Congress cannot discharge its obligation to the public interest without a much broader consideration of the entire subject than is proposed in the committee bill. And especially do I venture to contend that the Senate be not foreclosed from all consideration of the importance of making a fair trial of government operation of our transportation system when normal peace-time conditions shall have been fully restored.

"Long before we entered the war the railway transportation system of the country was on the verge of total collapse through mismanagement and corruption. The railroads from the beginning were grossly overcapitalized, and the public was burdened with constantly increasing rates to pay dividends on watered stocks. Added to this, the railroads were unlawfully permitted to collect from the public a further excessive rate for the accumulation of billions in surplus. Out of these vast sums, thus wrongfully levied upon traffic and pocketed as surplus, the railroads built extensions and made permanent improvements. They then overcapitalized these improvements as a basis for further wrongful exactions from the public.

"Moreover, the managers openly robbed the railroads from the inside. Construction and supply companies were organized by railway officers and managers. From these companies the railroads bought supplies of all kinds at exorbitant prices. Unrestrained greed exacted such profits on purchases by these insiders from themselves that there was always a shortage of funds for properly equipping the roads. This inside graft ate up the revenues of the railroads and furnished a perennial excuse for still further increasing rates upon the public. It goes without saying that a transportation system honeycombed with official graft and dishonesty was certain to be supplied—insofar as supplied at all—with inferior and defective equipment.

"The result was inevitable. When the European war came on, with its stimulus to increased production and traffic, the roads, already short of engines, cars, and all manner of equipment, at once disclosed the rottenness and inefficiency of the whole transportation system. By the summer and fall of 1916—months before we entered the war, to quote Director General McAdoo, 'they had reached such a point that traffic was almost paralyzed, through inability to furnish but a small part of the cars necessary for the transportation of staple articles of commerce.'

"When in 1917 the government was forced to seize the roads it took over a ramshackle and utterly demoralized railway system. The operation of railroads in such a state of disrepair was very expensive and wasteful under the most favorable conditions and excessively so under the extraordinary demands which the war imposed. The government at once found itself compelled to enter upon the enormous undertaking of restoration and up-to-date reconstruction in order to meet the immediate demands of its own and the public needs. And this it was forced to do at war prices for both labor and material.

"But this only partially states the government's handicap. Added to the vast expenditures imposed by the broken-down condition of the railroads, Congress—ever generous with the people's money, in response to corporate demands—authorized contracts with the private owners of the railroads for the use of their worn-out property at an annual rate of compensation so extravagant as to insure a deficit in government operation of the railroads from the outset. This was very satisfactory to the owners and their friends in and out of Congress who were opposed to government operation, lest it might lead on to government ownership.

"An organized assault was at once made upon public ownership of public utilities in general and government ownership and operation of railroads in particular. From the day the railroads were taken over down to this hour, in Congress and out, through the interest press and otherwise, there has been conducted a systematic and powerful propaganda to discredit government operation and the railroads and hasten their return to the private owners and private management with another era of commission 'control.'

"The failure of private ownership and private operation, under commission 'control,' leads logically to government ownership and government operation.

"That has been the natural evolution in the history of all communities. It is inevitable here. It may be delayed, but it will come. The danger is—and it is a great danger—that we are to be involved in another costly and temporizing expedient before it is accepted.

"So strong is the influence of the billions invested in railroads and the interests allied with them, and so great is the prejudice which their combined forces have for the time being manufactured against government operation that Senators and Representatives shrink from advocating a continuance of government operation, even for such time as to give it a thorough trial under normal business conditions.

"In an effort to find a way out and avoid meeting the issue of government operation, which, if ultimately successful, may bring government ownership in the end, we are asked to embark upon a complex experimental scheme of legislation uncertain in its results and open to attack as unconstitutional on more than one side.

"Private ownership and uncontrolled private operation of railway transportation was tried for 40 years. It became intolerable.

"Private ownership with a commission regulation of rates and services was tried for 30 years. It resulted in colossal failure.

"Through it all the public has been the long-suffering victim of a monstrous system of venal exploitation.

"We are now urged to enter upon another protracted period of attempting to combine the conflicting and warring elements of private ownership and public control.

"If our past experience teaches us anything, is it not plain that this means another era of enormous profits for the private owners at the cost of an enormous and unwarranted expense to the public?

"Is it rational to believe that in a few short months a small group of Senators and Representatives—no one of us an expert in railway transportation—has discovered some magic by which the miserable failures of 70 years are to be converted into a marvelous success?

"And when we find that the Senate committee has one plan, that the House committee has developed another plan, which in all essential features is opposed to the Senate bill, does it not raise a serious question as to whether either committee has found the way out?

"Does it not seem the part of wisdom to extend mandatory government operation for a period of five years rather than commit ourselves in haste to either plan?

"When the President issued his proclamation of December 27, 1917, seizing the railroads, which he did under the act of August 29, 1916, he referred to the war with Austria as a reason for taking over the roads as much as to the war with Germany.

"When, therefore, the act of March 21, 1918, fixed the time for termination of the railroad control by the government at one year and nine months following the proclamation of peace by the President, it meant peace with Austria as well as peace with Germany. As the proposed treaty

with Austria has not yet even been laid before the Senate, and will not be acted on for some considerable time, and peace with Germany has not been formally declared, it is evident that there is nothing in the law which can be held to require the President to return the roads for almost two years at the earliest.

"It can be said, however, with force that the interests of the railroads as well as the public require that the status of the railroads should be fixed for a period longer than two years, and for that reason I propose that we extend the government operation of the railways and make the same mandatory for a period of five years.

"Within the next five years the valuation of the roads will have been completed under the act of 1913. Within that time the government will be able to give a practical demonstration of its ability or inability to operate the roads successfully in times of peace as well as war. During that period the making of extensions and betterments will go forward, managers and employees will understand that their positions are secure if their work is efficient, and those who hold or may purchase the securities of the railways will do so in the confidence that their investment is safe. An increase of railway rates will not be necessary. And more than all, within that time the Congress, with all the added knowledge that it may acquire, can deliberately frame railway legislation with a reasonable assurance that it will furnish a solution of this great problem.

"What I am here suggesting I understand to be the position taken by both Mr. McAdoo and Mr. Hines, the two directors general of the railroads under government operation. I know it to be the position of at least two members of the Interstate Commerce Commission, who have so stated in public addresses in the last few weeks.

"I am aware, of course, that the interests which are anxious to discredit government ownership are very desirous that the railroads should be returned to the owners at once without the government having an opportuni ty to show with what success it could operate the railroads under stable business conditions in time of peace. Such interests should not be permitted, however, a controlling voice in this legislation.

"In the report filed for the majority of the committee it is said:

" 'The writer of this report is firmly convinced that when the government assumed the operation of the railways they were, taken as a whole, earning all they should be permitted to earn; but in the inevitable distribution of the earnings among the various railway companies the railways which carried 30 per cent of the traffic were earning so little that they could not, by any economy or good management, sustain themselves. Nevertheless, it is unthinkable that these highways of commerce shall be abandoned, and some system must be devised not only for their continuance but for their betterment and growth. *Government ownership would solve the problem, but it is the judgment of the committee that government operation is attended with so many disadvantages—notably in the increased cost of operation—that this plan must be discarded.*'

"The portion of the language quoted above, which I have put in italics, is every word that is to be found in that report on the subject of government ownership and operation.

"The whole subject is dismissed with a sentence. And the most notable disadvantage of government ownership is disposed of with a passing reference in five words to the increased cost of (government) operation.

"This is the logic of the committee:

"It cost very much more to operate the railroads after the government took them over.

"Ergo government operation is so expensive that it 'must be discarded.'

"This reasoning takes no account of:

"(1) The large outlay required to rehabilitate the wreckage which the government found on its hands on taking the roads over.

"(2) The government took over a transportation system that had practically ceased to function. 'There was not a single serviceable locomotive in (reserve) storage.' A hundred and forty-five thousand freight cars were stalled in a helpless congestion. It required from 2 to 25 days to ship a carload of grain from Iowa to Chicago.

"It cost the government a very large amount of money to set in motion the machinery of this badly stalled transportation system.

"(3) The cost of operation in war was enormously greater than in peace.

"Obviously not a dollar of all these vast expenditures is justly chargeable to government operation. It should be charged to private operation and not to public operation in instituting any comparison of relative costs.

"The only way in which to make a fair comparison between the cost of private operation and government operation of the railroads is to extend the government operation for a reasonable period of time under normal business conditions and compare the cost and efficiency of government operation for such time with a like period under private operation prior to the war.

"In this connection I call attention to the fact that government operation has for several months demonstrated the reasonable certainty of ultimate economic success.

"There is no longer a loss chargeable against the government in operating the railroads as we slowly approach more settled business conditions. The monthly deficit, which has been the object of so much adverse criticism against government operation, has wholly disappeared, and in its place appears a net monthly profit of millions of dollars. I am advised on the most creditable authority that as expenditures are adjusted to normal conditions that government operation can be continued without requiring any increase in existing rates."

The Senator also opposed the provisions for compulsory arbitration and other features of the bill.

Orders of the Regional Directors

IMPROVED CAR HANDLING.—Circular 86 of the Northwestern regional director calls attention to the necessity for the improving of car handling especially in view of the present acute situation in connection with car supply. In addition to this, particular attention should be paid to the prompt delivery of cars to connections, early arrivals at freight houses and team track deliveries, prompt unloading of equipment and movement of "company" material utilizing the full capacity for loading which will result in saving of much equipment for revenue loading.

Detention to Coal Cars.—The Northwestern regional director, file 44-1-198, requests that reports be made by wire from each station, showing all coal in open cars held for unloading in excess of established free time whether under straight or average agreement, in order that there may be accurate and complete information available as to detention of open cars in coal service. This information is to be collected by a division officer and a complete summarized report made by each railroad and mailed daily to the Car Service Section at Washington with one copy to the regional director's office. This report should show by stations the number of consignees holding cars, the number of cars held and the aggregate days held. Action should also be taken to impress upon each delinquent consignee the necessity of cooperation on his part in the prompt release of equipment, in order to assist in remedying the general shortage of cars.

Increase of 14 Per Cent Offered Coal Miners

NEGOTIATIONS BETWEEN THE OFFICIALS of the United Mine Workers and the representatives of the coal operators that have been in Washington in an effort to negotiate a wage scale since November 14 were broken off on Thanksgiving Day after the union leaders had definitely refused to accept a proposition made by Fuel Administrator Garfield for a 14 per cent increase in wages without any increase in the government-fixed prices for coal. Dr. Garfield's proposal was made as representing the average increases, in addition to the wage advances already made, that would be justified by the increased cost of living of 79.8 per cent since 1913 and was submitted to the representatives of the unions and the operators on November 26 after a careful study of the situation and after it had been approved at a meeting of the President's cabinet. It was formally accepted by the operators.

When the conferences were begun on November 14, Secretary of Labor Wilson declared that a 30-hour week and a 60 per cent increase in wages for the miners must be regarded as an impossibility, and that the "stand-pat position of the operators" was also an impossibility. Later he proposed an increase of approximately 31 per cent. The union leaders insisted on their original proposals and on November 20 flatly rejected an offer of 20 per cent made by the operators with the expectation that part at least of the increase in wages would be met by an increase in the prices for coal. On November 21 the union modified its demand to a 40 per cent increase. For several days the fairness of the 31 per cent compromise suggested by Secretary Wilson was discussed pro and con but it was never given an official status and was not accepted by either side. The entire question was discussed at several meetings of the cabinet which were attended by Dr. Garfield and by Director General Hines and on November 26 Dr. Garfield announced the proposal for a 14 per cent increase in wages as one which the government would sanction. This was regarded by the union officials as a repudiation of the 31 per cent proposal made by the Secretary of Labor, which they were then ready to accept, but Dr. Garfield stated that Mr. Wilson had no authority to make such an offer. The fuel administrator's statement was as follows:

"On the 24th instant I announced that the public must not be asked to pay more than it is now paying for coal, unless it is necessary to do so in order to provide reasonable wages to the mine workers and a reasonable profit to the operators. Careful investigation forces me to the conclusion that, in accordance with this and the other principles set forth on the 24th instant, the public ought not to be required to pay any increase in coal prices at this time.

"The prices fixed by the government on coal were calculated to increase production for war purposes. Coal was basic and the increase in production was imperative. The operators are now in receipt of margins which were necessary to affect that increase of production, but which are larger than are required under present conditions. It was estimated that the production needed for 1918 was 600,000,000 tons. The estimate for 1919 is 500,000,000 tons.

"Applying the principles set forth in paragraph 2 of the statement of November 24, when the average increases in wages since 1913 for the various classes of mine workers are deducted from the the increase in the cost of living since that time, we arrive at the amount of additional increase in wages justifiable at the present time.

"I have taken the figures of the bureau of labor statistics for both cost of living and for the weighted average of wage increases. According to these figures the cost of living has risen 79.8 per cent since 1913, and the amount necessary to bring the average wages of mine workers up to this point at the present time is 14 per cent.

"Readjustments heretofore made since 1913 were such as to give certain classes of mine workers an average increase in excess of the increase in the cost of living, and certain others an average increase below the increase in the cost of living. This form of adjustment was made in order to establish or preserve certain relative bases in the mining industry. I do not think this condition, however, ought to result in giving to mine workers, as a whole, and, in consequence, imposing upon the public, a total average increase in excess of the total average increase in the cost of living, because if this course be adopted the result would be that the total increased burden placed upon the mining industry will be far in excess of the increase in the cost of living. If this principle were applied in industries generally, it is obvious that the resulting cost would be passed along to the general public, and the increased wages would increase in a rapid spiral, taking as a minimum, the percentage of increase in the cost of living. In the long run this would add many new and serious burdens to the cost of living of the entire public, and would fall more injuriously upon the working classes than upon any others.

"It seems to me that the reasonable way to deal with this situation is to give to the industry as a whole an average increase commensurate with the increase in the cost of living and then let that amount of increase be apportioned in accordance with the wage bases that are acceptable to the employers and the employes.

"Control of prices by the government will be maintained for the present.

"The present negotiation stands by itself, but it is far from disposing of the fundamental controversy between operators and mine workers. That controversy is bound to be a continuing one as matters now stand. It involves living conditions and conditions in the mines, as well as wages and profits, and the general relation between operators and mine workers. Therefore, to aid in applying the principles which have governed us and which should govern in reaching conclusions in the future, it is urged that a permanent consultative body, with purely advisory powers, be set up, consisting of the Secretary of the Interior as chairman and of an equal number of representatives of the operators and of the mine workers.

"In order that the data necessary for the consideration of this consultive body may at all times be available, it is urged that the Congress make provision for collecting definite and trustworthy information concerning the coal and coke industry and for the tabulation of the same in quarterly reports showing:

"1. Production, distribution, storage and stocks of coal and coke.

"2. The cost of production and distribution and of maintaining suitable stocks, and any other data concerning the industry deemed necessary.

"3. The cost of living in the several coal fields.

"4. The selling prices and profits obtained by the operators, middle-men and retail dealers.

"5. Export requirements and the conditions limiting them.

"The settlement of the present controversy on the wage and price basis above indicated must be considered in the light of the proposal to set up this permanent, consultative body. While it will not have powers of decision, it will hardly seem possible to a reasonable man that in the light of its conclusions demands for exorbitant profits or unreasonable wages can be successfully maintained, or that conditions unfavorable to the American standard of living will be tolerated."

On November 28 a committee representing the operators

sent telegrams urging all operators to post notices at their mines offering a 14 per cent average increase effective at once, in an effort to attract the miners back to work and the government authorities took steps to furnish protection to all who desired to work.

Assistant Attorney General Ames issued the following statement outlining Department of Justice plans:

"All United States attorneys in the bituminous coal fields have been officially advised of the result of the negotiations at Washington and have been given instructions relative to the situations.

"It is, of course, obvious that the time has come when ample protection will be furnished all persons desiring to work in mines.

"All persons, whether miners or operators, making any agreement or arrangement with each other to restrict the supply of coal will be proceeded against as the law provides, and it should be understood that any person who aids or abets in restricting the supply of coal is likewise guilty by the terms of the Lever act.

"Instructions heretofore issued by the War Department are still in force, and under these instructions department commanders will act in proper cases when requested to do so by the State authorities."

Doings of the United States Railroad Administration

The Railway Coal Situation Showing Improvement—Orders Relative to Coal Transportation

WALKER D. HINES, Director General of Railroads, on November 25 authorized the following statement regarding the handling of coal by the Railroad Administration since November 1:

"The railroads had in their possession on November 1, when Fuel Administrator Garfield turned over the distribution of coal to the railroads, about 22,000,000 tons of soft coal, either in railroad storage or in cars. From this supply and the current production, that has been increasing steadily since the strike began, the railroads have been kept in operation, all American flag ships and a limited number of foreign ships have been bunkered, public utilities and absolutely essential industrial plants and institutions of various kinds, such as hospitals, have been kept supplied, and the householder has been kept warm. These uses have prior claim to coal and until coal is again produced in sufficient quantity more than to meet these needs, and unless there are unusual conditions, no supplies will be released to other users.

"In the first week of the strike the average number of cars of bituminous coal loaded daily was 9,305, or 26 per cent of the pre-strike average; in the second week loading was at the rate of 10,608 cars, or 30 per cent of the normal rate, a gain over the first week of 14 per cent. Last week, the third of the strike, production steadily increased and reached nearly 40 per cent of normal. The present week promises so far a still better showing.

"Production now is mainly in the East, in the South and in the Rocky Mountain region. In the central states, where bituminous coal is so largely used, there is little or no present output. The railroads have the difficult and unusual task of moving west a large part of the production of such fields as the Pocahontas and Pennsylvania fields, that normally moves east. The 22,000,000 tons the railroads had on November 1 was as evenly divided as possible over the country, but in the sections where there had been no production, supplies have become depleted and coal from the eastern producing fields has been and is being sent west to fill these needs.

"At the eastern tidewater ports there were on November 1 many thousands of cars of coal assembled for export to foreign countries. These cars were held, when the strike was first begun, as reserve supplies for the railroads, essential industries and limited bunkering of ships. The accumulation of cars of coal at these ports is nothing abnormal, is not interfering with operation, and has not been allowed to increase. It is being held for the protection of essential consumers on the Atlantic seaboard. The export business in coal was in full swing when the strike began, but obviously so long as the coal in cars and the current production are no more than what is needed for the protection of this country, export of coal should not be and will not be allowed. The situation is well in hand and there is and will be no lack of empty cars for the coal mines that are working. The cars of coal hold under load at various points for emergency use are not interfering with regular transportation."

Railroad Facilities Below Demand of Traffic

The railroads of the country are now doing a heavier business for the present season of the year than was ever done in the history of the railroads in normal years, and practically as heavy business as was done at this season in 1918, which exceeded all previous records, according to a statement authorized by the director general, on October 12. They have more cars in actual service, after excluding cars held out of service for repairs, than in 1917 or 1918. While the bad order car situation was greatly embarrassed by the extensive strikes among shopmen in August, the percentage of bad order cars is now rapidly improving. There was an increase of 52,456 cars in serviceable condition between August 16 and October 4 of which 12,110 were added in the one week ending October 4.

While the freight business is practically as heavy as at this time last year, the Railroad Administration in performing that business is deprived of many exceedingly important aids which it was able to utilize last year. One of these is the zoning of coal which last year compelled consumers to take their coal from nearby mines and thereby greatly increased the efficiency of coal transportation. Another is that last year there was much heavier loading of many important commodities than it has been possible to secure this year, and the result is that under existing conditions more cars have to be used for the same amount of traffic. There are various other important respects in which traffic was controlled in the interest of the war last year, so as to get the maximum results out of rail transportation and with the return of peace conditions and the resulting insistence of public sentiment upon release from wartime restrictions, these advantages have been lost.

"The fact that there is still a shortage in rail transportation is due to the condition that the amount of business offering is far in excess of the transportation facilities of the country," the statement says. "This has always been true in this country in times of heavy business in the autumn months, except last year when the matter could be and was

controlled with an iron hand with a view solely to war necessities.

"At the same time railroad facilities have not expanded to the extent required in the public interest. Even prior to the war, railroad facilities were not equal to the demands. During the war the addition of new facilities was greatly restricted by scarcity of material and labor. Since the war, it has been impossible to enter upon or carry out any extensive program for enlargement of railroad capacity, because of the uncertainty as to the status of the railroads. The Railroad Administration was not provided with the money and therefore could not originate or carry out any such program. The railroad companies, in view of the uncertainty, were unwilling to provide the money.

"The result is that the railroad facilities of the country are decidedly below what the traffic demands. Nevertheless the maximum traffic is being handled and this is being done with less shortage of transportation than manifested itself at times in the pre-war period."

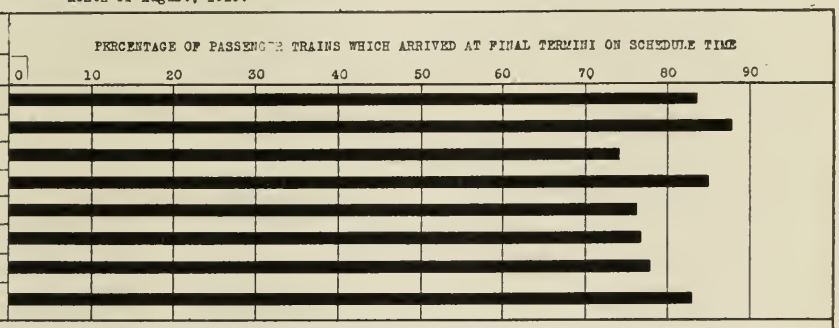
Basic data taken from reports of Class 1 Roads under Federal Control

UNITED STATES RAILROAD ADMINISTRATION
Director General of Railroads

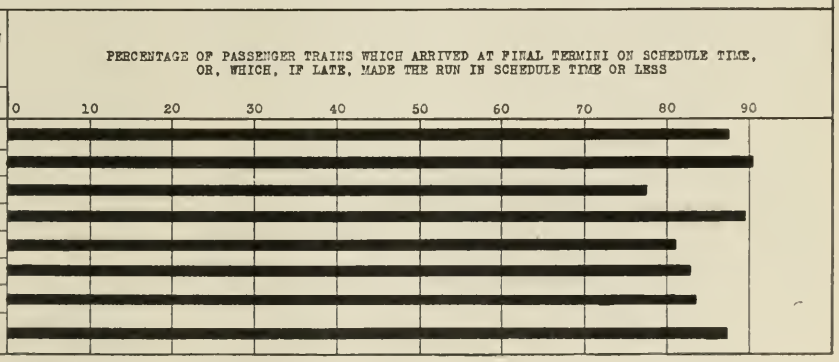
PERCENTAGE OF PASSENGER TRAINS ON TIME
Month of August, 1919.

Compiled by
OPERATING STATISTICS SECTION
DIVISION OF OPERATION
Washington, D.C., Sept. 22, 1919.

REGIONS	NUMBER OF ROADS	TOTAL TRAINS OPERATED	TRAINS WHICH ARRIVED ON SCHEDULE TIME	
			NUMBER	PER CENT OF TOTAL TRAINS
EASTERN	43	98 081	82 071	83.7
ALLEGHENY	15	80 261	70 756	88.1
POCAHONTAS	3	3 970	2 949	74.3
SOUTHERN	33	49 683	42 224	85.0
CENTRAL WESTERN	24	42 474	32 390	76.3
NORTHWESTERN	16	25 960	19 939	76.8
SOUTHWESTERN	23	20 289	15 855	78.1
AVERAGE -- ALL REGIONS	156	320 718	266 184	83.0



REGIONS	NUMBER OF ROADS	TOTAL TRAINS OPERATED	TRAINS WHICH ARRIVED ON SCHEDULE TIME OR WHICH, IF LATE, MADE RUN IN SCHEDULE TIME OR LESS	
			NUMBER	PER CENT OF TOTAL TRAINS
EASTERN	43	98 081	85 989	87.7
ALLEGHENY	15	80 261	72 912	90.8
POCAHONTAS	3	3 970	3 973	77.4
SOUTHERN	33	49 683	44 568	89.9
NORTHWESTERN	16	25 960	21 064	81.1
CENTRAL WESTERN	24	42 474	35 272	83.0
SOUTHWESTERN	23	20 289	16 992	83.8
AVERAGE -- ALL REGIONS	156	320 718	279 970	87.3



Trains arriving at final terminal 10 min. late or less are considered on time; second sections considered as scheduled 10 min. behind first section. Trains included in the lower chart are those which arrived at final terminal not later than 10 min. in excess of the number of minutes late leaving the initial terminal.

Suburban trains are excluded. When considering time of departure, delays at initial terminal chargeable to causes other than waiting for connections are considered as part of the running time. Delays at intermediate points waiting for connections are considered as part of the running time.

Trainmen Seek Interpretation of Overtime Proposal

A committee representing the four brotherhoods of train service employees was to confer with Director General Hines on Tuesday, December 2, to ask a more specific interpretation of his recent proposal to allow time and one-half for overtime in freight service, contingent upon the elimination of all arbitraries and special allowances. The committee, which has full power to accept or reject the overtime proposal, was appointed at a conference of the general chairmen of the four brotherhoods at Cleveland, called to consider Mr. Hines' proposal, after the conference had voted to accept his offer of a held-away-from-home-terminal rule providing for payment of wages for time held at other than the home terminal after 16 hours. This was as a substitute for rules proposed by the trainmen and firemen providing for pay after 10 hours. About 180 general chairmen of the firemen's brotherhood held a conference to consider what should be done in connection with their demand for a general wage increase, which has not been acted upon by the Railroad Administration.

Coal Orders

H. A. Garfield, United States Fuel Administrator, on November 22 issued an order directing that coal dumped into barges, scows, boats and other vessels on lakes, rivers and other inland waterways shall be subject to diversion in like manner and to the same extent as bituminous coal loaded in cars of a common carrier under the orders now in effect relating to the diversion of coal in transit, and coal diverted under the authority of this order shall be paid for by the party receiving the same, in accordance with the provision relative to the payment for diverted coal contained in the order of November 12, 1919. The director general of railroads and his representatives are authorized by the order to make such diversions of bituminous coal dumped into barges, scows, boats and other vessels as may from time to time be necessary in the order of priority set forth in the fuel administrator's order of October 31.

In another order the director general or his representatives acting by and under his authority are authorized to make such rules, regulations and orders restricting or prohibiting the use and consumption of bituminous coal for the purpose of producing of manufacturing coke in beehive ovens as may from time to time be necessary.

On November 19 Director General Hines announced that the Fuel Administration had advised that the charge of 15 cents per net ton for rebilling, etc., is not a proper item in settlements for coal diverted on and after October 30, 1919. The right to make this charge which was originally allowed by the order of January 14, 1918, was withdrawn by order dated November 20, 1918, and the order of January 14 as thus amended governed the settlement price for diverted coal

on January 31, 1919, when the regulations of the Fuel Administration were suspended.

Edward Chambers, director of traffic of the Railroad Administration, announced that where coal has been held by the Railroad Administraiton under the order of the fuel administrator and has subsequently been released to a consignee or to the original consignee, the demurrage rules become applicable from the time of such release.

Director Chambers also issued instructions to regional directors on November 12 stating that it has been decided that where coal is taken by the Railroad Administration and subsequently consigned to a consignee, the rate of freight to be charged such consignee should be the published freight rate from the mine at which the coal originated to the destination of such consignee, regardless of any out of route or back haul which may have been involved in the movement while under charge of the Railroad Administration.

Demurrage Rules Recodified

Owing to questions arising as to the application and interpretation of demurrage rules it was determined sometime ago to recodify the rules with a view to improving their form so far as possible and avoiding any questions. As a result this work was undertaken by the American Railroad Association in connection with committees of the National Industrial Traffic League and the results submitted to the Divisions of Traffic and of Public Service of the Railroad Administration, and finally to the Interstate Commerce Commission, which has given its tentative approval, subject to its right and duty to inquire into the legality or reasonableness of any rule or rules which may be the subject of any complaint.

The recodified rules do not involve any increase or decrease in the present rates. The recodified rules have been embodied in General Order 7-A issued by the Director General, revoking General Order 7 together with supplements 1 and 2. The recodified rules will be effective on December 1, 1919.

Miles Per Car Per Day Increasing

As indicative of increased efficiency in the use of freight cars, the average mileage per freight car per day in October, 1919, was 27.3 as compared with 26.7 in September, 1919, according to a statement authorized by the director general. The comparison with October of the two preceding years is as follows:

October, 1919	27.3
October, 1918	26.0
October, 1917	25.9

The comparative progress thus made in October is even better than that made in September, as is shown by the following comparison with September of the two preceding years:

September, 1919	26.7
September, 1918	26.5
September, 1917	26.4

Freight Locomotive and Freight Train Costs

The total cost of freight train service, including locomotive service, per 1,000 gross ton miles, which had been decreasing each month this year, including August, was slightly greater in September than in August, according to the monthly report of the Operating Statistics Section, although less than for September, 1918. For September, 1919, it was 101.1 cents, as compared with 106.2 cents in September, 1918, and as compared with 99.5 in August, 1918. In July, 1919, it was 100.6 cents. Per locomotive mile and per train mile the cost was less than for September of last year, whereas in August the costs were still greater than in the corresponding month of last year. The cost of freight locomotive service per locomotive mile in September was 106.7 cents, as compared with 107.9, a decrease of 1.1. In August it was 103.2 cents, which was an increase of 1.5 per cent, as compared with August, 1918. The cost of freight train service per train mile in September was 156.2, as compared with 158.1, a decrease of 1.2 per cent. In August it was 152.8, an increase over August, 1918, of 2 per cent. The combined figures for all regions and the comparative figures for last year are as follows:

	September 1919	September 1918
Cost of locomotive service per locomotive mile (cents)	106.7	107.9
Locomotive repairs	35.4	35.3
Enginehouse expenses	8.0	8.2
Train Enginemen	20.3	19.1
Locomotive fuel	39.6	41.9
Other locomotive supplies	3.4	3.3
Cost of train service per train mile	156.2	158.1
Enginehouse expenses / Locomotive repairs	49.4	50.2
Locomotive fuel	45.1	48.4
Other locomotive supplies	3.8	3.8
Train Enginemen	23.0	22.0
Trainmen	26.9	25.9
Train supplies and expenses	8.0	7.8
Enginehouse expenses / Locomotive fuel	32.0	33.7
Cost of total train service per 1,000 gross ton miles	101.1	106.2
Locomotive fuel	29.2	32.5
Other locomotive supplies	2.5	2.6
Enginemen and Trainmen	32.3	32.2
Train supplies and expenses	5.2	5.2

Railroad Activities in Connection with Foreign Commerce

Director General Hines has transmitted the following to the Senate in reply to a resolution requesting information in regard to the activities of the Railroad Administration in connection with foreign commerce:

"The Railroad Administration has endeavored to assist in the restoration of the movement of foreign traffic by the application of reasonable rates, rules, and regulations, such as are consistent with present conditions. To assist in determining what properly might be done, it has conferred with and secured data from various departments of the government and worked with them in that manner to co-operate in fostering, promoting, and developing the foreign commerce of the United States. The Railroad Administration is represented on the economic liaison committee organized by the Department of State.

"There is no assigned division or department of the Railroad Administration devoted to the fostering, promoting, and developing of foreign commerce.

"The Railroad Administration is not involved directly in the gathering of data used or the expense incident thereto, but only in the proper transportation of the traffic as developed and offered for shipment within the United States. A great many railroad employees who are generally engaged in the handling of traffic are, to an extent, involved in the handling of import and export traffic; it is an incident of the general business of the carriers. The foreign freight agents employed on the individual railroads are employed in facilitating the transfer, including the necessary customhouse business, of traffic between the ocean carriers and the inland rail carriers, their functions being performance of service rather than primarily the fostering, promoting, and development of foreign commerce. They are a part of the organization maintained by the railroad corporations prior to federal control, which will doubtless be maintained by such corporations after the termination of federal control."

Division of Capital Expenditures

A revised form, No. 12, has been issued, making slight changes in the "Completion" report. The purpose of this change is to show the expenditures made for work actually done during federal control, the credits to capital account for property retired and replaced during federal control, and the net charge or credit to capital account during federal control. No change is made in the manner of reporting the completion or work involving a capital charge of $1,000 or less.

General News Department

The American Concrete Pipe Association will hold its annual convention in the Great Northern Hotel, Chicago, on February 20 and 21. The general sessions of the convention will be held in the lecture rooms of the Western Society of Engineers.

Resolutions favoring the Plumb plan and denouncing Judge Anderson for issuing the anti-strike injunction were adopted at a meeting of general chairmen of the United Brotherhood of Maintenance of Way Employees and Railway Shop Laborers held in St. Louis on November 14.

A bill to establish uniformity in railroad safety work and to create a Safety First Division under the Interstate Commerce Commission, for the purpose of organizing and supervising safety committees composed of officers and employees was introduced in the House on November 12.

A mail aviator, flying from Bellefonte, Pa., to New York, was found dead on the ground near Dover, N. J., on October 30. It is supposed that he crashed into a tree while flying in a fog. Another aerial mail carrier fell, with his machine, near Baltimore, Md., on October 14, and was burned to death. In this case four bags of mail were destroyed.

Near Marcel, Cal., on the San Joaquin division of the Southern Pacific, traffic was suspended from October 25 to October 31 because of a blocked tunnel. Tunnel carpenters were at work and a small amount of earth which rolled down derailed the locomotive of a freight train. The derailed locomotive knocked down several tunnel posts, precipitating a slide of considerable magnitude.

Engineering Council has issued a call to engineers for support in order to continue its work. The member societies contributed $25,000 for the support of Engineering Council during 1919, while it is estimated that $50,000 will be needed for $1920. Aside from the possible appropriations of the member societies it is expected that $30,000 additional will be needed and the call which has been issued is for that amount.

Engineering Council has issued a statement regarding the activities of the engineering society's employment bureau which shows that in the interval from December 1, 1918, to September 30, 1919, 17,083 men were interviewed and that 4,858 registered with the bureau; and over 1,000 men are reported placed. This was accomplished at an expenditure of $10,600. The number of engineers visiting the bureau now averages from 60 to 70 a day.

The Chicago, Burlington & Quincy is negotiating with Chicago municipal authorities for the right to operate its own telephone system for its Chicago terminal, connecting the general office building with the freight houses and other points, and an ordinance granting this authority is being sought. The road has an agreement with the old Illinois Tunnel Company allowing the use of the tunnels for telephone wire, but there is opposition from the city authorities and the Chicago Telephone Company.

The Committee of Engineering Council on curricula of engineering schools has reported with reference to a suggestion that the engineering course in the colleges be extended to six years, that it does not favor the substitution of a six-year course for the present four-year course generally in the engineering colleges, although it calls attention to the fact that the longer course is now offered at a number of colleges. The committee strongly urges the extension of facilities for vocational training throughout the United States and particularly in the industrial centers.

Speaking by telephone between a moving railroad train and an instrument in a station office was the subject of a demonstration by W. W. Macfarlane on the Philadelphia & Reading near Wayne Junction, Philadelphia, on November 25, in the presence of M. H. Clapp, W. P. Borland and G. E. Ellis, representing the United States Railroad Administration. Mr. Macfarlane uses the rails of the track as a part of his electrical conductor, and he talked with a person on another train, two or three miles away, on the same track.

The "Public Ownership Conference" held in Chicago on November 15, 16 and 17, failed to endorse by vote the Plumb plan, but passed a joint resolution urging the government to retain control of the railroads for two years more. The resolution was introduced by Timothy Shea, president of the firemen's union, Warren S. Stone, president of the Brotherhood of Locomotive Engineers, and Glenn E. Plumb, special attorney of the railway brotherhoods. It provides for the union of the Public Ownership League with the Plumb plan. The resolution stipulates that reservations may be made to the Plumb plan as "they may be needed."

The Development Committee of the American Society of Civil Engineers has submitted its final report to the Board of Directors of the society and the committee has been discharged. The three representatives of the committee on the Joint Conference Committee (co-operating with members of similar committees of the other three national engineering societies) have been continued, reporting directly to the Board of Direction. The report of the Development Committee is being printed and will be distributed to the members in the near future. It will also come up for discussion at the annual meeting of the society in January.

Fuel conservation measures on the Chicago Great Western resulted in such substantial savings during the early months of 1919 that W. L. Park, federal manager, has addressed a letter of commendation to all enginemen as well as others who contributed less directly in securing such a satisfactory record. A comparison of the fuel performance for January, February and March, 1919, with the same months of the previous year showed a decrease in coal per 1,000 gross ton miles in freight service equal to 10.7 lb., or 4.1 per cent, equivalent to a monetary saving of $13,956. In passenger service, based on pounds of coal per passenger train car mile, there was a decrease of 3.1 lb., or 12.9 per cent, amounting in money to $23,650, or a total saving in freight and passenger service of $37,606 for the three months.

Ticket Frauds

Sleeping car conductors and porters employed by the Canadian Pacific Railway, to the number of six or more, have been tried and convicted in court at Winnipeg, Manitoba, on charges of accepting secret commissions from passengers. Fines of from $100 to $600 and jail sentences of ten days to six months have been imposed. The term "secret commissions" seems to mean the carrying of passengers, for a personal consideration, without requiring the presentation of tickets.

Three Milwaukee (Wis.) business men and two conductors on the Chicago, North Shore & Milwaukee Electric have been arrested in Milwaukee charged with a ticket selling swindle, which is alleged to have netted them over $30,000 a year for several years. The conductors are said to have obtained a supply of ten-cent tickets from one town to the next, which they cancelled instead of the Chicago-Milwaukee tickets presented by the passengers. These latter are said to have been bought by the business men from the conductors at 25 cents each and later sold to a selected list of customers at $1.50 each, the regular price being $2.32.

Railroad Reserve Force Proposed

A bill introduced by Senator Thomas of Colorado just before the Senate adjourned on November 19 provides for the creation of a railroad army reserve force of 200,000 men to be trained at land grant agricultural colleges for service on the railroads in times of emergency. Men between 18 and 30 years of age will be eligible for enlistment, but not for re-enlistment. The term of enlistment would be for 10 years with a provision for 12 months' training for work as train operatives, hostlers or telegraph operators and during the training period the men would receive regular army pay. If in time of emergency they were put to work on railroads they would receive the usual railroad pay, but would be barred from having any connection with a labor union.

Railroad Y. M. C. A. Extension Program

The Railroad Y. M. C. A. officers and secretaries have held regional conferences for the planning of a greater intensification and extension of the work during the coming months. It will be recalled that this organization held a continental membership drive last May, which netted an increase in membership of between 48,000 and 49,000, greatly exceeding the goal, which was 40,000 new members. In inaugurating an enlargement and extension of the work it has been decided to set aside different weeks during the fall and winter during which special efforts will be made to plan for and extend the work in different directions.

The Railroad Y. M. C. A. officers and secretaries for the Allegheny region met at Pittsburgh September 25; those for the Western and Northwestern regions at Chicago, September 26; Southwestern region, Kansas City, September 29; Eastern region, Albany, N. Y., October 3; Pocohontas and Southern regions, Richmond, Va., on October 6, and a conference will be held in Canada at a date which has not yet been decided upon. Members of the boards of management of the different associations attended these conferences in considerable numbers and the meeting were notable because of the activity of the railroad men.

The resolutions which have been passed embody a program for laying special stress on the launching and emphasis of activities in religious work during the week of October 12-18; on boys' work, October 26-November 1; educational work, November 9-15; health and happiness, November 30-December 6; citizenship and social, December 14-20; thrift, January 17-24; membership, April 12-19.

Road Building Dependent on Railroad Facilities

The Agricultural Department estimates that the amount of money that can be profitably expended in 1920 for hard surface highways in the United States is $633,000,000; but this is contingent upon the quantity of materials that the present limited railway facilities can transport. A circular issued by the Bureau of Public Roads of the Department of Agriculture urges that the shipping of such materials be started earlier than usual and that as great a mileage of road work be placed under contract during December and January as possible. Unless the available open top cars, many of which normally lie idle in the late winter, are utilized in that slack season, the work which can be done will necessarily be curtailed for lack of materials.

The total proposed expenditures for 1920 amount to more than four times the amount that has been expended during any previous year for like purposes. Therefore, there must be a tremendous increase not only in the materials, supplies and shipping facilities, but also in the labor supply, and also an enlargement of contractors' organizations. First of all, Thomas H. MacDonald, chief of the bureau, says, the attention of all state, county and city roadbuilding interests should be directed toward overcoming the car shortage. It has been customary to wait until contractors' organizations were ready to begin work before starting the shipment of material. Under these conditions many thousands of open top cars lie idle during the latter part of February, all of March and the earlier part of April. During the past spring, the circular says, the number of open top cars that were idle was more than 250,000, but by awarding contracts as early as possible, contractors will be able to ascertain their material requirements at different points and so will be in a position to place orders dependent upon railway transportation a considerable time in advance, and while the placing of material in storage involves some expense it will be small compared to the loss that will result if contractors are not in a position to go ahead with the work because of lack of materials.

The Prince of Wales on the C. P. R.

The 10-car train prepared by the Canadian Pacific for the use of the Prince of Wales on his trip across Canada from the Atlantic to the Pacific has already been described briefly in *Railway Age*. The Prince's journey in this train covered a distance of more than 10,000 miles, four-fifths of which was over Canadian Pacific lines; and the London Times, whose correspondent accompanied the Prince, devotes a column, on the termination of the journey, to a sketch of the life of the party on the train. The party, including reporters, numbered, all of the time, about 100 persons; and this account gives the railroad credit for maintaining the most perfect convenience at all times. Many side journeys were made, and the trip lasted about two months. On Lake Kootenay, in British Columbia, the whole train was transferred from one landing to another on floats. The train had a telephone line from one end to the other and had a medical dispensary, a workroom for a tailor and one for a photographer. News bulletins were received by telegraph four times each day. "Fishpoles" were at hand to connect with the telegraph or telephone line at the side of the road in case of need. The railway company had, altogether, a corps of about 60 employees to attend to the wants of the passengers. The cooks, waiters, etc., were picked men, most of them having had practice in English households. On a number of occasions the party left the train and lodged in a hotel, and then the baggage master had to see to sending out and getting back a good part of the 250 pieces of baggage on the train. The railway police on the train were Scotchmen and Irishmen who had seen service in the British army.

In addition to commending the men for efficiency, as the term is usually employed, the reporter credits them with a high degree of personal devotion to the Prince and an equally praiseworthy spirit of loyalty to the railway company.

Coal Production

Production of bituminous coal during the third week of the strike (November 16-22) was 44.8 per cent of normal, according to the weekly bulletin compiled by the United States Geological Survey. During the first week, before the strike order was withdrawn, it had been 29.6 per cent, and during the second week, 33.3 per cent. The third week's output, including lignite and coal made into coke, was 5,416,000 net tons. Compared with the week before, this was an increase of 1,390,000 tons. The average production during the four weeks ended October 25, which may be regarded as normal, was 12,089,000 tons.

The Central Interstate Wage Conference was reopened in Washington on the afternoon of November 14. It continued in session throughout the week of the 16th to the 22nd. During that period men returned to the mines in considerable numbers in West Virginia, Southeastern Kentucky and Tennessee, Alabama, Colorado and Wyoming. In the great central competitive field, from western Pennsylvania to Illinois, and in the tier of states immediately west of the Mississippi from Iowa south to Oklahoma, the situation underwent no change. In all that territory the only coal mined was an insignificant tonnage from scattered wagon mines and steam-shovel pits.

The anthracite industry responded to the stimulus of active demand caused by the soft coal strike with the largest production of the year. The week's output is estimated at 2,018,000 net tons, an increase over the week before of 192,000 tons, or 10.5 per cent. The highest rate of production ever maintained by the anthracite mines for an extended period was during the summer of 1918, when war-time demand for the steam sizes of anthracite carried the output to an average of 2,080,000 tons for a full-time week. The fact that the mines are now producing within 60,000 tons of that maximum indicates that but little more can be expected of them to fill the deficit caused by the bituminous strike.

REVENUES AND EXPENSES OF RAILWAYS

SEVEN MONTHS OF CALENDAR YEAR 1919

Name of road.	Average mileage operated during period.	Operating revenues			Maintenance of		Operating expenses				Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
		Freight.	Passenger.	Total (inc. misc.)	Way and structures.	Equipment.	Traffic.	Transportation.	General.	Total.					
Ft. Worth & Denver City Ry	454	$3,985,989	$1,739,615	$5,967,404	$624,042	$1,149,864	$31,022	$2,201,246	$172,380	$4,197,593	70.34	$1,769,811	$134,750	$1,634,199	$961,853
Ft. Worth & Rio Grande Ry	235	406,183	332,389	792,545	195,231	162,848	7,838	449,398	43,288	858,603	108.33	—66,058	21,469	—87,853	—115,191
Galveston, Harrisburg & San Antonio	1,381	8,253,663	3,221,917	12,041,982	1,789,733	2,656,737	124,268	4,653,380	371,905	9,701,246	80.56	2,340,742	370,248	1,967,144	—1,313,197
Galveston Wharf Co	13	.....	.....	484,043	168,909	5,531	169	189,861	11,304	432,109	89.27	51,934	87,560	—35,566	—238,360
Georgia R. R.	328	2,190,600	1,015,980	3,439,198	367,668	556,234	52,367	1,683,086	119,782	2,780,276	80.84	658,923	42,650	616,218	—470,075
Georgia Southern & Florida	402	1,589,212	667,681	2,467,947	418,771	586,534	42,032	1,175,222	72,488	2,299,168	93.16	168,778	95,786	72,635	—103,625
Georgia & Florida	348	390,904	133,253	557,531	191,236	141,064	13,826	358,135	38,911	743,172	133.29	—185,640	29,419	—215,841	—180,700
Grand Rapids & Ind.	569	2,881,483	1,065,617	4,293,912	636,064	1,005,912	71,401	2,156,320	155,830	4,038,059	94.04	255,854	180,502	75,318	—155,603
Grand Trunk Western Lines	1,001	9,127,527	2,008,042	12,111,080	1,480,061	2,294,698	114,885	5,695,645	334,673	9,948,673	82.14	2,162,406	351,513	1,807,484	1,888,002
Great Northern Ry.	8,251	41,798,267	10,591,697	57,498,930	11,050,082	10,804,881	391,010	24,627,909	1,063,954	48,658,364	84.62	8,840,567	3,038,251	5,798,072	4,814,534
Gulf & Ship Island R. R.	307	947,470	313,248	1,368,094	376,696	314,302	26,424	581,171	63,408	1,364,524	99.73	3,569	75,068	—71,766	—377,199
Gulf, Colorado & Santa Fe	1,934	7,182,684	2,829,840	10,596,971	2,382,474	1,953,580	107,390	4,740,641	339,822	9,504,567	89.69	1,092,404	498,173	590,081	—1,488,701
Grand Trunk Lines in New England	173	1,641,026	252,539	2,284,227	665,624	291,136	20,963	1,417,948	89,553	2,803,906	122.75	—519,679	83,500	—603,179	—112,895
Gulf, Mobile & Northern	424	1,121,434	296,700	1,495,379	318,911	377,077	36,872	721,043	67,889	1,520,036	101.64	—24,657	77,551	—102,492	—259,216
Hocking Valley	350	4,816,727	649,976	5,850,240	718,116	2,069,083	41,859	2,101,385	147,826	5,076,448	86.77	773,791	311,282	458,345	—359,071
Houston & Texas Central	847	3,172,071	1,413,645	4,858,366	932,476	912,656	49,710	2,110,697	137,853	4,140,340	85.22	718,026	241,472	474,404	—577,802
Houston East & West Texas	190	935,671	299,858	1,294,672	238,723	158,662	6,726	615,396	30,023	1,049,530	81.06	245,142	44,241	200,093	—44,922
Illinois Central	4,787	41,658,849	13,642,263	59,379,933	10,357,675	15,896,618	526,173	25,169,446	1,569,773	53,761,768	90.53	5,618,165	2,846,675	2,759,485	—3,321,717
Indiana Harbor Belt	116	.....	.....	3,585,378	633,759	753,284	12,211	2,276,760	116,595	3,792,609	105.77	—207,231	69,979	—277,213	156,028
International & Great Northern	1,159	5,642,623	1,794,215	7,929,954	1,892,037	2,068,029	87,039	4,029,093	281,755	8,400,183	105.92	—470,229	209,999	—681,138	—1,477,241
Kanawha & Michigan	176	1,887,571	399,430	2,368,464	355,103	877,036	17,943	909,897	89,594	2,249,586	94.98	118,878	126,968	—8,094	—765,870
Kansas City, Mexico & Orient	272	532,289	119,282	683,271	286,435	275,195	9,174	406,135	49,898	1,026,836	150.28	—343,565	43,801	—387,385	—141,695
Kansas City, Mexico & Orient of Texas	465	459,792	89,857	585,279	239,446	278,635	9,497	416,886	53,238	997,701	170.46	—412,423	34,906	—447,330	—295,940
Kansas City Southern	774	6,297,419	1,323,713	8,243,196	1,474,068	1,876,278	114,923	3,455,468	289,001	7,198,464	87.32	1,044,732	456,534	584,685	—1,491,133
Kansas City Terminal	26	.....	.....	748,691	102,824	166,311	.....	328,921	8,951	615,243	82.17	133,448	141,056	—7,653	—9,287
Lake Erie & Western	902	4,544,110	439,399	5,222,362	944,168	1,669,325	183,192	2,420,102	168,563	5,280,873	101.12	—58,511	208,600	—269,314	—677,448
Lehigh & Hudson River	96	1,339,966	26,500	1,419,313	176,965	325,641	11,363	622,547	40,074	1,176,591	82.89	242,722	35,700	207,004	21,263
Lehigh & New England	230	1,786,411	11,062	1,904,238	296,605	449,260	17,799	721,465	67,104	1,550,642	81.43	353,596	57,811	295,785	—276,593
Lehigh Valley	1,435	27,879,846	3,872,799	35,056,879	5,180,240	9,522,286	293,326	16,608,333	763,457	32,487,934	92.67	2,568,945	1,063,100	1,504,385	—255,818
Long Island R. R.	398	3,233,504	9,615,889	14,154,454	1,905,310	2,314,454	86,471	6 659,164	331,094	11,393,381	80.49	2,761,073	638,549	2,119,906	—590,348
Los Angeles & Salt Lake	1,168	6,787,891	2,365,832	9,699,303	1,701,430	2,044,941	125,326	3,260,950	209,585	7,596,678	78.32	2,102,626	472,717	1,628,681	292,369
Louisiana & Arkansas	302	901,049	250,795	1,194,748	324,719	285,922	23,391	551,284	42,773	1,228,088	102.79	—33,340	79,643	—113,030	—254,758
Louisiana Ry. & Nav. Co	349	1,618,008	247,140	1,979,866	560,051	376,844	25,856	971,146	54,146	1,988,044	100.41	—8,178	98,000	—106,326	—370,576
Louisiana Eastern	207	1,464,821	779,424	2,338,369	318,991	420,228	28,085	668,536	75,490	1,525,856	65.25	812,513	64,782	747,526	—328,973
Louisville & Nashville	5,013	42,129,708	14,135,016	59,354,090	9,345,516	15,505,801	789,881	25,304,626	1,323,751	52,476,423	88.41	6,877,667	1,783,378	5,087,527	—4,057,364
Louisville, Henderson & St. Louis	199	1,156,536	443,235	1,667,980	346,257	238,972	42,764	664,307	51,872	1,344,170	80.58	323,810	28,000	295,351	—56,005
Maine Central	1,216	6,311,568	2,660,565	9,679,022	1,770,322	2,223,136	83,581	5,716,153	251,896	10,059,716	103.93	—380,694	529,363	—910,118	—468,742
Maryland, Delaware & Virginia	82	462,699	231,456	716,662	63,651	221,751	4,499	492,008	14,576	796,486	111.13	—79,824	12,131	—91,975	34,452
Michigan Central	1,861	27,369,049	10,882,856	41,737,799	5,806,544	8,395,030	456,805	16,189,418	767,253	32,111,709	76.93	9,626,090	1,255,000	8,367,371	1,482,532
Midland Valley	388	1,558,263	551,176	2,188,844	460,581	383,701	16,570	814,079	83,741	1,758,671	80.34	430,173	48,488	380,536	—148,010
Mineral Range	101	437,787	2,939	458,761	80,860	152,082	2,993	266,769	6,932	509,922	111.15	—51,161	25,000	—76,161	—74,957
Minneapolis & St. Louis	1,646	5,251,967	1,568,971	7,150,686	1,317,224	1,850,443	72,284	3,617,400	205,581	7,054,952	98.66	95,734	356,819	—264,366	—218,300
Minneapolis, St. Paul & Sault Ste. Marie	4,243	17,010,429	4,421,185	22,855,674	3,522,751	4,898,966	166,444	9,887,543	528,700	19,121,006	83.65	3,734,568	1,306,279	2,426,883	2,431,115
Minnesota & International	194	430,515	169,783	636,114	158,022	111,603	3,503	341,134	24,618	638,880	100.43	—2,766	32,630	—35,410	—78,840
Mississippi Central	164	354,740	192,657	578,516	137,300	215,417	8,731	241,793	40,720	643,962	111.31	—65,446	23,725	—88,921	—267,867
Missouri & North Arkansas	365	528,392	257,107	838,157	461,605	269,919	12,894	438,438	60,030	1,242,022	148.18	—403,866	44,627	—449,454	—469,529
Missouri, Kansas & Texas R. R.	1,714	13,085,471	4,516,333	18,577,000	3,589,046	5,413,728	181,834	6,576,979	542,164	16,372,542	88.13	2,204,458	631,061	1,572,231	56,814
Missouri, Kansas & Texas Ry. of Texas	1,796	8,193,951	4,256,741	13,397,214	2,791,293	2,389,773	148,404	6,860,279	515,806	12,820,704	95.69	576,511	338,381	234,365	265,975
Missouri, Oklahoma & Gulf Ry	332	576,190	120,876	741,193	356,621	326,335	12,506	472,090	49,446	1,218,597	164.41	—477,404	59,516	—537,453	—272,013
Missouri Pacific	7,135	34,983,183	11,417,063	49,781,248	10,000,467	11,568,957	573,175	21,672,754	1,417,433	45,477,175	91.35	4,304,074	1,857,725	2,426,940	—4,342,348
Montour R. R.	54	648,715	10,248	695,906	192,814	404,431	9,143	183,341	45,139	836,544	120.20	—140,638	16,296	—156,939	—144,313
Mobile & Ohio	996	6,672,370	1,233,355	8,377,472	1,409,793	2,852,705	164,081	4,139,012	274,964	8,847,005	105.61	—469,534	368,022	—838,235	—956,502
Monongahela R. R.	108	1,743,646	141,828	1,896,510	438,873	243,603	6,689	628,469	48,653	1,366,288	72.04	530,222	35,000	495,203	25,367
Monongahela Connecting	6	.....	.....	967,708	160,656	364,470	3,617	504,366	49,369	1,082,478	111.85	—114,770	15,412	—130,182	—272,827
Morgan's Lou. & Tex. R. R. & S. S. Co.	400	2,862,484	1,209,016	4,321,367	688,764	931,788	54,919	1,828,450	140,787	3,658,522	84.66	662,846	215,123	446,564	—1,027,605
Nashville, Chattanooga & St. Louis	1,247	6,969,409	3,055,315	10,738,919	1,974,755	2,849,822	227,364	4,939,178	305,708	10,362,814	96.49	376,105	350,000	24,222	—2,007,364
Nevada Northern	168	842,617	71,441	952,211	141,601	158,647	6,355	267,538	30,430	605,515	63.59	346,695	133,038	213,656	—384,105
New Orleans & Northeastern	398	2,342,161	875,816	3,686,057	580,970	816,577	55,798	1,767,159	105,083	3,362,430	91.22	323,627	198,499	124,689	—520,939
New Orleans Great Northern	284	940,861	297,572	1,295,219	267,845	294,212	16,330	577,655	57,958	1,216,715	93.93	78,504	67,861	7,775	—289,721
New Orleans, Texas & Mexico	191	754,951	239,347	1,060,637	266,993	256,448	18,539	377,872	42,193	977,299	92.14	83,337	70,000	13,279	—285,723
New York Central	6,075	102,615,911	47,652,816	169,998,640	22,655,574	36,622,638	1,550,826	73,235,332	4,313,840	140,964,379	82.92	29,034,262	6,306,470	22,719,958	8,996,274
New York, Chicago & St. Louis	574	12,006,012	1,262,312	13,635,327	1,674,648	2,532,755	179,456	5,618,010	366,408	10,396,194	76.24	3,238,833	385,000	2,853,203	1,421,261
New York, New Haven & Hartford	1,965	25,801,297	24,899,488	57,147,716	7,902,891	11,841,361	317,307	28,938,420	1,865,279	51,908,487	90.83	5,239,228	1,876,000	3,352,087	—1,922,483
New York, Ontario & Western	569	3,561,866	1,440,335	5,979,369	928,088	1,466,897	57,469	2,756,101	161,475	5,370,031	89.80	609,338	179,800	424,570	—210,684
New York, Philadelphia & Norfolk	121	3,379,542	828,234	4,517,672	357,502	1,071,133	60,218	2,165,781	79,782	3,863,368	85.51	654,304	118,861	535,441	67,614
New York, Susquehanna & Western	135	1,499,193	383,486	2,171,351	208,698	361,589	13,479	1,406,136	56,312	2,046,342	94.24	125,009	214,744	—90,061	—69,588
Newburgh & South Shore	7	.....	.....	949,039	143,180	211,240	.....	450,982	25,830	831,232	87.58	117,806	48,095	69,711	38,877
Norfolk & Western	2,087	33,543,088	6,245,903	41,744,065	5,649,033	12,018,840	284,095	15,652,543	731,494	34,410,167	82.43	7,333,899	1,820,000	5,512,958	—1,680,473
Norfolk Southern	907	2,292,333	986,025	3,499,748	752,299	697,509	53,633	1,888,687	144,740	3,540,313	101.15	—40,565	131,840	—172,630	—418,917
Northern Pacific	6,572	39,533,705	10,910,751	54,249,960	9,944,665	9,626,110	430,442	21,068,339	1,290,000	42,862,052	79.00	11,387,090	4,117,117	7,261,160	—1,079,037

Traffic News

The Boston & Albany is preparing to follow the Boston & Maine with the announcement of a new freight tariff, to go into effect in December, making general advances of 25 per cent.

Milton J. Vandewalker, traffic manager of the American Ship Building Company, Cleveland, Ohio, has been appointed traffic manager of the Detroit Shipbuilding Company, with office at Detroit, Mich., a subsidiary of the former.

In order to throw some light on the present prices of sugar, Russell J. Poole, food director of the City of Chicago, has compiled the history of Illinois Central Box Car No. 33093 for the month ending November 15. The car, according to Mr. Poole, containing 54,250 lb. of sugar, has been moved from place to place during this period and in the meantime its cost has been swelled by the sum of $2,466. The car was originally consigned by the Godchaux Sugar Company, Nashville, Tenn., to J. P. Hadesman & Company, Chicago, but was resold by brokers four times, and finally reached the Washburne-Crosby Milling Company in Minneapolis, Minn. From Nashville the car was moved to Paducah, Ky., increasing its "value" in freight charges approximately $162. From there it was moved to Omaha, Neb., increasing its value (cost) approximately $187. Subsequently it was moved back to Chicago, for which the freight charges were approximately $201, and it then proceeded to Minneapolis, for which movement there were freight charges of $200 more. The total cost of the trip according to this compilation is approximately $2,466. Mr. Poole suggests that the Railroad Administration and the attorney general cooperate to stop such repeated reconsignments. "Meantime," says Mr. Poole, "so far as we know, the car is still rolling."

Preparing for Christmas

Believing that the movement of mail, parcel post and express shipments will be extraordinary during the holiday season this year and that there is every indication of an unusually large passenger traffic, R. H. Aishton, regional director of the Northwestern region, has promulgated nine suggestions for the handling of this traffic, embodying them in a statement which has been sent to railroad officers in his district. Mr. Aishton suggests that:

(1) Requirements of business to be carefully estimated in advance and equipment and power provided sufficient to avoid overcrowding of delayed movement of trains.

(2) Repairs to all passenger train cars to be expedited and all such cars fit for use held out of shop in the meantime.

(3) Special attention to be given to the inspection, cleaning and general preparation of cars for service during the holiday season.

Cooperation between individual roads with common use of equipment, including through routing of cars to avoid transfers which would cause delay or be inconvenient to passengers. Cooperation with Pullman Company, with the purpose of making best possible use of available sleeping cars.

(5) Temporary increase of facilities for storage and handling of baggage, mail and express to avoid congestion which has occurred in past years, use conveniently located freight houses and other buildings.

(6) Provide additional employees in ticket offices, baggage and parcel rooms, information bureaus, etc., and, if necessary, increase the number of depot passenger representatives.

(7) Change ticket office hours during the period of heavy sales, opening offices at night, if necessary.

(8) Arrange for publicity necessary to induce passengers to buy tickets in advance, thus avoiding congestion and permitting advance estimate of train and equipment required. The passenger traffic committee will suggest a form of poster to be used for this purpose in depots and ticket offices, and will also prescribe rules to govern advertising which will include instructions to passengers.

(9) Careful attention to supplies and the provision of necessary additional help on dining cars and in restaurants, lunch rooms, etc.

Foreign Railway News

Railwaymen in France to Strike

LONDON.

Extremists in France are taking advantage of the absence of the leaders of the General Federation of Labor, who are in Washington, by carrying on an active strike propaganda. The Paris Section of the State railways is taking the lead and notices were distributed on November 6, among all services ordering work to cease on November 7 on the left bank of the Seine. The political object of this threatened strike is clear from the following order of the day: "The railwaymen of the Champ de Mars decide to leave work at 3 p. m. on Friday, November 7, as a protest, first, against the delays in the amnesty and, second, against intervention in Russia."

Frank H. Clark, consulting engineer of New York City, has gone to Peking to act as technical adviser to the Ministry of Communications of the Republic of China. Mr. Clark recently resigned as general superintendent of motive power of the Baltimore & Ohio to open offices in New York City and undertake engineering investigations, report upon railway conditions and operations and cooperate in the preparation of plans and specifications for railway equipment and materials as well as to advise export firms, foreign railways and other concerns purchasing equipment or materials from United States manufacturers. He was associated with David L. Barnes, consulting engineer of Chicago, for four years and later entered the service of the Chicago, Burlington & Quincy, where he held successively the positions of chief draftsman, mechanical engineer, superintendent of motive power and general superintendent of motive power. Resigning from that company in 1910, he joined the staff of the Baltimore & Ohio as general superintendent of motive power, a position he held for eight years. Mr. Clark is a member and has served as president of the American Railway Master Mechanics' Association and the Master Car Builders' Association.

F. H. Clark

Germany's Passenger Service Ceases

On Tuesday, November 4, the whole passenger service throughout Germany ceased for 11 days, and after that period there will be only absolutely necessary passenger trains. In the industrial regions the workers' trains will not be taken off, and in and around the cities a restricted local service will be kept up, but that is all. The telegraphic and postal service is in a chaotic condition and the telephone service is impossible. Stations throughout the country are congested with goods traffic and the canal services are almost at a standstill. The mails will have to be forwarded by goods train, and the only travel service in Germany will be its Zeppelin service running between Berlin and Friedrichshafen. The stoppage of passenger traffic is officially explained as being necessary in order to secure adequate

distribution of coal and potatoes. As, however, the occupation troops must be in a position to occupy the plebiscite areas as provided by the Peace Treaty, and the moving of considerable bodies of troops is attended with difficulty, some connect the government's decree with the forthcoming troop movements. Other people think the desire to avoid trouble round about November 9, the anniversary of the revolution, has something to do with this measure.

Deficit on Prussian Railways

The deficit on Prussian railways for 1919, so far as can be ascertained, amounts to approximately $155,000,000, of which $40,000,000 has been expended in indemnities for railway thefts. It is estimated that the total working expenses for the year will amount to about $1,700,000,000.—*Modern Transport.*

Recuperation in Belgium

The coal mines of Belgium were not damaged by the Germans, and although they need new hoisting cables and other important repairs, they are now turning out 84 per cent of their pre-war deliveries. This statement is from a circular which has been issued by the Chamber of Commerce of the United States, in connection with the International Trade Conference. Belgium is already exporting coal to France, Italy, Holland and Switzerland, a total of about 400,000 tons a month. Iron works suffered seriously from the war; of 52 blast furnaces, 9 are now working. In the textile field there is a good deal of activity and about a million spindles are now resuming operations. The railroads are being rapidly restored. Germany has replaced a large part of the cars and locomotives which were taken away, and slow freight is now moving almost normally. On the main railroads passenger traffic is already quite as intensive and as rapid as before the war. Conflicts between labor and capital in Belgium have been settled, in general, quite peaceably; employers have increased rates of pay, and the workingmen, realizing the serious state of the country, have not pushed their claims to the extreme. Belgium still needs machines and raw materials, and must have capital.

English Railwaymen Want More Holidays And More Free Passes

London.

According to an article published in the Morning Post, at a special meeting of the Associated Society of Locomotive Engineers and Firemen at Leeds the Executive Committee was instructed to demand 7 shillings and 6 pence per week special rent allowance to all members to be paid in addition to wages. The following resolutions were passed:

1. That 14 days' holiday be allowed annually with full pay after six months' service; an extra day to be allowed for each bank holiday worked; six free passes to be available annually to any part of the United Kingdom, for each man, his wife and family.

2. That enginemen, motormen, assistant drivers, firemen and electric trainmen who from ill health or defective eyesight brought about by their employment are taken off the footplate (electric or steam) shall be paid not less than the rate they were receiving when taken off the footplate.

A definite stand was also to be taken against the question of lodging away from home, and to refuse to undertake journeys which involve this practice. It was also agreed that members' contributions should be increased by 2 pence per week.

England's Railroad Deficit

London.

The Times Trade Supplement states that official statements in connection with railway receipts and expenditure have by no means established the existence of any such large deficit as was paraded to make a vase for the setting up of a Ministry of Transport. It is known for example that receipts from freight traffic during the war period, even if the Government traffics are excluded, have been higher than for the year 1913. The increase in freight traffic revenue for the year 1918, as compared with the year 1913, was nearly 20,000,000, and for the years 1916 and 1917 was considerably in excess of that figure. There is a general belief that if Government traffics were allowed for, the estimated deficit on working during the war period, even after allowing for claims to be made by railway companies for arrears of maintenance would be almost extinguished. Under present condition, with a heavy falling off in Government traffic which has not yet been replaced by the demand for ordinary freight traffic with the new claims on revenues to meet the higher wages bill, it is difficult to see how a deficit on working can be avoided. Whether it will require an average increase in freight rates of anything like 50 per cent is quite another matter and it will be the business of the Advistory Committee, on which important commercial interests are represented, to see that no undue burden is imposed on British trade.

Electrification System Proposed to Be Adopted on French Railways

London.

The following is an abstract taken from "Le Genie Civil" of August 30, regarding the conclusion arrived at by the French Commission to America in connection with the choice of a system of electric traction:

In view of the remarkable results obtained by the Chicago, Milwaukee & St. Paul Railway, with 3,000 volt direct current, M. Mauduit, Professor at the Faculty of Science of Nancy, France, does not hesitate in finally deciding in favor of the adoption of this system, which he considers to be the only one at present realy efficient for main-line electric traction. Single-phase current, which at first sight offers the advantage of lending itself to a great variety of combinations, may some day achieve satisfactory working, but it is beyond doubt that the present practice is far from this desirable state of efficiency.

The drawback to continuous current is that it is more costly in initial outlay, on account of the rotary sub-stations which transform the 50-period three-phase current generally generated in power stations. However, one must bear in mind that in order to realize a saving in this direction with single-phase current, it is necessary to generate this single phase current under low frequency (16 periods) by means of special generating sets, failing which, if one wishes to utilize the current normally produced by the power stations (50 periods three phase current) it is necessary to resort to rotary transformers, both with the single-phase and the direct currents. From this standpoint continuous current offers the advantage of lending itself to the utilization of current from any power station, under the same conditions.

With regard to working expenses, M. Mauduit, does not consider that the difference between the two systems will be considerable and that it will count in the choice of a system.

The almost complete absence of perturbations on the telephone and telegraph lines forms, as regards continuous current, a very considerable superiority over the other systems.

Three-phase current which in America is only of insignificant local use has not been mentioned, as M. Mauduit is of the opinion that it should be rejected, especialy in view of the complexity and high price of the installation and upkeep of its two contact lines.

From an economic point of view, the documents which we have brought from America are far less complete and less precise than the technical information. On the other hand, it is necessary, in order to draw conclusions from the American experience as to the economic future of European electric traction, to introduce considerable modifications in the figures, on account of the two main constants which differentiate the American working from the European working.

The coupling used in America has a tensile strength of about 135 tons and one may allow for a tensile stress up to 40 tons; in Europe, there are two types of couplings, the tensile strength of which is 35 and 55 tons respectively, while the tensile stress allowed is limited to 10 tons except in Switzerland where it is 12 to 15 tons.

American passenger cars and goods wagons are fitted with compressed air brakes. The result is that they use engines two to three times more powerful, goods trains two to three times longer and heavier than in Europe, and that the attendants on goods trains are comparatively less numerous, which completely alters the figures in connection with working.

Exact calculation made by companies, and particularly the

results obtained with the first electrifications carried out and the taking into account the actual price of coal, will alone show under what conditions electric traction will be more economical than steam traction. It is already known, anyhow, that the saving will be greater on lines with long gradients and heavy traffic, and it is probable that, as regards liens deviating too much from these conditions, electric traction will be more costly than steam traction.

However, the ever increasing necessity to economize coal, and the great side-advantages well known to derive from electrification, make it necessary to proceed as rapidly as possible with the initial work of a progressive electrification of the most interesting lines of our Paris-Orleans, Paris-Lyon-Mediterranean, and Midi systems.

Coal Shortage in Argentina Results in Use of Corn as Fuel

In the Argentine Republic all the coal consumed on the railways and by power companies, etc., used to be imported from England, says an article in the Railway Gazette (London). Soon after the outbreak of war, however, the necessity for the employment of ships for other purposes reduced the supply of coal and, as time passed, the quantity decreased until at last practically no coal was introduced.

It had always been customary for the railways in the far northern part of the country, where forests of hard wood abound, to burn wood in locomotives, and the use of this class of fuel was rapidly adopted by all the railways, and also by the factories and electric-power companies in the large towns, as well as by private householders. As a result, the price of wood fuel largely increased and it soon became evident that the railways could not haul to the south sufficient wood to supply themselves and other consumers.

The British Government sent to the Argentine a certain number of ships to bring back wheat to Europe, but practically none to carry maize, of which a very large amount is grown in the Republic. Since it was not being exported, the farmers could not sell any, and they consequently became holders of large stocks of corn (maize), which they could not turn into cash. At the time the shortage in wood fuel was becoming pronounced, and it was suggested that corn might be burnt in its stead.

The farmers put forward their stocks at about $15 a ton, delivered at rail side. Experiments were made, and it was found that maize would burn freely and had practically the same calorific value as hard wood. It gave good results in the stationary boilers of power houses, and some was used in locomotives. Thousands of tons were burnt each month in the power houses of the railways, and in those established by public companies in the large towns to furnish electricity for lighting, power, electric tramways and railways.

It was burnt sometimes in the form of grain, but more often on the cob. Firebars had to be placed about ½ in. apart, otherwise the grain fell through into the ash pit or ash pan. This closing up of the bars was particularly necessary when maize was used on locomotives. In such cases it was burnt mostly on shunting engines.

The relative calorific values of maize and coal are found to be in practice, as 2.5 to 1; similar values for hard wood and coal vary between 2.1 of wood to 1 of coal, and 2.5 of wood to 1 of coal. The coal referred to is the best Welsh steam coal. The hard wood varies much according to the class of the trees from which it is cut, and the length of time it has been cut. Some of the new, green wood rushed forward directly after cutting, in a wet season, contained as much as 40 per cent by weight of moisture.

If maize is ground down until the particles are about the size of those of a medium sand, and it is then blown, by a fan, into a heated combustion chamber, it immediately bursts into flame, and is much more economically consumed. Some power companies laid down the necessary plant for dealing with it in this manner, and obtained results which showed the maize fuel to have a calorific value, relative to steam coal, of 2 to 1.

A large quantity of maize is still being burnt in the Argentine Republic, but the fuel question is a little easier, due to the fact that oil in reasonable quantities is now arriving from the Mexican and other oil fields.

Equipment and Supplies

Locomotive Deliveries, Week Ended November 8

The following new locomotives were shipped during the week ended November 8:

Works	Road	Number	Type
Baldwin	P. & R.	3	USRA Consol.
	L. V.	1	Santa Fe.
	C. C. & O.	1	USRA Mallet.
		5	
Total		5	

Locomotives

The Fore River Railroad has ordered one 0-6-0 locomotive from the American Locomotive Company.

The South Manchurian Railway has ordered six 0-8-0 locomotives from the Baldwin Locomotive Works.

Perrin & Marshall, 2 Rector street, New York, will be in the market shortly for two 40-ton switching locomotives.

The Detroit Edison Company, Detroit, Mich., has ordered two 0-6-0 switching locomotives from the Baldwin Locomotive Works.

The Shantung Railway (China) has ordered through Mitsui & Co., 65 Broadway, New York, seven consolidation locomotives from the American Locomotive Company.

The Pennsylvania Equipment Company, 1420 Chestnut street, Philadelphia, Pa., is in the market for three standard gage six-wheel switching engines, weighing about 70 tons.

The United Fruit Company is in the market for a number of three to six-ton fuel oil locomotives of 24 in., 30 in., 36 in. and 42 in gage, for use on its lines in Central America.

Freight Cars

The Great Northern is asking prices on 1,000 30-ton wooden stock cars.

The Chesapeake & Ohio is repairing 250 freight cars and may repair several thousand additional cars.

The Sterling Coal Company, Daniel Boone, Ky., has ordered 49 mine cars from the American Car & Foundry Company.

Thomas W. Simmons & Company, 4 John street, New York City, is inquiring for 100 steel box cars for export to China.

George H. Carey, 1 Broadway, New York, is in the market for 200 second-hand, all-steel gondola cars of 100,000-lb. capacity.

The Hyman Pickle Company, Louisville, Ky., has ordered one 40-ton flat car from the American Car & Foundry Company.

The Federal Ship Building Company, Kearney, N. J., is inquiring for 20 low-side gondolas and 10 flat cars of 50-tons capacity.

The Manhattan Oil Company, Minneapolis, Minn., is in the market for 100 8,000-gal. capacity and 100 10,000-gal. capacity tank cars.

The Aracoma Coal Company, Huntington, W. Va., has ordered 50 composite mine cars from the American Car & Foundry Company.

The Lidgerwood Manufacturing Company, 96 Liberty street, New York, is in the market for 100 50-ton ballast cars for the South Manchurian Railway.

The Belgian Government has bought 1,000 30-ton gondola cars from the American Government, 2,000 Belgian standard

type cars from the British and 5,000 from Belgian manufacturers.

The V. V. Lebedjeff Engineering & Supply Company, 227 Fulton street, New York, is inquiring for 60 second-hand flat cars with steel underframes; 40 of these cars to be of standard gage and 60,000-lb. capacity, and 20 of 36-in. gage and 50,000-lb. capacity, for export to the West Indies.

Passenger Cars

The Pennsylvania Equipment Company, 1420 Chestnut street, Philadelphia, Pa., is in the market for a second-hand standard gage baggage car.

The Madrid, Zarogossa & Alecarte Railway, Madrid, Spain, has ordered 20 second-class and 30 first-class passenger coaches from the American Car & Foundry Company.

Iron and Steel

George H. Carey, 1 Broadway, New York, is in the market for 150 tons of 20-lb. relaying rails with the necessary bars.

The V. V. Lebedjeff Engineering & Supply Company, 227 Fulton street, New York, is in the market for 2,000 tons of 12-lb. rails for export to the West Indies.

Signaling

The Canadian Pacific is installing automatic block signals on its line between Galt, Ont., and Woodstock, 30 miles; the General Railway Signal Company's signals arranged on the "absolute permissive" plan.

Miscellaneous

The Government of Netherlands, through its New York office, has ordered 4,000 forged wheels and axles for the Java State Railways from the Forged Steel Wheel Company, and 18,000 tons of 50 lb. and 70 lb. rails with angle bars, tie plates and clips (2,000 tons) from the U. S. Steel Corporation and the Consolidated Steel Company.

Perin & Marshall, 2 Rector street, New York consulting engineers for the Lung Yen Mining Administration of China, are in the market for four 3,000 cu. ft. 8 wheel type self-dumping cinder cars of standard gage; also for a 15-ton steam locomotive crane with 45 ft. boom, and additional 20 ft. removable extension piece in center, with a ¾ cu. yd. clam shell bucket, a 45-in. lifting magnet and 7½ kilowatt engine driven generating set, standard to be same as on the Pekin-Kalyon Railway, on which the crane will be located.

R. S. Willis, 11 Broadway, New York, has ordered from the Consolidated Steel Company 2,400 steel wheels and 1,200 axles, also an additional 200 wheels and 1,000 axles for use on railroads in Spain. Orders have also been given to the Railway Steel Spring Company for 11,700 steel springs and to the Niles-Bement Pond Company for a 48-in. hydraulic press of 200 tons' capacity, a Niles No. 2 automatically-driven axle lathe, a 48-in. standard car wheel borer, and a No. 2 extra heavy car wheel lathe, all for export to Spain.

Big Engine Menaces Town.—The throbs of a 2,000-h.p. engine are the cause of heart throbs and consternation in Sisterville, W. Va. Residents fear a part of the city will tumble down as a result of the vibrations. The engine in question belongs to the West Virginia Light Heat and Power Company, furnishing electricity to four municipalities. Council has condemned the engine and citizens in addition have appealed to the Public Service Commission. The engine was built a number of years ago, but was not used because of its great size, but recently the smaller engines have become disabled, and it has become necessary to use the larger one.

Supply Trade News

Henry C. Frick, a director of the U. S. Steel Corporation, also of the Pennsylvania Railroad, and the Atchison, Topeka & Santa Fe, died on December 2, at his home in New York.

The plant of the **E. A. Kinsey Company**, Cincinnati, Ohio, manufacturers of railway and contractors' supplies, was damaged by fire on November 21 to the estimated extent of $100,000.

The Kalamazoo Railway Supply Company, Kalamazoo, Mich., has increased its capital stock from $150,000 to $300,000 and plans the erection of an addition to its plant 100 ft. by 310 ft., to cost $10,000.

The International Steel Tube Company has been incorporated under the laws of Delaware with a capital of $2,500,000, of which $1,000,000 is preferred and $1,500,000 common stock, and is planning the immediate construction of the first unit of a seamless tube plant at Cleveland, Ohio. William P. Day, president of the International Steel Tie Company, is president, and Thomas Parrock, former superintendent of the Republic Steel Company, Youngstown, Ohio, is vice-president of the new concern.

H. W. Ross has been elected vice-president of **Templeton, Kenly & Co., Ltd.**, Chicago, manufacturers of Simplex jacks, and assumed his duties with that company on September 29.

H. W. Ross

In 1916 Mr. Ross was designated as engineer in charge of installing a bureau of standards for the Quartermaster Corps, U. S. A., for the purpose of testing and selecting various motor machine shop tools and accessory equipment for the United States Government. In 1917 he was called to Washington, D. C., to purchase machinery, tools and auto accessories for use of the Motor Transport Corps in France, on August 1, 1917, receiving his commission as captain, later being promoted to major. He went overseas, where he was connected with the Motor Transport Corps in an engineering and purchasing capacity. He was later sent to Spain and Portugal in connection with the General Purchasing Board. After the close of hostilities Major Ross was selected as officer in charge of sales of Motor Transport Corps equipment in connection with the United States Liquidation Commission, and he had charge of the appraisal and selling of the vast quantity of motor cars, trucks, motorcycles and machinery that the government had accumulated in France. Major Ross returned to the United States on September 15, and at his request was mustered out of the service soon thereafter. Mr. Ross' new work covers the general sales management of Simplex jacks, and he will give particular attention to the Simplex pole pulling and pole straightening and special emergency jacks used by steam and electric railways and other public utility companies.

M. J. Keane, manager of the steam goods branch of the Canadian Fairbanks-Morse Company, with headquarters at Toronto, Ont., has resigned and organized the **Valve Engineering Company**, with office at 160 King street West, Toronto. The new concern will act as agents for the Pennsylvania Flexible Metal Hose Company, the Penberthy Injector

Company, Spands & Witwyte, manufacturers of pressure packing for steam and gas engines, and other power plant equipment companies.

Robert C. McCarter, consulting engineer to all the European Westinghouse companies and president and managing director of the Russian Westinghouse Company, with office at New York City, and **William Cooper,** consulting engineer, who prior to the establishment of his office in New York, in 1917, was European manager and chief engineer for Robert W. Hunt & Co., have formed a partnership and will act as consulting engineers under the firm name of **McCarter & Cooper,** with office at 165 Broadway, New York City.

Major C. G. Carothers, who served in the U. S. Army as captain and major from September, 1917, to September, 1919, has been appointed Chicago railroad representative of the **B. F. Goodrich Rubber Company,** with headquarters at Akron, Ohio, succeeding **F. O. Slutz,** promoted. Major Carothers was born on August 31, 1881, at Mattoon, Ill., and was educated in the grade and high schools of his native town. He served an apprenticeship as machinist at Mattoon on the Cleveland, Cincinnati, Chicago & St. Louis, and then worked for a number of western railroads. He subsequently attended Purdue University, Lafayette, Ind., and was graduated as a railway mechanical engineer in 1912. From August of that year to August, 1914, he was mechanical engineer with the Falls Hollow Staybolt Company, Cuyahoga Falls, Ohio. He then served to September, 1917, as senior mechanical engineer with the Interstate Commerce Commission, Division of Valuation, Southern District, with headquarters at Chattanooga, Tenn. In July, 1917, he received a commission as captain in the Engineers Reserve Corps, and was called to active service the following September to attend the Second Engineer Officers' Training Camp, American University, Washington, D. C. He subsequently was attached to the 301st Engineers of the 76th Division at Camp Devens, Ayer, Mass., and in January, 1918, was sent to France, to report to the general superintendent of motive power, Colonel H. H. Maxfield, of the Railway Transportation Corps. He subsequently served in the railroad yard at Is-sur-Tille as master mechanic and built a shop there, also one at Villa-le-Sec, the advance section ammunition depot. He later served as superintendent of motive power of the 13th Grand Division, with headquarters at Is-sur-Tille.

C. G. Carothers

The **Detroit Star Grinding Wheel Company** has been formed by merging the business of the Detroit Grinding Wheel Company and the Star Corundum Wheel Company, both of Detroit, Mich. The officers of the new company are: **John R. Kempf,** president; **J. T. Wing,** vice-president; **F. H. Whelden,** secretary and treasurer. **Edward N. Dodge,** formerly with the Norton Company, Worcester, Mass., has been appointed general sales manager. The company's plant and offices will be at 241-61 Cavalry avenue, Detroit, Mich.

Earl E. Eby, sales manager of the industrial bearings division of the **Hyatt Roller Bearing Company,** New York City, has been appointed to the board of directors of **Hyatt, Ltd.,** London, a new company formed to market the Hyatt bearings in Europe. Mr. Eby will devote his entire time to this work, with headquarters in New York. **G. O. Helmstaedter,** Chicago district manager of the Hyatt Roller Bearing Company, has been promoted to sales manager to succeed Mr. Eby, with office at New York. W. B. Wachtler, formerly of the New York office, has been appointed to succeed Mr. Helmstaedter at Chicago.

H. A. Jackson, president of the **Chicago Pneumatic Tool Company,** has addressed a letter to shareholders stating that the proceeds of the new stock issue of $6,448,800 will be used as follows: redemption of bonds now outstanding, $3,086,300; extension of plant and of sales and service branches, $1,775,000; additional working capital, $1,587,800. The authorized stock at present is $7,500,000, of which the amount issued and outstanding is $6,448,000. It is proposed to increase the authorized capital stock to $13,000,000 and to offer at par to each stock holder of the company an amount of new stock equal to the present holdings. Mr. Jackson stated: "As a result of the increase, earnings will be substantially increased, the company will be free from all fixed charges, including sinking fund requirements, and there will be no capital liabilities other than the capital stock aggregating 128,976 shares. Assuming the same rate of earnings for the remainder of the current calendar year as has been experienced in the past nine months, the earning per share will be $35.55."

Charles S. Pflasterer, manager of the caustic soda primary battery department of the **National Carbon Company, Inc.,** Cleveland, Ohio, with office in that city, has been appointed eastern manager of the railroad sales department with the same headquarters. Mr. Pflasterer was born in Allegheny, Pa., in 1875. After spending two years in the steel mills at Braddock, Pa., he became connected with the Union Switch & Signal Company, Swissvale, Pa., in 1891 as a laborer. In 1893 he entered the employ of the Johnson Railroad Signal Company, Chicago, and from 1894 to 1901 was connected successively with various signal companies, the Chicago & Eastern Illinois, the Cleveland, Cincinnati, Chicago & St. Louis, the Chicago Elevated Railways and the Chicago Great Western. In 1901 he was appointed interlocking foreman on the Union Pacific at Omaha, Neb. From 1901 to 1908 he was successively signal foreman, general signal foreman, superintendent of construction, general signal inspector and assistant signal engineer and in 1900 was appointed assistant signal engineer of the Oregon Short Line, with headquarters at Ogden, Utah. In 1911 he became connected with the National Carbon Company, Inc., in charge of the caustic soda primary battery department, which position he held until his recent appointment.

C. S. Pflasterer

The Pollak Steel Company, Cincinnati, Ohio, with plants located at Cincinnati and South Chicago, Ill., manufacturers of railroad car axles, locomotive forgings and heavy forgings for marine and machine builders, announce that it has recently added to its South Chicago plant a large extension for the manufacture of drop forgings for the automobile, tractor and agricultural implement trade and has added to its Cincinnati plant a large extension for the manufacture of automobile parts. The Pollak Steel Company has just closed negotiations with the Interstate Iron & Steel Company, Chicago, which was desirous of carrying out its policy of concentration in the Chicago district, for the purchase of its rolling mill property at Marion, Ohio. The Marion mill is in full operation and this adds to the Pollak product the manufacture of shapes, angles, bars, as well as concrete reinforcing bars for the building trade, agricultural implement

manufacturers, tractor and automobile trade. In addition to its manufacture of specialties, such as automobile parts and drop forgings, which cannot be measured on a tonnage basis, this now gives the Pollak company a capacity of both forged and rolled products of approximately 300,000 tons a year.

Dr. M. E. Pennington has joined the staff of the American Balsa Company, Inc., New York, manufacturers of Balsa wood products, including insulation material. She will be in charge of its research and development work. Dr. Pennington graduated at the University of Pennsylvania, where she specialized in chemistry and received the degree of Ph. D. Dr. Pennington had charge of the chemical department of Women's Medical College of Pennsylvania and later of the City Bacteriological Laboratory of the Department of Health and Charities of the City of Philadelphia; she then established her own clinical laboratory, making a specialty of doing scientific research work in connection with medical research work of practicing physicians. Since 1905 she has been employed by the U. S. Department of Agriculture, having entered the service on part time, doing special research work, and later took up the preservation of foods by better handling methods, especially the application of refrigeration to all phases of the distribution of foodstuffs. Dr. Pennington gradually gave up her various other interests and has devoted herself entirely to that line of work under the auspices of the Department of Agriculture since 1907, when the Research Laboratory formally was established as an organization of the department. Dr. Pennington is the author of a number of articles which have appeared in the technical press and elsewhere, dealing with chemistry, bacteriology and botany. Since her connection with the Department of Agriculture a number of articles by Dr. Pennington on the preservation of foodstuffs by low temperatures, the effect of better methods of handling perishables, also on refrigerator cars, have appeared in the *Railway Age*.

Thomas H. Symington, who has been elected chairman of the board of the **T. H. Symington Company,** New York, was born on May 14, 1869, at Baltimore, Md., and educated at Lehigh University. In 1885 he served as an apprentice at the Mt. Clare shop of the Baltimore & Ohio and subsequently was consecutively journeyman-machinist, inspector of engines and inspector of materials on the same road. From August to November, 1893, he was draftsman at the Richmond Locomotive Works and then for two years was general outside inspector of the same works. From November, 1895, to June, 1898, he was assistant superintendent of the Richmond Locomotive and Machine Works and then to April, 1901, was superintendent of motive power on the Atlantic Coast Line. He then organized and became president of the T. H. Symington Company, with a plant at Corning, N. Y. In 1908 he reorganized the company and built one of the largest malleable iron plants in the country at Rochester. In 1916 he organized the Symington Machine Corporation, Rochester, for handling large shell contracts for Great Britain and Russia. Two years later he extended the operations of the machine company to handle government orders for shells and he organized and operated additional plants, including The Symington Anderson Company, to manufacture 75 mm. French model 1897 field pieces; also organized the Symington Forge Corporation to manufacture 75 mm. shell forgings and the Symington Chicago Corporation to manufacture 155 mm. shell forgings and machine shells. He was appointed assistant chief of ordnance in September, 1918, and since November of the same year, when he resigned his commission from the army, has served as president of the T. H. Symington Company, malleable iron foundrymen and manufacturers of railroad equipment, with headquarters at New York.

Trade Publications

Concrete and Highway Grade Crossings.—The Portland Cement Association, Chicago, has issued an eight-page pamphlet containing a report on the use of concrete slabs for paving highway crossings on railways. The report is illustrated by numerous photographs of actual installations of this nature.

Financial and Construction

Railway Financial News

Boston & Maine.—Judge Morton, in the United States District Court at Boston, has signed a formal decree terminating the receivership of this road on December 1. James H. Hustis was appointed receiver of the Boston & Maine on August 29, 1916.

Following the discharge of the receiver, the Boston & Maine and its seven leased lines were consolidated. The government has turned over approximately $20,000,000 to meet the claims of the bondholders.

Chicago, Rock Island & Pacific.—At a meeting on November 18, the directors deferred dividend action until December, when semi-annual dividends will be considered, the last returns having been made in July.

Cleveland, Cincinnati, Chicago & St. Louis.—This company has applied to the Illinois Public Utilities Commission for permission to issue $20,000,000 of refunding and improvement mortgage bonds.

Pennsylvania.—The quarterly dividend of 1½ per cent on the stock of this company was paid on November 29 to 113,881 stockholders. Although this is the largest number ever recorded only 1,709 of the checks went abroad.

San Francisco-Oakland Terminal Railway.—The Railroad Commission of California has authorized this company to issue two notes to the Realty Syndicate Company, one for $247,000. the other for $33,630. To secure the payment of the larger note, the company is to deposit 370 of its general lien mortgage bonds and as security for the smaller note, 50 of the bonds are to be deposited. The commission has also authorized the company to issue its 6 per cent demand notes, not to exceed the sum of $169,520 to renew notes for a balance of $169,520 due on notes amounting to $218,460 issued to various banks. The company reports that it has paid $48,940 of the original notes. These notes are to be procured by the deposit of $257,000 face value of the company's general lien mortgage bonds.

Southern Railway.—Walter Kerr, president of the New York Life Insurance & Trust Company has been elected a director to succeed A. D. Julliard, deceased.

Spokane & Inland Empire.—This road has been ordered sold under foreclosure on November 1 by order of the United States District Court at Spokane.

Timpson & Henderson.—D. R. Harris, Mayor of Henderson, Texas, has been appointed receiver for this line, which is 35 miles in length.

Twin Mountain & Potomac—John J. Baker of Keyser, W. Va., has been appointed receiver for this road which operates between Keyser, W. Va., and Twin Mountain, 27 miles.

Railway Construction

California Southern.—The rapid increase in the development of the Palo Verde Valley, Cal., and the corresponding need for railroad service have been cited by the California Southern Railroad Company as reason for its application to the Railroad Commission of the State of California for authority to make an eight-mile extension of its lines southwest of its present terminus at Blythe, Riverside county, Cal. The commissioners were also asked to authorize the issuance of bonds to the extent of $135,000 to meet the cost of making this extension.

The Erie Railroad has given a contract to Baldwin & Welcomer, Union City, Pa., to build a brick machine shop at Monmouth street, Jersey City, N. J.

Railway Officers

Railroad Administration

Federal and General Managers

Lyman Delano, federal manager of the Atlantic Coast Line, the Savannah Union Station and the Winston-Salem Southbound, has had his jurisdiction extended over the Charleston & Western Carolina and the Georgia; **T. F. Darden,** assistant to Mr. Delano as federal manager of the Atlantic Coast Line, with headquarters at Wilmington, N. C., has been appointed assistant federal manager of the Charleston & Western Carolina and the Georgia; **W. L. Mapother,** federal manager of the Louisville & Nashville and four other roads under the direction of B. L. Winchell, regional director of the Southern region, has had jurisdiction extended over the Atlanta & West Point and the Western Railroad of Alabama. These extensions of jurisdiction have been occasioned by the death of Federal Manager **Edwin T. Lamb,** whose death occurred November 9.

Operating

F. M. Doar, chairman board of control of the Augusta Union Station, has been appointed superintendent of the Charleston & Western Carolina.

A. W. Anderson, general superintendent of the Augusta & Summerville, the Augusta Union Station and the Georgia, with headquarters at Augusta, Ga., has been appointed general manager of the Georgia and the Charleston & Western Carolina.

S. T. Grimshaw, trainmaster of the Seaboard Air Line at Monroe, S. C., has been appointed assistant general manager of the Macon, Dublin & Savannah, with headquarters at Macon, Ga., succeeding **J. A. Streyer,** resigned to accept service elsewhere.

James C. McCullough, whose promotion to general superintendent of the Central System of the Pennsylvania Lines with headquarters at Pittsburgh, Pa., was announced in the *Railway Age* of September 12 (page 490), was born in Deersville, Ohio, on August 31, 1865. He entered railway service in 1881 as a tinner's helper, on the Pittsburgh division of the Pittsburgh, Cincinnati, Chicago & St. Louis. From 1881 until 1898 he was successively bolt machine operator, machinist's helper, fireman and engineman at Pittsburgh. In April, 1898, he was appointed assistant road foreman of engines on the Pittsburgh division and in 1901 was promoted to road foreman of engines and trainmaster on the Marietta division. On January 1, 1902, he was made trainmaster of the Pittsburgh division and in 1910 superintendent of the Marietta division. In January, 1912, he was transferred to the Richmond division and in 1914, to the Pittsburgh division, which position he held until his recent promotion.

Financial, Legal and Accounting

W. H. Vincent, auditor of the Georgia and assistant secretary and auditor of the Elberton & Eastern, with headquarters at Augusta, Ga., has been appointed federal auditor of the Georgia and the Charleston & Western Carolina. **W. S. Morris,** federal treasurer of the Georgia, has also been appointed federal treasurer of the Charleston & Western Carolina.

La Rue Brown, whose appointment as general solicitor of the Railroad Administration was announced in the *Emergency Bulletin of the Railway Age* of Nov. 11, was born in Louisville, Ky., and graduated from Phillips Exeter Academy, the academic department of Harvard and Harvard Law School. After practising law, he became chairman of the Minimum Wage Commission of Massachusetts and in 1913 became special counsel for the Massachusetts Public Service Commission in connection with matters relating to the financing of the New York New Haven & Hartford Railroad. From 1914 to 1918 he was chiefly engaged as special counsel for the United States in various anti-trust suits, including that against the United Shoe Machinery Company, and was also engaged with proceedings under the Panama canal act, relating to the control of water carriers by competitors.

Traffic

Ernest Williams, assistant general freight and passenger agent of the Georgia, with headquarters at Augusta, Ga., has been appointed general freight and passenger agent of that road and of the Charleston & Western Carolina. **D. H. Crenshaw,** division claim agent of the Georgia at Augusta, Ga., has been appointed freight claim agent of both roads.

Engineering and Rolling Stock

L. G. Morphy, designing engineer of the Boston & Albany, has had his title changed to principal assistant engineer with duties to remain unchanged.

J. E. Willoughby, chief engineer of the Atlantic Coast Line at Wilmington, N. C., has been appointed chief engineer of the Georgia and the Charleston & Western Carolina.

S. L. Church, division engineer of the Conemaugh division of the Pennsylvania at Pittsburgh, Pa., has been transferred to the Maryland division, succeeding **J. O. Hackenberg,** appointed principal assistant engineer at Wilmington, Del.; **N. B. Pitcairn,** main line supervisor at Perrysville, Md., has been appointed Mr. Church's successor.

Purchasing

F. H. Fechtig, purchasing agent of the Atlantic Coast Line at Wilmington, N. C., has been appointed purchasing agent of the Georgia and the Charleston & Western Carolina.

Corporate

Traffic

C. A. Blood, has resigned as federal traffic manager of the Lehigh Valley and has been appointed corporate traffic manager with headquarters in New York City.

H. C. Franks has been appointed general agent of the San Antonio & Aransas Pass with office at San Antonio, Texas. He will represent the corporation in matters pertaining to freight and passenger traffic.

F. H. Glendenning has been appointed foreign freight agent of the Canadian Pacific at Vancouver, B. C.; **C. S. Gowans,** foreign freight agent at Montreal, and **H. W. Gillis** has been appointed assistant to Mr. Gowans.

W. R. Smith, general manager and chief engineer of the Edmonton, Dunvegan & British Columbia, the Alberta & Great Waterways and the Central Canada, with office at Edmonton, Alberta, has also been appointed traffic manager, succeeding **C. Dowling,** who has resigned.

Obituary

Lewis S. Smith, federal treasurer of the Texas & Pacific, and acting federal treasurer of the Trans-Mississippi Terminal, notice of whose death appeared in the *Railway Age Emergency Bulletin* of October 13, began railroad work in 1877 in the treasury department of the International & Great Northern at Palestine, Texas. He entered the employ of the Texas & Pacific in 1886 in the capacity of paymaster. In 1890 he was appointed treasurer of the same road and in July, 1918, after the road had been taken over by the government he was made federal treasurer. The following year he was appointed acting federal treasurer of the Trans-Mississippi Terminal. Prior to joining the staff of Texas & Pacific, he was connected with the Missouri Pacific with offices at St. Louis.

EDITORIAL

Railway Age

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n most parts of the country the track is going into the vinter saturated with water from the recent general rains. This will lead to more than the usual amount of heaving and rough track, particularly since less than the normal amount of ditching and other drainage work has been done during the last hree or four years. This condition is arising at a time vhen the track structure itself has been weakened by in-dequate renewals of rails, ties and ballast. It is now too ate to make amends for the deficiencies of the past. The roblem is to see that sufficient supervision and inspection re provided to detect and correct any weaknesses promptly nd before they become serious. This will call for added are by all responsible for the safety of track.

Increased Precautions Will Be Necessary

ate in November formal ceremonies attended the opening of ie San Diego & Arizona, a 148-mile line extending eastward from San Diego, Cal., to a connection with the Southern Pacific at El Centro. This line, which was described in the *Railway Age* of April 11, page 931, is one involving somewhat more nan ordinary construction difficulties. However, there would e little remarkable about the completion of such a railroad ut for the fact that the building of new main line railoads in the United States has become almost an extinct ursuit. Annual statistics still disclose that some mileages f new railways are being built each year, but analysis shows nat these are concerned, for the most part, with branch line xtensions, lumber spurs and oil and coal field developments. Repeated reference has been made in these columns to the lmost total cessation of extensive railway development in his country and the completion of the San Diego & Arizona the exception which proves the rule.

Recent Railway Extensions (Rarae Aves.)

ne of the changes which the Railroad Administration made passenger traffic conditions was the establishment of consolidated ticket offices. The corporations themselves had had consolidated ticket offices in some cities for a number of years and where such an office is well located, with ample attndants to take care of the peak load, it is generally consided satisfactory. It is undoubtedly a convenience to be ble to choose between two or more alternative routes and ecure railroad and Pullman tickets on any one of these utes at the same office. As in nearly every other busiess, however, it has been found increasingly difficult to et clerks who come directly in contact with the public who e polite, alert and intelligent. The arrangement of the nsolidated ticket offices in the larger cities is such that one erk or ticket agent is assigned to a specified section of the ounter; in a large office there may be 10 or 15 such sections. ne difficulty which has developed is the tendency of a lazy indifferent ticket seller to be absent from his section of e counter, or to appear to be engaged in other work, so that an undue amount of work is done by the two or three more ambitious and alert ticket sellers and an unnecessary delay results. If there was an incentive for the ticket seller to sell as many tickets as he could, the service to the public would probably be considerably improved, and a source of waste time and possibly of waste money in salaries of ticket sellers would be eliminated. Might it not be possible to grade the salary of ticket sellers so as to give the ambitious clerk a somewhat higher average monthly income than the indifferent clerk? Of course, there are difficulties in the way of such a scheme; a clerk who had the hard luck to sell an undue proportion of short trip tickets might feel himself aggrieved, but if the salary was fixed on a three-month's average, it would seem that the more efficient man would be properly rewarded. If consolidated ticket offices are to be continued after the corporations resume operation of their roads some such plan as this might be worth consideration.

Service at Consolidated Ticket Offices

Travelers who during the past year or two have been able to make their accustomed railroad journeys only by occasionally—or frequently—standing in the aisle of a day coach for from ten to a hundred miles ought, perhaps, to congratulate themselves that they had an American day coach to stand in. In England, where nearly every passenger-carrying unit classed as "coaching stock" is a compartment car, and where, consequently, the standing-up arrangement is nearly or quite out of the question, passengers by the hundreds during the past summer have been paying a shilling each for the advance reservation of seats; this merely for the clerical work incident to reservation, not for extra breathing space or luxury of fittings as in the case of a Pullman car. On many occasions it was necessary to take this precaution a sufficient time in advance, or else stay at home. A Saturday express of the Great Western from London to the seashore was reported as having its six hundred seats booked three weeks ahead! There were not enough cars and locomotives to carry all the people who wished to travel, and no other solution of the problem was possible. The same arrangement was in vogue to some extent in France. And the practice has its attractive features. Unless passengers can get into the habit of carrying a camp chair under the arm, there are still situations in America (in the vicinity of our large cities) in which some way of economizing seats is desirable. Charging for making reservations is not necessarily unreasonable, even when cars are not desperately scarce. The idea of penalizing a railroad when it fails to do its best to provide a seat for each passenger, a familiar proposition with demagogues in legislatures, is not without its friends among level-headed people. When the demand exceeds the supply, *or is nearing that point*, a stiffening of the charge is legitimate. It would not be long, to be sure, before some legislator would arise to condemn all railroad management sas extortioners; but the principle is sound, nevertheless. Twenty-five cents would be too high, as a permanent rate; and the required advance notice of three weeks would be a good deal

Reserving Seats in Day Coaches

shortened as the restoration of normal conditions became possible; but any experienced passenger who—when willingly or unwillingly deprived of Pullman accommodations—has had to put up with disagreeable conditions in a day coach, would no doubt be glad to see some such experiment tried.

Relation Between Purchasing and Stores Depts.

Henry B. Spencer, director of the Division of Purchases, United States Railroad Administration, presented a paper before the New York Railroad Club September 19, which was printed in the *Railway Age* of September 26, and which was largely in the nature of suggestions as to improvements in the purchasing and stores departments organizations, based upon observations of the practices of the roads under federal control. Mr. Spencer recommends that the purchasing, storing, handling, disbursing, etc., of all material and supplies be placed under the direction of an executive officer. That there is great need for better organization and methods on some roads is indicated by the comparative data as to the amount of stores carried by two unnamed roads, which are said to be typical of two extremes. Unfortunately, the discussion of the paper did not deal with the larger aspect of Mr. Spencer's recommendations. There is bound to be a wide difference of opinion over such a radical suggestion. Its success will, of course, depend upon getting a big enough man for the job and of having, at the same time, the very best methods for keeping an accurate record of the material and its movement. A perpetual or continuous inventory is essential in order that the exact condition may be ascertained promptly and at any time. Such records rightly used and accompanied by close co-operation between the purchasing and stores departments and those departments using material will bring results no matter what form of organization is followed. The question is to develop that form of organization which, under the peculiar conditions on a given road, will develop these ideal conditions.

Weak and Strong Coal Mines

The weak and strong road problem of the railroads is not unique; just at present an analogous problem is presented in the coal mining industry. Just as freight rates which will yield the Denver & Rio Grande or the Chicago Great Western a bare existence, will yield the Union Pacific or the Chicago, Burlington & Quincy a large profit, so the price per ton for coal which will little more than pay miners' wages in operations where the seams of coal are thin and difficult to work, will yield a very large profit—William G. McAdoo, former director general of railroads, speaks of 200 per cent—to other mines with broad, easily workable seams of coal. Just as in earlier discussions of the railroad problem there have been advocates of government ownership on the ground that the public and not private investors should profit by the earnings of the advantageously situated road, so there are now advocates of government ownership of the coal mines, in order that the public rather than the operators shall get the profit from rich, cheaply workable coal. One of the important factors in convincing the public of the undesirability of government ownership of railroads has been the quality of the service rendered during government operation. Service is not so important a factor in the coal situation, but another reason which applies to the operation and ownership of coal mines, as well as to the operation and ownership of railroads, namely, the higher cost of government business than of private business, has been demonstrated convincingly by government operation of the railroads. This country needs an increased, not a diminishing output of coal. Apparently the most practical as well as the cheapest way in the long run to get it, is to accept economic law, and permit owners and operators of cheaply workable coal mines to make the profit which their advantage over other coal mine operators gives them.

The Remarkable Revival of Railroad Freight Traffic

LAST SPRING the freight traffic of the railways of the United States declined to the smallest amount that it had since 1915. In October, 1919, the amount of freight traffic handled was the largest ever handled in any single month in the history of American railroads except August, 1918.

These statements show the remarkable way in which the industry and commerce of the country recovered after the slump which was caused by the cessation of the war in Europe. In February, 1919, the number of tons carried one mile by the railroads was only 25,700,000. This was the smallest month's business that had been handled since 1915. In October, 1919, the number of tons carried one mile was 40,300,000, an increase over February of 57 per cent. A comparison between February and October is unfair, however, because of the fact that October has a larger number of days than February. But March and October have the same number of days; and the business handled in October was 40 per cent greater than it was in March. October is always one of the busiest months of the year on the railroads and the traffic handled in October, 1919, was 1.3 per cent greater than that handled in October, 1918, which held the record for October up to this year.

The coal strike caused a sharp decline in the amount of business handled by the railroads in November. The rapid increase of freight business from February to October, however, and the fact that the business handled in October broke all records, show how large is the productive capacity of the country at the present time, and are very reliable indications of how large the production will be after the coal strike is over. Looking at the matter from a transportation standpoint, while the railroads have succeeded in handling 1.. per cent more freight than in October, 1918, they did not handle quite as much freight as they did in August, 1918 and it taxed their facilities to the limit to handle what they did.

With the productive capacity of the country so great as it is shown to be by the immense volume of business it began to give the railways as soon as it had partially recovered from the effects of the war, and with the difficulty that the railroads experienced in handling that business, the fact is made increasingly clear that under any system of operation the railroads for some years to come are going to find it impossible to handle all the business the country can give them unless there is a sharp industrial depression.

While this fact is so plain, and while it makes so obvious the necessity for the immediate revival of the expansion of railroad facilities, the government at Washington continues to refrain from adopting any definite and constructive measures for the solution of the railroad problem. President Wilson has announced that he will return the railways to their owners on January 1, but Congress has passed no legislation to prepare for their return.

Some people continue to predict that the failure of the administration and Congress to deal constructively with the subject of railroad *regulation* will make successful private management of railroads unavoidable. If the administration and Congress should show no more capacity to deal with the

railroad problems which would arise under public *ownership* than they show in dealing with those which arise under public *regulation,* it is obvious that government management would not be made any greater success than the government regulation has been and is being made.

The Dunkirk Collision

THE INTERSTATE COMMERCE COMMISSION issued on November 26 a report, dated September 2, and signed by W. P. Borland, chief of the Bureau of Safety, on the rear collision of passenger trains at Dunkirk, N. Y., July 1, when eight passengers were killed in a New York Central express train. The report says that the investigation was conducted in conjunction with the Public Service Commission of New York state, but that commission has published no report on it.*

The cause of this collision and the problem of preventing such disasters in the future, have been discussed by many writers. Different phases of the question have been touched upon in the *Railway Age.* In a letter printed July 18, page 92, S. G. Neal presented the claims of the "Automatic Straight Air" brake. In the issue of August 15, page 291, E. W. Pratt gave his experience with certain safeguards. In the issue of July 25 there was an editorial note. The question why no action was taken by any person on the train back of the engine is uppermost in many minds. C. W. Hoisington, of Wichita Falls, Tex., writes: "The engineman sounded the signal for brakes. How many trainmen realize and fully appreciate this signal? It is plain that many do not. Why? Simply because the trainmaster who employs them does not make them acquainted with its true importance. It may be admitted that the average brakeman could not have stopped that train in the distance available; but it would seem that two men, with the assistance of the conductor and the baggageman could have at least slackened the speed to such an extent as to have mitigated the consequences. How about the conductor's valve? How many trainmen are taught that on the first intimation of an impending collision or derailment they should pull the cord?"

Another correspondent asks, "Were the brakes applied, on the cars, either by hand or by pulling the conductor's valve? If they were applied did the application indicate full air pressure? If not applied, did the trainmen hear the whistle? If they did not hear it, why? Over how many cars can the New York Central standard whistle be heard by men in a train moving at high speed"?

It is pertinent to consider these questions. They suggest a great change which has taken place in railroad practice since the air brake became universal, but which we recognize only tacitly. By reason of the general and complete reliance on the air brake, hand brakes have not only fallen into disuse, so far as passenger trains are concerned, but, as an emergency safeguard, have become impossible. The task of keeping trainmen keyed up to the high state of vigilance which prevailed in the old days is practically out of the question. The rule books still keep up the fiction, but the practice has no respect for the rule books. Our correspondent asks if the trainmen of Train 7 heard the short blast of the whistle calling for the setting of the hand brakes; and if they did, why they did not respond. Mr. Borland's report settles it that the single blast was sounded, and was several times repeated; but it also gives the facts which explain the uselessness of the whistle signal in such an emergency. Ten witnesses testify to hearing the whistle stop-signal given by train No. 7, most of them saying that it was repeated three or more times; yet the conductor of the train (sitting in the seventh car) did not hear these repeated blasts; the baggageman did not hear them; the "second conductor," riding in the same car with the conductor, heard them, but took no action; and Brakeman Colmorgan heard them, but did nothing more than to "ask the conductors what they meant"! The second conductor "did not pay any attention" to what this brakeman said. The flagman of this train, when approaching Dunkirk, "heard more whistling than usual" and interpreted it as the engineman's warning to pedestrians to get off the track.

Discussion as to the amount of noise made by the train, or the size of the whistle on the locomotive, will not develop any profitable information. The conductor and the baggageman say that they did not hear the sounds; but it is a safe conclusion that if they had heard them no quicker action would have been taken. The hand brakes on heavy vestibuled cars are a slow and clumsy resource at best and nobody expects anything from them. The conductor's valve is the last (and only) resort. That does its duty if it is used; but the vital question is to get it used promptly. Our problem is that of the human agency; and the big problem, from that standpoint, is that of training common human beings to act as quickly in an emergency which may occur once in two or twenty years, as they would in an everyday procedure which has become second nature. The desideratum is to educate *all* of the employees on a train—including porters, waiters and cooks—to open the air valve as quickly, when they perceive that the train is in danger, as the engineman would open it if he saw danger. The most cursory comparison of the conditions in the cars with the conditions surrounding the engineman is sufficient to show the almost insuperable difficulty of doing this. Only the most regular and efficient attention to a thorough drill of all hands could accomplish even an approach to this theoretical safeguard.

It is true, as our correspondent suggests, that the ideal trainmaster, with unlimited resources at his command, might train a force of men up to a much higher degree of efficiency than is now to be found, even on the best roads. But, with conditions as they are, the practical operating officer must feel a strong sympathy toward the trainmaster who frankly admits that his trainmen depend wholly on the engineman to keep their train from running into danger. And our remedial measures must be directed to insuring to the engineman every possible means of doing this.

The statement of facts in this case, as given by the trainmen, has the earmarks of the kind of "testimony" so familiar at such hearings, where the directness of the questions and the positive and unequivocal nature of the replies (as recorded in the printed report) leave, as a final impression on the hearer's mind, the feeling that the real situation in the testifiers' minds is neither clear nor simple; that what they heard, or did, or thought, or said, in the crucial moment, was confused or indefinite, or could not be clearly described, and that what they said on the witness stand was correspondingly untrustworthy. Their conduct had fallen far short of their duties (duties as outlined by the questioner after his study of the rule book) and their narrative, two hours or two days afterward, thus was inevitably almost or quite worthless. Thus we have here, as in countless other cases, a puzzle for the investigator which he cannot solve. For an effective remedy he must direct his efforts in other directions.

*This collision was reported in the *Railway Age* of July 4, 1919, page 40. Westbound passenger train No. 41, second section, standing at the station, about 2 a. m., was run into at the rear by westbound passenger No. 7, moving at about 40 miles an hour; 12 persons were killed and 111 injured. A trespasser, riding between the tender and the leading car, is believed to have closed the angle cock in the air brake pipe, on the assumption that thereby he could stop the train. The present report summarizes the testimony of trainmen and other competent witnesses, 10 of whom heard a whistle signal given by the engineman of No. 7, calling for the application of hand brakes. Some of these witnesses said the whistle was sounded four times, some seven times and others an indefinite number. The report contains five photographic pictures of the wreck, but contains no conclusion except that the collision was caused by the closing of the angle cock.

Results of the Operation of the English Railroads

THE NET RESULT of the operation of the railroads of Great Britain by the government from August 5, 1914, to June 30, 1919, has been a deficit after the payment of the guaranteed rental to the private companies of £21,911,000 ($109,555,000). It is estimated, however, that in the fiscal year ending March 31 next, the deficit for that twelve months alone will be £45,000,000 ($225,000,000). It was not until 1918 that net operating revenues fell below the amount necessary to meet the government guarantee of rental. Since that time, however, a decline in gross revenues and a large increase in operating expenses have reduced the net operating income to but a fraction of the amount of the rental guarantees.

Under date of October 31, 1919, Sir Eric Geddes, minister of transportation, has issued a "white paper" giving the figures for revenue and expenses of railroads of Great Britain and Ireland during the period of governmental control. The total operating revenues for this period (five years lacking one month), was £749,065,000, ($3,745,325,000). The total net operating income was £220,810,000 ($1,104,050,000), and the total guaranteed rental was £222,721,000 ($1,113,605,000) leaving a net loss to the government of £21,911,000 ($109,555,000). The rental guaranteed by the government was based on the revenues and expenses of 1913. In 1913 the railroads of Great Britain earned £118,701,000 ($593,505,000) and operating expenses including taxes amounted to £75,127,000 ($375,635,000), leaving a net operating income of £43,574,000 ($217,870,000) available for interest and dividends. At the outbreak of the war earnings increased rapidly. The railroads under government operation made no charges for government service, but in all of the figures quoted above there is included an estimated amount as revenue from government service. Thus, in the period from August 5 to December 31, 1914, £3,500,000 ($17,500,00) is credited as revenue from government traffic; in 1915, £10,279,000 ($51,395,000); in 1916, £20,649,000 ($103,245,000); in 1917, £35,699,000 ($178,495,000); in 1918, £41,917,000 ($209,585,000), and in the first half of 1918, £12,919,000 ($64,595,000).

In addition to performing railway service the government took over the operation of railroad hotels, steam boats, docks, etc. In each year since 1914 there has been a deficit from these operations amounting to £158,000 ($790,000) in 1915, but to £2,190,000 ($10,950,000) in 1918. Furthermore, the government has paid the interest on additional capital since the beginning of the war. This interest amounted to £543,000 ($2,715,000) in 1915, and had reached the rate of £1,000,000 ($5,000,000) a year by June 30, 1919.

Included in the government statement of railroad expenses for the period of government operation is an amount covering arrears of maintenance. Apparently the government has been fairly liberal in making its estimate of arrears, although to prove this we would have to have available more detail than is covered in the ministry of transportation "white paper."

Maintenance of way in the test year, 1913, cost £11,818,000 ($59,090,000). A somewhat similar proportionate amount was spent in the last five months of 1914, but a charge of £800,000 ($4,000,000) was made for arrears. In 1915, £11,598,000 ($57,990,000) was spent on maintenance of way, and £2,985,000 ($14,925,000) was charged for arrears. In 1916, £11,924,000 ($59,620,000) was spent and £5,056,000 ($25,280,000) was charged for arrears. In 1917, £13,266,000 ($66,330,000) was spent, and £6,282,000 ($31,410,000) charged for arrears. In 1918, £16,145,000 ($80,725,000) was spent, and £6,485,000 ($32,425,000) charged for arrears; and in the first six months of 1919 £10,224,000 ($51,120,000) was spent and £1,357,000 ($6,785,000) was charged for arrears.

It should be born in mind that the track structures, etc., of English railroads are on the average more nearly permanent structures than the average on American railroads. The evil effects of delayed maintenance are slower, therefore, in making themselves apparent. The final result, however, is similar to that which has resulted from deferred maintenance on American railroads. Assuming that the estimates of arrears is based on impartial opinion, the jump in maintenance expense from less than £12,000,000 ($60,000,000) in 1916 to more than £13,000,000 ($65,000,000) in 1917, and to more than £16,000,000 ($90,000,000) in 1918, with a steadily increasing, not decreasing, amount chargeable for arrears is significant. The increased cost of labor and materials would not probably account entirely for the course taken by cost in maintenance of way and charges for arrears.

Figures for maintenance of equipment show similar conditions. Maintenance of equipment in 1913 cost £13,258,000 ($66,290,000) In the five months of 1914 quite a little less than a proportionate amount was spent and £315,000 ($1,575,000) only was charged for arrears. In 1915 the amount spent was £500,000 ($2,500,000) more than in 1913, but £2,477,000 ($12,385,000) was charged for arrears. In 1916 £15,212,000 ($76,060,000) was spent and £3,203,000 ($16,015,000) was charged for arrears. In 1917 £17,621,000 ($88,105,000) was spent and £3,668,000 ($18,340,000) was charged for arrears. In 1918 £21,888,000 ($109,440,000) was spent and £3,327,000 ($16,635,000) was charged for arrears, and in the first half of 1919 £14,157,000 ($70,785,000) was spent and £358,000 ($1,790,000) was charged for arrears. It will be noted that the jump in maintenance of equipment expenditures came a year earlier than in maintenance of way expenses, which is what would be expected if we are correct in assuming that a part of the large increase in maintenance expenses and charges in the later years of government operation are the result of accumulated deferred maintenance.

The English divide their transportation expenses into two general classes, those pertaining to the cost of running locomotives and those pertaining to train and station costs. Notwithstanding the fact that fuel is the largest item of locomotive running expenses, the so-called traffic expenses, which include train and station expenses, more than kept pace with the increase in locomotive running expenses. This is probably due in part to the very low wages paid to station agents, ticket collectors, porters, etc., prior to 1914. The increase in wages to this class of employees was proportionately greater even than the increase in fuel costs. Locomotive running expenses in 1913 amounted to £17,131,000 ($85,655,000) and increased steadily until in 1918 they were £29,974,000 ($149,870,000), and in the first half of 1919, £18,168,000 ($90,840,000) or at the rate of more than £36,000,000 ($180,000,000) a year. So called traffic (train and station) expenses amounted to £23,261,000 ($116,305,000) in 1913, and steadily increased until they amounted to £41,622,000 ($208,110,000) in 1918, and to £25,513,000 ($127,565,000) in the first half of 1919, or at the rate of over £51,000,000 ($255,000,000) a year. The increase in 1918 over 1913 in locomtive running erpenses was 43 per cent, and in traffic expenses 44 per cent.

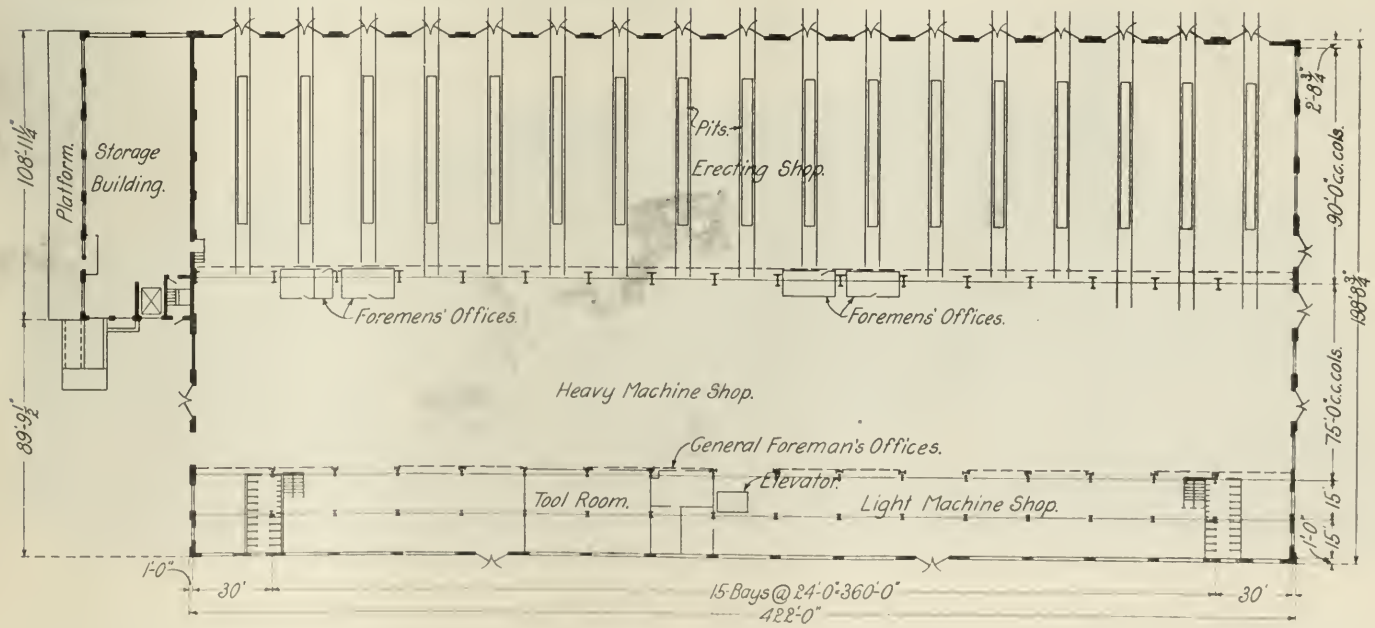
Had the English roads been returned to their owners at the end of 1918, the results of operation by the government would have placed but a very slight burden on the tax payers. The forecast which Sir Eric Geddes makes for the fiscal year ending March 31, 1920, is based on an expectation of traffic continuing at about the 1918 volume, but with a great increase in expense over 1918. If the estimate is correct, it shows a serious situation for the English railroads.

Heavy Machinery Bay, Logansport Shop

Pennsylvania Lines Improved Locomotive Facilities

Shop at Logansport, Indiana, and Roundhouse at Stark, Ohio, Illustrate Character of Designs Developed.

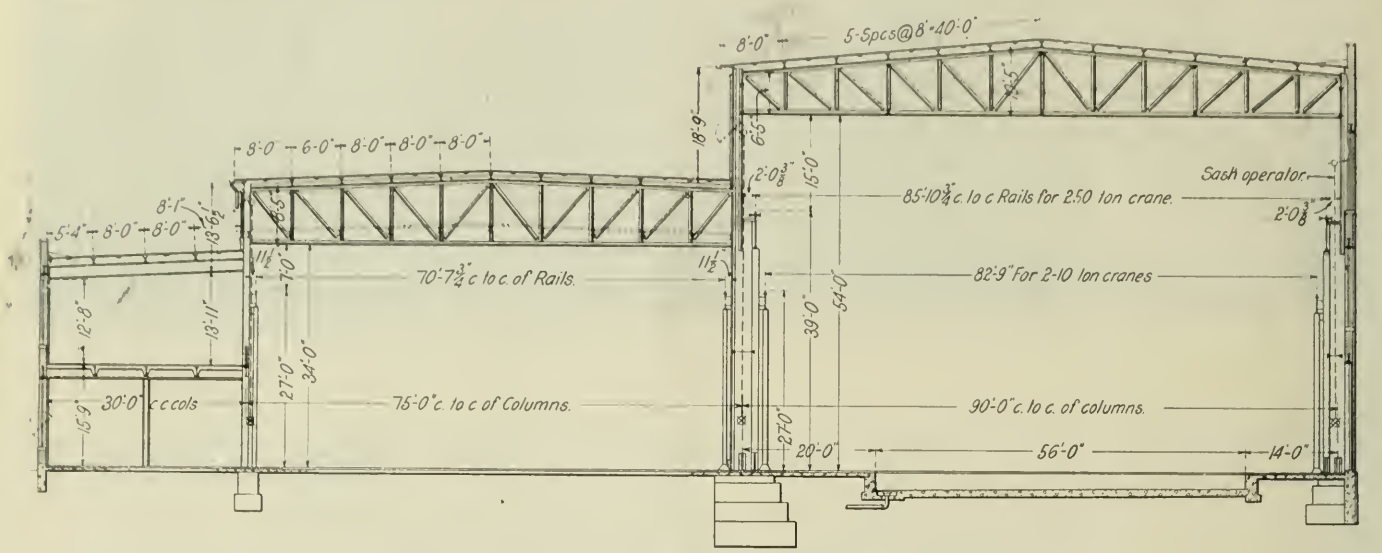
THE PENNSYLVANIA LINES WEST of Pittsburgh have probably made more extensive improvements and additions to their shop and engine terminal facilities in the last two years than any other railway system in the country. To some extent this has involved the extension of existing facilities, but in large measure it has involved the construction of complete new structures and in several cases of entirely new layouts. These new developments are of special interest as indicating the trend of modern design, and exemplifying the development and application of standard plans, as the principle of standard structures was applied extensively in this terminal program of the Pennsylvania Lines. At the Columbus (Ohio), locomotive shops, existing facilities have been extended so that this will serve as the central heavy repair shop of the Southwest system, while at Logansport, Ind., and at Stark, Ohio, complete new locomotive shops are being provided which, while smaller than those at Columbus, are to be equipped to take care of all locomotive repairs except those involving firebox renewals. These shops are, moreover, of special interest because the same standard design was applied at each point.



Plan of the Logansport Shop Building

In the case of engine houses, extensive additions to existing houses have been made at Logansport and Columbus,

while at Stark and Crestline, Ohio, Richmond, Ind., and one or two other points complete new roundhouses have been built, several of which conform to a standard plan that is notable for the novelty of design and the introduction of a number of unique features. For this reason, the following description of an example of a heavy repair locomotive shop recently put into operation at Logansport, Ind., and of a new roundhouse at Stark (Canton), Ohio, now nearing completion, will be of interest.



Cross Section of the Standard Locomotive Repair Shop Building

The Logansport Shop

The new shop at Logansport occupies a site at the extreme end of the shop property where a space could be had which was not being actively used in the shop operation, thus reducing interference between the construction and shop activities to a minimum. Another advantage of the site arose from the fact that rock underlies the natural ground surface at a depth of only four or five feet. The new facilities include a shop building 195 ft. by 422 ft. with a storehouse wing at the north end 37 ft. by 109 ft., a transfer table 60 ft. wide extending the entire length of the building and a parking space for locomotives consisting of 20 short tracks occupying a strip of land 72 ft. wide on the far side of the table. Access to the shop is afforded by lead tracks at each end of the building, connecting with the transfer table. At the south end of the shop there is a material yard, provided with a 10-ton gantry crane of 75-ft. span.

The shop proper consists of a 90-ft. erecting bay, a 75-ft. heavy machinery bay and a 30-ft. auxiliary bay which was built with a second or mezzanine floor. The ground floor of the 30-ft. bay is devoted to toilet rooms, fan rooms, general foreman's office, tool room and light machinery work, while the mezzanine floor is used for a tin shop, headlight repairs, air brake inspection and testing and locomotive pipe fitting.

The predominating feature of the erecting bay is the provision for two craneways, one above the other. The upper one carries a 250-ton Morgan crane equipped with two trolleys, each of which is provided with one 125-ton hook and one 20-ton auxiliary hook. This bay has a clear headroom of 54 ft. while the top of the upper craneway rail is 39 ft. and the lower craneway rail 27 ft. above the floor level. The lower runway carries a 10-ton Whiting crane. The erecting bay contains 17 engine pits 56 ft. long and spaced 24 ft. center to center. These pits all drain to the west end where catch basins are connected with a sewer system.

North End of the Logansport Shop Showing the Storehouse Wing and the Concrete Roadways

The 75-ft. bay which contains the heavy machine tools

is equipped with a 10-ton traveling crane. The roof is supported by roof trusses 34 ft. clear above the floor and grouped in pairs to form transverse monitors which afford the high degree of overhead lighting necessary to the absence of light from the sides of an interior bay.

In point of construction this building is typical of modern industrial plant practice, with steel columns and roof trusses, exterior curtain walls of brick with large window areas. The great height, wide span and heavy crane loads in the erecting bay necessitated extremely heavy construction in the columns, especially those between the 90-ft. and 75-ft. bay which make provision for two crane-ways on one side and one on the other. These columns weigh 21,940 lb. each. The mezzanine floor is of reinforced concrete supported on steel columns and girders. The roof is composed of 2-in. yellow pine decking on the steel purlins covered with a built-up roofing. The down spouts are of Aspromet corrugated asbestos covered steel. All floors with

Erecting Bay, Logansport Shop

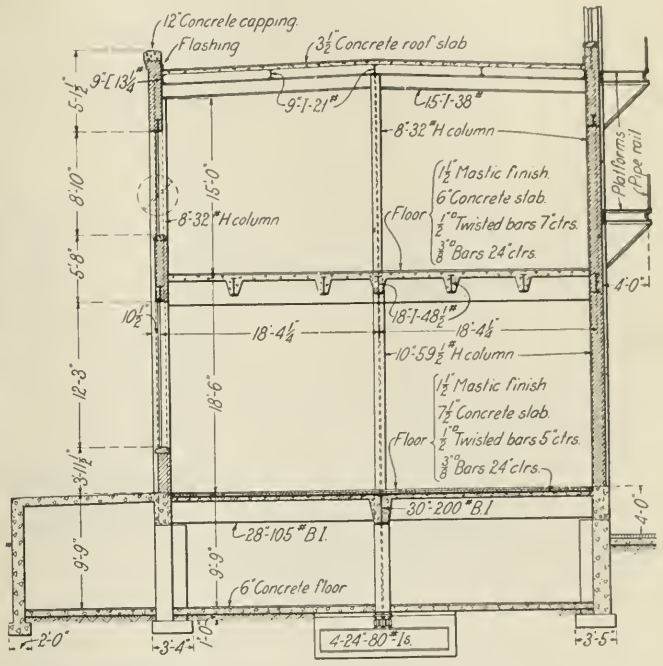
the exception of those in the toilet and wash rooms are creosoted wood blocks on concrete base. The toilet and wash room floors are covered with Sarco mastic, finished with a flashing 6 in. high against the walls on all sides.

The equipment of the building is operated by electric power supplied from a motor-generator set taking 3-phase, 60-cycle, 2300-volt alternating current and delivering direct-current at 250 to 275 volts.

The illumination has been well worked out. Natural light is supplied through large areas of factory-ribbed glass, mounted "rough side cut" in Truscon steel sash in addition to the monitor lighting previously mentioned. Artificial lighting in the 90-ft. bay is provided by 750-watt lamps placed in X-Ray shades, one of which is attached to the bottom of each roof truss, the position on these trusses alternating from the quarter point at one end of the truss to the quarter point on the other end of the next truss. In addition to this system of lighting, there are four 50-watt lamps spaced uniformly along the center line of the building to serve as illumination for the night watchman service. In the 75-ft. bay five lamps equipped with "intensive light" shades are provided in each panel.

The Heating System

The building is heated by the Vento system of hot air heating. This installation consists of duplicate plants, serv-



Cross Section of the Store Building at Logansport

ing the north and south halves of the building, respectively, and having fans and heaters located in the extreme north and south ends of the 30-ft. bay. Each power unit consists of a No. 10 Sirocco blower driven by a 20-hp. alternating-current motor, drawing air from the outside through a six-unit heater, and blowing the heated air through conduits to outlets in various parts of the house. For the 30-ft. bay, overhead sheet metal conductors were provided but in the two main bays underground concrete conduits were installed, leading to a row of eight outlets along the center line between the 90-ft and 75-ft. bays and 17 outlets along the outside wall of the erecting bay. Live steam is used in the heaters and a small motor-driven pump returns the condensation water to the boilers. Louvers for the admission of air from the outside are provided with adjustable vents so that a smaller amount of outside air may be taken in cold weather in conjunction with a certain degree of re-circulation of the air within the building.

Power service from the power house consists of a six-inch

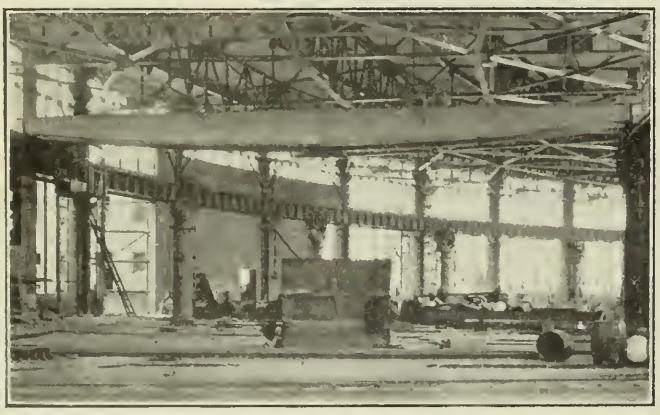
General View of the Stark Roundhouse

steam main, a three-inch condensation return pipe and a four-inch compressed air line. These are conducted through a concrete conduit, the top of which consists of pre-cast concrete slabs equipped with lift bars for ready removal.

Toilet facilities for shop employees are installed on the first floor at each end of the building and wash and locker rooms containing a total of 315 lockers on the mezzanine floor directly above. Provision has also been made for toilet facilities and lockers for women employees of the shop at the north end of the messanine floor.

The Store House

Store space is provided in a wing at the north end of the building, 37-ft. wide by 109 ft. long with two stories and basement. It has a steel frame, brick walls and concrete-covered girders and beams supporting reinforced concrete floors. The first floor is designed for a load of 600 lb. per sq. ft. and the second for a load of 350 lb. per sq. ft. With the exception of offices for the storekeeper and clerks on the second floor, the space in the building is taken up entirely by tiers of shelving. Loading and unloading from cars is facilitated by a concrete platform extending the entire length of the wing, the space underneath this serving as an addition to the basement area.

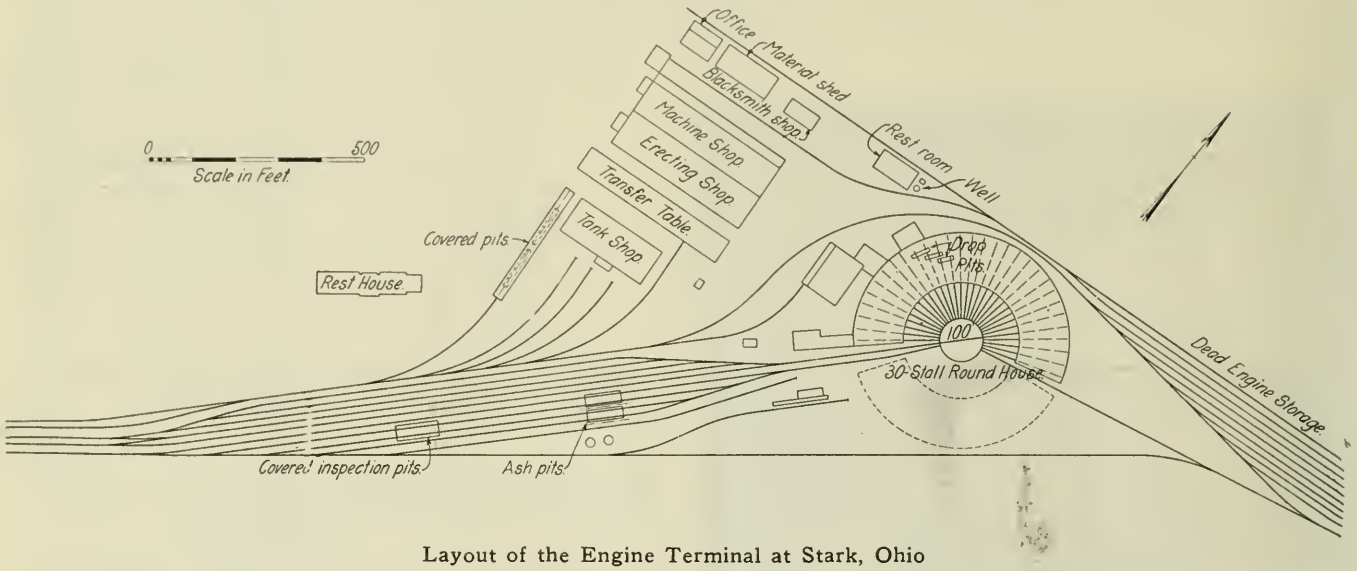


Interior of the Stark Roundhouse During Construction

The transfer table pit is 60 ft. wide by 532 ft. long and is equipped with five lines of 85-lb. A. S. C. E. rail to carry a table of 250 tons capacity. As in the case of the building, the presence of a rock foundation greatly simplified the construction. The rails are carried on continuous walls of concrete supported on the rock. The space inside the curb walls is paved with a concrete slab which slopes to four lines of drains. The table is operated by a 75-hp. motor at a speed of 100 ft. per min. with full load.

Another facility occupying a separate building is an electric welding shop 20 ft. 2 in. wide by 100 ft. long. This is divided into five separate rooms of which three are for electric operations, one for gas welding and one for the motor-generator set used to convert 3-phase, 60-cycle, 220-volt alternating-current to 75-volt direct current.

Inter-shop transportation is conducted very largely by the use of electric industrial trucks and this service has been greatly facilitated by provision for a concrete roadway along the west side of the building, at the angle at the north end adjacent to the storehouse wing and leading to other buildings and to the street entrances.



Layout of the Engine Terminal at Stark, Ohio

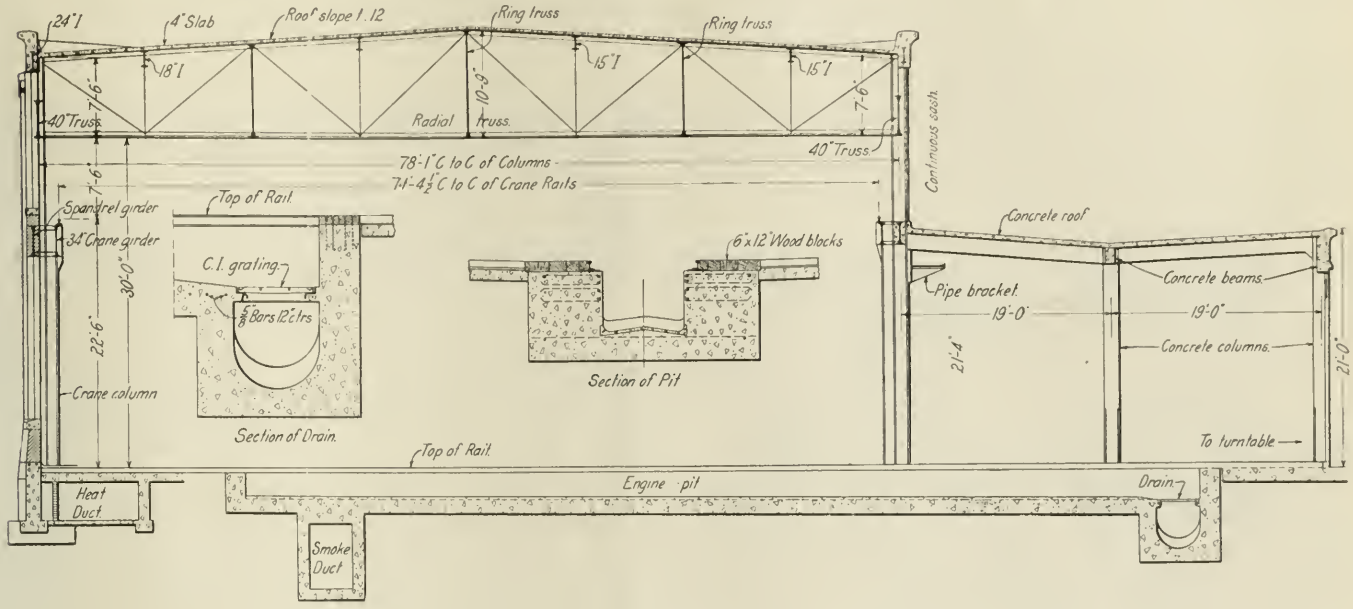
The Construction

The construction work was carried on under a contract with the Austin Company, Cleveland, and was handled in a manner to secure early completion although failure of steel delivery as a result of war conditions greatly interfered with the record for expeditious progress. Thus while the steel was scheduled to be delivered entirely by September, 1918, the last of it did not arrive until March, 1919. Considerable of the excavation, particularly for the transfer table was moved by a steam shovel. Concrete was mixed by a mixer mounted on a flatcar with cars of stone, sand and cement placed on the track to the rear of it in the order named. A platform erected alongside this track for each position of the cars was used for wheeling materials to the machine. The concrete was dumpted into two-wheeled carts of 6 cu. ft. capacity and wheeled to the point of delivery in the forms. About 12,000 cu. yd. of filling was placed in the shop building for which sand hauled from a pit on the railway was used. This was thoroughly wetted as it was placed and became thoroughly compact so that the concrete floor slabs could be laid on it without danger of settlement. The walls of the building contain 835,000 brick of which a large part were laid at the rate of 250,000 bricks per week, and the entire east wall of the shop was laid in 14 working days. Hanging scaffolds supplied by the Patent Scaffold Company, Chicago, were used for this work. The steel was erected with a double-boom traveler.

The Stark Engine Terminal

The engine terminal at Stark occupies a triangular piece of ground along the north side of a freight classification

yard located about two miles east of Canton, Ohio, the terminal having connections with the yard both to the east and to the west, with the main approach from the west. Inbound locomotives come in over the south track of the layout which expands into four tracks for the accommodation of the inspection and cinder pits, although only the two center tracks pass through the inspection shed. The outbound track is north of the inbound tracks and has a



Longitudinal Section of a Typical Stall of the Standard Engine House

separate connection with the turntable. North of the outbound track and with a lead connecting to it is a four-track engine storage yard with space for 44 85-ft. engines. The inbound and outbound tracks and the lead from the engine

One of the Cinder Pits at the Stark Engine Terminal

storage yard are served by a coaling station at the extreme west end of the layout and also by two penstocks located just west of the coaling station. Water supply is also provided by a third penstock located between the inbound and outbound tracks near the turntable. To the west of the roundhouse is a complete locomotive repair shop very similar to the one at Logansport, the principal difference being that the shop building is 30 ft. shorter that the one at Logansport, while a separate building 90 ft. by 300 ft. has been provided for a tank, wheel and pipe shop. A section of this group of buildings is shown in the same illustration as the map.

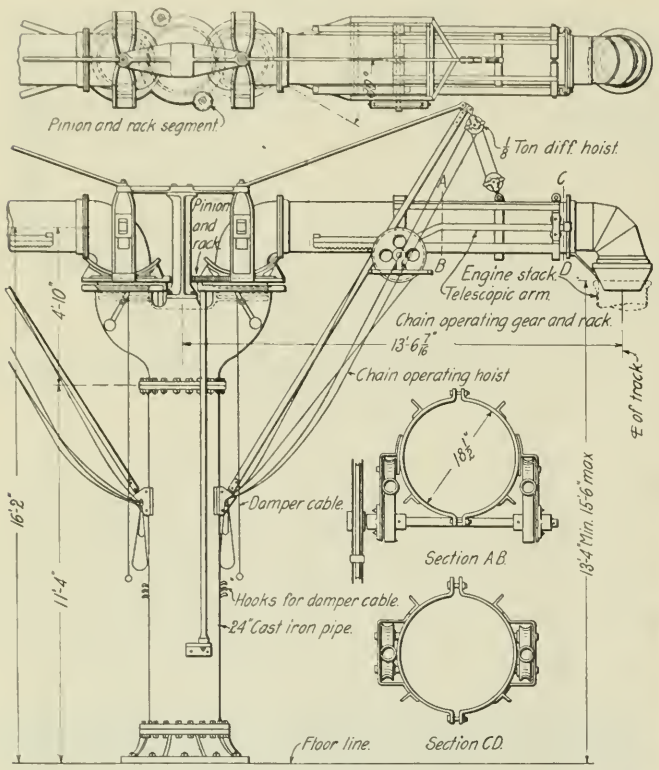
The roundhouse contains 30 stalls with space for the future addition of about 20 stalls more. The unusual features embodied in this engine house may be ascribed almost entirely to the desire to provide a traveling crane and to maintain the house as free as possible from gases from the locomotives. Provision for the traveling crane led to the adoption of a three-bay construction which comprised a wide, lofty bay for the traveling crane along the outer side of the house with two lower bays at the turntable side. The presence of the traveling crane did not permit the use of smoke jacks. Monitors in the roof were deemed ineffective in the removal of the smoke to a degree that would not be objectionable from the standpoint of illumination, corrosion of the steel work or discomfort to the crane operator, so it was decided to install a smoke exhaust system although there was no call for this in the way of public objection to smoke nuisance. The predominating feature of the smoke collector is an upright smoke receiver having much the appearance of a water penstock, connected by a system of underground ducts to an exhaust fan in the power plant. As seen in the drawings these smoke jacks are placed between every second pair of stalls and consist of a riser pipe 24-in. in diameter fitted at the top with two 18-in. branches with universal joints and telescope extensions so that the nozzle may be inserted in the top of a smoke stack with considerable variation in the position of the locomotive and the height of the stack. The gases are exhausted through the fans mentioned above into the chimney of the power plant. Horizontal bottom discharge fans are used so that both the inlet and outlet ducts are below the floor level. Owing to the corrosive nature of the gases handled a minimum of rolled metal is used in the housing of the fan, the walls of which are made of brick with circumferential plates of flanged cast iron segments.

Structurally the building is of a composite type, the large bay having a structural steel frame and concrete roof, while the two lower bays are entirely of reinforced concrete. The exterior walls are brick but a large part of the area consists of windows with Fenestra Steel sash. A clear height of 30-ft. to the underside of the roof trusses of the crane bay results in the unusual height of 39 ft. 4 in. for the outside

wall so that two tiers of windows 15 ft. 9 in. and 15 ft. 5 in. high, respectively, give a large glass area for the outer wall of the house, which, together with monitor windows over the lower bays, provide unusual natural lighting of the roundhouse.

Artificial illumination is provided by two 200-watt. ceiling lamps in the low part of each stall and two 400 watt lamps in the high portion. The lamps are equipped with Maxolite fixtures. Current is supplied by a local public utility company.

The floor of the roundhouse is paved with creosoted wood blocks on a concrete base. The track pits are unusual in the exceptional width of walls as shown in the cross-sectional view. In the half of the pit nearest the table the wall is of sufficient width outside the rail to carry 34 in. of jacking planks while the outer end has somewhat narrower walls.



Smoke Exhaust Duct

The pits drain to a concrete drainage duct which also receives the drainage from the entire roof through down spouts.

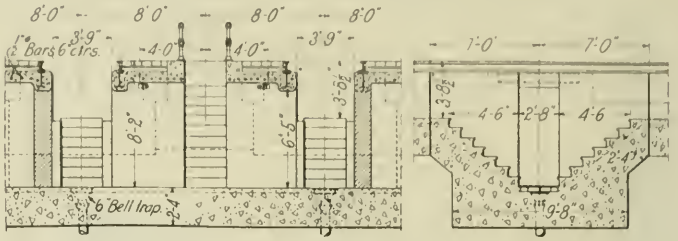
Three complete drop pits are provided, each embracing two-track pits in the manner indicated in the plan. The pits are of the type in which the ram is carried by a pit truck, a slot being provided in the bottom to accommodate the barrel of the ram. These pits have an average length of about 45 ft. with an inside width of 7 ft. 6 in. and a depth of 5 ft. 7 in. plus 5 ft. 4 in. for the ram slot.

The roundhouse is heated by the forced draft system of hot air heating common to most modern roundhouses, this system being very largely parallel to that for the smoke exhaust, that is, with the use of concrete ducts below the floor and vitrified pipe branches leading to outlets in the track pits. The heating system consists of two Sirocco pressure fans, one 65-in. and one 100-in., the smaller one to be replaced by a second 100-in. fan when the roundhouse is extended to the full number of stalls. These fans draw outside air through steam heater units and discharge the heated air into the concrete ducts.

Pipes for the washout, filling, blowout, cold water and air supply lines are carried on brackets attached to the inner side of the line of columns between the high and low parts of the roundhouse. Service from these lines is supplied at every other column while on the intermediate columns electric light service outlets are provided, these being six-plug revolving fixtures.

The Power Plant

The power plant occupies a separate wing to the rear of the house, connected with the latter by means of a smaller



Details of a Two-Track Inspection Pit

wing containing the heater and smoke exhaust fans. The main wing is 89 ft. by 108 ft. and contains a boiler room fitted with four 450 hp. boilers with space for one additional boiler. There is also an air compresser room 43 ft. by 60 ft., an electrical repair room and one for a boiler washout system. The boilers are equipped with automatic stokers and are served by a complete installation of mechanical coal and ash handling machinery in conjunction with a track hopper outside the building. Smoke from the furnaces is carried to a 150-ft. Custodis chimney of 11 ft. inside diameter which also takes the gases from the smoke exhaust system. To avoid interference between the natural chimney draft and the forced draft of the smoke exhaust fans, the

One of the Inspection Pits Covered by a Reinforced Concrete Shed

chimney is divided into two flues by a vertical diaphragm. Another wing of the building 55 ft. 7 in. wide by 50 ft. maximum depth serves as a light machine tool annex.

No small amount of attention has been given to the provision of adequate accommodations for engine house men and engine crews in a third wing of the roundhouse which also contains space for offices. This consists of a square two-story portion 58 ft. 7 in. by 67 ft. 4 in. which is connected with the roundhouse by a one story structure 32 ft. wide by 73 ft. 6 in. long. The lower floor of this wing contains toilet and locker rooms for engine men and engine house men and offices for the roundhouse foreman, road

foreman of engines and clerks. The second floor contains separate rest and toilet rooms for the shop and office women as well as a large record room.

The roundhouse is served by a 100-ft. turntable of the deck type which is unusual in that the table is turned by the application of power directly to the end wheels through line shafting from a motor mounted on one side of the table near the center. The trucks are equipped with spring bearings. Another detail which will add greatly to the possibility of keeping the turntable pit in a neat condition is a pavement of cull bricks in the pit.

Well Planned Inspection Pit Provided

One feature of the engine terminal is the complete provision made for inspection of incoming engines, in the form of a two-track inspection pit, covered with a reinforced concrete shed. These pits are 100 ft. long, 3 ft. 8½ in. deep and 16 ft. center to center, requiring a shed 37 ft. wide. To avoid the possibility of men being run over or injured while climbing in or out of the pits and to afford ease of access, the pits are connected by a transverse tunnel with stairways leading to the pits and from the tunnel up to the platform between tracks. This inspection pit is provided with a pneumatic tube connection to the roundhouse foreman's office for the delivery of inspection reports.

The ash pits are also of a design that differs considerably from prevailing practice. Two pits are provided, each serving two tracks 18 ft. center to center. As shown in the photograph the arrangement provides for the delivery of the ashes down an incline covered with paving brick to a central basin with the bottom 10 ft. 3in. below the base of rail level. Instead of using a locomotive crane to remove the cinders from the basin, a special crane mounted on a gallows frame is installed which travels on rails spaced 36 ft. center to center. This frame stands astride of the two tracks over one pit and has a cantilever projection to reach the basin of the other pit. With this arrangement the cinders can be removed from the pits without any interference with engines on the tracks. The outer rails of the running tracks are carried on the outer walls of the pit, while the inner rails are supported on built-up steel beams spanning between piers made of 18-in. cast iron pipe filled with concrete.

The Coaling Station

The coaling station is a reinforced concrete structure having a storage capacity of 700 tons, and was built by the Roberts & Schaefer Company, Chicago. The automatic hoisting equipment is capable of delivering 75 tons of coal per hour from the track hopper under the coal delivery track. Adjacent to this track is a wet sand storage bin, having a capacity of 1200 tons of wet sand. This wet sand is wheeled by hand to a hopper under a drying house built adjacent to the coaling station from which it is hoisted by a bucket elevator to a 60-ton storage bin over a battery of two Pennsylvania Lines coal-burning dryers. From the latter the dry sand is spouted down through screens to a pneumatic discharge which delivers the sand to a 10-ton wooden storage tank located in the top of the coaling station.

The engine terminal at Stark is being built by the Walbridge, Aldinger Company of Detroit with the exception of the coaling station and the design and installation of power plant equipment which is being handled by Westinghouse, Church, Kerr, New York. All of the terminal improvement work on the Pennsylvania Lines has been carried on under the general direction of Robert Trimble, chief engineer construction, Pennsylvania Lines, Pittsburgh. The work at Canton was under the supervision of T. M. Bole and later H. W. Hinkley, engineers in charge. The improvements at Logansport were under the immediate direction of W. E. Guignon, division engineer and T. L. Doyle, assistant division engineer.

French Opinions of American Methods of Railroading

By Francis Jaques

It is interesting, in talking with French railroad men, to hear their views of the improvements which the American Transportation Corps introduced into French methods of railroading during the war. The French have been particularly enthusiastic over certain features, some of the most important of which are mentioned here.

Train Despatching Methods

One which impressed them most favorably was the American method of train despatching. This was tried experimentally at the end of 1918 on the Paris-Orleans, between St. Nazaire and Saumur, a distance of about 115 miles, and the results were excellent. Four French train despatchers were installed in the American Transportation Office at Saumur to learn the despatching system. The chief despatcher was a man peculiarly fitted to acquire and appreciate the value of these new methods, and he and his three associates were immediately impressed with the opportunities which the centralized system of train control offered for improving train operation.

The Frenchmen were quite unfamiliar with the apparatus used in telephone train despatching, and had not before realized the peculiar adaptability of the selective telephone system for handling train movements. The rapidity with which officers were called, either singly or in groups, the clearness of the lines and the mechanical accuracy of the selective apparatus were a marvel to them.

These French despatchers quickly saw the good points of this centralized system of train control and when asked their opinion of this method, after they had tried it for a certain time, stated that they believed that it was better than their own system because it offered the following advantages: A perfect knowledge of the location of all train movements, delays, congestion, etc.; the possibility of giving advance information to the terminals as to the probable time of arrival of trains, thus facilitating the preparation of engines, crews and equipment and their proper use; the elimination of useless side tracking and the intelligent arrangement of movements out of turn; and also the chance of relieving an overloaded line in case of need. American railroad men are naturally familiar with all of these advantages, but they were a revelation to the French who had never before had a practical demonstration of this method of train despatching.

Because of the success of the trial on the Paris-Orleans between St. Nazaire and Saumur, the Paris, Lyons & Mediterranean is now installing the despatching system on the heaviest section of its line between Dijon and Lyons, and later it intends to put it in all the way from Paris to Marseilles—a distance of 550 miles. The Est is also going to adopt this improvement, and it has already begun to introduce the despatching system on the line from Paris to Metz.

Passing Tracks at Stations

Another thing which the A. E. F. transportation officers made the French realize was the importance of getting trains off the main lines by the use of passing tracks at stations where trains took water or coal, or waited for orders. A great many passing sidings were constructed, and others lengthened, by the A. E. F. during the war. This was, in fact, the chief means employed to increase the capacity of roads for, contrary to the generally believed myth, the Americans constructed very few entirely new lines.

The longest passing tracks in France before the war were not over 1,625 ft. (500 meters) long and, as they were too short to handle American trains, they were therefore lengthened. At first they were made about 2,210 ft. (680

meters) long, but towards the end of the war some were being lengthened to 2,372 ft. (730 meters). The improvement in train operation was most marked as a result of the lengthening of the sidings and of their proper use. Where these passing tracks are still useful for future commercial needs they will be kept. Where they were purely for war purposes and are no longer required, they will be removed and the material will be used elsewhere.

American Locomotives in France

With regard to locomotives, the French were favorably impressed by our engines for freight service. They consider them more suitable for this work than their own locomotives as they are simpler and contain fewer refinements. They therefore get out of order less easily and can be more readily repaired.

At first the French had considerable trouble due to the heating of the bearings, but this was chiefly because they did not understand them. Later they had no more difficulties on this account. They also had to make some slight changes in the buffing arrangements. Otherwise they found our freight locomotives adapted for their work, and they used them to great advantage during the war.

French ideas in regard to locomotives have recently changed radically. The "old school" of railroad engineers had gradually worked up a type of compound locomotive in order to obtain certain economies, particularly in the consumption of coal which is very expensive in France. With the introduction of the superheater, the results given by the simple locomotives equipped with this apparatus began to be quite as good as those given by the compound locomotives, whereas the use of superheated steam with the latter type added little to its value. For this reason the younger engineers, of the "new school," believe that it is better to construct, at the present time, two-cylinder simple locomotives equipped with superheaters, as they do not consider that the economies obtained by the use of the compound locomotives are sufficient to compensate for the high initial expense and the great cost of maintenance of this complicated type. A committee formed by the Paris, Lyons, Mediterranean, the Midi, the Paris-Orleans and the State Railroads is, therefore studying designs of two-cylinder, simple locomotives equipped with superheaters as being the best type for the immediate future in France.

It may be here stated that the A. E. F. left 1,333 locomotives in France divided up according to type as follows:

American	150
Baldwin	1,143
Saddle Tank	30
150 H. P. Gasoline	10
Total	1,333

American Freight Cars in France

The French considered the big American cars exceedingly practical, for in France cars of 10 tons (2,240 lb.), or less, capacity were used before the war. It is probable that all cars of less than 10 tons capacity will gradually go out of service, and that 20, 30 and 40-ton cars will be used almost entirely. The large American cars left in France by the A. E. F. will continue to show the excellent practical results of the use of larger cars, and this will soon lead to their being adopted universally. The tariff minimums will, of course, have to be adjusted because of the increased capacity of the cars and this question is now being studied.

	Number	Average Capacity
Box	8,649	33 tons
Flats	2,050	33 tons
Open	6,779	30 tons
Tanks	850	10 tons
Petrol Tanks	43	5,000 gals.
Refrigerator	1,450	25 tons
Ammunition	65	20 tons
Total	19,886	

It is interesting, in this connection, to note the foregoing figures, corrected to April 1, 1919, relative to the number of American freight cars left in France by the A. E. F.

Arrangement of Yards

The French consider the American yard layouts better than their own as being simpler, and for this reason more economical to build and to operate. They are planning to use some of the best features of our yards when building future yards in France.

Labor-Saving Machinery

The leading French engineers were enthusiastic, too, over the improved American shop machinery, and they intend to introduce it into France as fast as possible. This is particularly important, for it is necessary to economize in every way possible in labor to make up for the lack of operatives due to the large number of men killed during the war. Improved methods will have to be used also to compensate for the high wages which the railroads are now forced to pay.

The former prejudice of French workmen against modern machinery, because it reduced the number of laborers and so took away their jobs, is no longer as strong, particularly among the better class of workmen, as they are beginning to realize that they reap many advantages by the introduction of modern improvements; for instance the ensuing reduction of the high cost of living.

The heads of all the railroads are determined to put in this modern shop machinery as soon as they are able to do so; but this will require a tremendous initial expense. The great question is how to obtain the money for all such improvements. Loans and imports both affect the rate of exchange of the money market in a way which is disastrous to France, as is shown by recent events and yet these improvements are, in the end, absolutely essential for regaining the prosperity of the country. A rapid solution of this difficulty is most desirable for the future of France. Whether this would lead to the placing of large orders in America by the French railroads for shop machinery, etc., is a question, for it is the present policy of the government to restrict importations, thus preventing the placing of orders for railroad equipment and material elsewhere than with French firms, even when better prices and deliveries can be obtained abroad. This is done to help build up French industries and to offer employment to the demobolized soldiers, as well as to keep down the rate of exchange. One can readily understand this in cases where there is no immediate haste in procuring the finished articles. There are, however, many people in France who believe that certain machinery, such as railroad shop machinery, for instance, should be imported at once in order to permit the fast development of transportation facilities which are so essential for the future prosperity of the country.

It will be seen from the foregoing that, after studying American railroad methods introduced by the A. E. F. in France during the war, French railroad men propose to change French methods of railroading notably by: the introduction of the American despatching system; the increased use of passing sidings to keep trains off the main lines; the adoption of a simpler type of freight engine; the use of larger cars; the simplyfying of yard layouts, and the introduction of modern shop machinery. They believe that, although railroad conditions are entirely different in France than in the United States, they can use American experience and methods to great advantage. In the same way, American railroad men who were in France with the A. E. F. have gained a broader experience and many new and valuable ideas from their contact with the French. The cordial relations established between the Americans and the French during the war will certainly lead to a constant exchange of ideas in the future which will be most valuable for the entire railroad world.

Loading the Cane Train.

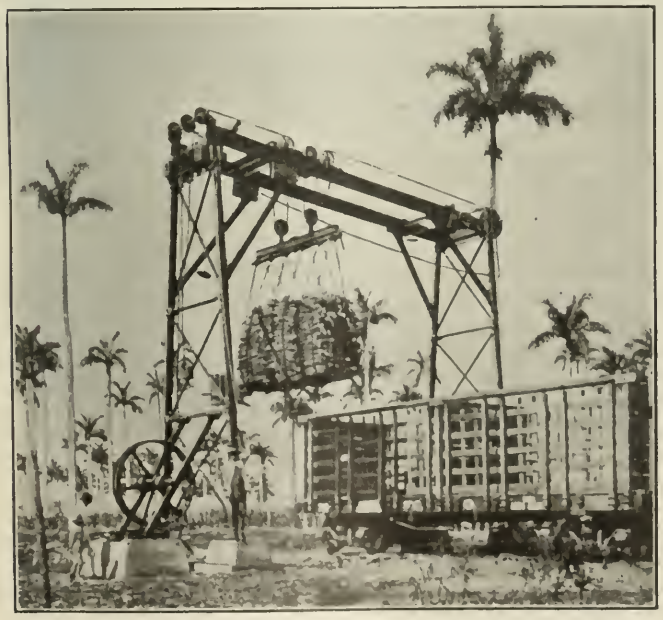
Cuba's Sugar Cane Railways a Large Market*

The Importance and Extent of the Sugar Plantation Lines—Possibilities for Improvements

By John P. Risque

Part III—Loading and Transporting the Cane

ALTHOUGH MECHANICAL CANE CUTTERS have appeared in a variety of designs in an effort to expedite and speed the big job of getting the cane to the mill, their success and adoption is measured by the cane growers' tenacious reliance on the wielder of the *machete.* These thousands of hand swung knives of great length and width have no apparent difficulty in keeping ahead of the supply of cars. In order to make up the deficiency in the supply of Cuban cane field labor, the passenger business of the main lines from the various ports, up and down the island, is considerably augmented by the arrival of thousands of professional harvesters who annually come from various parts of Spain and the Canary islands.



The "Trasbordador" or Cane Loader

Hand in hand with the methods of the primitive, but reliable hand cutters, go the traditional ox-carts with their eight-foot wheels. These cumbersome vehicles equipped with cane racks or bodies, called *jaulas,* collect the cane from the cutters in the fields and a sleepy looking pair of oxen slowly drag their burden to the *batey,* or park in front of the mill, if close by. If the mill is remote from the field, the cart is driven to the *trasbordador* at the side track of the plantation railway or the main line, as the case may be.

The process of unloading the cane from the carts to the waiting cane cars by means of the *trasbordador* or hoist is one of the few efficient links in the chain of transportation steps from the field to the mill. This apparatus is generally a simple drum hoist driven by oxen and occasionally by a gasoline engine. Its action is quick and efficient. The cart is weighed, checked on the books in favor of the contributing *colono,* chains swung around the load of cane which is quickly hoisted and swung over into the cane car. The train from the mill leaves a section of empty cars on the siding and on its return picks up the loads.

Burned cane is a bugbear that is a steady threatener; such cane must be gathered and ground before fermentation sets in. It is generally understood that burning his cane is the last desperate resort of the *colono* who is unable by threats or otherwise, to cajole trains to his district; a questionable method to be sure, but one which is usually successful as it means a choice between a total or a partial loss for all concerned.

Waste of Cane

If all the good sugar cane that is strewn along Cuba's cane railroads were added to the amount "lifted" from the cars at water tanks and way stations during the *Zafra* by well meaning native connoisseurs of raw cane, the total would doubtless run a mill a whole season. An investigation of the cause of more or less frequent complaints from *colonos*

*This is the third of three articles on the sugar plantation railways of Cuba. The first appeared in the *Railway Age* of October 17, and the second in the *Railway Age* of October 24, 1919.

claiming short weights would reveal a considerable loss of cane through the tendency to overload and wrongly load the cars. The cane shakes off the top or slides through between the stakes.

If the railroad end of the mill is not running behind in supplying the required hourly amount of cane, the yard will show it by the lines of waiting loads on the spare mill tracks. Cars are detached from the line one at a time (in the case of end dump mills), drawn by oxen onto the tipping table, upon which the car is then chained down, the table mechanically inclined, the door latch released and the cane dumped out into the hopper. The dumping platform is then lowered, the car unchained, and the car as slowly and methodically withdrawn to the empty track by the waiting ox-team.

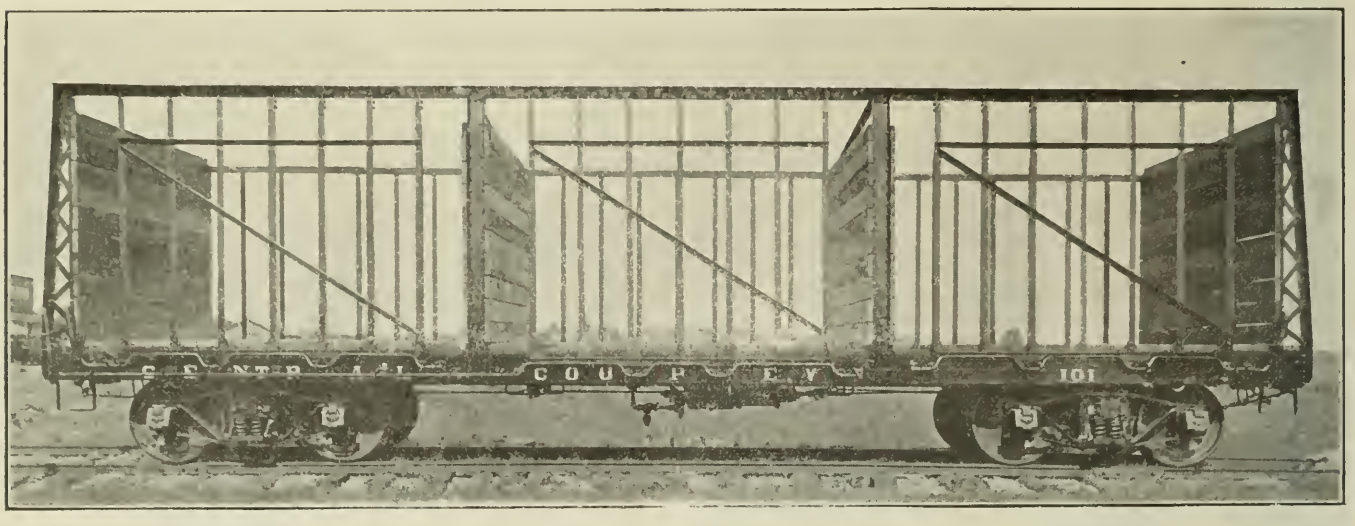
Mills arranged for the accommodation of side dump cars carry their entrance tracks over the tipping table and on past the receiving table, the table tips sideways, the cane is dumped from the side and when the table is returned, the train is pushed forward and the next car takes its place. In both of these cases—side and end dump—a light 0-4-0 saddle tank locomotive is utilized by some mills, dependent upon the capacity of the hopper to take care of such accelerated movement. Old mills to which additional rolls have been added or otherwise speeded up are most logical candidates for switchers to supersede the oxen.

The principal product of the mill, raw sugar, is packed in bags of 320 lb. each and stored in the plantation's sugar warehouses (or in the locomotive shed if there is one) or shipped in their own sugar cars to main line cars, to port. Molasses, which constitutes a small percentage of a mill's product, is most often shipped from the mill in main line tank cars. There are a few molasses cars owned by the plantation — luckily so, if the numerous complaints of "molasses on the tracks" (due to faulty condition of the cars) is any criterion.

Various complications exist in the transportation of sugar from the mills to ports, among which may be mentioned the very singular combination which governs the haul of sugar from one of the Santa Clara mills to a port near the city of Cienfuegos on the southern coast. The sugar cars of this plantation are provided with narrow gage bodies mounted on standard gage trucks. Extra long body bolsters of these cars carry steel rings at their outer ends. When the train arrives at the end of the standard gage line the cars are put under a four-post steel frame work, equipped with four hand-operated hoists—ordinarily chain blocks. The chains are hooked to the rings and the laborious job of raising the loaded car from the standard gage trucks by hand begins. Narrow gage trucks are rolled under the cars, one by one, and when the job is complete the re-equipped train proceeds on its way. A formidable crew of men is stationed at this point during the crop movement to take care of the business of swapping trucks and the three or four narrow gage locomotives which take care of their end of the business, repose in the open field when not otherwise engaged. Thus occurs another item in the cost of transporting sugar to the refinery, and consequently a relative enhancement in the cost of the finished product itself.

Cane Transportation Experiments

The vexing problem of field to mill has received serious thought and the expenditure of considerable money, not only by the pioneer of cane car construction, but from one of the best known sugar engineers of the island—the present manager of a large company. To a certain extent portable light railways are laid from the main stem of plantation lines with considerable success, but their use has not become general. It is understood, however, that under the present conditions,



Typical Three-Compartment Car. The Cane Is Loaded Lengthwise of the Car and Dumped at the Mill by Tipping the Car and Opening the Side Bars and Gates

—an increase in the value of oxen of about 150 per cent—the complexion of the cane field during the *Zafra* is due for a change, and the portable railways will compete with the tractor for efficiency. The introduction of a caterpillar tractor drawing several trailers is as yet considered an innovation. The trailers are provided with wide tread wheels and removable bodies, which when loaded are slid over on to the empty frames of a narrow gage train of cars on the mill's permanent railway.

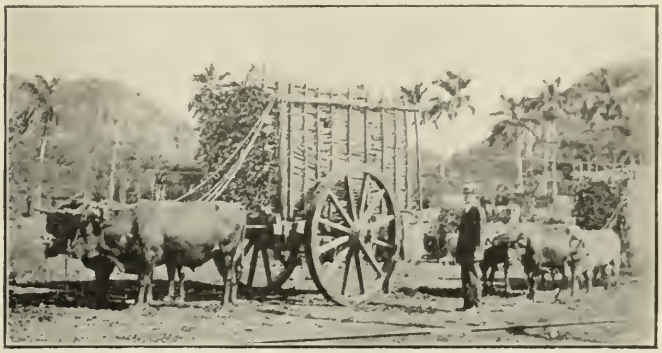
Business Opportunities Among the Plantations

It has been the intention in this article to indicate primarily that there is a wide possibility for improvement in the repair facilities of locomotives owned by plantations in Cuba. Incidentally the field is open for an entirely new system of collecting cane; the eventual elimination of the patient *buey* (ox) and his cumbersome cart, however, painful to tradition, is none the less certain. Further sale of electric headlights is assured (two to a locomotive, for they back up as much as they go forward—there are no turn tables and but few wyes) as they are fast becoming recognized as nearly indispensable.

Shop equipment and storehouses naturally follow in plans for locomotive maintenance. Painting machines have not as

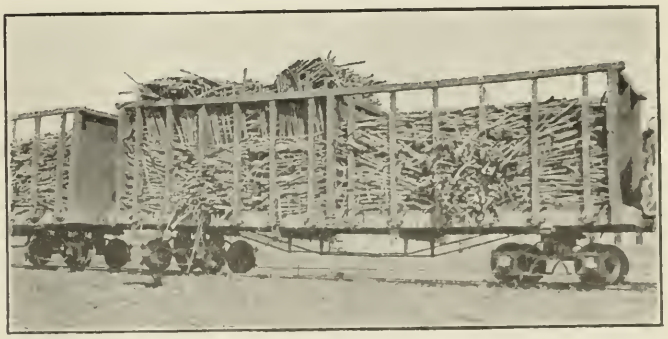
yet had a good tryout, although the United Railways maintain a special painting department, equipped with air machines. Plantation cars are painted by hand and it is slow work—and this job is a very necessary one owing to the excessive rust creating qualities of the climate. Oil storage tanks, piping and tank cars will be required as conversions to oil increase. Tube reclaiming machinery will eventually come into use when sufficient sugar warehouses are erected.

A Side Dump Car at the Tipping Table

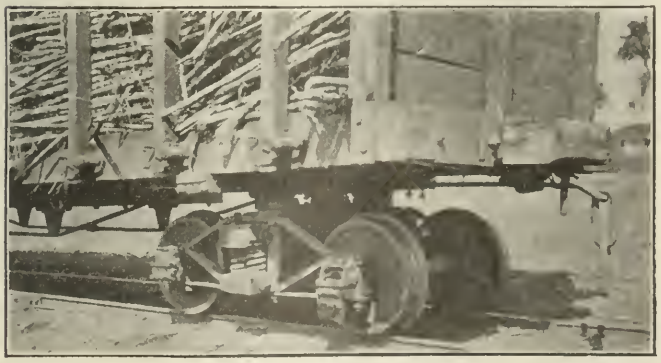


The Famous "Careta" or Ox-Cart

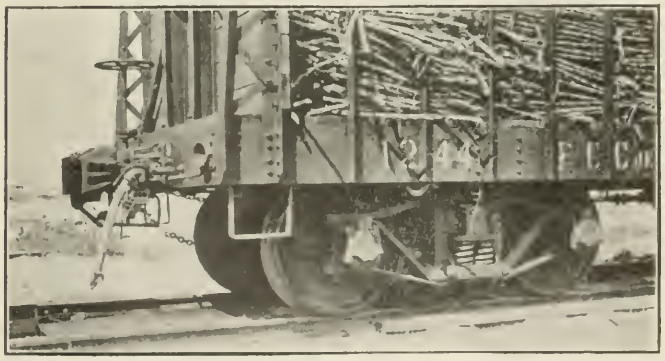
An Example of Good Cane Loading and a Modern Type of Cane Car



The Wrong Way to Load Cane—a Wooden Car Without Brakes



A Narrow Gage Wooden Cane Car; Note the Opportunity for Brakes, Couplers and Better Journal Box Lids



The Other Extreme in Cane Car Equipment. The End of a Modern Steel Cane Car

Electric and air tools are used and their use will increase. The list of materials annually purchased for 195 Cuban mills is enormous. The list of additional requirements which will be gradually added by the introduction of labor saving tools and better cane collecting systems will increase this amount.

Doing Business with the Plantation

Mill machinery and supplies come principally from the United States, although Scotch and German machinery is in evidence. Mill supply houses in Havana are numerous, large and very active. Salesmen cover the field regularly and often. Branch agencies of American firms are increasing in numbers and commission houses which handle American specialties are easy to find and are generally well equipped. The introduction of new methods and means for their accomplishment should, after a careful analysis on the ground, be planned by the newcomer, with a view to the careful cooperation with the forces which already exist. Competent Spanish speaking engineers and salesmen who know the country and its people are available and are well able to promote worthy enterprises under their own and outside direction and capital.

In New York City daylight saving is to be resumed next spring, regardless of federal law, according to an ordinance passed unanimously by the Board of Aldermen, and approved by the mayor on October 24. If this ordinance goes into effect the clocks will be set ahead on the last Sunday in March, 1920, and restored on the last Sunday in October, as was done the present year in conformity to the federal law.

How the "Plumb Plan" Will Work

[By L. C. Fritch in "Judge"]

THE FOLLOWING is an illustration of what will take place at a meeting of the board of directors of the Nationalized Railways when the brotherhoods are represented on the board of directors and the employees have ten directors and the public five:

At a meeting of the board of directors of the National Railways of America, January 1, 1925, the following members were present: Representing the public, one; representing the employees, ten.

The following business was transacted: Brother Janis, representing the employees as a whole, moved that a general wage increase of 25 per cent be adopted, effective January 1, 1920, all back pay bearing interest at six per cent compounded semi-annually; and to provide the funds necessary to meet this increase such advances be made in freight and passenger rates as will be required. Resolution adopted: Yeas, 10; Nays, 1.

Brother Smith, representing the trainmen, moved that Brother Barleycorn, who was dismissed on the X. Y. Z. Railway in 1918 for drinking on duty, be reinstated with full seniority rights and full pay from date of dismissal to time of resuming duty and with interest at six per cent compounded semi-annually, and that the officers who disciplined Brother Barleycorn be summarily dismissed from the service and shall not again be employed on the National Railways during their natural life. Carried: Yeas, 10; Nays, 1.

Brother Leasure, representing employees at large, moved that the original plan of the government to buy the railroads for twenty billions of dollars by assessing each of the 100,000,000 people $200; that the $200 assessed to each of the 1,000,000 employees be returned to them and the public other than railway employees be made to pay this amount into the treasury; also that the original plan to divide the surplus equally between the employees and the government be changed, and that the employees hereafter are entitled to all the surplus, as labor alone produces the surplus. Motion carried: Yeas, 10; Nays, 1.

Brother Carr, representing the trainmen, offered a resolution that all freight trains be hereafter limited to twelve cars in order that the number of crews be increased owing to reduction in traffic and in order that this be accomplished that the committee on equipment be instructed to purchase the necessary additional locomotives to accomplish this result. Carried: Yeas, 10; Nays, 1.

Chairman of the Board Rack offered a resolution that hereafter the board of directors meet twice a week, that absent members be paid their fees, and that the fees be increased from $20 to $50 for each meeting of the board.

Brother Straight of the trainmen offered a resolution that each freight train be provided with a Pullman car, including buffet, and that a chef and waiter and porters be provided, and that all equipment and supplies, including food, be purchased by the railways. Carried unanimously, the public director having left the meeting to attend a political meeting.

Brother Jones offered a resolution that special agents be appointed whose duty it shall be to report each case of employees doing anything outside of the specified duty, a second offense to meet with prompt dismissal. Carried.

The board considered the results of operation for the year 1924, which was as follows:

Miles operated	300,000
Gross earnings	$3,000,000,000
Expenses	3,500,000,000
Deficit	500,000,000

A resolution was offered that inasmuch as no surplus was earned and whereas it requires as much effort on the part of the employees to make a deficit as a surplus, that the employees be voted a bonus of ten per cent on the deficit, making the sum of $50,000,000 to be distributed among the employees, and that an increase in freight and passenger rates be made to meet the requirements. Carried: Yeas, 10; Nays, 1.

Seat Tickets in Dining Cars

THE RESERVATION of seats in dining cars, by means of tickets distributed to passengers before the beginning of the meals, has now been the regular practice on the Congressional Limited trains of the Pennsylvania Railroad for a whole year; and the officers of the road express decided satisfaction with the plan, though they do not as yet recommend it for trains which make stops during or near meal times. The Congressional Limited trains run for four or five hours without taking or leaving passengers. The southbound train leaves New York at 3:25 p. m.; Manhattan Transfer, 3:42; Baltimore, 7:30, and arrives in Washington 8:30 p. m. Northbound, the train leaves Washington at 4. p. m., Baltimore 5 p. m., and arrives in New York at 8:10 p. m. The southbound train takes on but few passengers at Baltimore.

The tables are set four times for periods of 45 minutes each—namely, from 5:30 to 6:15; from 6:15 to 7; from 7 to 7:45, and 7:45 to 8:30. A notice describing the arrangement for the dinner service is found by each passenger when he enters the train. All of the cars in the train are parlor cars, and each passenger, therefore, has a numbered seat which is identified by his ticket. Usually there is one dining car on each train. Each of the tables bears a card showing its number.

The steward distributes to passengers the tickets for seats according to their choice, each series of tickets, for each sitting, containing the numbers of six large tables and six small ones, there being four tickets, with the same table number, for each large table, and two tickets with the same table number for each small table. This plan works well, and there has been no attempt to number individual seats in the dining cars.

The car seats 36 persons, and four sittings will accommodate 144; in case of a larger number, when an extra dining car is provided, the extra car serves meals a la carte. The regular cars are manned by one steward, four cooks and six waiters.

The service in these cars is table d'hote, and the tickets for the different sittings are of different color, obviating any possible confusion in seating the passengers. On the southbound train the steward goes through the parlor cars immediately after leaving Manhattan Transfer, and on the northbound after leaving Baltimore; and therefore he has no trouble with the problem of passengers getting on the train after he has made his rounds.

The second period—6:15 to 7—is the most popular one, and all the seats for this sitting are quickly disposed of. The passenger who desires the most convenient hour and fails to get it occasionally enters an objection, but no great difficulty has been experienced. It is obvious that the chances of obtaining a desirable sitting are at least as good as under the a la carte system, which, though it might economize time, in some cases must labor under the disadvantage of crowding at other hours if the train is well filled.

The average length of time occupied by the passengers in eating is 35 minutes, leaving 10 minutes for the resetting of the tables. On one occasion 150 passengers were served by one car in one evening, but this made necessary a fifth sitting, beginning at 8:30 p. m.

Doings of the United States Railroad Administration

Additional Information Issued Regarding Schools for Mechanics and Apprentices

Director General Hines, on November 1, sent the following telegram to Henry J. Allen, governor of Kansas, in reply to one from the governor dated October 25, alleging discrimination in the car supply available to Kansas shippers:

"Referring first to relative loading in Central Western and Southwestern regions, seven weeks ending September 27 do not furnish fair comparison of relative loading in these regions. From July 1 to October 17, the railroads transported from Kansas farms 71,682,000 bushels of wheat, from Oklahoma farms 34,711,000 bushels, and from Texas farms 21,438,000 bushels, as compared with 11,898,000 bushels from Minnesota farms, 26,972,000 bushels from North Dakota farms and 15,120,000 bushels from South Dakota farms. Wheat transported from Kansas, Oklahoma and Texas farms was 73,841,000 bushels in excess of entire movement from Minnesota, North Dakota and South Dakota combined, being more than twice entire movement from these three Northwestern states. During same period wheat transported from Kansas alone was 20,000,000 bushels in excess of entire amount transported from Minnesota, North Dakota and South Dakota. During same period 62 per cent of entire wheat crop was transported from states of Kansas, Oklahoma and Texas as against only 55.8 per cent from Minnesota, North Dakota and South Dakota. Allegations of discrimination by Railroad Administration in favor of Northwest against Southwest, and particularly Kansas, are contrary to facts, and it is hoped that there will be no more of these charges from public officials holding responsible positions. Referring next your statement that daily market reports continue to show that grain receipts at Northwestern terminals are greater than at Kansas City, St. Louis and Chicago combined, thus showing improper distribution of cars, facts are that from October 1 to 29, grain receipts at Chicago, St. Louis and Kansas City amounted to 22,996 carloads as against only 20,985 at Minneapolis and Duluth. Also you have omitted Omaha, St. Joe and other Central Western terminals. Also you have overlooked heavy shipments of wheat from Kansas, Nebraska and Oklahoma to Minneapolis relieving producing sections. Also you have overlooked entirely movements earlier in season when nearly all grain cars were used for loading in Kansas and other Southwestern states. Referring to your statement that Kansas millers cannot ship flour while Minneapolis mills are guaranteeing prompt deliveries, our reports show that on October 25 there were only a few mills closed in Kansas while during last week no loading of box cars with either grain or flour was permitted for two days at Twin Cities. Referring your statement that there are now in Kansas warehouses more than one million barrels flour sold but which cannot move, official records of United States Grain Corporation show that on October 17 there were only 300,000 barrels of flour and food products in stock at Kansas mills. Referring your statement as to capacity Kansas mills, records of United States Grain Corporation show a present daily grinding of somewhat less than 300,000 bushels. Referring your statement concerning car shortage for cement and other industries in Kansas, shortage in Kansas is no greater relatively than in other states. Supply of preferential cars for loading grain, grain products and sugar in Kansas and elsewhere has necessarily diminished available supply for other commodities. Your suggestion that Kansas situation is not understood by Railroad Administration is without foundation in fact. Situation is fully understood and Kansas will continue to receive just and impartial treatment. Referring instructions issued result of Chicago conference, you will understand that it takes a little time to make such instructions fully effective. All available cars suitable for grain, grain products and sugar are now being so applied and regional directors advise me that with movement of empties now tided west prospects are favorable for progressive improvement in Kansas loading. As advised in my telegram of October 18 to you, individual instances requiring relief should be drawn to attention of superintendents of transportation named in my telegram."

Vocational Education for Mechanics and Apprentices in Railroad Shops

For the guidance of railroads contemplating the establishment of schools and classes for training of mechanics and apprentices under provisions of the federal vocational education act and the Division of Operation circular of August 1, 1919, the following additional information on the matter is submitted in a circular issued by Frank McManamy, assistant director of the division:

The federal vocational education act provides that schools organized under its provisions shall be conducted by the particular state in which the school or class may be located, and under the general direction of the state board for vocational education.

In establishing such schools and classes under the authority of Division of Operation circular, August 1, 1919, railroads in federal operation will co-operate with the state board for vocational education.

It is expressly stated in the vocational education act that the controlling purpose of the work to be aided under its provisions is to fit for useful employment those who are preparing for a trade or industrial pursuit or who have entered upon the work of a trade or industrial pursuit.

Since the state director for vocational education is informed on all provisions of the federal law, as well as the state plans under which the schools will be operated, such arrangements as may be necessary for installing this system of training in any railroad shop should be made by the railroad with that official, and in conducting a school at any point the railroads should designate some local officer at that particular place to cooperate with the local superintendent of schools.

A list of the names and addresses of the state directors for vocational education is appended.

The purpose for which federal money has been appropriated and may be expended by the state and under what conditions the state may allot such funds is determined in general by the provisions of the law, all details of which will be furnished the railroads upon application to the state board for vocational education.

The general conditions set up in the act are as follows:

1. The school or class must be under public supervision or control.
2. The controlling purpose must be to prepare for useful employment.
3. The instruction must be of less than college grade.
4. All pupils must be over 14 years of age.
5. To meet the requirements of the vocational education act, the instruction must be given for not less than 144 hours

per year. The United States Railroad Administration authorization for 208 hours of instruction per year meets this condition.

6. Every dollar of federal funds must be matched by a dollar of state or local money, or both. The expenditures are to be made by the state board direct or by the local community, and reimbursement made from federal funds by the state board for vocational education.

7. Reimburesement may be made from federal funds only for money expended for salaries of teachers. This does not include any reimbursement for buildings, equipment, or supplies.

8. The railroad must supply the plant and equipment adequate for the type of instruction to be given. This has already been authorized by the Railroad Administration in circular August 1, 1919.

9. The course of study may include trade drawing, trade science, trade mathematics, and actual shop work. In all cases the instruction given shall be of the trade-extension type, supplementing in character the regular employment of the pupil.

10. The methods of instruction must be such as will insure the functioning of that instruction in the trade which the apprentice is learning. This means that the instruction should be given as far as possible by the individual method rather than through lectures. Demonstrations, illustrations, and examples should be drawn from the shop in which the pupil is employed. A careful coordination must be maintained between the instructor responsible for the related instruction in the classroom and the training which the apprentice is receiving in the shop.

11. All instructors for whose work reimbursement is to be made through the state board for vocational education must be thoroughly qualified and meet the qualifications set up by the state plan in the state in which the work is to be given. The instructor of related subjects should be a man possessing at least two years' technical education of college grade, or equivalent technical education, and having a satisfactory practical expereince and contact in one or more of the trades represented in the railroad shop—a contact sufficient of giving an appreciation and working knowledge of the principal trade processes. It is recognized that whenever a man can be found possessing, in addition to the technical training, a journeyman's experience in a trade, he is more likely to be successful as an instructor.

The Federal Board for Vocational Education, in cooperation with the United States Railroad Administration, will prepare suggested courses of study for at least three trades, namely, machine shop, boiler making, and sheet-metal work, and these suggested courses of study will be placed at the disposal of the various state boards, and through these boards can be obtained by the railroads upon application.

There are certain condidtions which should be considered in making arrangements for railroad shop apprentices' schools under this plan:

1. There should be an advisory committee. Such committee may properly include representatives of the workers in the trades, the shop management, and public school.

2. This advisory committee should be responsible for insuring cooperation between the workers, shop management and public-school authorities.

3. The instructors employed for this work should be satisfactory to the advisory committee, as well as meeting the qualifications set up in the state plans.

4. The courses of study should be satisfactory to this advisory committee.

5. The classrooms to be used should be suitably fitted up for the instruction which is to be given, and they should be so located that the apprentices may readily have access from the shop to the classroom and the classroom to the shop without the necessity of making an entire change of clothing or entailing an unnecessary loss of time.

It is understood that railroads may conduct their own schools independent of these arrangements with the Federal Board for Vocational Education, but in such cases the entire expense will be borne by the railroad, and no reimbursement can be made from federal funds under provisions of the federal vocational education act.

Instructions Covering the Apportionment of Revenues from Interline Passenger Traffic

1. Effective December 1, 1919, the provisions of General Order No. 20, in so far as they relate to passenger accounts, are hereby canceled.

2. Effective with the business on and after December 1, 1919, General Order No. 32, and Accounting Circulars Nos. 12, 12-A and 106, are hereby canceled. On and after the date all bases and practices in effect December 31, 1917, as published in the Official Digest of Passenger Fares and Divisions, circulars issued by the various territorial passenger associations division circulars issued by individual carriers in effect December 31, 1917, and the recommendations of the Railway Accounting Officers Association as published in 1917 Synopsis, and as subsequently amended, shall govern the division and apportionment of interline passenger revenue, excess baggage collections and other analogous revenues derived from the interline passenger service, between roads under federal control.

3. The preparation of division slips on a revenue basis shall be started at once, in order to facilitate the work of making apportionments for the month of December, 1919, and to permit reports to carriers to be rendered not later than the last day of the succeeding month.

4. Adjustments made in the accounts for December, 1919, and subsequent months, covering tickets sold prior to December, 1919, and settled on "passengers carried one mile" basis, shall be made by applying the average revenue per passenger per mile that was used by the issuing carrier in the apportionment of interline ticket sales made during November, 1919.

5. Adjustments made in the accounts for December, 1919, and subsequent months, on account of excess baggage collections prior to December, 1919, that were apportioned on a mileage basis, shall be made by applying the average revenue per mile that was used by the issuing carrier in the apportionment of interline excess baggage collections for November, 1919.

6. In rendering reports of interline passenger traffic, carriers shall use the forms prescribed by the Railway Accounting Officers Association, as published in 1917 Synopsis, and as subsequently amended.

7. Claims shall not be rendered nor adjustments made for errors developed in interline passenger traffic reports for the period of federal control, but errors shall be brought to the attention of the initial carrier. Tracers for unreported tickets shall be rendered and adjusted, and revenues allocated by each carrier in accordance with the practice in effect at the beginning of federal control.

8. Effective December 1, 1919, General Order No. 49 and Accounting Circulars Nos. 42 and 43 are hereby conceled. The use of the forms and the application of the methods set forth therein are, however, left to the discretion of the individual carrier except that the present uniform forms and methods shall be continued at the consolidated ticket offices and union stations.

Contracts Executed

The Railroad Administration has executed compensation contracts with the Susquehanna & New York for $56,884, the Morgantown & Kingwood for $51,362, and the Maryland, Delaware & Virginia for $49,543.

Interstate Commerce Commission's Annual Report

Organization Had a Busy Year in Spite of Reduced Authority —Recommendations Presented to Congress

THE THIRTY-THIRD ANNUAL REPORT of the Interstate Commerce Commission to Congress, covering the year ending October 31, 1918, contains little in the way of new recommendations for the future because its views have been so fully expressed before the Congressional committees engaged on the proposed railroad legislation.

The routine report of the activities of the commissioners and the various bureaus shows, however, that the commission has been fully occupied in spite of the fact that its authority has been somewhat curtailed by federal operation of the railroads.

The commission's recommendations are summarized in the report as follows:

Summary of Recommendations

1. That consideration be given to our recommendation in the 1916 annual report that the power to award reparation be placed wholly in the courts; that a condition precedent to an award of reparation by a court for unreasonable rates or charges be that we have found such rates or charges unreasonable as of a particular time; that the law affirmatively recognize that private damages do not necessarily follow a violation of the act; that provision be made that sections 8, 9, and 16 of the act to regulate commerce shall be construed to mean that no person is entitled to reparation except to the extent that he shows he has suffered damage; and that the law should provide that if a rate is found to be unreasonable the rule of damages laid down in the *International Coal Case,* 230 U. S., 184, should control.

2. That section 20 of the act be amended to provide that its terms shall be applicable to holding companies.

3. We renew the recommendations made in previous reports favoring the standardization of railroad operating rules.

In connection with the subject of reparation, the commission refers to its previous report, in which it said it should be borne in mind that the standard of reasonableness under the commerce act is not a definite fixed standard, and whether a certain rate is reasonable or not often cannot be known by the carrier until the commission has passed upon it. The report refers to the fact that the shipper claiming reparation has frequently in fact passed the unreasonable charge along to the consumer in the price of his goods. The commission discusses the decision of the Supreme Court in the Darnell-Taenzer case, in which the defendant carrier offered this fact as a defense, in which the court said that the plaintiffs suffered loss to the amount of the verdict when they paid the freight rate. Their claim accrued at once in the theory of the law, and it does not inquire into later events. The commission says the law might well affirmatively recognize that private damages did not necessarily follow a violation of the act, and provide that sections 8, 9 and 16 shall be construed to mean that no person is entitled to reparation except to the extent that he shows that he has suffered damage. Incidentally, it says, the law now permits carriers to retain certain unreasonable charges in excess where rates are found to be unreasonable, and reparation is awarded only to the parties claiming it within the statutory period, and an unreasonable rate under existing conditions is in the last analysis a matter of judgment and in legal sense not generally an extortion.

As to the extension of the act to make it applicable to holding companies, the commission says that in the investigation of the affairs of operating railroad companies its work has been obstructed by reason of the fact that desired information concerning the carrier under investigation was obtainable only from the records of a holding company, which questions its authority to inspect its records and accounts. The information thus sought usually has to do with the financial status of operating accounts and their relationships to other carriers—matters of manifest concern to the public and important in the performance of their regulatory duties.

An abstract of the report is as follows:

Abstract of Report

Shortly after the armistice the Committee on Interstate Commerce of the United States Senate requested us to designate one of our members to present at the hearings of the committee "available data and other information bearing on the railroad situation in the country." Commissioner Clark, the senior member of the commission and chairman of its legislative committee, was designated as such representative. After consideration in conference the commission authorized him to present to the Senate committee statements embodying the prevailing views of the members of the commission and outlining generally the legislative program to which as a body we gave our support; and, second, the somewhat divergent views of Commissioner Woolley.

Commissioner Eastman did not become a member of the commission until February 17, 1919, and was therefore not a participant in the deliberations which led to the adoption of the program so submitted. Under date of July 8, 1919, Commissioner Eastman issued an individual statement. The formal statements were supplemented by extensive oral testimony and statistical date.

Subsequently the Committee on Interstate and Foreign Commerce of the House of Representatives made a similar request, in response to which much additional testimony was submitted and numerous illustrative and explanatory statements compiled.

As stated in our last report the service section created by the director general supplanted the carriers' commission on car service and took over its organization and personnel as well as a part of our Bureau of Car Service, thus in effect continuing the arrangement which then existed for handling car service and transportation generally. This method of operation has continued. The experience had under federal control has demonstrated the public benefits which can be derived from unified direction of car service and emphasizes the necessity for expanded power in the commission in order that those benefits may be continued and, where practicable, enhanced after operation of the railroads is resumed by their respective owners.

Certification of the Standard Return

Last year we certified to the President the average annual railway operating income of 282 carriers. During the current year we certified the average annual railway operating income of 285 carriers. After reviewing the accounts of 117 carriers we found that some of the reported figures should be corrected to harmonize with our accounting rules, and that 27 corrected certifications should be made to the President. Ninety of the original certifications were based upon accounts and computations which required no corrections. Additional

corrected certifications will be made where warranted by the further examinations now being conducted.

Boards of Referees

Under the provisions of section 3 of the federal control act and in response to petitions filed by railroad corporations, we have appointed eight boards of referees, and upon a petition filed by the director general we have appointed one such board, to hear claims for just compensation not adjusted by agreement upon a contract, as is contemplated in section 1 of the federal control act. These boards have proceeded promptly with a view to reporting, as soon as practicable in each case, to the President the just compensation. One of these cases has been concluded, and in four of them the evidence has been presented and briefs are soon to be filed.

Consolidated Classification

In our thirty-second annual report we advised that we had continued to endeavor to stimulate uniformity in freight classification. We stated that we had inquired of the carriers as to why they could not by January 1, 1919, or earlier, effect an assimilation or consolidation of the three general freight classifications into one volume containing one set of uniform rules and regulations and with three rating columns, one for each territory; that this was followed by the appointment by the director general of a small committee, of which our classification agent was a member, to take up and finish the work delegated in September, 1908, to the carriers' committee on uniform classification; that the special committee duly submitted such a volume and that request was made upon us by the director general to make an investigation and submit our recommendations to him.

The hearings were concluded shortly after our report was submitted, some 15,000 pages of testimony having been taken and 800 exhibits filed. Our report and recommendation was submitted to the director general on September 22, 1919, 54 I. C. C., 1. All of the carriers subject to the act and which were not under federal control were made respondents in order that the same classification might, if that course were found advisable, be prescribed for their use also.

The consolidated classification was not proposed as, and is not, a uniform classification in the generally accepted sense of the term. It would preserve the identity of the official, southern and western classifications. In consolidating the classifications and unifying the rules and descriptions numerous concessions were made and some long-standing and deep-rooted controversies growing out of territorial

Nature of changes	Number of changes in the classification			
	Official	Southern	Western	Total
Increase in ratings	890	2,574	393	3,857
Reduction in ratings	478	898	464	1,840
Carload ratings eliminated*	136	1	4	141
Increases in minimum weights	342	599	194	1,135
Reductions in minimum weights	229	73	61	363
Carload minimum weights to which rule 34 is added, subjecting them to the graduate scale	39	49	132	220
Additions or new items	1,144	1,665	425	3,234
Total	3,258	5,859	1,673	10,790

*The number of carload ratings established does not appear, but they are included in the reductions.

or local traffic policies were cast aside. Some radical changes were necessary in order to accomplish the desired uniformity as to rules and descriptions. There was no concerted effort to make the ratings uniform, but uniformity seems to have been kept in mind. The special committee was not directed to change ratings that were not necessarily or reasonably incident to changes in descriptions, and most of the increases and reductions in ratings proposed by the classification chairmen had no necesary connection with the work assigned to the special committee. Our representative thereon had no voice in assigning the ratings. Changes proposed for the purpose of attaining a greater degree of uniformity had more of an upward than a downward trend. While some of the proposed changes had been discussed with the public, the great majority of changes were laid before the public in the consolidated volume for the first time. The following table will give some idea of the magnitude and scope of the general revision put forward by the carriers:

An increase of more than one class in the rating effects an increase in the average charges ranging from 15 to 25 per cent. Many reductions were proposed, but it happens that, upon the whole, they would not apply to traffic of the same importance as would the increases. The director general did not intend the consolidated classificaiton as a revenue measure, and the classification committeemen disclaimed any purpose on their part to make it such. The record showed that, in the main, the proposed increases reflected conscientious efforts to bring about a proper relationship of ratings and to fairly distribute the transportation expenses over the various articles of traffic. Generally speaking, the consolidated classification, as proposed by the carriers, would bring them more revenue. So far as western classification territory is concerned, most of the increases proposed were of minor importance and comparatively few of them were protested, but in the two other territories some of the increases would apply on important kinds of traffic, and were the subjects of vigorous protest. The uniform rules, descriptions and estimated minimum weights were generally recognized as desirable and were received with favor. Objections were voiced mainly to increased ratings and to a general rule relating to charges on mixed carload shipments.

An absolute uniform classification could be prepared and proposed only in connection with a uniform system of rate scales having a uniform number of classes. Until that is worked out, however, there is no real bar to complete uniformity except in so far as carload freight in the lower classes is concerned. The percentage relationships between the classes are not uniform, even within any one of the three classification territories, nor among the tariffs of the same system of railroads, or even for different distances in the same tariff. This should not be a bar, however, to partial uniformity.

A study of the changes in ratings proposed disclosed inconsistencies which we could not endorse. We, therefore, had a comprehensive analysis made to ascertain whether or not we could properly recommend, with modifications, the somewhat general revision of ratings proposed, or an amplification of those proposals. We found that we could not properly recommend either, for the reason that many and important changes as to which interested shippers had had no notice or opportunity to be heard would be included.

So far as general rules, commodity descriptions, packing specifications and estimated and carload minimum weights are concerned, and subject to the modifications thereof indicated in our report, we recommended the adoption of the consolidated classification for application in lieu of the present official, southern and western classifications by carriers under federal control. With but two or three exceptions we did not recommend changed ratings, except as the establishment of new items indirectly effected changes and such as may be a reasonably necessary part of the establishment of uniform descriptions, specifications or minimum and estimated weights. The same rules, descriptions, packing specifications and minimum and estimated weights, subject to the same modifications and limitations, were, tentatively, and without prejudice, found just and reasonable for carriers not under federal control. We also tentatively sug-

gested a 10-class classification for the entire country and uniform percentage relationships among the classes in the class-rate scales throughout the country.

The director general has instructed the territorial classification committees to prepare a consolidated classification conforming to our recommendations, and it is expected that such an issue will be filed at an early date. The proposed classification is the result of effort toward uniformity extending over a long term of years, and since uniform rules and descriptions are necessary before uniformity in ratings is possible it marks an important step toward a uniform classification.

In connection with the consolidated classification, the director general requested that we hear evidence as to the effect of cancelling various state classifications and substituting therefor the consolidated classification. This request was not made until the hearings as to the latter were well advanced and no order was made broadening the scope of the hearings. Generally speaking, the states of Alabama, Florida, Georgia, Illinois, Iowa, Mississippi, Nebraska, North Carolina and Virginia have their own classifications. Evidence was accordingly received on this subject. Our conclusion was that while ordinarily there could be not justification for a different rating on an article when transported wholly within a state than when moved into or out of the state or between states in the same general territory, equality between intrastate and interstate ratings should not be accomplished by such substantial increases on important articles of traffic as would result if the proposed consolidated classification were substituted for the state classifications. We expressed the view that the respective situations should be worked out carefully and gradually after full investigation and co-operation with the interested shippers and state commissions with a view to not depriving any commodity or community of fair and reasonable rates and that, therefore, we could not recommend the substitution of the proposed consolidated classification for the state classifications. The question of the elimination of the Illinois classification was pending before us at the close of the period.

The question of eliminating exceptions to the territorial classifications was not referred to us by the director general.

Formal Docket

The formal complaints filed numbered 838, of which 695 were original complaints, and 143 subnumbers, which may be compared with 342 original complaints and 114 subnumber complaints filed during the previous period. We decided 458 cases and 140 have been dismissed by stipulation, or on complainant's request, making a total of 598 disposed of, as againt 653 during the previous year.

We conducted 839 hearings and took approximately 106,591 pages of testimony, as compared with 596 hearings and 104,983 pages of testimony during the preceding year.

Subjoined is a statement which shows certain facts as to the condition of our docket upon November 1, 1917, 1918 and 1919:

	1917	1918	1919
Cases at issue, but not set for hearing	185	21	54
Cases set for hearing, but not heard	111	142	184
Cases heard, but not fully submitted	110	87	234
Cases submitted	643	386	274
Total cases pending	1,217	768	860

Applications to Increase Rates Under the Amended Fifteenth Section

The total number of these applications filed since the amendment of August 9, 1917, is 8,439; number pending October 31, 1918, 1,237. During the year 1,755 applications have been filed; 1,041 have been approved; 37 have been denied in full, and 68 denied in part; 1,024 have been withdrawn by the applicant carriers; 8 have been assigned to dockets for formal hearings, and 814 are now pending.

The amendment of August 9, 1917, to section 15 of the act, expires by limitation January 1, 1920.

Investigation and Suspension Docket

No proceedings were instituted on this docket. We declined to suspend protested schedules in 10 instances, and disposed of 8 proceedings previously instituted.

Express Companies

After hearing upon application of the express companies for a 10 per cent increase in their interstate rates, we authorized such increase on June 17, 1918. Proposed Increase in Express Rates, 50 I. C. C., 385. These rates were made effective July 15, 1918.

On November 16, 1918, the President took possession, control and operation of the American Railway Express Company and placed it under the charge of the director general of railroads.

Effective January 1, 1919, by his general order No. 56, the director general adopted the block system of stating express rates in the three states which had not theretofore adopted that system and increased the express rates generally about 8 per cent.

During the period covered by this report schedules of rates substantially in accordance with the block system applicable to less than carload shipments of fruits and vegetables produced in 10 of the southern states have been established interstate, and similar schedules were also established on intrastate shipments in several of the states. Schedules of interstate carload rates on these commodities are still under consideration by the express company.

The director general has filed with us, to become effective December 10, 1919, regulations governing the packing of property shipped by express. These regulations contemplate better protection to the property transported and consequent reduction in loss and damage claims.

Numerous informal complaints have been received because of delays in payment of claims for loss of, damage to, or delays in the transportation of property by express. These have been taken up with the several companies and in general disposed of. The Adams Express Company, not now engaged in the transportation of property, has in some instances failed to give claimants definite response within two years after delivery of the property or after a reasonable time for delivery has elapsed, and has refused to pay claims when suits were not brought within the period of two years and one day after delivery, as was stipulated in the contract of shipment. In some instances it has offered to adjust the claim by payment of 60 per cent of the amount claimed, explaining that if that offer were not acceptable investigation would be continued and the claim disposed of on its merits. While the several companies were merged under a contract with the director general, apparently on provision was made for the assumption by the American Railway Express Company of claims against the constituent express companies the cause of action in which accrued prior to the creation of the consolidated company.

The Fourth Section

The operation of the transportation systems of the country by the director general of railroads has had a marked effect upon the applications for relief from the requirements of the fourth section of the act to regulate commerce. The director general has, in important instances, declined to defend carriers' applications for relief under the fourth section, but requested relief in a few instances. The applications filed have been in the main on behalf of carriers not under fed eral control, and as these carriers form in the aggregate but a small part of the transportation system of the country, and

have comparatively few situations where such relief is necessary, the number of applications has been less than in previous years.

The number of applications received for relief from the provisions of the fourth section was 51, a decrease of 214. The number of fourth-section orders entered was 182, of which 127 were permanent in character and 55 for temporary relief. Of the orders entered, 122 were in response to applications included among the original 5,030 applications for authority to continue then existing fourth-section departures, and 60 were in response to applications filed subsequently. Applications withdrawn after correspondence with carriers numbered 23. Orders granting relief in whole or in part total 82; orders denying relief in whole or in part numbered 124. Applications were assigned in whole or in part for hearing in connection with other proceedings in 157 instances.

Rate Schedules

There were filed 95,961 tariff publications containing changes in freight, express and pipe-line rates, passenger fares and classification ratings. These figures indicate a decrease in the number of rate changes established during the period, but this period followed the general increases in rates and fares ordered by the director general of railroads, and most of the changes in these publications were made to restore relationships between points and commodities which were disturbed by the percentage increases.

The file of schedules which is maintained for the use of the public, including shippers, carriers and departments of the government, has been used to the limit of its capacity, and, in addition, the Bureau of Tariffs has continued to furnish rate information to shippers, to the Railroad Administration and to other departments and bureaus of the government in constantly increasing volume.

Bureau of Inquiry

Twenty-eight indictments were returned for violations of the act to regulate commerce and the Elkins act. Three of these were against carriers or carriers' agents and 25 against shippers, passengers or other non-carriers. During the year 65 cases were concluded. Pleas of guilty were offered by the defendants in 57 of these cases and a plea of nolo contendere in 1. A verdict of not guilty was rendered in 1 case and indictments were dismissed in 6 upon motion of the government.

Several prosecutions have been instituted against shippers who filed with carriers false claims for alleged loss and damage to shipments in transit, in violation of section 10 of the act to regulate commerce, and thereby obtained payments from the carriers of substantial offsets against the transportation charges paid by such shippers, a discrimination against honest shippers who did not engage in such fraudulent practices. The obtaining of money from carriers under federal control by means of such false claims is practically equivalent to the obtaining of money from the Treasury of the United States by the presentation of false claims against the government.

In our last annual report reference was made to prosecutions under the Elkins act undertaken against dealers who had obtained the transportation of lumber into embargoed districts by using, without authorization, the names of government officials upon the billing for such shipments with intent to show that the lumber was intended for the use of the government when in fact intended for private purposes. Most of these prosecutions have been concluded successfully. A few still await trial.

Bureau of Law

On October 31, 1918, there were 16 cases involving orders or requirements of the Commission pending in the courts, of which 5 have been concluded. During the year 3 cases were instituted, so there are now pending in the different courts 14 cases. Of these 3 are in the Supreme Court and 11 in district courts. Of the 5 cases finally disposed of 2 were dismissed on motion of the petitioner, 2 were dismissed on motion of the parties and 1 was concluded by a decision of the Supreme Court.

Bureau of Statistics

The work of making the computations underlying the certificates of average annual railway operating income has been practically completed. The following table gives a survey of the number of steam roads of each class for which such computations were made, and the amount of the income involved. It is perhaps needless to say that the amounts here shown will not be exactly the aggregate of the amounts for which contracts are signed nor necessarily the ultimate amount payable to those classes of roads when all corrections and adjustments are made:

SUMMARY OF COMPUTATIONS OF AVERAGE ANNUAL RAILWAY OPERATING INCOME, AS DEFINED IN THE FEDERAL CONTROL ACT, FOR THE THREE YEARS ENDED JUNE 30, 1917

Item	Number of roads	Amount of income
Class I companies under Federal control	[1]163	$887,650,248.12
Class II companies under Federal control	03	8,671,996.48
Class III companies under Federal control	[2]35	379,387.46
Switching and terminal companies under Federal control	[2]124	22,014,303.34
Total	415	918,715,935.40
Class I companies not under Federal control	[3]11	4,624,908.25
Class II companies not under Federal control	[4]122	8,097,419.00
Class III companies not under Federal control	[6]223	2,365,702.99
Switching and terminal companies not under Federal control	[6]48	3,331,200.21
Total	404	18,419,230.45
DEFICITS NOT INCLUDED IN ABOVE		
Class I companies under Federal control	4	653,814.22
Class II companies under Federal control	27	1,195,815.35
Class III companies under Federal control	25	347,770.97
Switching and terminal companies under Federal control	8	76,723.95
Total	64	2,274,124.49
Class I companies not under Federal control	0	.....
Class II companies not under Federal control	[7]21	643,082.74
Class III companies not under Federal control	[8]144	973,879.36
Switching and terminal companies not under Federal control	37	636,713.57
Total	202	2,253,675.67
The net railway operating income with deficits deducted would be:		
Roads under Federal control	...	916,441,811.00
Roads not under Federal control	...	16,165,555.00

[1]Excludes Cincinnati, Hamilton & Dayton Railway Company not certified.
[2]Excludes two companies not certified.
[3]Excludes Utah Railway Company not certified.
[4]Includes 28 companies operated under co-operative contract.
[5]Includes 37 companies operated under co-operative contract, and excludes 53 companies not certified.
[6]Includes 1 company operated under co-operative contract, and excludes 1 company not certified.
[7]Includes 3 companies operated under co-operative contract.
[8]Includes 18 companies operated under co-operative contract.

The federal operation of the roads has necessitated a change in the annual report form of steam roads. Two reports have been required for 1918 for each controlled road, the one returned by the federal auditor and covering the revenues, expenses and operating statistics of the road, and the other returned by the corporate auditor and covering the financial transactions of the corporation. Owing to the numerous new accounting questions which have been raised by federal control, carriers have again been unable to comply with our rule that annual reports must be rendered within three months after the close of the reporting year. Our statistics for the calendar year 1918 will for this reason be much delayed.

The attempt of the Railroad Administration to inaugurate a more elaborate method of reporting statistics of the various classes of commodities received our approval. General Order 59, issued by the director general, contemplated the re-

porting of the commodities carried in such a way as to show not only the number of tons carried but also the freight revenue for each class of traffic, and further to show the number of tons of each class carried from any one state to each other state. This order was, however, rescinded. A new attempt is being made to work out a practicable improvement in this kind of statistics.

Bureau of Carriers' Accounts

The activities of this bureau have been directed chiefly to the execution of duties imposed upon us by the provision of the federal control act, which requires that as a basis for compensation of railroad owners we shall determine and certify the average annual railway operating income for the three years ended June 30, 1917. As the work has been prosecuted without additional force it has been necessary temporarily to defer the broader investigations of accounts usually conducted by this bureau. The review has nevertheless resulted in substantial benefits through the discovery and correction of erroneous practices in connection with the important accounts involved, as well as material changes in the amounts reported by the carriers as their operating income, which was the immediate subject of inquiry.

Of approximately 560 carriers whose accounts it became necessary to examine for the purpose of verifying the average annual operating income as reported by them, there have been submitted by the field force of the bureau reports of 387 examinations, leaving 173 examinations yet to be made, of which 33 are now in progress.

Bureau of Correspondence and Claims

The number of informal complaints received was 4,450, a decrease of 1,008. Carriers filed 1,885 special docket applications for authority to refund amounts collected under the published rates admitted by them to have been unreasonable, a decrease of 876. Orders authorizing refund were entered in 1,755 cases, a decrease of 997, and reparation was awarded thereon in amounts aggregating $420,867.77. In addition, 648 cases were dismissed or otherwise disposed of without orders. The bureau also handled approximately 48,000 letters, many of which, while not classified as complaints, had the characteristics of complaints.

Bureau of Safety

The casualties on steam railroads in connection with the operation of trains during the calendar year 1918 are summarized as follows:

Class of persons	Number of persons	
	Killed	Injured
Trespassers	3,255	2,805
Employees	2,928	47,556
Passengers	471	7,316
Persons carried under contract, such as mail clerks, Pullman conductors, etc.	48	766
Other nontrespassers	1,995	5,701
Total of above classes	8,697	64,144

In addition, there were 589 persons killed and 110,431 injured in nontrain accidents during the year.

During 1918 there were 164 employees killed and 2,332 injured in coupling and uncoupling cars; casualties due to employees coming into contact with overhead and side obstructions, falling from and getting on and off cars, resulted in 630 deaths and 14,533 injuries. As compared with the figures for 1917, there was a decrease of 2 in the number killed and 176 in the number injured in the former class of accidents, and an increase of 39 in the number killed and a decrease of 1,851 in the number injured in the latter class of accidents.

During the year information of violations of safety-appliance laws by railroads operated under federal control was not filed with United States district attorneys for prosecution, but reports of such violations were furnished to the United States Railroad Administration to enable it to take corrective measures as contemplated by Order No. 8 of the director general. Reports of 1,569 specific instances of violations of the law were transmitted to the director general.

In connection with the consolidation and unification of terminal facilities effected by the Railroad Administration, investigations conducted by us have disclosed that in some instances proper inspection was not being given equipment in such terminals and available repair facilities were not being sufficiently utilized to insure that cars having safety-appliance defects would not be moved in violation of law. Several cases of this character were called to the attention of the director general, and in each case corrective measures were taken to secure compliance with the requirements of law.

Investigations have disclosed that situations exist on several railroads where trains are still controlled on mountain grades by means of hand brakes. Measures are being taken by us to bring about the discontinuance of this practice and to secure full compliance with the law. In some cases, joint investigations and demonstrations have been conducted for the purpose of fully establishing the practicability and safety of operating practices which conform to the requirements of the law.

The results of safety-appliance inspections also direct attention to the fact that improvement in the condition of air-brake equipment is required. Our order of June 6, 1910, specifies that not less than 85 per cent of the cars in a train must have their brakes used and operated by the engineer of the locomotive drawing the train, and this requirement is generally understood and recognized. The order also provides that "all power-brake cars in every such train which are associated together with the 85 per cent shall have their brakes so used and operated." This latter requirement is not generally observed. It is common practice at the present time for trains to leave terminals having some cars with inoperative brakes or having brakes cut out, notwithstanding the fact that facilities are available at such terminals for making repairs or replacements necessary to place all power-brake equipment in operative condition.

The period within which carriers subject to the safety-appliance laws were required to equip their cars to comply with the standards fixed by our order of March 13, 1911, was, as to paragraphs *b, c, e* and *f* of the order, extended on February 1, 1918, to September 1, 1919. On August 15, 1919, application was made to us by the United States Railroad Administration, and by the American Railroad Association for an additional extension of nine months. At the hearing it was shown that there remained yet unequipped about 80,000 cars, 16,596 of which would require reconstruction of the ends in order to provide sufficient end ladder clearance. It was also shown that on account of difficulty in obtaining men and material, in locating nonequipped cars and getting them unloaded and to repair tracks, it would be necessary to grant additional time within which to equip them, or it would be necessary to take from service cars otherwise suitable for use and needed particularly for transportation of coal and grain. In view of this showing, on August 29, 1919, an order was issued granting a further extension of time until March 1, 1920.

With respect to railroads which are not operated under federal control, there were, during the fiscal year, 15 cases of violations of the safety-appliance law, involving 73 counts, transmitted to United States district attorneys for prosecution. Cases aggregating 57 counts were tried, of which 49 counts were decided in favor of and 8 counts adversely to the government.

During the fiscal year there were transmitted to the several United States district attorneys for prosecution 10 cases of violation of the hours-of-service act, involving 61 counts.

Cases aggregating 21 counts were tried, of which 2 counts are pending decision, 2 counts were decided in favor of, and 17 adversely to, the government. Of these 17 counts, 16 have been appealed. There were also 42 counts decided against the government on demurrers to defendants' answers. There were 461 counts confessed and 46 counts dismissed. In the various circuit courts of appeals there were decisions in 3 cases involving 23 counts, all in favor of the government. In 2 cases decided by the Supreme Court involving 29 counts, the decisions were in favor of the government; application for a writ of certiorari was denied in two cases which were consolidated and tried as one case, involving 120 counts, wherein the decision of the circuit court of appeals was favorable to the government. Pending trial in the various district courts are 71 cases involving 651 counts.

Reports of 225 instances of violations of the law were transmitted to the director general. Of the cases filed for prosecution in the district courts, 4 were instituted against the officers and agents in charge of the employees who exceeded the statutory periods of service, involving 18 counts. These officials were employed by four railroads which are operated under federal control.

During the year ended June 30, 1919, we investigated 79 train accidents. These included 53 collisions, 25 derailments, and one miscellaneous accident. The collisions resulted in 261 deaths and 1,083 injuries, the derailments resulted in 55 deaths and 231 injuries, while the one other accident resulted in 20 deaths and 19 injuries, a total of 336 persons killed and 1,333 persons injured.

Of the 53 collisions investigated, 28 occurred on lines operated by some form of block signal system, 19 on lines operated by time table and train order; 6 were yard accidents.

Of the 28 collisions occurring on block signal roads, 18 occurred in automatic block signal territory, of which 12 were rear-end collisions, 5 were head-end collisions, and 1 was a side collision.

Eleven of the accidents occurring in automatic block signal territory were due, directly or in part, to the failure of enginemen properly to observe and obey signal indications; in some cases improper performance of duty by flagmen was a contributing cause. In one of the rear-end collisions the primary cause was the failure of a crew to wait a sufficient time after opening a side-track switch before passing out upon the main line. Two of the collisions investigated were caused by lack of proper maintenance of signals In one of these cases a false clear signal was the primary cause of the accident, while in the other, which occurred on an interurban line, orders had been issued by the dispatcher for train crews to disregard automatic block signals, several of which were not in operative condition and had been out of order for some time. The crews of the trains involved in this accident overlooked a meeting point which was fixed by time table as well as by a train order.

Of the 10 collisions which occurred in nonautomatic block signal territory, 4 were rear-end and 6 were head-end collisions. One was due to improper flagging. In 4 collisions train orders were involved. In one case the engineman failed to stop and take siding as directed; in another case a train crew failed to obey a wait order; in the third case an operator made an error in copying a train order, and the crew accepted the order, which was incomplete and also contained an erasure and an alteration; and in the other case the operator failed to deliver an order. Two accidents were due to enginemen not operating their trains under proper control in occupied blocks, as required by signal indications; another was due to the failure of an engineman to observe and obey the stop signals of a flagman, another to a runaway due to cars being left on a grade without sufficient number of hand brakes being set, while another was due to a work train occupying the main track without protection.

The 6 yard accidents investigated consisted of 1 rear-end collision, 4 head-end collisions, and 1 side collision. The most serious of these was a head-end collision between a light engine moving away from a roundhouse, and a heavily loaded employees' train. It occurred in a dense fog and was the result of both enginemen failing to take proper precautions in view of the prevailing weather conditions.

The 19 collisions on lines operated by the timetable and train-order system consisted of 5 rear-end collisions, 12 head-end collisions, and 2 side collisions. All of the rear-end and side collisions were due to failure properly to protect trains by flag. Errors in transmitting, receiving and fulfilling train orders were responsible for 5 of the 12 head-end collisions. Of the remaining 7 head-end collisions, 5 were due to trains occupying the main track on the time of superior trains, 1 to running by meeting point on account of excessive speed, and the other to the failure of a dispatcher to provide a meeting point between 2 extra trains. Among the accidents due to occupying the main track on the time of a superior train was the most disastrous accident ever investigated by us; it resulted in 90 deaths and 180 injuries. In this case a passenger train, inferior by direction, passed from double to single track and collided with the opposing superior train. No train register was maintained at the end of double track, and the conductor, who was busy collecting tickets, thought that a train which had been passed while on the double-track section was the opposing superior train. The engine crew were killed in the collision.

Three of the 25 derailments were due to defective equipment and 14 derailments were due to track conditions, including broken rails, switches being open or partly open, washouts, the malicious removal of rail connections, and to the poor condition of track. Five derailments were due to excessive speed; one was caused by an obstruction maliciously placed on the track and one resulted from an arrangement of signal lights at the end of double track which was such that the engineman thought a derail was closed and the signal clear, when the contrary was the case.

The failure of enginemen to observe and obey signal indications and the failure to provide adequate flag protection for trains continue to be the principal causes of collisions. Misreading signals, failing entirely to see signals due to fog, smoke, and steam, being temporarily engaged in other duties, or being asleep, constitute the more common reasons for the failure of enginemen to observe and obey signal indications. Accidents due to these causes have occurred on roads where the best trained and most competent men are employed. The only remedy proposed which appears to be adequate to check and provide protection against the occurrence of disastrous accidents of this character is the adoption of some form of automatic train control system for the purpose of compelling obedience to automatic block-signal indications.

The matter of providing proper flag protection for trains is in most cases essentially a question of observance or enforcement of rules. It has been clearly established as a result of accident investigations that numerous disastrous railroad accidents would beyond question be prevented by strict adherence on the part of the flagmen to the requirements of the flagging rules. Improvement in this regard can be effected by railroad companies by exercising proper supervision and care in the selection, training, instruction, and assignment of flagmen. In this connection attention is again called to the recommendation made in previous reports for the standardization of railroad operating rules. The adoption by railroads throughout the country of uniform operating rules, specific and definite in their requirements, and embodying the best operating practices now in vogue, would constitute an important step in providing increased safety in railroad operation.

Collisions continue to occur on lines which are operated by the time-table and train-order system, due to the weaknesses inherent in the train-order system of operation, which have been discussed in previous reports. There have also been several collisions in block-signal territory, which resulted from lack of necessary maintenance of automatic signals and failure to observe rules essential to the safe operation of the nonautomatic block system. Block-signal statistics indicate a very slight increase in railroad mileage operated by the block system during the calendar year 1918, and during the past four years the average net increase in block-signal mileage has been less than a thousand miles per year.

Investigations of a number of fundamental questions pertaining to railroad rails and the causes of their failure are now in progress. These investigations include both manufacturing conditions and service conditions encountered in the track.

Under authority of the act of October 22, 1913, tests have been conducted of an automatic train-control device and an automatic train-pipe connector. Detailed reports of the results of these tests have been transmitted to the Congress. During the fiscal year plans of 89 devices were examined and opinions thereon transmitted to the proprietors.

During the fiscal year three applications for medals of honor under the act of February 23, 1905, were received. In two cases we recommended to the President that the applications be denied, and he approved the recommendations. The third case is still under consideration.

Bureau of Locomotive Inspection

The work of this bureau during the fiscal year ended June 30, 1919, is shown in detail in the report of the chief inspector, published separately.

The tables below show in concrete form the number of locomotives inspected, the number and percentage of those inspected found defective, and the number ordered out of service because of not meeting the requirements of the law, together with the total defects found.

The amendment to the locomotive boiler inspection law of March 4, 1915, to include the entire locomotive and tender and all appurtenances thereof, did not become effective until September 4, 1915; therefore the record for the fiscal year ended June 30, 1916, includes accidents and casualties investigated under the amended act for only 9 months and 26 days of that year.

The following table shows the total number of persons killed and injured by failure of locomotives or tenders, or some part or appurtenances thereof, during the four years ended June 30, 1916-1919:

	Year ended June 30							
	1919		1918		1917		1916	
	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured
Members of train crews:								
Engineers	14	194	11	245	16	230	11	205
Firemen	22	265	19	306	21	304	12	225
Brakemen	11	82	6	62	13	60	9	74
Conductors	2	16	..	21	3	14	1	6
Switchmen	1	7	2	8	1	8	...	6
Roundhouse and shop employees:								
Boiler makers	1	9		11	...	11	1	11
Machinists	..	5	...	11	...	8	1	11
Foremen	..	3	1	4	...	1	1	3
Inspectors	..	6	4	4	...	3	...	3
Watchmen	..	2	...	3	...	5	...	8
Boiler washers	..	7	1	4	...	7	...	10
Hostlers	..	6	...	8	...	6	...	6
Other roundhouse and shop employees	1	17	2	19	2	19	1	21
Other employees	3	23	...	26	5	22	...	7
Nonemployees	2	11	...	24	1	23	1	3
Total	57	647	46	756	62	721	38	599

All accidents which have been reported to this bureau, as required by section 8 of the law, and rules 55 and 162 promulgated thereunder, have been carefully investigated and a report rendered, as required, for the purpose of determining, as far as possible, the exact cause of such accidents, and applying a remedy that will tend to prevent recurrences. Copies of such reports have been furnished to all interested parties, when requested, and to railroad officials, in order to acquaint them with the conditions, as disclosed by our investigations.

Locomotives Inspected, Number Found Defective, Percentage Inspected Found Defective, Number Ordered Out of Service, and Total Defects Found, by Comparison

	1919	1918	1917	1916
Number of locomotives inspected	59,772	41,611	47,542	52,650
Number found defective	34,557	22,196	25,909	24,685
Percentage found defective	58	53	54.5	47
Number ordered out of service	4,433	2,125	3,294	1,943
Total defects found	135,300	78,277	84,833	71,527

Number of Accidents, Number Killed, and Number Injured, by Comparison, Covering Failures of All Parts and Appurtenances of the Entire Locomotive and Tender

	1919	1918	1917	1918
Number of accidents	565	641	616	537
Decrease from previous year..per cent	11.8	[1]4.1	...	...
Number killed	57	46	62	38
Decrease from previous year..per cent	[1]23.9	25.8	...	...
Number injured	647	756	721	599
Decrease from previous year..per cent	14.4	[1]4.8	...	...

[1]Increase.

Note.—Percentage of decrease not shown for 1916, because of amended act not being in effect the entire year.

Number of Accidents, Number of Persons Killed and Number Injured; Due to the Failure of Some Part or Appurtenance of the Locomotive Boiler Only, with Their Percentage of Decrease, by Comparison of the Fiscal Years Ended June 30, 1912-13, With the Fiscal Years Ended June 30, 1918-19

	1919	1918	1917	1916
Number of accidents	341	398	820	856
Decrease 1919 from 1918.....per cent	14.3	...	...	...
Decrease 1919 from 1912.....per cent	60.2	...	...	...
Number killed	45	36	36	91
Increase 1919 over 1918.....per cent	25	...	...	...
Decrease 1919 from 1912.....per cent	50.5	...	...	...
Number injured	413	510	911	1,005
Decrease 1919 from 1918.....per cent	19	...	...	...
Decrease 1919 from 1912.....per cent	58.9	...	...	...

The fact that it is known that all accidents will be carefully investigated, and the existing conditions made known by parties whose only interest in such matters is to prevent recurrences, has had a most beneficial effect in reducing the number of casualties to employees and travelers upon railroads, as indicated by a comparison of the reports rendered.

The reduction in the number of accidents and casualties is gratifying when it is remembered that up to September 4, 1915, the law applied to the locomotive boiler and its appurtenances only, since which date it has covered the entire locomotive and tender and all of their appurtenances.

A summary of all accidents and casualties occurring during the fiscal year ended June 30, 1919, covering the entire locomotive and tender and all of their appurtenances, shows a decrease of 11.8 per cent in the number of accidents, an increase of 23.9 per cent in the number killed, with a decrease of 14.4 per cent in the number injured, as compared with the year ended June 30, 1918.

A summary of all accidents and casualties, caused by the failure of the locomotive boiler and its appurtenances only, for the fiscal-year ended June 30, 1912, which was the first year of the existence of the law, compared with a summary of all accidents and personal injuries which occurred during the fiscal year ended June 30, 1919, shows the substantial decrease in the number of accidents of 60.2 per cent; a decrease in the number of persons killed of 50.5 per cent; and a decrease in the number injured of 58.9 per cent, caused by the failure of such parts.

The increase in the number of persons killed during the

last year over the year previous is, to a considerable extent, due to some very violent explosions resulting from firebox crown-sheet failures. These failures serve to illustrate the prime importance of proper firebox construction, inspection, and repair, together with the location, inspection, and maintenance of such appliances as water glasses, gauge cocks, injectors, steam gauges, and safety valves.

Substantial progress has been made in equipping locomotives with headlights which will meet the requirements of our orders of December 26, 1916, and December 17, 1917, the effective date of which was fixed as of July 1, 1918. Notwithstanding the strenuous opposition offered, by certain carriers, to the adoption of these requirements, the use of such lights as a safety device is meeting with the general approval of the employees who are employed where locomotives are so equipped; and a number of the officials, under whose jurisdiction these lights are being operated, have expressed their opinion that such lights are economical and add materially to the safety of operation.

Under our order of April 7, 1919, certain modifications in the rules which were granted in our order of September 20, 1917, because of conditions brought on by war, were abrogated and others substituted. Experience had demonstrated that certain modifications granted in our order of September 20, 1917, could be made permanent without adversely affecting the safety of operation; therefore, such modifications were retained in the rules.

It has been the purpose to co-operate with the United States Railroad Administration and the officials of the various carriers to the fullest extent consistent with our duties and the purpose of the law, and avoid as far as possible, being compelled to order locomotives removed from service for unsafe conditions at a time when traffic might be seriously delayed.

This bureau has also furnished transcribed reports showing defects found on all locomotives ordered out of service and all defects found approaching violations of the law and rules to the federal managers or the chief operating officers of the carriers. This was done for the purpose of keeping them informed so that proper repairs might be made to such defects before they became violations and to prevent, as far as possible, failures which might result in serious accidents to persons and property, and consequently serious delay to traffic.

Bureau of Valuation

Fifty-three tentative valuations have been served, and hearings are now being held upon protests which have been filed. In connection with the properties of the Texas Midland Railroad, the Winston-Salem Southbound Railroad Company, and the Kansas City Southern System, action upon protests has been taken and final reports published, except that we have not fixed a single sum as the final value of the common-carrier property of any of these carriers.

As stated in our last annual report, the work of the bureau had been seriously interfered with during the war by inability to obtain and retain competent men, and it was expected that with the cessation of hostilities this condition would disappear, but it has not. The difficulty of finding men with the requisite expert qualification has not lessened, and the cost of employing them has materially increased. This has to an extent interfered with progress.

The field work of the engineering section has been substantially finished. The road and track parties, which make the major part of the field inventory, have been disbanded in the Southern, Western, and Pacific districts and will be disbanded in the Central district about January 1. A small amount of branch work, that is, the inventorying in the field of buildings, bridges, and equipment, is still to be done in all districts except the Southern; and owing to a mistake in estimating the mileage assigned to the Eastern district, road and track work in this district will run some four or five months beyond the previously estimated average date of completion of January 1, 1920.

In the land section our progress has not been as great as was anticipated owing mainly to the inability of carriers to supply necessary preinventory information, like maps of their right of way. Our appraisers can not fix the value of these lands until the carrier has pointed out their location and extent.

The greatest difficulty is being experienced in the accounting section and here again the delay arises from the inability of the carriers to furnish us proper information, especially as to the cost of their equipment and the original cost of their lands. The effect of the war has been to increase the demand for accountants, especially of the higher grade, more in proportion to the supply than in case of any other class of employees engaged in our valuation work. Not only is there an unusual demand for accountants in private occupation but the government itself has become a large employer. The federal control of railroads has imposed upon the railroad accountant a great amount of additional work for which an adequate number of competent men has not been available.

In our report in the Texas Midland case, we said:

"* * * Tentative valuations in which a simple sum as the value of the property is not stated will in due course be supplemented by such finding and a final valuation, including a single sum as the value of the property, will be duly issued."

At the time that report was issued it was our thought that action concerning final value should not be taken until after a comparatively large number of tentative valuations had been prepared and served and the interested parties had been given an opportunity to be heard fully upon the question. All parties to the record represented to us that in the presentation of this question they would be greatly aided by the observation and study of a comparatively large number of cases, and that we could act in the premises more intelligently than would otherwise be possible. We have therefore arranged to hear argument early in January.

Orders of the Regional Directors

Report of Operating Conditions. — The Southwest regional director, by Supplement 3 to Order 36, directs reports of operating conditions to be made monthly instead of semi-monthly.

Export Bills of Lading Via North Atlantic Ports.—Supplement 2 to Circular 240, of the Southwestern regional director, gives additional names to the list under paragraph 8 of the original circular (*Railway Age,* page 424, August 29).

Disposition of Old Ties.—Order 236, of the Southwestern regional director similar to file 113-1-1 of the Northwestern regional director (*Railway Age,* September 12, page 518).

Condition of Locomotive Cabs. — The Northwestern regional director, file 66-1-122, states that the condition of many locomotive cabs is such that in cold weather severe hardship to the men as well as loss of efficiency will result. Openings in cabs around boilerheads, injector pipes, reverse levers and other places must be properly closed; clear vision windows must open and close properly; cab heaters must be applied and be put in proper condition for service, and suitable cab curtains must be provided as soon as needed.

Cold Weather Fire Warnings. — The Southwestern regional director, in Order 242 (renewal of Order 85), quotes Bulletin 3 issued by the manager of the Insurance and Fire Protection Section, relative to prevention of fires in the winter and the necessity for eliminating fire hazards.

Double Sheathed Box Cars Built by C. M. & St. P.

Underframe Has Steel Center Sill and Wooden Side Sills; Wooden Frame Body with Steel Ends

A 40-TON BOX CAR in which many interesting features have been incorporated has been designed by the Chicago, Milwaukee & St. Paul, and a lot of 1000 is now being built in the company's shops at Milwaukee. The general outside dimensions of the car are as follows: length 42 ft. 1½ in.; height at eaves 13 ft. 2 in., and width at eaves 9 ft. 11 in. The inside of the body is 41 ft. 5½ in. long, 8 ft. 10⅜ in. wide, 9 ft. 1⅞ in. high at the center and 8 ft. 8⅝ in. high at the sides with a door opening 8 ft. 2¼ in. high. The cubical capacity of the car is 3267 cu. ft. and the average light weight is 44,800 lb.

Underframe

The underframe is made up of a steel center sill with three wooden sills and three truss rods on each side. The center sill consists of two 12 in., 40 lb., channels, 43 ft. long, with a ¼ in. by 20 in. cover plate extending practically the full length on top of the sill. A double body bolster of the built-up type is used. The top chord members are ¾ in. by 7 in. and pass through the center sill channels near the neutral axis and over a combined filler and center plate casting. The bottom bolster members are 1 in. by 7 in. and pass under the center casting. Malleable iron fillers are bolted between the two members at each intermediate sill and also at the side bearings.

The end sill is of wood, 6½ in. wide by 8½ in. high. It is cut out to a height of 3¾ in. where it passes over the center sill. Two nailing strips 3¾ in. high are bolted along each side of the center sill. With the four intermediate and two side sills, there are eight points of support for the floor boards. The sills are all 8½ in. high, the width of the intermediate sills being 4 in. and of the side sills 4½ in. The truss rods are 1¼ in. in diameter, with ends upset to 1½ in. The needle beams are secured to substantial spacing castings attached to the bottom of the sills.

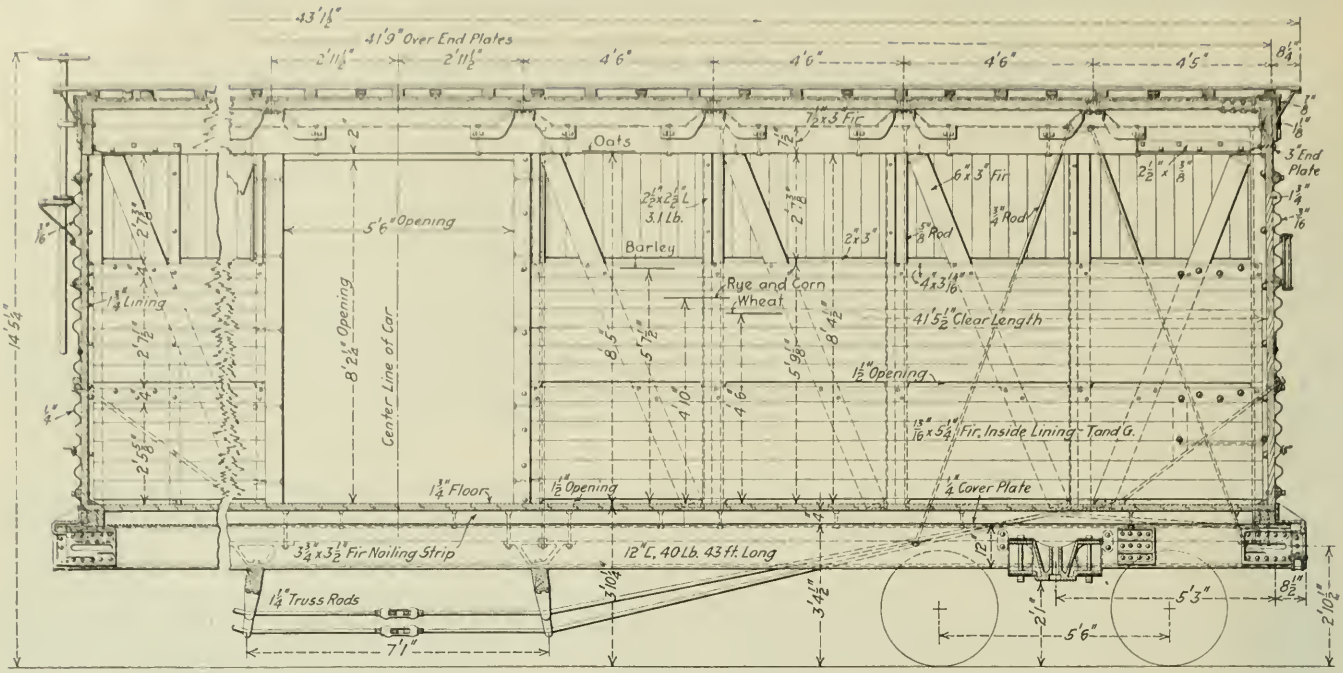
The draft gear is of the Cardwell friction type. One of the illustrations shows the details of its application. A coupler with a 5 in. by 7 in. shank is used but slots for a coupler key are provided in the sills.

Body Construction

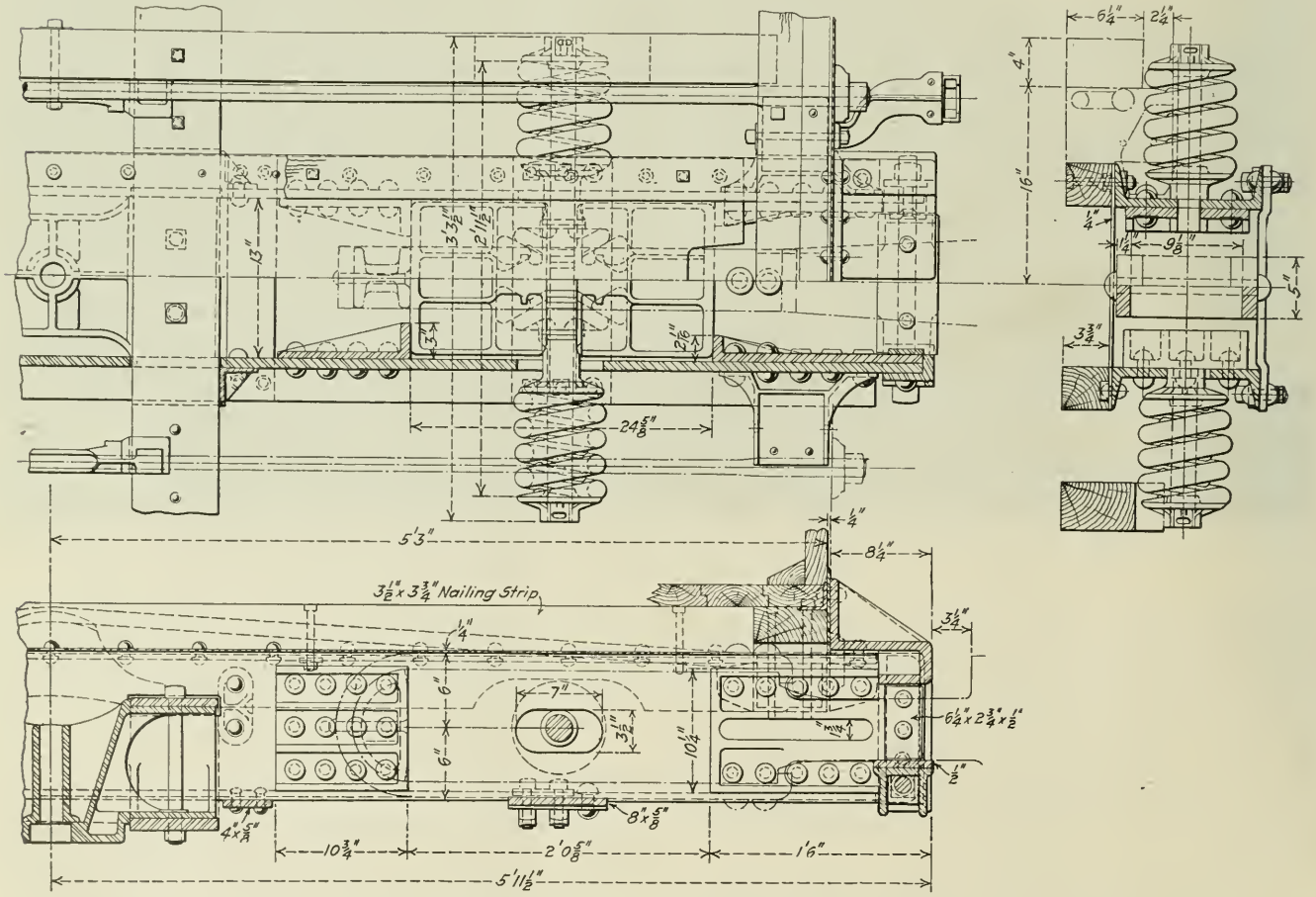
The side trusses are made up of 6 in. by 3 in. posts and braces, each vertical post being reinforced by a 2½ in. by 2½ in. angle iron weighing 3.1 lb. per ft. The door posts are made up of a 4½ in. by 5⅝ in. and a 2 in. by 3 in. post with a 2¼ in. by ¾ in. wrought iron strip between. These parts are bolted together and the front post is further reinforced by the door stop. The side plate is 7½ in. by 3 in. There are two belt rails, 4 in. by 3 13/16 in., located 2 ft. 5⅝ in. and 5 ft. 5⅛ in. from the floor. The flooring is 1¾ in. thick and the inner and outer sheathing are 13/16 in. thick.

The ends are of the Murphy two-piece type, ¼ in. plates being used for the lower section and 3/16 in. plates for the upper. The lower plate extends down behind the striking casting and over the end sill, and a 2½ in. by 2½ in. angle iron riveted to the plate sets into the upper face of the sill. This construction is clearly shown in the drawing of the draft rigging. Diagonal braces extend from the post pocket casting

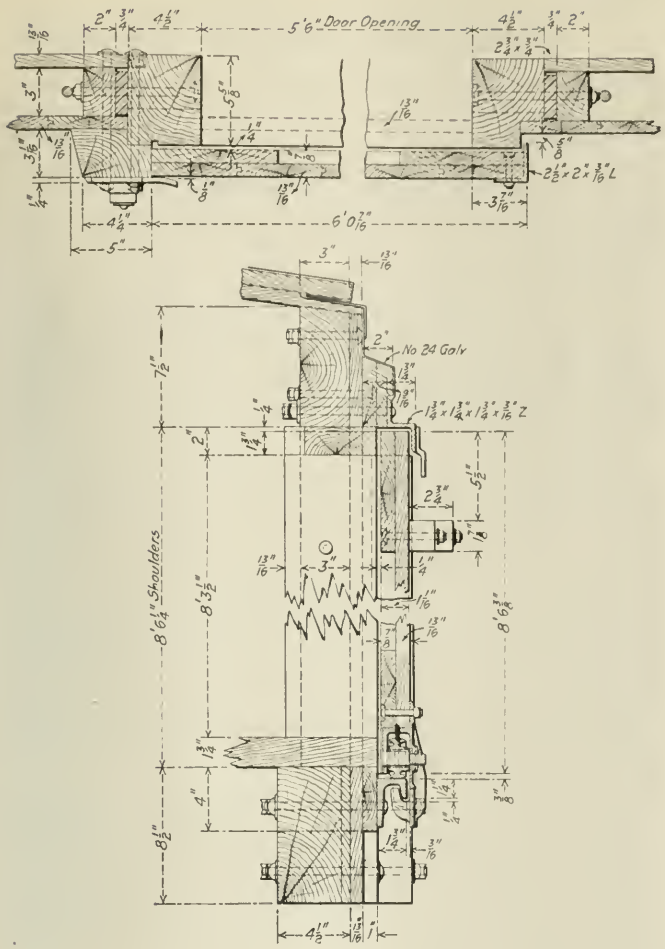
Double Sheathed 40-Ton Capacity Box Car Designed and Built by the C. M. & St. P.



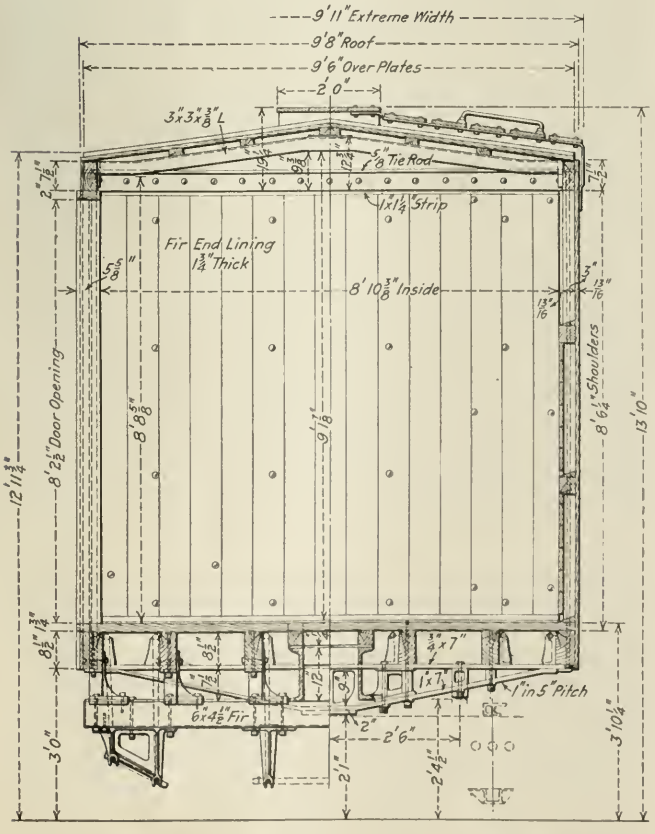
Longitudinal Section Showing the Arrangement of the Body Framing



Details of the Draft Gear Application



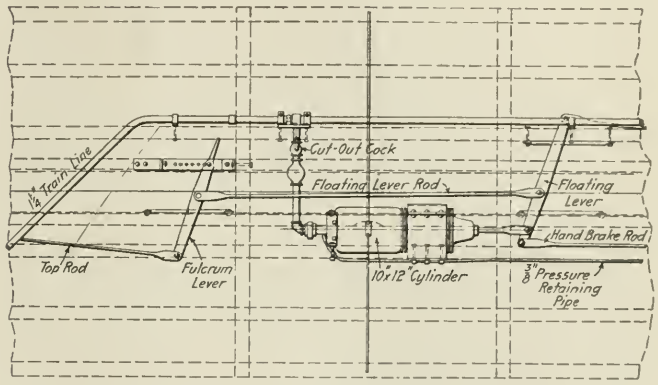
Details of the Door Construction



Half Sections of the C. M. & St. P. Double Sheathed Box Car

over the bolster to the top of the lower end section on each side. The end plate, to which the upper section is joined, is 3 in. thick and is fastened to the side plate with strap bolts. The end is lined with 1¾ in. matched boards placed vertically.

The roof is supported on Ideal carlines formed of two 3 in. by 3 in. by ⅜ in. angles, to which are bolted the wooden purlins and ridge pole. The roof is the Murphy type X L A flexible. The doors are of the bottom supported type with



Arrangement of the Foundation Brake

Camel door fixtures. Details of the construction at the doors are shown in one of the illustrations.

Brake Slack Adjuster

An interesting detail of the brake rigging is the method employed for taking up the slack. No adjustment is provided in the bottom or top rods. Instead the fulcrum lever is attached to a bracket which has several holes for adjusting the piston travel. The lever is provided with a handle and lettering on the side of the car calls attention to the fact that excessive travel is to be taken up at the fulcrum lever and not at the trucks. The convenience of this arrangement has proved of great assistance in eliminating excessive piston travel.

Amending Section Four of the Act to Regulate Commerce

G. W. Luce, freight traffic manager of the Southern Pacific at San Francisco, Cal., has recently written a treatise on the disadvantages which would accrue if the "long-and-short-haul" clause of the Act to Regulate Commerce is amended as proposed in the bill recently introduced in the Senate. Mr. Luce says in part:

"There was introduced in the Senate, on May 20, 1919, a bill to amend Section Four (commonly called the long-and-short-haul clause) of the Act to Regulate Commerce. Much has been said by the press of interior cities regarding this bill, giving the impression that a great disaster would befall such communities if the bill were not passed. The following is a quotation from articles that have appeared in some of the interior papers:

> 'Inland towns and cities no longer will be compelled to pay higher freight rates than terminal points if the bill to amend the long-and-short-haul clause in the Interstate Commerce Law is passed.'

"This statement, taken by itself, may be true, but the freight rates which interior communities will be required to pay, if the bill is passed, will be higher than they are today, or ever have been, for this reason: If the pre-war service between the Atlantic seaboard and the Pacific coast is resumed, and the transcontinental railroads are prohibited

from meeting the water rates, unless they make the same, or lower, rates to interior points (which they cannot afford to do unless water rates are sufficiently high) the traffic will move by water, and if the railroads forego the revenue on that traffic, it is quite evident they must increase the rates sufficiently on the only remaining traffic, which is that to the interior, to earn the necessary money to pay their bills. The traffic between the Atlantic and Pacific coasts is only one of the many such situations. They exist in all parts of the United States.

"Are the railroads now to be compelled by such an amendment to so adjust their rates as to prevent their handling any traffic that can move by water, and be limited to interior traffic that can only be handled by rail and to increase their rates on such traffic so that their earnings will be sufficient for fixed charges, operating expenses, taxes, and a reasonable profit? Also, are the railroads to be restrained from making necessary rates on United States manufactured goods from interior points to the Atlantic, Gulf or Pacific coast cities to meet competition of foreign-made goods reaching these cities by water?

"It is not contended here that the railroads should be permitted to make rates that will force the water lines out of business. I suggest, therefore, that the railroads be permitted to fairly meet the water line rates and enjoy a share of the business, utilizing their facilities to the fullest extent; the Interstate Commerce Commission to say to what extent the railroads may go towards meeting water competitive rates without affecting intermediate rates, which must at all times be reasonable in, and of, themselves.

"If the traffic is forced to move by water, and then transshipped to interior points, the railroad not being permitted to fairly meet water competition, it follows that the railroads must fix the interior point to which they can afford to handle the traffic from points of origin at rates based on the water rate, plus the rail rate back to such interior point. Further, if rates on traffic from points of origin to destinations beyond such fixed point must be the same, or higher, the traffic would then be forced to the water lines.

"What difference does it make to the merchant at 'inland towns and cities' whether his freight is moved via rail direct, or via water and rail route, so long as the through charge is about the same by both routes? It is to his advantage to have at his command the use of either route. He would have the benefit of daily service by rail, and not be dependent wholly upon specific sailing days, a week or so apart, by water routes.

"Viewing the situation also from the standpoint of moving traffic by rail through interior points to terminals, or coast cities; it is helpful to the interior, for the more trains handling traffic through the interior to water terminals, the more trainmen are employed and more material and supplies are used, which is always beneficial to both interior and terminals. Again, it is beneficial or harmful to the interior as that service is increased or diminished, depending on whether or not the railroads are compelled to retire from handling traffic to water terminals.

"Are the terminals, or coast cities, to be denied the choice of either rail or water service and are they to be compelled to use the water lines and be denied the use of the rail lines by the passage of a law forbidding an adjustment of rates by rail, fairly competing with the water lines in both rates and service?

"It seems to me that all manufacturing industries, as well as all jobbers, both at interior and coast cities, should not be favorable to the passage of an amendment to the Fourth Section of the Act to Regulate Commerce which will create a rigid-long-and-short-haul clause.

"Measured by test the Fourth Section, as it now reads, is just and fair to all interests, and if continued to be properly and fairly administered will continue helpful to both rail and water carriers, also the public both at interior and coast cities, especially if the rates of the water lines in the future are also controlled and regulated by the Interstate Commerce Commission."

Plumb "Conference" Urges Continued Government Control

THE CONFERENCE on Democratic Control of the Railroads organized by the Plumb Plan League, has issued a statement urging that pending railway legislation be delayed until an investigation of the whole subject can be made by an official commission created for the purpose. It suggests that government control be continued until such an investigation is laid before Congress and the country. Statement said in part:

"There is no justification for precipitate haste in turning the railroads back to their owners. Neither the public, shippers nor consumers are suffering under the present arrangement. In many ways they are receiving better service than ever before, and at much lower rates than the railway owners are demanding.

"Abnormal war conditions created deficits under federal control. These deficits have disappeared. The railroads are now more than paying their way. Official reports of the Railroad Administration for July and August, 1919, show that the roads are earning all operating charges, including maintenance, as well as the governmental rental of over $900,000,000 a year. They are actually earning a surplus for the government. In July they earned a surplus of $2,316,501, and in August $16,296,025, in excess of all charges.

"These earnings are likely to increase, rather than decrease, in the future, as business once more assumes normal conditions.

"Despite this showing, railroad owners are demanding an immediate increase in operating and freight rates of at least 25 per cent. This will amount to nearly a billion dollars a year. Other railway representatives, speaking for different classes of securities, are demanding an increase running up to 50 per cent which would amount to approximately $2,000,000,000 a year."

The conference says that to return the railroads now would be to restore them to the bank syndicate which previously controlled them. The conference recommends that:

1—Congress postpone action on pending legislation and continue federal control for two years.

2—That an expert commission be created representative of railroad, financial, industrial, agricultural, and labor interests with instructions to investigate the entire problem of transportation with the definite aim of developing it into an agency for the upholding of industry, the promotion of production, the expansion of foreign trade; that means be devised by which all transportation agencies, rail, water and truck be integrated into a single system from producer to consumer as a means of stimulating production and reducing the cost of living, and that means of decentralized administration be worked out so that the railroads will come in close and intimate contact with shippers, producers, and the public and for such democratic control as will awaken the interest of officials and workers as well. Investigations should be made into the transportation agencies and proposals in foreign countries.

THE RAILWAYMEN'S BUNS.—Is it higher pay or greater leisure that has filled railwaymen with a craving for tea and buns? At many of the great London stations now it is difficult for the mere passenger to get served in the refreshment rooms, so great is the rush of men in railway uniforms. This writer dropped into the refreshment room opposite No. 18 platform at Liverpool street yesterday morning and counted fourteen porters and other railwaymen busy with tea or coffee and buns. It was pleasant to meet them and to overhear their cheery "shop."—*London Chronicle.*

Annual Convention of Railway Electrical Engineers

Present Applications of Electricity to Railroad Work Presage Great Development in the Future

THE ELEVENTH ANNUAL CONVENTION of the Association of Railway Electrical Engineers was held at Hotel Morrison, Chicago, October 28-31. The opening session was called to order by the president, J. E. Gardner, of the Burlington, at 10:00 a.m., October 28.

In a brief address President Gardner called particular attention to the necessity for active participation in the discussion by the members. He also expressed the appreciation of the association for the splendid array of exhibits which the Railway Electrical Supply Manufacturers' Association had provided.

The report of the secretary-treasurer, which followed the president's address, showed the excellent financial status of the association.

Locomotive Headlights

The present importance of the electrical headlight on steam locomotives is clearly emphasized by the fact that three distinct committee reports out of a total of nine were devoted to various phases of this subject. The time limit set by the Interstate Commerce Commission when all locomotives must be equipped with high power headlights is but a few months away, and this fact was responsible for the great interest shown in the numerous details of electric headlight installation and maintenance.

The reports of the committee on electric headlights opened up a discussion of many construction and operating details of the various equipments. The committee's reports showed that it held two meetings in conjuction with representatives of the manufacturers of electric headlight equipment, the companies represented being the General Electric Company, the Pyle-National Company, the Schroeder Headlight & Generator Company, the Electric Service Supplies Company, the Buda, Ross Company, the United States Headlight Company, and the Loco Light Company. The object of these meetings was to arrive, if possible, at some basis for the standardization of certain parts of headlight apparatus. Among other things a standard generator base plate was recommended by the committee, such a plate having been designed by one of the members. This plate is made in such a way as to make it possible to bolt it to any type of headlight generator now on the market.

It was recommended that the manufacturers furnish headlight turbo-generator sets of such design and capacity as to operate with practically constant voltage under any load within the rated capacity of the equipment, and with steam pressure ranging from 100 lbs. to 250 lbs. boiler pressure, without the necessity for change of nozzle or governor parts.

Ball bearings of rugged construction were recommended. These were to be of standard size and manufacture, which would enable the railroads to obtain them for their requirements in the open market, if so desired.

It was recommended that turbo-generator sets be so designed as to enable the use of either oil or grease for lubrication, sufficient capacity being provided to lubricate bearings for a minimum of one month at one application of lubricant. Much discussion developed on the question of proper lubrication. Some roads that have been using grease have had satisfactory results, while others have had more or less trouble with this lubricant. One representative said that he had found that when using a stiff grease the balls were never lubricated and that when a thin grease was substituted, they became clogged. His particular problem had been solved by using a good grade of oil. Representatives of two of the headlight manufacturers offered further testimony on this point, which seemed to corroborate the statement that oil was superior to grease. Each manufacturer had run tests with both grease and oil, and each had eventually arrived at the same conclusion—that oil was the better lubricant.

An interesting point was brought out in the discussion when it was suggested that it might be advisable to increase the capacity of the headlight turbo-generator sets in order that their range of usefulness might extend to other fields. The specific use mentioned was the equipping of tugboats to supply power to wireless telegraph sets. Such a use is, of course, restricted, as far as railroads are concerned, to companies operating tugboats as a part of their regular equipment. There is, no doubt, however, that in time the efficient, compact turbo-generator will find other uses than that of locomotive lighting, but it is also probable that various sizes will be built to meet the requirements of different fields, rather than attempt to make one type for universal use.

In view of the fact that so many thousands of locomotives will shortly be equipped with electric headlights the problem of instructing those who are to maintain this apparatus becomes one of special importance. The work of co-ordinating the information and instruction necessary for the use of headlight maintainers was assigned to the Committee on Electric Headlight Handbook. In its report this committee outlined a book, comprising five sections, as follows:

Introduction. Descriptions and illustrations, covering the various makes and types of practically all locomotive lighting, including suburban lighting, equipment manufactured in this country. Instructions for operation and maintanance of all the various makes and types of locomotive lighting equipment manufactured in this country. Methods of installation, as used by a number of the railroads at the present time, both for locomotive lighting and suburban lighting. Standard practices for conduiting and wiring locomotive headlight equipment as recommended by the association.

It was the idea of the committee to bring out a handbook on electric headlights, worked up along the same general lines as the handbook for car lighting, which was published by the association last year. Among the association members the general opinion seemed to be that the sooner the book could be placed in the hands of the headlight maintainers, the better it would be, as the need for some trustworthy source of information on this subject is beginning to make itself felt.

Another phase of the headlight question that is developing side by side with the installation of the equipment, is the necessity for some system of keeping operating and maintenance records. The committee on compiling costs for maintenance of headlight equipment submitted a number of sample forms as recommended practice for the use of railroads in keeping actual records for their costs of operation and maintenance of electric headlights, with the idea that if such information is to be exchanged between different railroads, it would be comparable on account of having been drawn up on the same, or practically the same form.

Electrification

The Committee on Electrification presented a unique and valuable report of the most unusual character. The re-

port consisted of two sections, the first being an outline of the many factors to be considered in any investigation in the matter of electrifying existing steam roads. The great mass of details that must be given careful consideration to determine whether or not the electrification of any piece of track will prove practical is truly remarkable. To those who have never had the occasion to make inquiry into any electrification project, this first section of the report was a revelation. The investigation form as presented in the first section of the report is undoubtedly the most comprehensive and complete outline ever compiled, and it will be of greatest value to those interested in electrification either in the near future or within the next 10 or 15 years.

The second section of the report consisted of a bibliography which covers practically everything that has been written on the subject of electrification from 1908 to the present time. In most cases the author's name is given, so that ready reference is had to any article or book, by any particular author. The vast amount of information contained in these several hundred articles and books forms a source of inestimable value to any engineer making a study of electrification problems. This report may be found in the 1919 proceedings of the Association of Railway Electrical Engineers, and also in the October, 1919, issue of the *Railway Electrical Engineer.*

Electric Car Lighting

The work of the Committee on Illumination was divided between two sub-committees. Sub-committee *A* presented a report on car illumination, which included a large number of photographs of car lighting fixtures used in both coaches and Pullman cars. A number of curves were also included in this report, showing the intensity of illumination obtained with various types and arrangements of fixtures at different terminal voltages. Parts of the report were exceedingly technical in nature, but the greatest portion treated the subject in an easy, descriptive manner. From the evidence presented, the indications are that while the average illumination of day coaches is by no means poor, the demands of the traveling public for more light will probably result in increased illumination in the future. It was brought out in the discussion that little or nothing had been done to improve the lighting of diners and baggage cars, and that it might be of advantage to confine the investigations of the association for a time to these two types of cars.

Sub-committee *B* of the Illumination Committee presented a report on incandescent lamps and lamp specifications. This report included specifications for tungsten lamps of various types and voltages. One of the things that falls within the scope of lamp specifications is the satisfying of the demand for a rugged carbon incandescent lamp for portable service. The advent of the tungsten lamp with its greatly increased efficiency has all but driven the carbon lamp from the market. This condition has been much deplored, for while the carbon lamp cannot compare with the tungsten for efficiency, it does prossess rugged physical characteristics, which make it particularly desirable for use on extension cords. In connection with car lighting lamps, the fact was brought out that very recently the manufacturers had developed a lamp for lighting country homes that was designed for operation on 30-32 volts, and it was thought perhaps that there might be some possibility for getting the wrong lamp when purchasing. In fact, such an instance did occur on one road and was not discovered until the lamps began to fail. Although designed for car lighting voltage, these country home lamps lack the rugged construction necessary to stand the vibration in car service and failed very quickly after being installed.

In preparing the specifications for electric train lighting equipment, the committee assigned to this subject earnestly recommended as much reduction as could possibly be made in the variety of apparatus without impairing the quality of the service. The subject is complicated and the progress necessarily slow. The aim of this committee was to present the matter before the association as a progress report, so as to obtain the opinion of the car lighting engineers, which would act as a guide during the coming year. One of the most important matters considered was the recommendation for a standard rating for axle generators. Another was the question of increasing the height of battery boxes from 21½ in. to 23 in.

Stationary Power Plants

The Committee on Railroad Stationary Power Plants presented an exceedingly long report, full of great detail. It should be considered, perhaps, as an essay on ideal power plant installation and operation rather than a report of existing or proposed equipment. There was practically no discussion on this subject.

Electric Welding

The Report of the Committee on Electric Arc Welding consisted principally of a series of additions and changes to the masterly work presented by the welding committee at last year's convention. For the greater part, these changes were not of great importance, but were simply such details as had come to light through another year's experience with the welding art. The report included many photographs showing the various types of welding accomplished on actual machinery. One of the applications of electric welding in which much interest is shown at present, is the welding of cast iron, such as broken cylinders. By setting studs into and alongside the broken surfaces and placing the welded metal around these studs, a joint is made in broken castings that possesses fully as much tensile strength as any equivalent cross-section of the same casting.

In the discussion of the report the question of whether or not a welding supervisor was necessary for railroad welding aroused much comment. In the opinion of representatives from roads that have gone into the matter of arc welding most extensively, it is absolutely essential that some one be appointed to make a thorough study of the art if successful welding is to be expected. During the discussion the question was asked as to the relation in time consumed in welding tubes by the open fire method and by the electric welding process. From the statements of those who are doing much of this work by the electric welding process, its vast superiority to the open fire method was immediately apparent. Twenty to 25 tubes can be welded per hour by the open fire and in some cases possibly a few more, but with the attendant danger of sacrificing the quality of the work. With the electric process it is quite possible to make as many as 80 welds per hour, the average weld requiring from 25 to 30 seconds.

At the final session of the convention the following officers were elected for the ensuing year: President, L. S. Billau, assistant electrical engineer, Baltimore & Ohio, Baltimore, Md.; senior vice-president L. C. Hensel, chief electrician, St. Louis-San Francisco, Springfield, Mo.; junior vice-president, E. S. M. Macnab, electrical engineer car lighting, Canadian Pacific, Toronto, Canada; secretary and treasurer, Joseph A. Andreucetti, assistant electrical engineer, Chicago & North Western, Chicago. Executive committee: L. C. Moore, electrical engineer, Missouri Pacific, St. Louis, Mo.; J. R. Sloan, electrical engineer train lighting, Pennsylvania Lines East, Altoona, Pa.; A. E. Voight, car lighting engineer, Atchison, Topeka & Santa Fe, Topeka, Kan.; C. H. Quinn, electrical engineer, Norfolk & Western, Roanoke, Va.; E. Lunn, chief electrician, Pullman Car Lines, Chicago; F. J. Hill, chief electrician, Michigan Central, Detroit, Mich.

Commissioner Woolley Opposes Return of Roads

Increase in Freight Rates Will Add Greatly to the Cost of Living—The Labor Question

Robert W. Woolley, of the Interstate Commerce Commission, in an address before the American Academy of Political and Social Science, on October 18, at Philadelphia, opposed the return of the railroads to private management on the ground that such a step would result in an increase in rates which he declared would be multiplied in its effect in the cost of living. He proposed to check the profiteer by holding down the rates. Mr. Woolley said in part:

"Mr. Cuyler, chairman of the railroad executives, testifying before the interstate commerce committee of the Senate last winter, sounded an alarm, although he may not have meant to do so, when he stated that upon the return of the railroads to their owners it will be necessary for the Interstate Commerce Commission to grant a further increase in freight rates. What the measure of this increase may be I am sure I do not know. It seems to be generally agreed that it will have to be at least 25 per cent; some have placed it as high as 50 per cent. In a speech delivered at St. Louis in June last, Director General Hines stated that an advance of $300,000,000 in freight rates would be reflected in the cost of the finished article to the consumer to the extent of $1,500,000,000. Investigations made in normal times amply justify such a prediction. For instance, when an increase of 10 cents per ton was granted on anthracite coal in 1902, the price of a ton of anthracite to the consumer advanced 50 cents, and it never came down. An increase of 25 per cent in freight rates would mean approximately $875,000,000, which the people would have to pay to the railroads, and using Mr. Hines's ratio, $4,375,000,000, which the ultimate consumer would have to pay for what he uses, eats or wears because when he buys a finished article he pays an accumulation of increases.

"Does Congress propose to turn back the railroads to their owners at this perilous time and thereby make new high price levels instead of lower price levels inevitable, or does it propose to enact legislation requiring the holding of these roads for a fixed reasonable period following the proclaiming of peace and thereby aid the vitally important work of checking the profiteer and getting us back to normal? That is the problem in a nutshell.

"We are at the cross-roads. Return the railroads and increase freight rates and I fear no measure before the House or the Senate today can save us. For nearly a year now, in statements to Congress and in addresses before conventions and commercial clubs, I have been contending that the present freight rates are ample, that the operating revenue of the railroads in the period of shrinking or vanishing traffic following the signing of the armistice was no test of their sufficiency and that as we approach a general resumption of industrial activity, the soundness of my contention would become evident. In other words, though hostilities ceased with the signing of the armistice, economic disturbances due to the war did not cease by any means.

"That there should have been an operating deficit tremendous in proportions following the cessation of hostilities was inevitable. As a war-making measure there had been stored in all big centers and in many smaller ones, large reserves of coal in order that the fearful experience of the winter of 1918 might not be repeated. Building operations, other than those conducted by the government, had practically ceased, private enterprise had either put its shoulder to the wheel in the winning of the war or it had stepped aside. When you consider that the products of the mines, chiefly coal and ores, road and building material constitute fully 70 per cent of all the freight traffic of the railroads, it is easy to understand that the Savior of man himself, with the Arch-angel Gabriel as his chief assistant, could not have earned the standard return without increasing freight rates and consequently making higher and higher the cost of living, unless he had performed a miracle.

"I hope you will pardon me for taking pride in the fact that my prediction as to the early disappearance of the monthly operating deficit has come true. Since July 1 the railroads have earned the standard return and a few millions besides. Congress should treat the total amount of the operating deficit incurred from the beginning of federal control to July 1, 1919, as a war cost, and appropriate for it out of the public treasury just as only one year ago it was appropriating billions for munitions with which to vanquish the Hun. Let the government retain the railroads during the period of reconstruction and hold freight rates where they are. By pooling receipts of all the roads it does, with the present operating ratio of 85 per cent, what would be impossible for most roads under private control. Let it help, not hinder, the President in his fight on the high cost of living.

"The President and the director general have dealt successfully with labor. As I say this I realize what is running through the minds of some of you. You are thinking of the substantial increases in wages granted railroad workers.

"Denouncing the government for doing what capital did in the steel plants, the munition plants, the shipyards, and in many other industries has been a favorable sport with those who refuse to deal with this problem fairly, who find it convenient to forget what the presidents of the great railroads of the eastern United States said they needed money for, how many rate increases they might need for the same purpose, when they testified in the fifteen per cent case before the Interstate Commerce Commission in November, 1917.

"How easy it is for those who seem to be afraid that the government will not remit the railroads once more to the mercies of great banking houses for capital with which to finance additions and betterments to forget the picture of labor conditions on the railroads in the autumn of 1917 painted by Samuel Rea, how skilled labor was leaving to take up unskilled employment at much better wages in the shipyards, munitions plants and steel plants; how it was necessary to use three men where formerly two men would do; how the shortage in Official Classification territory especially was becoming alarming. But joyfully do they point to the fact that on the date of the signing of the armistice there were approximately 145,000 more men employed on the railroads than there were at the time the railroads were taken over by the government. I have asked this question once before. Suppose Director General McAdoo had not so augmented his force that he could get approximately 100 per cent efficiency no matter what the emergency, and a crisis had found him unprepared, would those who now talk of waste and prodigality have come forward with paeans of praise for the niggardly policy he had pursued? The ratio of labor cost to the entire operating cost in 1917 was 61.36; in 1918 it was 65.54 and I am informed by the Railroad Administration that for the first seven months of 1919, it is estimated to have been 64 per cent. I wonder

how this showing compares with that made in some of our other big industries?

"If the present unified control is done away with and each road now under federal control is turned back to its owners on January 1, what is to be the policy of those owners toward labor? Have the executives of the corporations who have been sitting on the side lines criticising for two years caught a vision out of all that has happened, and are they ready to deal with the labor problem sanely and fairly—and by that I do not at all mean abject surrender to labor's every demand—or do they propose to pursue the mailed fist policy and run the risk of seriously crippling the transportation systems of the country in the hour of its greatest economic need?

"Several days ago one of the foremost traffic attorneys of the country told me an interesting story. He was shouting a few months ago to give the railroads back; today he says the service the shippers are receiving is so much better than they ever got under private control that he now wants the government to hold the roads. He came to Washington to see what could be done about the recent coal car shortage in Kentucky. 'I called on Mr. Hastings, assistant traffic director,' he said, 'and immediately he got on the wire with Atlanta. He directed the Southern Railroad to turn over 500 coal cars to the Louisville & Nashville. When I get back to Kentucky the relief will be under way. Under private control we would have stewed in our own grease before such a thing could have happened.'

"A few weeks ago Clifford Thorne, who represents many of the big independent oil companies, and other considerable shippers in actions before the Interstate Commerce Commission, told the House Committee on Interstate and Foreign Commerce that now is no time to be turning back the railroads; that they should be held for two years following the proclaiming of peace. Mr. Thorne was one of the bitterest critics of the Railroad Administration during the war and one of the first to demand, almost viciously, that the railroads be given back to their owners at the earliest possible moment.

"When you consider that we have never had federal control in its real sense, that we have only had what amounts to a receivership and a loose-jointed one at that, that the morale of the director general's organization has for many months been admittedly low, due to uncertainty as to what is going to happen, don't you think the testimony of such men tells a story which is worth considering in these critical times?"

Valparaiso, Chile's Chief Port

Wheat Shipments to Be Treated as an Emergency Movement

WHEAT WILL BE TREATED as an emergency shipment and given right of way over all other traffic demands in an effort to insure its prompt movement to grain elevators, Director-General Walker D. Hines announced after a conference held on October 16 at Chicago. Julius Barnes, director of the United States Grain Corporation; B. F. Bush, regional director of the Southwestern region; Hale Holden, regional director of the Central Western region; J. E. Gormley, assistant regional director of the Northwestern region; W. C. Kendall, manager of the Car Service Section; Max Phelan, director of the Division of Public Service, and the federal managers of the principal roads in the West and Southwest were present. Following the conference at which the car situation in the Western wheat growing states was fully discussed, Director-General Hines issued the following statements:

"The Railroad Administration is again reviewing the situation today with respect to the movement of this year's wheat harvest from the country to primary markets and other places of storage, has had reported to it the quantities already moved from southwestern states and is impressed with the comparatively small amount of wheat yet to be handled.

"Approximately 20,000,000 bu. of the Texas crops have already been moved, leaving 11,000,000 bu. on farms. The entire movement of wheat last year in Texas was 5,500,000 bu. In Oklahoma, of the total crop of 45,000,000 bu., 33,000,000 bu. have been moved in three months, leaving 12,000,000 bu. yet in the country. Against this movement of 33,000,000 bu. this year, it is to be noted that the total movement of wheat from Oklahoma in twelve months last year was 28,000,000 bu.

"In the entire southwest there have already been moved to market 134,000,000 bu. in the last three months, leaving 99,000,000 bu. on the farm. Against this movement of 134,000,000 bu. so far this year, the total movement for the previous twelve months was 137,000,000 bu.

"In the state of Kansas there have been moved to market 66,000,000 bu. of wheat, leaving 63,000,000 bu. on the farm.

"Notwithstanding the extraordinary transportation of wheat which has already been performed this year, and notwithstanding the heavy demands for transportation by all other sorts of traffic, the Railroad Administration is taking steps to increase still further the handling of wheat. Preference is to be given so as to move wheat that is on the ground, additional equipment is to be provided to relieve the elevators at Kansas City, Mo., and Omaha, Neb., and the various railroads located in the wheat territory are to give additional intensive supervision to the handling of local wheat."

WASTE OF CAR SPACE still constitutes a serious leak. A warning to the shipping public has been issued by K. M. Nicoles, chairman of the San Francisco (Cal.) Terminal Efficiency Committee. Loss of car space in these days means loss of business handled; a matter of concern to the shipper as well as to the carrier. A comparison of the loading for September, says Mr. Nicoles, shows that, in wheat, shippers are using but 95 per cent of car capacity this year, as against 101 last year; in corn and oats, only 77 per cent as against 94; in sugar, 89 per cent as against 106; in canned goods, 96 per cent compared with 100; and in rice, 98 per cent compared with 109 per cent last year. As practically all cars can be loaded to ten per cent above their marked capacity, the loss is seen to be large

General News Department

Advances to railroads by the War Finance Corporation have amounted to $204,794,520; and of this $134,436,310 had been repaid up to November 15, according to the annual report of the secretary of the Treasury; leaving a balance of $70,358,210 outstanding.

The airplane mail carrier who made the regular trip from Washington to New York on Tuesday, December 2, covered the distance of about 218 miles in one hour, 34 minutes, or at the rate of 138 miles an hour; and the load of mail weighed 630 lb. The airplane was a new DeHaviland-4 with twin motors. The start was made from College Park, Washington, at 12 o'clock noon, and the plane arrived at Belmont Park, New York, 1:34 p. m.

Daylight saving and the advantages of the plan are now under discussion in 16 states, according to Marcus M. Marks, of New York City, who says that public sentiment is being crystallized so that these 16 states will be ready by next spring to follow the aldermen of New York City in the adoption of a law to set the clocks forward in 1920 the same as was done in 1919 under the now obsolete federal statute. Mr. Marks thinks that there will be a general movement next year to begin the use of "summer time" a month later than heretofore, and to terminate its use a month earlier.

Prize for Report on Lakewood Trucks

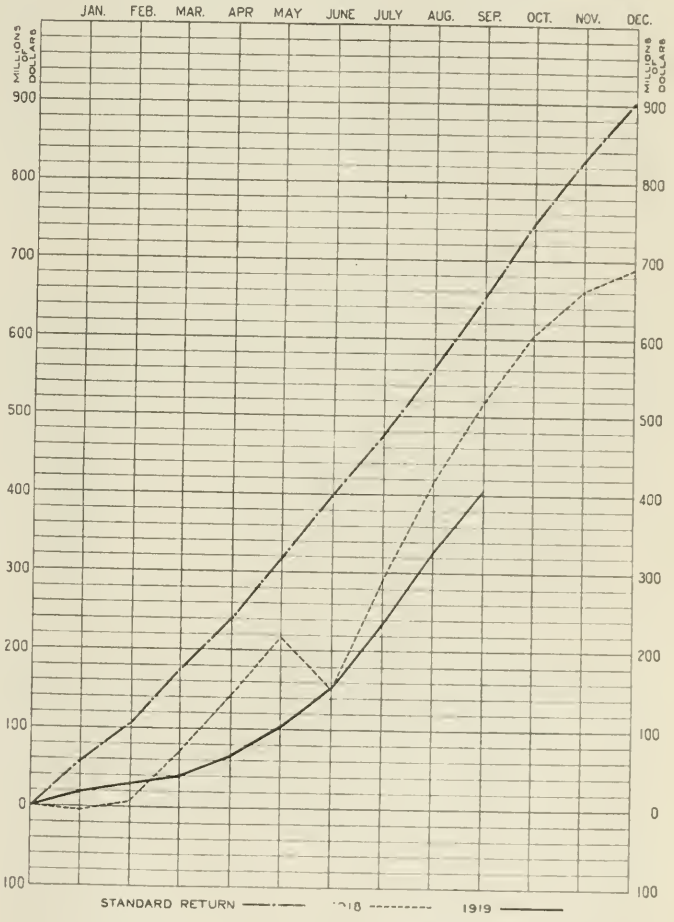
The Lakewood Engineering Company, Cleveland, Ohio, announces prizes of $1,000, $500 and $250 for the three best papers describing experience with the Tier-lift trucks made by that company. This truck, which is of two tons capacity, is propelled by power from a storage battery, and also is arranged to lift its load, by means of its motor, to any height up to 76 in. Papers must be sent to A. R. Bond, Scientific American, New York city, by January 30, and within a month thereafter the awards will be made by a committee consisting of Mr. Bond, Prof. D. S. Kimball, Cornell University, and Irving A. Berndt, New York City.

Kansas City Switchmen Strike

Approximately 1,500 switchmen members of the Brotherhood of Railway Trainmen left their work in the Kansas City terminal district on Saturday, November 29, and returned again on Monday, December 1. Definite reasons for this action were not given, but it is believed that the walkout was due to dissatisfaction over the present wage scale and because the national officers of the brotherhood "failed to get action" on their demands. The ending of the strike immediately followed the sending of telegrams to the governors of Missouri and Kansas by the mayors of Kansas City, Mo., and Kansas City, Kan., and the president of the Kansas City Chamber of Commerce. The messages were sent in compliance with a resolution unanimously adopted at a mass meeting of representative citizens called to discuss measures to meet the serious coal situation in Kansas City resulting from the national coal strike and abetted by the strike of the local switchmen. The strike had already been termed unauthorized by national officers of the Brotherhood of Railway Trainmen and a representative of the national organization attended a meeting of the strikers held on November 30, counseling the men to return to work. The vote was taken at that meeting which resulted in the ending of the strike. The two-day walkout practically paralyzed freight shipping in the terminal yard.

Net Operating Income

The chart made by the Bureau of Railway Economics shows the net operating income of the Class 1 Roads in 1919, compared with the average in the test period (1915-1916-1917) on which government rental is based. The table gives the figures on which the chart is based.



Net Operating Income, Cumulated by Months, 1918 and 1919, Compared with Standard Return, Class I, Railways of United States.

Month	Average net operating income (Standard return) in 3-year test period		Net operating Income earned in 1919		Deficit in 1919	
	By months	Cumulative	By months	Cumulative	By months	Cumulative
January	$56,613,000	$56,613,000	$18,783,702	....	$37,830,0 00	.....
February	47,934,000	104,547,000	10,106,268	$28,889,970	37,828.000	$75,658,000
March	68,251,000	172,798,000	10,842.608	39,660,778	57,409,000	133,067,000
April	67 289,000	240,087,000	26,115,214	65,916,807	41,174.000	174,241,000
May	77,385,000	317,472,000	39,462,367	105,215,450	37,923,000	212,257,000
June	82,550,000	400 022.000	52,270,702	157,448 669	30,279.000	242 573.000
July	75,341 000	475,363,000	77,176,933	234,625,602	1,835,933	240,737,067
August	86,860,000	562,223,000	.....	.....	(Increase)	.....
September	91,273,000	653,496,000	.....	.....	.....	.....
October	94,333 000	747,829,000	.....	.....	.....	.....
November	83,536,000	831.365.000	.....	.....	.....	.....
December	73,282,000	904,647,000	.....	.....	.....	.....

Traffic News

Wilson C. Redding, representative at Pine Bluff, Ark., for Arkansas for the Chevrolet Motor Company, has resigned, having been elected traffic manager for the traffic bureau of the Chamber of Commerce of Pine Bluff.

Commutation tickets on the Pennsylvania Railroad for certain long distance journeys must bear the photograph of the holder. This rule goes into effect on December 5 and, according to an announcement of the company, is made necessary because of frequent misuse of tickets between Philadelphia and Trenton (31 miles) and between Trenton and New York (58 miles).

According to a report on overseas traffic for the week ended November 19, made to the director general, 5,442 cars of commercial export freight were received at North Atlantic ports during this period as compared with 912 cars for the same week of 1918. This shows an increase of 4,530 cars, or 496 per cent for November 19, 1919, as against the corresponding period last year. For the week ended November 19, 1919, there were 16,339,185 bushels of grain stored in elevators at North Atlantic ports. There were received during the week 2,940,240 bushels, while 4,912,416 bushels of grain were cleared. The deliveries exceeded the receipts by 1,972,176 bushels. The total amount of grain in elevators at these ports represented 77.7 per cent of the total elevator capacity. There were 8,478,216 bushels of grain stored in elevators at Gulf ports on November 19, representing 82.5 per cent of the total elevator capacity.

Canadian Cars in the United States

The problem of the shortage of cars in Canada has been brought to the attention of the United States Railroad Administration by the Department of Railways and Canals of Canada. The Canadian Railway War Board has advised that department that the following is the status of the Canadian-United States freight car situation:

Canadian box cars in United States	43,661
United States box cars in Canada	21,240
An adverse balance of	22,421
Canadian livestock cars in United States	1,830
United States livestock cars in Canada	158
An adverse balance of	1,672
Canadian refrigerator cars in United States	1,800
United States refrigerator cars in Canada	1,246
An adverse balance of	544

Coal Production

Coal production during the second week of the strike was 33 per cent of normal as compared with 29.4 per cent during the first week, according to the weekly bulletin of the Geological Survey. The output of the seven days, November 9 to 15, including lignite and coal coked, was 3,990,000 net tons, an increase of 438,000 tons, or 12.4 per cent, as compared with the week before. The average production during the four weeks ending October 25 was 12,089,000 tons. As the strike order was withdrawn on the afternoon of November 11, the week contained two days during which the order was in force and four days after it had been withdrawn, but, the report says, production was not resumed during the week on a considerable scale except in scattering districts outside of the central competitive field. The report contains an analysis of operating conditions during the first week of the strike, November 2 to 8, inclusive, but shows that in the central competitive field the strike was practically 100 per cent effective. Virtually no coal was mined in Illinois, Indiana, Michigan, Ohio and the Pittsburgh district. In the tier of states immediately west of the Mississippi the tie-up was also practically complete and from Iowa south of Oklahoma about 99 per cent of the capacity was closed. The closing of so many mines afforded to the others which remained at work exceptional car supply and, thanks to the efforts of the railroads, transportation disability as a limiting factor practically ceased to exist. Only one small district afforded serious shortage of cars and, the report says, there is little doubt that the percentage of loss on account of car shortage for the entire country will be found to be less than 1 per cent.

Commission and Court News

Interstate Commerce Commission

The Commission has declared the Chicago & Calumet River to be a common carrier and, therefore, lawfully entitled to participate in interstate rates with other common carriers, or to have its charges on interstate shipments absorbed under proper tariff provision by the roads having a line haul. The road now serves the Ryan Car Company, the Camel Company, the General Fuel & Supply Company and the Western Steel Car & Foundry Company and is making arrangements with the Koppel Industrial Car & Equipment Company and the Fidelity Storage Company for similar service. The commission has ordered the company to file a tariff for its approval.

Demurrage on Grain

A recommendation of dismissal is made in a tentative report by Attorney Examiner Charles F. Gerry on complaints instituted by the Armour Grain Company, the Minneapolis Traffic Association and others against the railroads arising from the imposition of demurrage on carloads of inbound transit grain at Chicago and Minneapolis during the periods of car congestion in the fall of 1916 and 1917 when the railroads did not furnish enough cars for outbound shipments to keep a steady flow through the transit elevators. Several hundred thousand dollars in demurrage charges is involved, but the tentative report finds that the carriers were not liable for failure to furnish cars under such unusual conditions and that the transportation of transit grain involved two contracts of carriage, of which the first was complied with after proper placement of car and a reasonable opportunity afforded for unloading it.

Illinois Classification

The Interstate Commerce Commission has issued a decision written by Commissioner Meyer on an investigation initiated at the request of the director general, who asked advice as to whether the present Illinois classification and the present class and commodity rates applicable between points in Illinois should be continued in effect. The Commission recommends:

1. That for the rules, descriptions, packing specifications and minimum and estimated weights of the Illinois classification there be substituted the corresponding portions of the consolidated classification, subject to the modifications thereof indicated in Consolidated Classification Case, 54 I. C. C., 1.

2. That the Illinois scale of class rates and ratings applicable thereto under the Illinois classification be canceled; and the Disque scale, governed by the official classification, be substituted therefor and applied between points in the Illinois district south and east of the lines indicated, extending from Chicago through Peoria to St. Louis, Mo.; and that class rates, governed by the contemporaneous western classification, and not higher than the level of interstate rates between points in northwestern Illinois and adjoining states, be substituted therefor and applied between points in the Illinois district on, north, and west of the Chicago-St. Louis line.

3. That a review of particular commodity rate structures be made in order to remove discriminations which now exist or may arise from any readjustments growing out of these recommendations.

4. Specific recommendations made with respect to commodity rates on certain articles.

Commission Reduces Rate Initiated by Director General

The Interstate Commerce Commission in the case of the Solvay Process Company vs. Delaware, Lackawanna & Western has decided that an increase from 17 cents a long ton to 30 cents a net ton in the rate on limestone, c. l., from Jamesville, N. Y., to Solvay, N. Y., made by the Railroad Administration in connection with its general rate advance in 1918 was unreasonable

in itself in spite of the general need of the Railroad Administration for increased revenues; and that a rate in excess of 25 cents a long ton is unreasonable. Reparation is awarded from June 25, 1918, at which time the rate was increased to 40 cents a long ton, although it was reduced to 30 cents a net ton on September 16, 1918. The case has attracted interest because the Secretary of Commerce took part in it, was represented at the hearing and filed a brief supporting generally the contentions of the complainant, but urging also the power and primary duty of the Railroad Administration to foster and protect commerce, with only secondary regard to the adequacy of rates as sources of revenue. He differentiated in this regard between federal and private control, pointing to the fact that the Railroad Administration was given the support of public funds derived from general taxation. He urged also the importance of relieving complainant's traffic from any unnecessary burden in view of the utility of its products and their wide distribution. However, in considering its powers and duties under the federal control act, in reviewing the rates initiated by the director general, the commission has concluded that the words "just and reasonable" as used in that act have substantially the same meaning as in the act to regulate commerce, from which they are drawn, and the case was decided upon the facts of record pertaining to the particular rate involved. The director general filed formal answer denying any violation of law, but was not represented at the hearing. The defendant carrier offered no denfense of the 40 cent rate, but in defense of the 30 cent rate cited the act of August 29, 1916, the President's proclamation taking over the railroads, the federal control act, and General Order No. 28. "These recitals tend, however," the commission says, "to justify the rate increases under that order as a whole and not necessarily the increase in every rate. When General Order No. 28 was promulgated, an immediate increase of revenue was doubtless deemed imperative. It is not, however, to be presumed that there was any intent permanently to abandon the standards by which the rights of individual shippers had been determined during a period of peace. It is rather to be presumed that the constituted authorities had in contemplation ultimate readjustment in cases where the universality of their methods might be shown to work undue hardship upon particular shippers." The commission, therefore, found it unnecessary to consider the justification for the general increases in rates, but said that the question concerns the specific increase applied to what is an almost unique movement of this particular traffic.

Court News

Safety Appliance Acts

The New York Supreme Court, Trial Term, Erie County, holds that the federal Safety Appliance Acts requiring that cars engaged in interstate commerce shall be "equipped with couplers coupling automatically by impact, and which can be uncoupled without the necessity of men going between the ends of the cars," does not apply to a defect in the timber bolted to the car frame, to which timber the drawbar was fastened. The purpose of these acts is to relieve railroad employees from the necessity of going between the ends of cars and the couplers. The supplementary act of 1916 does not extend the carriers' liability for defects in couplings outside of the statutory requirements. It is an extending act only in declaring that carriers shall not escape liability to employees for the reason that cars not meeting with statutory requirements are being moved for repair. This is the first time this particular question has been passed upon by the courts.—Buschalewski v. N. Y. C., 173 N. Y. Supp. 506.

United States Supreme Court

"Knowingly" Accepting a Rebate

The Lehigh Coal & Navigation Company was convicted and fined in the district court of New Jersey for accepting rebates and concessions from the Central of New Jersey in violation of the Interstate Commerce law. A case was certified to the Supreme Court of the United States on the following facts: When the coal company leased its railroad, the Lehigh & Susquehanna, to the Central in 1871, covenant 10 of the lease provided that on coal shipped by the company at the northern end of the Nesquehoning tunnel the rates should not exceed those on coal from the Lehigh region, from Penn Haven to the same points, either by the Central or by the Lehigh Valley. In August, 1906, and thereafter the tariffs filed by the Central contained a footnote providing that in compliance with this covenant, a lateral allowance was made to the coal company on all anthracite originating on its tracks in the Panther Creek, Nesquehoning and Hacklebarnie districts mined and shipped by it, when coming via the Hanto, Nesquehoning, and Mauch Chunk gateways. All subsequent tariffs, 262 in number, contained the foot note. The allowance was 19.18 cents a ton, and this was credited in the monthly settlement of the company's account with the railroad. This credit was the point of the government's attack.

The certificate asked the following question: "In the criminal prosecution of a shipper for knowingly accepting transportation at less than the duly established rate by receiving an allowance that was referred to in the tariff but was not specified in figures therein, has the defendant a right to offer in evidence that the allowance was received under the honest belief that it was lawfully established by the tariff, and under the honest belief that in receiving it he was not disregarding what he believed to be the provisions of the tariff, but was complying therewith?" The Supreme Court answers the question in the affirmative. There was no misunderstanding of the law, or of what it required. The misunderstanding was induced by practice and the opinion of those in authority that the act was complied with, and a tariff was filed. The word "knowingly" in the statute required to incur the guilt of a misdemeanor by accepting a rebate was therefore to be given exculpating effect.—Lehigh Coal & Navigation Co. v. United States. Decided November 10, 1919.

Rear End Platforms—Mail Cars

State and Federal Legislation

Complaint was made to the Pennsylvania Public Service Commission that the Pennsylvania Railroad ran a specified train in interstate commerce, the last car of which was not equipped at its rear end with a platform thirty inches wide, guard rails and steps, as required by a Pennsylvania statute of 1911. The railroad contended that it was not bound by the statute because the rear car was a mail car constructed in accordance with the regulations of the Post Office Department, and because the Federal Government had assumed control of the matter so far as to exclude such intermeddling on the part of a state. The Commission and the State Superior Court decided against the railroad.

The Supreme Court of the United States has now reversed that decision. The court says, by Mr. Justice Holmes, that if all that had been done on behalf of the United States in the way of regulation had been to determine how mail cars should be built, and to exclude a thirty-inch platform, it might be said that the state law could be obeyed by putting a different car at the end of the train. It would be a tax upon the railroad when it wished to run a mail train wholly made up of mail cars; but it could be done. But when the United States has exercised its exclusive powers over interstate commerce so far as to take possession of the field, the states no more can supplement its requirements than they can annul them. In the present instance the rules for the construction of mail cars, admitted to be valid, not only exclude the wide platform, but provide an equipment for them when used as end cars. The Safety Appliance Act, with its careful requirements for the safety of the men was followed by most elaborate regulations issued by the Interstate Commerce Commission, which include three large pages of prescriptions for "Caboose Cars Without Platforms." Caboose cars constantly are used as end cars and these pages, like the Post Office order as to mail cars, recognize the lawfulness of an end car such as the Pennsylvania statute forbids. "The subject matter in this instance is peculiarly one that calls for uniform law and in our opinion regulation by the paramount authority has gone so far that the statute of Pennsylvania cannot impose the additional obligation in issue here. The Interstate Commerce Commission is continually on the alert, and if the Pennsylvania law represents a real necessity, no doubt will take or recommend steps to meet the need." Mr. Justice Clarke dissented, being of the opinion that the United States had not taken possession of the field involved in this controversy.—Pennsylvania Railroad v. Public Service Commission. Decided November 10, 1919.

Foreign Railway News

The contract awarded by the German Government to the Krupp Works for the construction of rolling stock is reported by the United States commercial attache at The Hague, as calling for 2,000 freight cars, of 15 tons capacity, and 100 locomotives each year. It is said that the contract stipulates that the price must correspond to costs of material and labor and that the factory shall make a profit of only two per cent.

Underground Railway for Marseilles

The Marseilles Municipal Council has decided to proceed with the construction of an underground railway in the city, a project which has long been in contemplation in view of the ever-increasing congestion of the streets.

Prussian Railways Deficit

For 1919 the deficit on Prussian railways amounts to 634,000,000 marks (nominally $158,500,000), of which 160,000,000 marks ($40,000,000) goes to cover indemnities for railway thefts. The total working expenses for the year will amount to 7,500,000,000 marks (nominally $1,875,000,000).

Oil Fuel on the Central Uruguay

The directors of the Central Uruguay Railway, in its annual report, say that having regard to the present high prices and the difficulty in obtaining coal and wood, the board has made arrangements to extend the use of fuel oil, and has contracted for supplies to be delivered during the next two years.

Cost of the Eight Hour Day on the Underground

London.

In the cost of the eight-hour day on the London omnibus services, tramways and railways operated by the Underground, an additional expenditure is incurred of approximately £700,000 ($3,500,000) per annum. An addition of about 20 per cent to the staff is required to work the services.

Uruguay East Coast Railway Sale

Cable advices have been received in London from the general manager in Uruguay of the Uruguay East Coast Railway Company, Limited, that the sale and transfer of the railway to the Uruguayan Government was completed on October 15 of this month, the sale and transfer to take effect as from October 1, 1919.

Argentine Railway Projects

Buenos Ayres advices state that the Chamber of Deputies is shortly to discuss a project which will authorize a French company to construct a railway across the Federal territory of Formosa to an extent of 300 kilometres. It is understood that several deputies intend strenuously to oppose this project, with the object of giving preference to a company which has been formed with Brazilian, Argentine and North American capital.

English Railway Earnings

The British Board of Trade Journal, reporting revenue and expenditure of railways of great Britain and Ireland for the years 1916, 1917 and 1918, shows that the average rate of dividend for the first time during the war exceeded the 1913 average of 3.63 per cent. For 1918 the figure given is 3.70 per cent. The total receipts again increased, but the per cent of expenses was greater than in the previous year (the proportion in 1914 was 63 per cent):

	1916	1917	1918
Total receipts, thousands	£154,468	£168,721	£197,293
Expenditure, thousands	102,520	115,994	143,342
Net income	51,948	52,727	53,951
Per cent of expenses	66	69	73

London Subway Officials Visiting America

London.

A. R MacCullum, assistant to the mechanical engineer of the underground lines in London; C. J. Spencer, manager of the London and Suburban group of tramways, and Frank Peck, commercial manager and C. J. Spence, engineer of the London General Omnibus Company, are visiting the United States to make a close study of the present day traffic and transport conditions in New York and other principal cities.—Modern Transport.

Nationalization of Mines Demanded in England

An extract from an article in the London Times states that by an almost unanimous vote on September 10, the Trades Union Congress declared its readiness to cooperate with the Miners' Federation of Great Britain to the fullest extent with a view to compelling the government to adopt the scheme of national ownership and joint control recommended by the Coal Industry Commission. The figures were as follows: For the resolution, 4,478,000; against, 77,000; making a majority in favor of the resolution of 4,401,000.

Railway Extensions in Jamaica

London.

The Times Trade Supplement states that the question of railway extensions in Jamaica is attracting a good deal of attention. At present the total length of the Jamaica railway is 1,970 miles. The island is 4,450 sq. miles and the population in 1916 was 892,406. It is stated that there is a project to extend the railway and that a scheme had been projected to electrify the railway and thus do away with steam haulage. The waterfalls in Jamaica should make this possible. Trinidad had mapped out its railway extension program, and the new work will involve an expenditure of upwards of $10,000,000.

Trade with Germany

London.

About 18 months ago the Textile Trade section of the London Chamber of Commerce passed a resolution deciding to have no trade relations with Germany for at least 10 years. On Wednesday, October 29, the mover of that resolution proposed, at a meeting of the section, another resolution to exactly the opposite effect, expressing the opinion that resumption of business with Germany and other enemy countries should be regarded as properly open to members of the section. Consideration of the motion was deferred for a week.—London Times Trade Supplement.

High Cost of Fuel in South America

London.

An extract from the Engineer states that Follett Holt, M.I.C.E., the chairman of the Entre Rios Railway of Argentina, speaking at the annual meeting stated that the fuel bill has absorbed 23 per cent of the total expenses of the company, and it was now seriously considering the oil fuel question. It had under construction an 8,000 tons capacity oil plant and would use oil fuel for the locomotives and ferry steamers. He states that during the past few years all the South American railways had been bled almost to death by coal prices, and that the market for some million tons of coal in South America was in danger of being lost to England.

Locomotive Building in England

London.

The first locomotive to be built by Sir W. G. Armstrong, Whitworth & Co., Ltd., at its Scotwood works, was tested on November 12. This engine is a main line 0-8-0 superheater locomotive with a 6-wheel tender for the North Eastern. At the date of the armistice the Scotswood works were entirely devoted to the production of munitions. Large quantities of shells of every calibre, from the smallest to the giant naval projectile of over a ton weight, were reproduced; the output during the period of hostilities reaching the total of 14,500,000 shells, in addition to vast number of cartridge cases, fuses, etc. These works were selected for the manufacture of locomotives and a remarkable transformation has taken place. A large task was involved

in clearing away the quantities of shell machinery and in reorganizing and equipping the shops for locomotive manufacture. It is reported that this plant will employ 3,000 men and produce one finished locomotive per day.

The War and Indian Railways

LONDON.

An abstract from the Times engineering Supplement states that the pressure of the Mesopotamian, East African and other distant campaigns on India's still very inadequate railway resources may be gaged to some extent from official statements made in the Viceroy's Legislature last month.

The materials belonging to Indian railways sent out of the country for war purposes included 774 miles of new and second hand rails, 217 locomotives and 5,423 vehicles. Of the rolling stock 196 locomotives and 4,508 vehicles were meter gage. The other materials sent were varied in character and very large in quantity. Before the cessation of hostilities the replacement of 157 meter gage locomotives and 2,500 vehicles had been arranged.

Motor Vehicles as Feeders to Italian Railroads

The use of motor vehicles as feeders to the railroads is said to be more extended in Italy than in any other country in the world. This is owing to the fact that Italy is a mountainous country in which railroad lines can only be built at considerable cost and labor. The total length of railroad lines in Italy is 8,700 miles, while the length of routes over which motor services are run with a fixed time table is 8,070 miles. There are 400 of these lines over which regular public services are run either as feeders to the railroad or in order to open up country which has remained inaccessible to the railroad.

These public automobile services for goods and passengers were begun in a small way ten years ago in order to meet the deficiencies of the railroad system.

Traffic Between Italy and Germany

LONDON.

The London Times Trade Supplement says that Italy and Germany have entered into an agreement with a view to re-establishing traffic between them through Switzerland. Passenger and freight traffic already have thus been reopened, though subject to certain restrictions. This is of great economic significance for Italy because of the abnormal exchange rate, German goods can now be bought by Italians at 60 centesimi the mark, as compared with more than double that rate under pre-war conditions.

Italy is struggling for the life of her industries. Many trains are not running for lack of fuel, and if it were not for the receipt from Belgium of 2,000 tons coal daily, Italy would be in great distress.

American Imports and Exports Into France

LONDON.

The Fortnightly Information Review of the American Chamber of Commerce give the imports into France from America as follows for the first seven months of the years 1919, 1918 and 1917:

	1919	1918	1917
Machines and machinery..	Fcs.320,824,000	Fcs.202,748,000	Fcs.291,631,000
Tools and hardware.....	*142,996,000	123,995,000	327,259,000

*This figure includes the quantities imported to regularize the imports made in 1918 for the Government.

The exports from France into the United States for the same period are as follows:

	1919	1918	1917
Machines and mechanical appliances.	Fcs.786,000	Fcs.223,000	Fcs.497,000
Tools and manufactures of metal....	444,000	542,000	892,000

The English Steel Strike

The steel strike was caused in England through the skilled men employed in the steel works at Ebbw Vale and Dowlais asking for a certain minimum which the employers could not see their way to accede. As a result of the demand put forward by about 200 men, who struck to enforce it, between 4,000 and 5,000 other workers have been put out of work. A conference held at the Ministry of Labor between Sir David Shackleton and the Engineering Employers' Federation, to enable the latter to state their views on the consolidation of present earnings, including war advances, into permanent rates of wages and the stabilization of existing wages. Representatives of the Trade Unions have submitted a general claim for stabilization until November, 1920, which would necessitate an extension for another year of the Wages (Temporary Regulations) Act. The employers are pressing for certain amendments and conditions if the Act is renewed. The Minister of Labor has promised to consult the government, and the position will probably be further discussed with the parties concerned.

England's Export of Railway Material

LONDON.

According to the Board of Trade Returns, the value of railway material exported during the first eight months of the present year was as follows:

	1919	1918
Locomotives	£675,403	£900,987
Rails	1,246,608	381,104
Carriages	324,168	443,423
Wagons	907,465	210,166
Wheels and axles	438,246	247,650
Tires and axles	638,876	402,760
Chairs and metal sleepers	177,812	88,397
Miscellaneous permanent way	533,106	418,356
Total permanent way	1,986,414	895,530

The weight of rails exported was 77,694 tons, as against 20,899 tons for the same period in 1918, and of chairs and metal sleepers 10,875 tons, as against 5,610 tons last year. Locomotives to the value of £63,767 and rails £38,930 were sent to India during the month of August.

Electrification of the North Eastern Railway

LONDON.

The directors of the North Eastern Railway have provisionally sanctioned a scheme for the electrification of the main line between York and Newcastle (a distance of 80 miles). The scheme provides also for the electrification of the loop line (31 miles in length) from Northallerton to Ferryhill via Stockton. On these portions of the railway there is a very heavy and varied traffic, ranging from East Coast and other important through trains to local freights. Hitherto the experience of the company with electric traction has been confined to the working of a dense local passenger traffic on Tyneside, between Newcastle, North Shields, Tynemouth and Whitley Bay, and of the coal traffic between Shildon and Newport (Middlesbrough). No other company in Great Britain has, however, experimented with the electric haulage of freight trains.

On Tyneside the third rail system is in use, but between Shildon and Newport overhead electrical equipment has been adopted. The new proposal is a combination of the third rail and overhead systems, and the general idea is that the former should be used on the running lines, and the latter adopted in the freight yards and at large stations.

Railway Reconstruction in Patagonia

LONDON.

The London Times Trade Supplement says that the recent blockading on the Transandine line (Buenos Ayres to Valparaiso), on account of snowstorms blocking the Uspallata Pass, has again brought forward suggestions for a new transcontinental line in South America. The most immediately practical idea is that necessitating the construction of only 175 miles of railway, and even though this includes the crossing of the Andes, the height to be negotiated does not exceed 6,000 ft. By this means the line would be free from danger of blocking through snow blizzards, and that the expense and difficulties connected with railways constructed to climb higher altitudes would be obviated.

The transcontinental line in existence at present in South America is the Buenos Ayres-Valparaiso railway, about 1,030 miles in length, crossing the Andes at a height of 10,470 ft., the Andean section of this line being of a gage different from that of the railways of Argentina and Chile, which on either side complete the link, and necessitating three handlings of freight on each through journey. Completion of the new route would mean the creation of a second sea-to-sea railroad, over an all broad gage line (5 ft. 6 in.), traversing ascents of such easy grade that no rack sections would be necessary.

Supply Trade News

F. W. Sinram, general manager of the **Van Dorn & Dutton Company**, gear specialists, of Cleveland, Ohio, has been elected president of the company. Mr. Sinram is also president of the American Gear Manufacturers' Association.

Fairbanks, Morse & Co., Chicago, have purchased a lot 300 ft. by 150 ft. in the central manufacturing district of that city for the purpose of erecting a new warehouse, to cost $15,000. It will be of brick and concrete, three stories and a basement.

The Sherwin-Williams Company, Cleveland, Ohio, is contemplating the erection of a factory at Kansas City, Mo., to cost $500,000. The first unit will be equipped for the manufacture of paint and will be followed by the construction of a varnish factory.

M. M. Drake, sales manager for the Deeming-Endsley Company, Chicago, with headquarters in that city, has been appointed manager of the railway supply division of **The Pierce Company**, Kansas City, Mo., with office in the Transportation building, Chicago.

R. E. Trout, who has resigned as signal engineer of the St. Louis-San Francisco, to become general sales manager of the primary battery division of **Thomas A. Edison, Inc.**, with office at Bloomfield, N. J., as was announced in our Emergency Bulletin of November 6, was born at Miles Grove, Pa., now North Girard, on August 18, 1874. He began his railway career in 1892 with the Union Switch & Signal Company, Swissvale, Pa., as an apprentice in shop and construction work. He entered the service of the Michigan Central in 1896 as construction foreman and signal inspector. In 1898 he returned to the Union Switch & Signal Company, in charge of the installation of an electro-pneumatic interlocking plant at the South Station, Boston, Mass. In 1900 he was appointed signal inspector on the New York, New Haven & Hartford, with office at Providence, R. I. Mr. Trout again returned to the service of the Union Switch & Signal Company in 1901 as inspector of material and construction work. From May, 1902, to July of the same year he was connected with the signal department of the Chicago & Alton. On the latter date he was appointed signal engineer of the St. Louis-San Francisco, which position he held until his recent appointment. Mr. Trout has been a vice-president of the Railway Signal Association and later became president, which position he held until that association became the Signal Division of the Engineering Section of the American Railroad Association, at which time he was elected chairman of the Signal Division.

R. E. Trout

The business and property of the **O. S. Walker Company**, Worcester, Mass., manufacturers of grinding machines and magnetic chucks, has been sold by Oakley S. Walker to a group of men prominently connected with the machine tool and supply business, and the reorganization of the company has been completed. The name of the company will remain unchanged and the new officers are: President, **W. B. McSimmon**, Boston; vice-president, **J. H. Drury**, Athol; general manager, secretary and treasurer, **Clayton O. Smith**; the third director being **William F. McCarthy, Boston.** The new ownership brings with it increased financial resources which will make possible future development and increase of the business. The company manufactures grinding machines of various types and magnetic chucks used in holding iron and steel parts while they are being ground or machined.

C. F. Neudorfer, general plant superintendent for the Standard Tank Car Company, Masury, Ohio, has been promoted to general manager, a position which has been vacant for some time. **N. L. Mabey**, chief engineer, becomes assistant general manager. **Frederick Burroughs**, chief estimator, has been made chief engineer, and **J. W. Todd**, assistant chief engineer, has been appointed assistant purchasing agent in the office of the superintendent of transportation. **J. T. O'Connor**, superintendent of transportation, has been appointed purchasing agent. **J. R. Sweeken** succeeds Mr. O'Connor as superintendent of transportation.

E. L. Chollman, whose election as vice-president and sales manager of the **Paxton-Mitchell Company**, Omaha, Nebr., was announced in the *Railway Age* Emergency Bulletin of October 13, was born at Omaha, Nebr., on August 5, 1877. He entered railway service in 1892 as a machinist's apprentice on the Union Pacific at its Omaha shops. From 1897 to 1901 he was machinist on various railroads and from 1901 to 1902 was roundhouse foreman on the Union Pacific, with office at Evanston, Wyo. In 1902 he was appointed assistant general foreman at Cheyenne, Wyo. From 1903 to 1904 he was master mechanic for the La Follette Coal & Iron Railway Company, La Follette, Tenn. In the latter year he was appointed general foreman on the Southern, with office at Alexandria, Va. In 1905, he was appointed general foreman at Danville, Va., and in 1906 was transferred to Greensboro, N. C., which position he held until 1909, when he was appointed superintendent of car shops at Knoxville, Tenn. In July, 1914, he was elected vice-president of the Southern Locomotive Valve Gear Company, Knoxville, Tenn., a position which he held until his recent election as vice-president and sales manager of the Paxton-Mitchell Company.

E. L. Chollman

The **American Steel Foundries**, Chicago, in its report for the year ending September 30, 1919, shows a decrease in surplus over the corresponding period in 1918 of $144,150. The decrease in net earnings before taxes, the statement shows, is $2,823,232. The comparative income account is as follows:

	1919	1918
Net earnings	$3,751,696	$6,858,017
Depreciation	210,826	305,860
Balance	$3,540,870	$6,552,157
Other income	330,118	142,063
Total income	$3,870,988	$6,694,220
Charges	*165,302	117,497
Federal tax reserve	1,243,113	3,970,000
Surplus	$2,462,573	$2,606,723

*Includes $122,739, net earnings subsidiary companies applicable to stocks not owned by American Steel Foundries.

The International Cement Corporation has been incorporated under the laws of Maine, with headquarters at New York. It is a consolidation of the Cuban Portland Cement Corporation, with properties in Cuba, the International Portland Cement Corporation, with properties in Argentina, the Compania Uruguaya de Cemento Portland, with properties in Uruguay, and the Texas Portland Cement Company, operating two plants in the United States, one at Dallas, Tex., and the other at Houston, Tex. The directing heads of the

International Cement Corporation are **F. R. Bissell**, chairman of the board of directors, and **Holger Struckman**, president and general manager.

Harry M. Giles, who has been appointed general superintendent of the South Philadelphia works of the Westinghouse Electric & Manufacturing Company, Pittsburgh, Pa., as was announced in our Emergency Bulletin of October 13, has risen from the ranks in the Westinghouse organization, having for a number of years been superintendent of marine erection. He was born in Boothby, Me., on March 23, 1869, and when a small boy his parents moved to Providence, R. I., where he received his schooling. Leaving high school, he went to work at an early age in the shops of the Corliss Steam Engine Company. While working he took a night course in the Rhode Island School of Design and later received private instruction in mechanics, kinematics and mathematics. In 1900 he became superintendent of Corliss engines with the Westinghouse Machine Company, a position he held until the company became a part of the Westinghouse Electric & Manufacturing Company.

Huntley H. Gilbert, who has been appointed manager of sales, Western district, of the **Pressed Steel Car Company** and the **Western Steel Car & Foundry Company**, with offices at 425 Peoples Gas building, Chicago, Ill., as was announced in our Emergency Bulletin of October 20, graduated from Cornell University in June, 1907, with degree of mechanical engineer. He then was in the employ of the Illinois Steel Company at its South Works and later served as sales agent of the Scully Steel & Iron Company and then as western representative of the George E. Molleson Company. He entered the employ of the Pressed Steel Car Company in June, 1912, as sales agent in the Chicago office and in 1915 was sent to England and France as special representative to investigate the manufacture of shell forgings. In July, 1917, he was commissioned captain in the Ordnance Officers Reserve Corps and reported for duty July 25, 1917, as assistant to the chief of the Field Artillery Section, Carriage division, Ordnance Department, serving in Washington until February, 1918, when he was transferred to the Rock Island Arsenal, serving there as executive assistant to the commanding officer, later administrative officer, and on July 25, 1918, he was promoted to major. He attended the October, 1918, staff class at the War College, and was then appointed division ordnance officer, 97th Division, Camp Cody, N. M., serving there until the division was demobilized, at which time he was honorably discharged from military service. In January, 1919, he re-entered the service of the Pressed Steel Car Company and Western Steel Car & Foundry Company as assistant manager of sales, Western district, and was recently promoted to manager of sales of the same district.

H. H. Gilbert

Lieutenant Vernon S. Henry, who has re-entered the service of the **Safety Car Heating & Lighting Company**, New York, and is now connected with the Philadelphia office as a sales representative, as was announced in our Emergency Bulletin of October 13, is a graduate of Stevens Institute of Technology. At the outbreak of the war he attended the first training camp at Fort Myer, Va., and received his commission as first lieutenant in August, 1917. He went to France the following November and was in charge of automatic rifles in the A. E. F., remaining there until May, 1918. He then returned to the United States to assist in the production of machine gun tripods, model 1919, and for his development in this work he afterwards received a citation for meritorious and conspicuous service. In 1918 he returned to France and was in charge of the development of machine gun and anti-aircraft material until discharged from the service in February, 1919.

Reorganization and Expansion of the Reading Iron Company

The Reading Iron Company, Reading, Pa., manufacturer of wrought iron pipe, is undergoing reorganization under the direction of **L. E. Thomas**, the newly elected president, who succeeded F. C. Smink. Mr. Thomas was formerly vice-president and general manager of the Birdsboro Steel Foundry & Machine Company. He has had a broad and varied experience in the iron and steel business, having held several important operating positions in the Ohio works of the Carnegie Steel Company, and, later, while identified with the United Engineering & Foundry Company, installed some of its equipment in the leading steel plants of this country. For 14 years he was vice-president and general manager of the Birdsboro Steel Foundry & Machine Company.

L. E. Thomas

W. Woodward Williams has been appointed general manager of the company to succeed George Schuhmann, who retired on August 1, 1919, on account of ill health. Mr. Williams formerly served with the A. M. Byers Company, Pittsburgh, as general sales manager and general manager. Craig Geddis has been appointed advertising manager. He was formerly connected with the sales and publicity departments of the National Tube Company, and later was publicity manager for the Mesta Machine Company. Edgar F. Blessing has been appointed metallurgical engineer and W. E. Dunham production engineer. Mr. Blessing was formerly connected with the Doehler Die Casting Company, Brooklyn, N. Y., and Mr. Dunham was, until recently, service manager for the A. M. Byers Company.

W. W. Williams

The Reading Iron Company has also bought the George B. Lessig Company plant at Pottsdam, Pa., giving the Reading Iron Company an additional monthly muck bar capacity of 2,600 tons. It has also bought from the Empire Steel & Iron Company ten acres of land adjoining its tube works for use in future extensions. Branch offices for the district sales representatives have been established at New York, Philadelphia, Pa., Pittsburgh, Chicago, Dallas, Texas and Cincinnati, Ohio. Additional branches are now being located and will be opened by the company in the future.

Trade Publications

CONCRETE PIPE.—The American Concrete Pipe Association, Chicago, has issued an illustrated bulletin on the manufacture, use and testing of concrete pipe for culverts, drains, pressure pipes and sewers. The illustrations show almost every phase of this important industry.

CURTAIN FIXTURES.—Bulletin F-1, published by the Curtain Supply Company, New York, describes and illustrates the action of the ring curtain fixtures developed by this company and contains sketches showing standard types of open and enclosed grooves to aid in selecting the proper style of ring fixture.

STORAGE BATTERY CARS.—Bulletin No. 106, describing Edison equipped railway storage battery cars, mention of which appeared in these columns in the September 26 issue, was published by the Railway Storage Battery Car Company and not by the Edison Storage Battery Company, as incorrectly stated.

EDISON PRIMARY BATTERIES.—Batteries for electric lighting of railroad signals are described in a handsome eight-page pamphlet issued by Thomas A. Edison, Inc., Bloomfield, N. J. The pamphlet contains also a handsome portrait of Mr. Edison and a brief sketch of the history of incandescent lamps since he made the first one on October 21, 1879.

ASBESTOS.—The Magnesia Association of America, Philadelphia, Pa., is now publishing a monthly booklet, which is devoted to the interests of the asbestos and magnesia industries. The magazine is known as "Asbestos" and contains information regarding market condition and prices, and articles on subjects of special interest to users and manufacturers of asbestos and allied products.

VALVE FACING TOOLS, ETC.—An illustrated catalogue and price list of valve facing tools, ball check valves, solid and hollow balls, pneumatic tube welding machines, ball finishing tools for repairing superheater ball joints, pneumatic locomotive turntable motors, etc., products of the Draper Manufacturing Company, Port Huron, Mich., has been issued by this company and is known as Catalogue No. 7.

PULVERIZED COAL FOR LOCOMOTIVES.—The Fuller Engineering Company, Allentown, Pa., describes its equipment for burning pulverized fuel on locomotives in Bulletin No. 21. Figures are given covering the cost of drying and pulverizing coal and of installing a pulverizing plant. The advantages of this method of firing locomotives are described and sectional drawings show the equipment applied to locomotives.

A SHOCKLESS CROSSING.—The Alexander Railroad Crossing & Equipment Company has issued an illustrated folder describing the Alexander crossing and pointing to the satisfactory results secured with this construction on various railroads during the last 10 years. Vibration charts are also shown illustrating the marked reduction in the vibration secured by the use of Alexander crossings as compared to other types.

PROCESS METAL.—The Robertson Company, Pittsburgh, Pa., formerly the Asbestos Protected Metal Company, has issued a small pamphlet on the use of the Robertson process metal or steel plates, sheets, and shapes, covered with a coating of asphalt, asbestos and water proofing. Illustrations and descriptions tell how this material is used for roofing, sheathing, ventilators, window sash, skylights and many other purposes.

FANS, BLOWERS AND EXHAUSTERS.—The various types of blowers, exhausters and fans manufactured by the Buffalo Forge Company, Buffalo, N. Y., are described in catalogue No. 400, with illustrations and tables of specifications. Diagrams and illustrations of countershafts designed for use with these blowers and exhausters are shown, together with dimensions and price lists. This booklet, consisting of 35 pages, contains information of special value to fan users.

STEEL WINDOWS.—The Truscon Steel Company, Youngstown, O., has issued a complete new catalogue on its line of steel sash windows including pivoted, continuous and balanced sash, with photographs of typical installations. Most of the space is given to large-scale cross sections of the varied applications of this construction in a manner that gives the architect all the information necessary to prepare a complete working layout.

VULCAN SOOT CLEANER.—Bulletin 541, issued by the Vulcan Soot Cleaner Company, Du Bois, Pa., contains a discussion of the merits of the Vulcan patented diagonal method for cleaning soot from the tubes of horizontal water tube boilers, covering such features as maintenance cost and first cost, accessibility for inspection and repairs and ease of installation and cleaning. Illustrations in two colors show typical designs as applied to horizontal water tube boilers with vertical baffling. The bulletin also contains an analysis of the cost of Vulcan cleaners and their value as investments.

WHITING RAILROAD EQUIPMENT.—The Whiting Foundry Equipment Company, Harvey, Ill., has prepared catalogue 145, containing 36 pages, to show the advantages and labor saving features of the various railroad specialties manufactured by this company. The equipment described in this catalogue consists of screw jack locomotive and coach hoists, transfer tables for locomotives and coaches, cranes, and turntable tractors. For those contemplating new shops a drawing of a modern shop layout, showing the most practical and economical arrangement of the equipment, is included.

BOILER FEED CONTROL.—An eight-page bulletin, embodying specifications for the Copes system of boiler feed regulation, has been published by the Northern Equipment Company, Erie, Pa. A cover is provided with punched holes for adding future bulletins or specifications that will be published by the company. The bulletin discusses the principle and operation of the regulator and its mechanical construction, heat storage, reduction of furnace temperature fluctuations on sudden load changes, service performance, and the Copes steam pump governor. It contains a number of charts and photographs.

FEEDWATER HEATER.—Bulletin 5 of the Locomotive Feed Water Heater Company, New York, is a complete treatise on the application and operation of the Type E locomotive feedwater heater developed by this company. A colored chart shows how the heater performs its functions and is arranged to show in a graphical manner just where all of the heat that comes from the burning coal on the grates of the locomotive is distributed and its amount at various points throughout the route between the fuelbed and the top of the stack. A sectional drawing shows the arrangement of the equipment on a locomotive, with all pipe connections.

AUTOMATIC CUT-OFF VALVES.—The Lagonda Manufacturing Company, Springfield, Ohio, in catalogue S-2 describes the Lagonda automatic cut-off valves for power plants, which are designed to close automatically in case of an abnormal flow of steam in either direction through the valve. The booklet contains an account of tests made by the Department of Commerce of the United States to determine their reliability of operation and adaptability for different conditions. External dashpot valves for use when the flow of steam from boilers to the header is practically constant, and internal dashpot valves for installation where load conditions are unsteady are fully described, with illustrations showing sectional views of the various classes. Lagonda non-return valves which close in case of tube rupture or an accident to the boiler are also covered in the catalogue, which contains 32 pages.

FUEL OIL.—This is the title of a 46-page booklet published by the Tidewater Oil Company, New York, which gives a brief survey of experiences of various users of fuel oil and gas oil, and is intended to be of service not only to non-technical executives and plant managers, but also to plant engineers. It contains many charts, diagrams and illustrations and is divided into 15 chapters. The following chapter headings will give some idea of its contents: Advantages of Fuel Oil Over Coal; the Nature and Refining of Crude Oil; Greater Economy of Heavy Over Light Fuel Oils; Results Obtained Where Fuel Has Been Changed from Coal to Oil; Installation, Burner and Furnace Requirements. Under the heading, Estimating the Saving, Fuel Oil vs. Coal, a formula is given for computing roughly the amount which a particular plant can afford to pay for oil as computed from the present price of coal firing.

Railway Financial News

Chicago, Peoria & St. Louis.—Chellis A. Austin, president of the Mercantile Trust Company of New York, is chairman of a committee formed to act for the holders of Chicago, Peoria & St. Louis equipment 6 per cent notes due November 1, 1919, for the payment of which no provision has been made. Notes of this issue maturing a year ago were purchased by the Railroad Administration and the interest thereon paid by it, but the Railroad Administration has declined to act similarly in regard to this year's maturity. The receiver for the road has no means with which to pay the notes. The committee states that the equipment securing the notes appears to have a present value largely in excess of the notes outstanding, but insurance thereon has expired and the receiver is without funds to renew it. Holders are asked to deposit their notes with the Mercantile Trust Company.

Grand Trunk.—The Hon. J. D. Reid, minister of railways of Canada, recently made public at Ottawa, Ont., a schedule of the total liabilities which the Dominion government assumes by taking over the Grand Trunk. These consist of:

(1) The debenture stock in perpetuity, amounting to a total of $155,373,806.

(2) Second mortgage equipment bonds, 6 per cent, $1,814,780.

(3) Northern third mortgage, 6 per cent bonds, $70,566.

(4) Canada Atlantic, 4 per cent bonds, $16,000,092.

(5) Wellington, Grey & Bruce bonds, $295,893.

(6) Matured bonds unpaid, $3,407, or a total of $18,184,738.

In addition, Canada will assume liability for the interest at 4 per cent on the guaranteed stock of £12,500,000 in perpetuity, with the exception that the government will have the right at he end of 30 years to take over that stock, instead of paying the 4 per cent interest that has been guaranteed on it so long as the government leaves it in its present position, in the meantime the stock being divested of its voting privileges. Also included are the following stocks: First preference 5 per cent stock, $16,644,000; second preference 5 per cent stock, $12,312,666; third preference 4 per cent stock, $34,884,535, or a total of $63,841,201.

New York, New Haven & Hartford.—Judge Learned Hand, in the Federal District Court at New York, granted a motion asking that the $150,000,000 restitution suit brought by Edwin Adams and other stockholders of this company against William Rockefeller and other officers and directors of the New Haven be restored to the court for trial. In the same proceeding Harold Norris and another group of stockholders asked the court to appoint a limited receiver to press the trial of the Adams suit which has been pending for more than a year. This motion is scheduled to be heard by Judge Julian T. Mack on December 11.

Wabash.—An opinion handed down in the United States Circuit Court of Appeals at St. Louis on November 24 holds that the Equitable Trust Company of New York is entitled to collect approximately $51,000,000 from the Wabash Railway Company. This opinion affirms the judgment given by Judge Adams, following the foreclosure of the old Wabash Railroad in 1915.

William L. Carlisle, the notorious train robber, escaped recently from the state prison at Rawlins, Wyo., where he was serving a life sentence for the robbery of three Union Pacific trains in 1916; and within a few days he stopped westbound Union Pacific passenger train No. 19 between Medicine Bow, Wyo., and Rock River, about 100 miles west of Cheyenne, and took some $250 from passengers. He got away safely, and during the next few days telegrams signed "Carlisle" and referring humorously to the efforts of police to find him were received by railroad officers and others; but he was at last captured, seriously wounded, near Glendo, Wyo., on December 2, after a long chase through snow covered mountains.

Railway Officers

Railroad Administration

Regional

E. L. Brown, federal manager of the Denver & Rio Grande, has been appointed transportation assistant to the regional director of the Southwestern region, with headquarters at Dallas, Tex., a newly created position.

Federal and General Managers

Benjamin B. Greer, assistant regional director of the Central Western region, whose appointment as federal manager of the Chicago, Milwaukee & St. Paul, the Ontonagon and the Escanaba & Lake Superior, was announced in the Emergency Bulletin of the *Railway Age* of November 11, was born at Chicago on August 6, 1877. He began his business career with the Pullman Company in the summer of 1899 and a few months later entered the service of the Great Northern at St. Paul, Minn., as a clerk in the accounting department, after which he was successively material clerk in the superintendent's office, extra gang foreman, assistant roadmaster, chief clerk to the division superintendent and assistant superintendent, with headquarters at Minneapolis, Minn. On December 15, 1908, he left the Great Northern to become transportation inspector on the Chicago, Burlington & Quincy, with office at Chicago. In 1910 he was promoted to superintendent of the St. Louis terminal. In May, 1911, he became superintendent of the Hannibal division and in January, 1912, was transferred to the St. Joseph division. He was promoted to assistant to the general manager of the Lines East of the Missouri river, with headquarters at Chicago, in 1913, and in 1914 became assistant general manager of the Lines East. From 1915 until July, 1916, he was assistant general manager of the Lines West and on the latter date became assistant to the vice-president in charge of operation, which position he held until September, 1917, when he was elected vice-president and general manager of the Colorado & Southern. In November, 1917, he was also elected president of the Colorado Springs & Cripple Creek, with office at Denver, Colo. These positions he resigned later in that year to become assistant regional director of the Central Western region.

B. B. Greer

Traffic

C. H. Stinson, assistant traffic manager of the Wabash, with headquarters at St. Louis, Mo., has assumed the duties of traffic manager, succeeding **W. C. Maxwell,** who has resigned to become connected with the Wabash Railway Company.

J. H. Wingfield, whose appointment as manager of dining cars of the Southern Railway, Lines East was announced in *Railway Age* of Sept. 19 (page 602), was born in Richmond, Va., June 6, 1871, and educated in the public schools of that city. He entered railroad service in October, 1886, in the office of the purchasing agent of the Richmond & Danville, now part of Southern, at Manchester, Va.; was trans-

ferred to the auditing department in March, 1889, and to the passenger department in May, 1896. Three years later Mr. Wingfield entered dining car service and in August, 1910, was appointed superintendent of dining cars of the Mobile & Ohio. In July, 1913, he was promoted to superintendent of dining cars of the Southern Railway and Sept. 15 last became manager as mentioned above.

Walter A. Rambach, whose appointment as freight traffic manager of the Missouri Pacific, with office at St. Louis, Mo., was announced in the Emergency Bulletin of October 13, was born in St. Louis on August 10, 1878. He began railroad work in 1895 with the Missouri Pacific and the St. Louis Iron Mountain & Southern as a clerk. From 1895 to 1908 he was successively chief clerk in the office of the assistant general freight agent and chief clerk in the office of the freight traffic manager at St. Louis. In September, 1908, he was appointed assistant general freight agent at St. Louis, and in January, 1914, was appointed assistant to the vice-president. He was promoted to assistant freight traffic manager with office at St. Louis in 1915, which position he held until his recent promotion. Mr. Rambach succeeds **C. E. Perkins,** who resigned to become general freight traffic manager of the Missouri Pacific Railroad Company.

C. E. Perkins, whose appointment as general traffic manager of the Missouri Pacific with office at St. Louis, Mo., was announced in the *Railway Age Emergency Bulletin* of October 13, was born in Chicago in 1871. He received his education in the public schools of Kansas City, Mo., the Williston Seminary, East Hampton, Mass., and Amherst College. He entered railroad service as a clerk in the office of the Kansas City, Fort Scott & Memphis in 1891. In 1896, he was appointed chief clerk to the general agent of the St. Louis-San Francisco with office at Kansas City. In 1897, he entered the service of the Kansas City, Pittsburg & Gulf, now the Kansas City Southern, as chief tariff clerk, later becoming successively chief clerk and assistant general freight agent, with office at Texarkana, Tex. In 1909, he was appointed assistant general freight agent of the St. Louis, Iron Mountain & Southern, with office at St. Louis, and in 1910, he was promoted to general freight agent. In 1913, he was appointed assistant general traffic manager of the Missouri Pacific-Iron Mountain System and in the same year was promoted to freight traffic manager, which position he held until his recent appointment on the Missouri Pacific, where he succeeds H. M. Adams, recently elected vice-president of the Union Pacific.

Engineering and Rolling Stock

W. W. James has been appointed assistant valuation engineer of the Central of New Jersey and the New York & Long Branch.

H. L. Laning has been appointed assistant valuation engineer of the Philadelphia & Reading, the Atlantic City, and the Port Reading.

E. Y. Allen, assistant valuation engineer of the Philadelphia & Reading and the Central of New Jersey, with headquarters at Philadelphia, Pa., has been appointed valuation engineer of those roads and of the New York & Long Island Branch, the Atlantic City, the Port Reading, the Baltimore & Ohio New York Terminals, the Baltimore & New York, the Staten Island Rapid Transit and the Staten Island.

M. Lipman, supervisor of the Pennsylvania, Eastern Lines, at East Liberty, Pa., has been appointed division engineer of the West Jersey & Seashore division; **C. L. P. Russel,** supervisor at Verona, Pa., has succeeded Mr. Lipman, and **J. R. Scarlett,** main line assistant supervisor at Baltimore, Md., has been appointed Mr. Russel's successor. **R. Woodcock,** assistant supervisor at Youngwood, has been transferred to Baltimore, Md., and **H. P. Heil,** transit man of the Philadelphia Terminal division, has been appointed Mr. Woodcock's successor.

Purchasing

J. M. Mitchell, storekeeper of the Virginian at Roanoke, Va., has been transferred to Victoria, Va., succeeding **K. A. Fernstrom,** assigned to other duties; **J. V. Bland,** storekeeper at Sewalls Point, Va., has been appointed Mr. Mitchell's successor. **G. C. Donovan,** has been appointed acting storekeeper succeeding Mr. Bland.

Corporate

Executive, Financial, Legal and Accounting

Ralph Budd, whose appointment as president of the Great Northern with office at St. Paul, Minn., was announced in the *Emergency Bulletin of the Railway Age* of October 20, was born at Waterloo, Iowa, on August 20, 1877. He graduated from Highland Park College of Engineering at Des Moines, Iowa, in 1899, and began railroad work in the same year in the engineering office of the Chicago Great Western. Until 1902 he was successively draftsman, levelman, instrument man and assistant engineer, and from 1902 until 1905 he was successively roadmaster, general superintendent of construction on the St. Louis division and division engineer of that division. From 1902 until 1906 he was division engineer on the same road with headquarters at Chicago. The following year he became chief engineer of the Panama railroad with headquarters at Colon, Panama. In 1909 he resigned to become chief engineer of the Oregon Trunk, with headquarters at Portland, Ore., having charge of the construction of that line into Central Oregon. From 1910 to May, 1914, he was also chief engineer of the Spokane, Portland & Seattle, and from 1911 to January, 1913, also chief engineer of the Spokane & Inland Empire and the Spokane Traction Co. Mr. Budd was appointed assistant to the president of the Great Northern in January, 1913, and in February of the same year was appointed chief engineer. In May, 1914, he again became assistant to the president which position he retained until February, 1918, when he was elected executive vice-president. He served as assistant to the regional director of Western railroads in charge of capital expenditures with office in Chicago in April, 1918, returning to his former duties late in that year.

Charles Donnelly, whose election as executive vice-president of the Northern Pacific Railway Company was announced in the Emergency Bulletin of October 13, was born at Grand Rapids, Wis., on November 9, 1869. He received a high school education in that city and later entered the Georgetown University Law School at Washington, D. C., graduating in 1896. He began railroad work on September 8, 1903, with the Northern Pacific as assistant division counsel on the Montana division, with headquarters at Helena, Mont. In January, 1908, he was appointed assistant general counsel, with headquarters at St. Paul, Minn. In May, 1918, he was appointed general solicitor of the Northern Pacific under federal control and on October 1, 1919, was elected to his present position, with office at St. Paul, Minn. Mr. Donnelly, in addition to his duties as executive vice-president, will temporarily take over part of the duties of Thomas Cooper, vice-president and land commissioner, who has been given a leave of absence because of ill health.

C. Donnelly

Alexander C. Brown, president of the Brown Hoisting Machinery Company, Cleveland, Ohio, has been elected president of the northeastern Ohio division of the National Safety Council.

EDITORIAL

Railway Age

EDITORIAL

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Uncertainty Destroys Market For Securities

In November, 72 large corporations and some smaller corporations sold $294,845,000 worth of securities to raise new capital or for refunding purposes, and not one of these corporations was a railroad corporation. In the first eleven months of 1919, railroads sold $250,919,000 worth of securities, according to the compilation which is made by Dow Jones & Company (Wall Street Journal). This is less than a tenth of the total corporation financing done in the eleven months of 1919, and furthermore, not a dollar of it represents further partnership participation in the railroad business. There were $118,331,000 of railroad bonds sold, and $132,588,000 of railroad notes, but not a share of stock. The fact that no railroad securities of any kind were sold in November reflects one thing — uncertainty. Uncertainty is more deadly to credit than worry to the proverbial cat. The law of supply and demand is set aside by uncertainty. The fact that industrial corporations sold nearly two billions of dollars of securities in the eleven months of 1919, shows the broad market which has been developed for investment securities. A study of the maturing obligations and immediate capital needs of the railroad corporations, shows how large is the supply of railroad securities which should be marketed. Uncertainty prevents the joining of issue between the supply and demand. Of more far-reaching importance, however, than this temporary present uncertainty is the fact that no railroad stock has been sold this year. An industry in which nobody wants to become a partner, is in an unhappy situation.

The Safety Movement and Past Experience

The recent accident prevention drive furnishes additional evidence of the tendency on the part of the railroads during recent years to improve the working conditions of their employees, and it is to be hoped that the termination of the drive on October 31 has not marked the end of concerted efforts to reduce the number of accidents. There would seem to be no good reason why an active safety campaign should not be maintained continuously, if it is not overdone. But in carrying out these activities one should profit from experience gained in the past with movements of somewhat similar character and avoid the old pitfalls. It is easy to recall the enthusiasm which attended the so-called "Welfare" movement and easier to recall how it was killed by its friends in allowing the idealistic phase of the problem to obscure the practical side. That there is danger of defeating the purpose, or at least of lessening the efficiency of the "Safety" movement in a similar manner is evidenced by the fact that it is not difficult to find division officers who, because of the local conditions under which they work, are forced to devote as much as one week in each month to safety matters and meetings. Granting the great importance of the movement it is hard to conceive of any division officer being willing to give a week of his time continuously to these matters. That his interest will eventually be lost seems certain. The fact that such conditions exist is due, probably, to the fact that it is common practice for the roads to employ specialists from outside to head the safety committees. Naturally their first interest is in actual results and, as naturally the viewpoint of others is lost sight of. It seems that the employment of men experienced in actual railroad work and thoroughly awake to comparative values would go a long way to relieve the situation.

Handling Labor Controversies

That there is a feeling of unrest among all classes of railroad labor despite the large wage increases the majority of workers have received, is generally admitted. The boards created by the Railroad Administration to pass on labor disputes have performed an important function during the period of federal control by providing a channel for the orderly settlement of the disputes arising due to this general air of dissatisfaction. Each successive bulletin dealing with labor matters brought up innumerable controversies, a large share of which were finally passed on by the board of adjustment. Important agreements governing the working conditions in the mechanical and maintenance of way departments have recently gone into effect. The labor organizations are now strongly intrenched on all the large roads and they will undoubtedly try to place their own interpretation on these agreements. As the Division of Labor will go out of existence at the end of federal control, the managers will have a serious labor problem to face during the first few months of private operation. It is essential that during this period of readjustment railroad officers should be free to devote their attention to the problem of operating the properties in the most efficient manner. In the past too much of the time of the higher executives has been spent in long drawn out disputes, over petty questions concerning wage matters. The climax has been reached during federal control. After one of the wage supplements was issued the superintendent motive power of a certain large road spent three weeks in conferences with representatives of the shop crafts, yet only one-fourth of the questions brought up were disposed of, the remainder being referred to the adjustment board. Such procedure is an unjustifiable waste of time, of which the executives should be relieved. With the extremely complex wage agreements now in force it might be well to have an officer in each department, reporting directly to the department head, who would be the final authority on the interpretation of wage contracts. The representatives of the labor organizations have little to attend to aside from these disputes and if their demands are refused, seldom fail to take their case to the highest tribunal. It goes without saying that the higher officers must keep in close touch with the general labor situation, but it is quite unnecessary that they should be called on to settle trifling differences with regard to the meaning of the various provisions of the contracts. Some such plan as suggested above should prove helpful by taking this burden off the shoulders of the executives.

Puzzles of the Accident Investigators

THAT the block system is safer than the time-table and time-interval system of running trains, goes without saying; but it does not go far enough. Too many railroads or parts of railroads are managed by men who accept this fact in theory but do not heed it in practice. The block system is safer because of its simplicity; but in what does the simplicity consist? Some things are so simple that to impress them on the unreceptive mind it is necessary to build up a line of auxiliary argument in order to arouse the reasoning faculties, as is done in teaching the beautiful simplicities of geometry. The simplicity of the block system can sometimes be best set off by looking at the confusion which is inseparable from the other plan. This confusion is illustrated in a striking way by a recent collision. While the circumstances attending it have scarcely any element of novelty they may, nevertheless, be studied with profit. We have been studying the same kinds of facts for years; but there is need of keeping on, for we learn the lesson so poorly that we continue to kill people, because of our ignorance—or perversity.

Confusion is the term which may properly be applied to the lack of correspondence between the mental processes and the outward conduct of enginemen (and conductors) and the theoretical mental operations (for running trains without the block system) in the rule book. In this case an engineman (passenger, eastbound) displaying green flags, said that he sounded the whistle to call the attention of a freight engineman (westbound) on a side track and that there was a sound from the whistle of the engine on the siding; but whether or not this sound was the prescribed acknowledgement of his own signal he could not say; there was too much noise on his own engine. The freight engineman did not see the flags; he denied hearing the whistle signal (and of course did not answer a signal which he did not hear); the fireman and the head brakeman corroborated his statement that the eastbound train did not whistle; the conductor of the eastbound could not corroborate his own engineman; and the government investigator distrusts the testimony of those who did back up the engineman. In fact, the investigator was so confused by the multitude of discrepancies in the testimony of the ten or eleven men who ought to have been able to give clear, truthful, and consistent testimony concerning the whole situation that he gave up in despair, and he only said that he "believed it possible" that the whistle signal was not sounded.

The rest of this story would take a column or two. It is more, interesting than fiction; but like the popular fiction of the day, its length compels us to send the reader to another page (our account of train accidents in September). The most comprehensive conclusion of the investigator is that embodied in his statement that all of the men on the westbound train, except the pilot, were inattentive to their duties.

Adding to the foregoing the other confusing features shown in the account of the collision and the subsequent investigation, what do we see? A dozen questions of veracity which no ordinary man could settle without the skilful aid of the Supreme Court; and as many more questions about qualifications, discipline, personal habits and daily practices, which the trainmaster could, indeed, settle if he had unlimited time and financial resources, but which, with things as they are, simply baffle him. Any one who gets at the real state of mind of the typical trainmaster finds him burdened with an assortment of unsettled problems concerning the training of his men that is truly amazing to one who comes to the subject fresh from the outside. Simplification of collision puzzles by the use of the block system serves markedly to reduce these problems, (and it is the only way to reduce them. Compare any investigation of a collision under the block system with any report of a case like that here referred to; the difference is obvious at a glance. Questions of veracity are not absent, of course; where two men are involved in any serious error, all sorts of desperate efforts of each to shift the blame to the other are always to be expected; but the investigator's task is greatly simplified, nevertheless. This case was a good deal more complicated than the average but it was not unusual. The records of the Interstate Commerce Commission would show numbers of them every year, if not every quarter. The collision at Kelleyville, Okla., on September 28, 1917, killing 23 passengers, was of the same kind as the present case, though not so many men were at fault.

On the other hand, look at South Byron, Ivanhoe and Mount Union, the three most prominent recent collisions under the block system; the question of responsibility was pretty well settled in each case by or before the time the formal investigation was started. These were great disasters, involving difficult questions; but at least we can say that the technical definition of what ought to be done in such cases is reasonably clear. These three collisions all occurred under automatic signals. With nonautomatic the situation is not usually so free from complication; but with either system the problem is simplicity itself as compared to that of dealing with men who have "fallen down" in their grapple with the intricacies of the Standard Code.

As intimated above, this article is predicated on a collision reported in the record of last September (the second item in the list); but its lesson applies without change to a large class; to most of those on lines not worked wholly by the block system, where the realiability of the conductor and the engineman are supposed to be bolstered by the vigilance of brakemen and firemen.

Increased Investment Required to Reduce Labor Costs

AMONG the most interesting statistics which have been made public by the Railroad Administration are those which it recently furnished to the Senate Committee on Interstate Commerce regarding the number and compensation of railroad employees in the year 1919 as compared with December, 1917, the last month of private operation.

These statistics show that in December, 1917, the number of employees of the railways now under government control was 1,703,748, while in July, 1919, it was 1,894,287, an increase of 190,539, or 11.2 per cent. The total compensation paid to the employees of Class I railways—which are substantially the same as those under government control—in the entire year 1917 was $1,740,000,000. The total compensation paid to the employees of the railways under government control in July, 1919, was $226,141,000. This is at the annual rate of over $2,700,000,000. Some advances have been granted since July to shop employees and train service employees. These statistics confirm estimates previously made by the *Railway Age* that wages on the Class I railways are now running at the rate of approximately $2,800,000,000 a year. If the wages being paid by the Class II and III railways were added this amount would be increased to approximately $3,000,000,000.

Director General Hines calls attention to the fact that the increase in the number of employees has been almost entirely due to reduction in the hours of work per day. He points out that in December, 1917, the total number of hours worked by the persons then on the pay roll was 434,000,000, while in July, 1919, with over 190,000 more persons on the pay roll, the total number of hours worked was less than 417,200,000.

The average number of employees of Class I roads

throughout the year 1917 was 1,732,876, and it may be pretty safely assumed that this was approximately the number employed in July, 1917. The amount of passenger traffic handled in July, 1919, was substantially larger than the amount handled in July, 1917. On the other hand, the amount of freight business handled in July, 1919, was substantially less than in July, 1917. In other words, the increase in the number of men employed was not due to or accompanied by an increase in the amount of traffic handled, and, in consequence, there was a decline in the total amount of traffic handled per employee. Such statistics as are available indicate that the number of tons moved one mile per employee in July, 1917, was 21,000, and in July, 1919, only 18,500; while the number of passengers moved one mile per employees in July, 1917, was about 2,300, and in July, 1919, it was 2,400. During all the years when the question of an eight-hour working day in the railroad and other businesses has been under discussion it has been contended by some persons that a reduction of hours would result in a reduction of production and by others that it would not result in a reduction of production because the average worker would accomplish as much in a working day of eight hours as in a working day of ten hours, for example. The statistics of the Railroad Administration demonstrate that the effect of reducing the average hours worked per day per employee has been to make it necessary to employ over 11 per cent more men to do a somewhat smaller amount of work.

The reduction made in working hours probably was justifiable. It was justifiable if, in the circumstances existing at the time, the establishment of an eight-hour day in any industry was justifiable. But the fact that the reduction in hours has resulted in a reduction in the amount of work done per employee and therefore in a large increase in the number of employees required to handle the same amount of traffic, must not be overlooked. The eight-hour day in railway service having been adopted, it is practically certain that it will never be abolished. Under private operation the companies may succeed, even with existing facilities, in handling a slightly larger business with the present number of employees. But all the big increases in the amount of traffic handled in proportion to the number of men employed which occurred before government operation was adopted, were due, not to the fact that the average employee did more work, but to the fact that the managers and officers of the railroads worked out better operating methods and designed or adopted larger or better yards, cars, locomotives, and so on, and that the owners of the railroads furnished the capital required to provide the additional and improved facilities. They were due chiefly, not to the work of the employees, but to the investment of more and more brains and capital in the industry.

The establishment of the eight-hour day, with its consequent effect of rendering it necessary to employ about 11 per cent more men to handle actually a smaller traffic, has of itself caused a large increase in railroad expenses. This increase in the number of employees required for a given amount of work has been accompanied by a large increase in wages per employee, which has had the effect of pyramiding the increase of expenses and making it very large. There is only one way in which the effect of these influences on expenses can be even partly nullified, and that is by adopting better operating methods and providing facilities which will again begin to reduce the amount of labor required to move a given amount of traffic, as was being done steadily for years before the eight-hour day was established. But these larger and better facilities cannot be provided without a large investment of capital. It will be true in the future as it has been in the past, that the only way to effect very large economies in operation will be to make large investments of capital in facilities which will increase the amount of traffic which can be handled in proportion to the number of persons employed.

There has been much said in our own columns and elsewhere about the need for a large investment of capital to enable the railroads to expand their facilities. Another most important reason why a large investment of capital is needed is afforded by the enormous increase which has occurred in the railroad pay roll. The fact cannot be too forcibly emphasized that the effect of this on operating expenses cannot be materially offset in any way except by a large investment of capital in equipment and facilities which will reduce, as past investments of capital have reduced, the amount of labor required to move a ton or a passenger one mile.

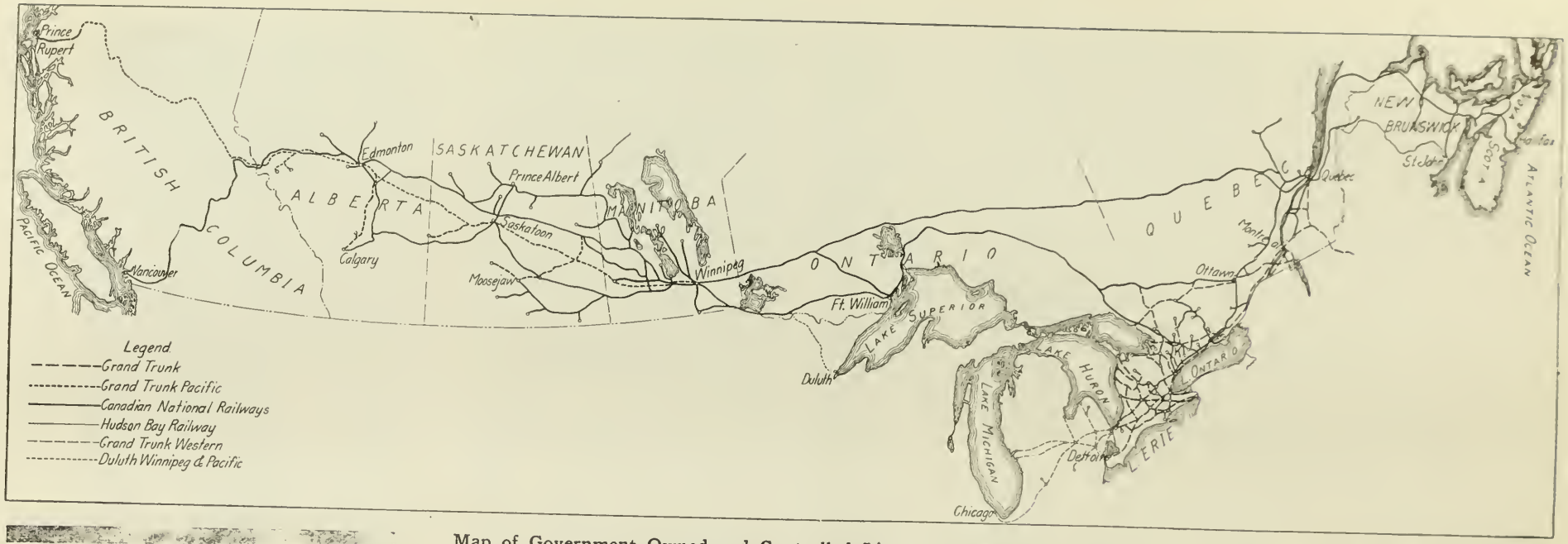
It is most unfortunate that such fundamental principles of railway economics as this one are understood by very few people outside of the class who finance and operate railways. If it were possible to make economists, members of regulating commissions, shippers and lawmakers understand that whatever tends excessively to restrict the amount of capital invested in railroads not only tends to prevent them from adequately increasing their facilities, but also tends to prevent them from effecting economies in operation which are necessary to enable them to make low rates, we should soon have the railroad problem discussed and acted upon with more intelligence than it has been in the past.

New Books

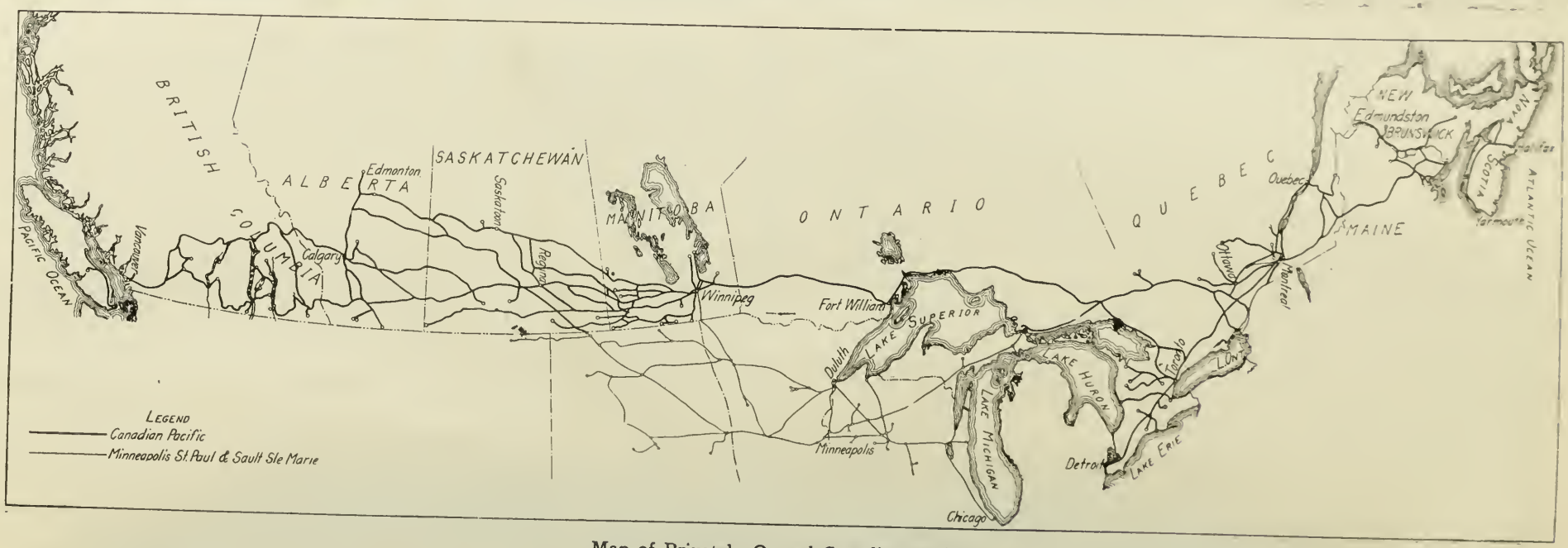
Proceedings, American Wood Presevrers' Association, 1919, 6 *in. by* 9 *in.,* 310 *pages of text,* 30 *pages of advertising, illustrated. Published by the American Wood Preservers' Association, F. J. Angier, secretary-treasurer, Baltimore & Ohio Railroad, Baltimore, Md.*

This book contains the running report including committee reports and personal papers presented at the fifteenth annual meeting of the American Wood Preservers' Association held at St. Louis on January 28 and 29, 1919. Studies of substitute preservatives to compensate for the growing scarcity of creosote, specifications of the United States Railroad Administration for ties and for preservative treatments of timber were among matters of special interest presented at this meeting. The last 40 pages of the text consist of statistical data on the consumption of preservatives, the amount of timber, ties, piles, poles, etc., treated, as prepared by the United States Department of Agriculture, Office of Forest Products, in co-operation with the American Wood Preservers' Association.

Scenes on the Government's Alaska Railroad. Camp 24 on King River, Matanuska Branch



Map of Government Owned and Controlled Lines and the Grand Trunk



Map of Privately Owned Canadian Pacific

Canada's Extension of Railway Nationalization*

Development of Government Ownership in the Dominion Produces a Peculiar Transportation Situation

THE DOMINION OF CANADA seems to be drifting steadily and surely toward the nationalization of her railways. Despite a lesson more convincing every day of the failure of government operation of railways in the United States, and in spite of the similarity between the two countries in respect to almost all conditions which affect railroad operation and management, the experience of the United States with government operation during the past two years has, to all appearances, meant little to those in Canada who are formulating national policies. In fact, the long struggle with the railroad problem south of the international boundary has had little or no effect on developments in the Dominion.

This apparent checkmating of national railway policies by the two nations goes even further. When the United States turned to government operation as a war-time measure, the Dominion refrained from such drastic action and allowed the roads which were then leading a corporate existence, to prove that they were able to handle the increased volume of war-time traffic as expeditiously and as successfully as they had handled the smaller peace-time business. While our government shouldered the burden of operating the railways, Canada went to the source and controlled the shipper instead of the railroad—and succeeded. This policy of *laissez faire,* in transportation, which made Canada's war problem much less complex than it otherwise would have been, proved the efficiency and versatility of the privately owned and operated railroad under the abnormal conditions incident to the war.

Again, our recent railway ailments promise to be eradicated at the present session of Congress by a return to private management with governmental regulation as a permanent national policy, whereas Canada, which has long been dabbling in government ownership, seems now to be entering upon a very extensive nationalization policy. Where our troubles are seemingly to diminish in the near future, Canada's real troubles are seemingly just about to begin.

It is the purpose of the present article to outline only the present railway situation in the Dominion of Canada. The events which have led up to this situation, the seeming inevitableness of the steps which the Dominion government has taken so far, and the probable effects upon Canada's contemporary and future railway history of the steps already taken and those which appear about to be taken, will be dealt with in later articles.

Canada's Transportation Plant

At the present time Canada's seven main lines may roughly be segregated into three classes insofar as the nationalization program is concerned first, roads owned by the government and managed by an operating organization; second, roads in which the government is heavily interested financially, but which are operated by private management and, third, roads, or rather a road, wholly privately-owned and operated.

Of roads belonging to the first class there are consolidated under the direction of one operating organization (that of the Canadian National Railways Company) the four government-owned lines, formerly known as the Inter-Colonial, the Prince Edward Island, the National Transcontinental and the Canadian Northern. This operating company was formed after the mileage of government-owned lines had been so increased by the addition of the 9,648 miles of the Canadian Northern System as to make their unified management and operation seem desirable. The executive officers of this company are in the main the old executive officers of the Canadian Northern. Its operating staff is composed substantially of the same men who have been operating the Canadian Northern and the Canadian Government Railways, i. e., the Prince Edward Island, the Inter-Colonial and the National Transcontinental. Until recently the Canadian National Railways Company was a temporary arrangement, but, with the passage by both houses of the Canadian parliament of a bill, House Bill 70, incorporating the company, the temporary organization became a permanent one.

Under the provisions of this bill there has been created a "railroad company" in every sense of the word except in that, instead of shareholders being the power behind the management, the government has assumed this position. The powers conferred upon the new organization are substantially those conferred upon a private railroad corporation by its stockholders; the voice usually retained by the shareholders in a privately owned railroad corporation is retained by the government; and the government, like the shareholders in a private corporation, supplies the money for the operation and development of the plant. In other words, Canada now has in the case of these lines something approximating to government ownership and private operation.

All statistical statements used in the compilation of the cost of construction, indebtedness, etc., of Canada's roads which appear in this series of articles, are taken from the Sessional Papers presented before the Canadian Parliament up to and including the report for the year 1916. Figures for these items after that date are not available, but with higher operating costs, higher costs of material and labor, and no corresponding increases in rates, the financial position of the roads has not improved since then. The Canadian railways have been granted rate increases equal to those granted by the Interstate Commerce Commission in the United States. At the same time the Canadian roads have granted wage increases equal to those granted in the United States. The increase in the cost of materials and labor have more than counterbalanced the advantages arising from the increased earnings.

The Intercolonial and Prince Edward Island

The oldest railroad in point of ownership by the Dominion is the Intercolonial, running from Sidney, N. S., and Halifax north to the Gulf of St. Lawrence, and thence southward along the St. Lawrence river to Montreal, passing through Moncton, N. B., and Quebec, and forming the eastern link in the government-owned transcontinental line. The government's ownership dates back to 1867, approximately 52 years. The mileage of the Intercolonial is approximately 1,500 miles. A large part of this mileage is through unproductive, rocky sections of eastern Canada, with great stretches of non-traffic producing territory lying between the main terminals. Because of this uneconomic location, determined years ago by political and military considerations, plus the inevitable results of political interference under government ownership, the road has been a consistent drain on

* First of a series of three articles outlining the present situation of the Dominion of Canada's railways, the events which led up to this situation and the results that might ensue as a result. The second and third articles of the series will appear in subsequent issues of the Railway Age.

the public treasury. Never since its purchase and development by the Dominion government has it been able to meet both its operating expenses and interest charges on the capital invested, and in a majority of years it has not even earned its operating expenses. Probably, situated as it is with regard to traffic producing territory, it could never have been successful as a separate venture. Now, however, it is linked with other roads which are traffic producers and the decision as to whether it will be successful or not depends not so much on its operation as a single unit as on its operation as one link in the government-owned transcontinental chain of roads.

Of the Prince Edward Island, the second road named in this group of roads which are now under the jurisdiction of the newly formed Canadian National Railways Company, little need be said because of its remoteness from the general railway situation in Canada. It is a narrow gage road of approximately 278 miles, serving Prince Edward Island and was formerly under the same management as the Intercolonial. However, it has one characteristic in common with the other roads in this group, namely, the propensity to consistently incur deficits. Never in any year in its history has the Prince Edward Island been able to earn its operating expenses, much less its interest charges. It has had little effect on the present situation in Canada except as a drain upon the public treasury.

National Transcontinental

In the case of the third of these government-owned railroads, the National Transcontinental, an entirely different situation presents itself. The National Transcontinental was built directly by the Dominion government, beginning in 1904, and has been operated by the government since its completion in 1913. Running from Quebec to Winnipeg with a mileage of approximately 2,067 miles, the National Transcontinental forms the second link in the new government chain across the continent. It was built as a result of an agreement between the Dominion government and the Grand Trunk Railway Company, the details of which will be given in the second of this series of articles. In regard to the present situation, however, the cost of construction of this road up to 1917 amounted to $164,000,000. The government commission which built it was composed of men inexperienced in railroad construction. Another government commission, composed of F. B. Gutelius and J. Lynch-Staunton, which was appointed in 1912 to investigate charges of extravagance, corruption and mismanagement in the road's construction, reported a waste of many millions of dollars.

As an operating success it has been equally deficient. The total operating expenses up to 1916 were $4,744,129 as compared with operating revenues of $3,956,234, leaving an operating deficit of $787,895. The road has many miles of main lines with few miles of branch lines or feeders. The main part of the route between Quebec and Winnipeg passes through undeveloped territory, originating little traffic other than wood pulp and timber. Whether the National Transcontinental will be a success as a part of the new government transportation system depends on the latter rather than upon it.

Canadian Northern

The fourth road now owned by the government and operated as an integral part of the Canadian National Railways is the Canadian Northern, running from Quebec in the East to the Pacific coast at Vancouver, B. C., and with a network of lines in Manitoba, Saskatchewan and Alberta. The total mileage of the road is 9,405 miles. It provides an alternative route from Winnipeg east through Toronto and Montreal to Quebec, and the section from Winnepeg west forms the western link in the new system. The line was constructed by Sir William MacKenzie and Sir Donald Mann with liberal government assistance. Briefly, the financial story of the road developed in such a manner as to make the governments, Provincial and Dominion, in one way or another the guarantors of about 75 per cent of the company's liabilities. The war, higher operating costs, invasion of the territory served by the Canadian Northern by other railways and a faulty policy pursued by the road brought it into financial difficulties and it was unable to finance itself. Ostensibly there was nothing left for the government to do, in the light of the necessity for maintaining uninterrupted service throughout this part of the Canadian west and protecting its already large investment in the property, but to take over the road. After arbitration proceedings Messrs. MacKenzie and Mann, who held 60 per cent of the common stock, were paid approximately $10,000,000 for their holdings and the road was placed under the jurisdiction of the Canadian National Railways. The extent of the interest of the government in the Canadian Northern at the time of the report made by Sir H. L. Drayton and W. M. Acworth, members of a Commission of Inquiry appointed in 1917 to investigate the railway problem, was $298,253,263, which sum includes subsidies, proceeds of land sold, loans outstanding on investments and guarantees outstanding. In view of the prospect of the necessity of constantly aiding the road from funds in the public treasury, it was taken over by the government on July 1, 1918, thereby bringing the total mileage of the government-owned lines up to 13,200 miles.

This system as now constituted gives to the Dominion government a nationally owned transcontinental line. However, this line has a serious lack of traffic originating branch lines in those districts in which much of Canada's products originate. The one exception to this lack of feeders is in the Western grain-producing provinces where the Canadian Northern had built a large network of branch lines to handle the wheat crops. A transcontinental line, so much of which passes through unproductive territory as does the Canadian National Railways, could never be successful without a complete system of branch line feeders to originate traffic, which in turn supports the expense of the long haul.

Fortunately, perhaps, for the nationalization plan the financial trouble which precipitated the acquisition and amalgamation of the Canadian Northern has also affected two other lines, one of which, the Grand Trunk Pacific, traverses rich traffic-producing territory in the western provinces and extends to the Pacific coast, and the other, the Grand Trunk, forms a network of traffic-producing lines in Canada's industrial districts. These two roads comprise the second division, i. e., roads in which the government is heavily interested financially, but which are not yet government-operated in the ordinary sense.

The Grand Trunk Pacific

The Grand Trunk Pacific, with a mileage of 2,809 miles, the eastern terminal of which is at Winnipeg, and which traverses the richer portions of the provinces of Manitoba, Saskatchewan, Alberta and British Columbia to Prince Rupert on the Pacific coast, is now nominally a government railroad, although it is not operated as a part of the Canadian National Railways. The Honorable J. D. Reid, minister of railways, was appointed by the government as receiver for the road, on March 7, 1919, under the War Measures Act. This action was taken immediately after its parent and sponsor, the Grand Trunk, had notified the Dominion government that it could not operate the road after March 10, because of the heavy deficit incurred in its operation and the refusal of Parliament to grant further aid for the maintenance of service on the Grand Trunk Pacific. This rather complicated situation is due to the conditions under which the Grand Trunk Pacific was constructed and the relations of the Grand Trunk and the Dominion government to it.

It may be recalled here that the Grand Trunk Pacific was constructed by the Grand Trunk, liberally assisted by the Dominion government as part of an agreement entered into between the government and the latter company for the construction of a transcontinental line, the Grand Trunk Pacific, part of which was to be constructed by the Grand Trunk and the eastern half, the National Transcontinental, by the Dominion government. This latter portion of the line, east of Winnipeg, was to be leased, after its completion, to the Grand Trunk Pacific Company, the rental to be based on the cost of construction. Upon the completion of the National Trancontinental the Grand Trunk refused to take over its operation because of its excessive cost of construction, which, of course, greatly raised the rental to be paid. Insofar as the Grand Trunk Pacific is concerned, the financial development of the road arrived at a point where the Dominion government was interested to the extent of about half of the approximate expenditure of $200,000,000 through the payments of deficits and the guarantee of bonds, and the Grand Trunk was responsible for approximately an equal amount.

The upward trend of operating costs and, as stated before, the refusal of the acting premier, Sir Thomas White, to ask Parliament to appropriate further funds for the maintenance of service on the Grand Trunk Pacific led the officers of the Grand Trunk, who are likewise the officers of the Grand Trunk Pacific, to notify the Dominion government that it would be impossible to continue operating the Grand Trunk Pacific after March 10. As a result, at the present time the Honorable J. D. Reid, minister of railways, is head of the Grand Trunk Pacific company as receiver, and its former officers are continuing operation. But this arrangement is at best only a temporary device to maintain uninterrupted service until it is possible to absorb the Grand Trunk Pacific into the Canadian National system. It is generally conceded that this action will be taken in the near future and that the Grand Trunk Pacific will become an integral part of the Canadian National Railways. This development, however, depends largely upon the future relations between the Dominion government and the Grand Trunk.

The Grand Trunk

As to the other line or system falling into this classification, the Grand Trunk, little can be said with certainty as to its present situation. The government had been extending liberal financial aid to the company, and in January, 1918, opened negotiations for the perpetual lease of the property. These negotiations, after passing through a series of proposals and counter proposals, in which the Grand Trunk's liability for the Grand Trunk Pacific played a major role, seem to be nearing completion. The outcome of these negotiations has not been announced, but when the strategic position of the Grand Trunk lines is considered, the assumption that the negotiations will end in government acquisition seems safe.

The main part of the Grand Trunk's mileage lies in Ontario, east of Lake Huron and north of Lakes Erie and Ontario. In this district is produced the major part of Canada's manufactured products. The Grand Trunk's lines have been constructed to handle the traffic produced here as well as possible, and the result is a network of lines, all serving a definite purpose. In this district, too, the cities and towns are old and well developed, making the establishment of new terminals in this territory doubly hard and expensive. On the other hand, the Grand Trunk has built fairly adequate terminal and switching facilities throughout this district. The needs of government lines can be largely met by the Grand Trunk, and it is therefore safe to assume that some co-ordinating arrangement will be made. Without some arrangement with the Grand Trunk the Canadian National Railways would be obliged, in order to operate efficiently and successfully, to duplicate lines and terminals of the Grand Trunk, at a cost of approximately $150,000,000.

The Canadian Pacific

Against these two closely interwoven groups of railroads, which may be viewed even now as one, is arrayed the successful privately owned and operated transcontinental line, the Canadian Pacific. Operating approximately 13,000 miles of splendidly equipped and maintained road from St. John, N. B., on the Atlantic coast to Vancouver on the Pacific coast, it stands out as one of the best examples in the world of a successful privately owned and operated railroad.

Financially it is a powerful corporation; this too in spite of rapidly rising operating costs and stationary revenues. Since July 1, 1913, the road has had relatively a very small funded debt and the government now has practically no definite financial interest in the Canadian Pacific other than an indirect interest figured in the value of land granted the road. Physically the road is in its normal state, which, however, is a standard to which it would take millions to elevate most of the roads now or to be under the Canadian National Railways Company. The position of the Canadian Pacific is too well known to require detailed exposition; the interest lies not in the Canadian Pacific's present status, but in the status of the Canadian National Railways and especially in what this peculiar Canadian railroad situation may develop into in the future.

The Present Situation Summed Up

Briefly, then, the present railway situation may be summarized as follows: The Dominion government owns and is operating as one system approximately 13,200 miles of line, namely, the Intercolonial, the National Transcontinental and the Canadian Northern, which represented up to and including 1916 a total public interest officially reported at $600,000,000. The Dominion government further controls the Grand Trunk Pacific with 2,809 miles of line and is negotiating for the control of the Grand Trunk with 3,567 miles more. Thus it may be assumed that there will be under the banner of the Canadian National Railways and operated as one system in the near future almost 20,000 miles of railways, in which will be included not only a transcontinental line but a system with a network of traffic-producing lines to feed the main lines.

In competition with this will be operated the Canadian Pacific with its records for service, its established traffic and its admitted financial strength. This situation of a government owned transcontinental railway, operating in competition with a privately owned transcontinental railway, each with its network of branches for the gathering of traffic and practically paralleling each other across the American continent will be without precedent in the history of steam transportation.

There is an interesting international complication in connection with this situation, which has not been without its influence upon the developments so far and will not be without influence upon developments in the future. The Canadian Northern, now owned by the government, has a mileage in the United States of 225 miles, of which 44 miles are proprietary and 181 are leased. Most of this mileage is in the Duluth, Winnipeg & Pacific, but this line is practically a separate corporation. The fact that this mileage is comparatively small has not and probably will not make a great difference in international relations, as the present arrangement of a separate corporation controlling this mileage in the United States will probably be continued by the Dominion government.

The Grand Trunk, however, controls approximately 1,868

miles of road in the United States. The controlling of this mileage by the Grand Trunk would, if the Grand Trunk were purchased by the Dominion government, create a rather complicated international situation, with the Dominion government practically taking orders from the Interstate Commerce Commission and being forced to abide by laws made by the United States government. To obviate this situation the Dominion government is negotiating for the perpetual lease of the Grand Trunk rather than its purchase.

The Canadian Pacific also has a mileage of 4,948 miles in the United States, of which 145 are proprietary, 32 leased, and 4,771 miles controlled. This mileage of the Canadian Pacific has no influence on the present situation, but it would have an influence if there should be a move toward nationalization of the Canadian Pacific itself.

Whatever may be said of the railway nationalization program in Canada the fact remains that some of these roads had fallen into financial difficulties, and that because of the Canadian policy of government assistance to railway construction, the government was faced with the necessity of paying ever-increasing deficits out of the public treasury. The government decided that, since it had to pay these deficits, it might as well be sure of its reward in the event that the roads whose deficits were paid should become successful in the future.

The developments which have led Canada to the present situation will be discussed in the next article in this series, after which the bearing the present situation may have on the future of Canada's railroads will be treated in a third article.

Wood Preservation Statistics for 1918

THE PROCEEDINGS of the American Wood Preservers' Associates for 1919 contains a statistical report on the wood preserving industry for 1918 and previous years which contains many data of interest to railroad men concerned with the treatment of timber used in railroad work. The statement below was prepared from material contained in this report.

There was a reduction of over 10 per cent in the cubic feet of wood subjected to treatment during 1918 as compared with the year previous. The cubic feet of wood treated in 1918 was 122,612,890 cu. ft. as compared with 137,338,586 cu. ft. in 1917. The number of railroad cross ties treated in 1918 was 30,609,209 or 2,850,261 less than the 33,459,470 reported for 1917. The number of piles treated in 1918 was 12,286,517 lin. ft. as compared with 12,695,567 lin. ft. in 1917. The quantity of wood blocks treated was 2,398,869 sq. yd. or 1,062,071 sq. yds. less than the quantity treated in 1917. In the case of construction timber which includes bridge timber, switch ties, etc., the quantity treated in 1918 was 122,587,120 ft. b. m. or a decrease of 15,000,000 ft. b. m. from the quantity reported in 1917.

This decrease in the amount of timber treated during the year has, of course, a direct relation to the amount of preservative used. In the case of coal tar and creosote, of which there was a distinct scarcity during the latter part of the war period, 47,787,998 gal. were used or a reduction of 22,610,611 gal. or 30 per cent as compared with the quantity reported for 1917. The consumption of water-gas tar, 2,822,652 gal., paving oil, 4,057,862 gal. and miscellaneous preservatives 28,013 gal., also represent decreases as compared to 1917. However, in the case of zinc chloride of which 31,101,111 lb. were used during 1918, there was an increase to the amount of 4,656,422 lb. as compared to 1917.

These statistics were gathered by the Forest Products Service from signed statements received from 101 treating plants out of a total of 107 plants of all kinds in active operation during 1918. There are 125 treating plants in the country at the present time but 16 of these were idle for one reason or another during the year.

The prices paid for preservative materials did not increase as much between 1917 and 1918 as in the period previous to 1917. The following table gives the range of prices for the years 1917 and 1918 compared:

Preservative	1917	1918
Coal tar creosote, per gal.	$0.065 to $0.230	$0.075 to $0.360
Water gas tar, per gal.	0.043 to 0.060	0.054 to 0.075
Zinc chloride, 50 per cent solution, per lb.	0.029 to 0.075	0.030 to 0.045
Zinc chloride, fused, per lb.	0.063 to 0.085	0.065 to 0.085

Of the total quantity of timber subjected to treatment during the year, measured in cubic feet, 75 per cent consisted of cross ties. Of the total number of ties treated,

CONSUMPTION OF WOOD PRESERVATIVES BY THE TREATING PLANTS OF THE UNITED STATES 1909 TO 1918

Year	Plants number	Creosote (a) gallons	Zinc chloride pounds	Other preservatives (b) gallons
1909	64	51,431,212	16,215,107	(c)
1910	71	63,266,271	16,802,532	2,333,707
1911	80	73,027,335	16,359,797	1,000,000
1912	84	83,666,490	20,751,711	3,072,462
1913	93	108,373,359	26,466,803	3,885,738
1914	94	79,334,606	27,212,259	9,429,444d 2,486,637
1915	102	80,859,442	33,269,604	3,205,563d 1,693,544
1916	117	90,404,749	26,746,577	5,675,095d 582,754
1917	115	75,541,737	26,444,689	7,579,819d 137,361
1918	107	52,776,386	31,101,111	4,057,862d 28,013

(a) Includes coal-tar creosote and water-gas tar.
(b) Includes refined coal-tar, corrosive sublimate, and carbolineum oils.
(c) Statistics not available.
(d) Paving oil.

30,609,209, the number that were hewed ties was 19,502,999 as compared to 11,106,210 sawed. Of the total number 38 per cent or 11,714,728 were oak ties, 33 per cent or 10,216,-064 were yellow pine ties and 12 per cent or 3,855,318 were Douglas fir. Four million more ties were treated with creosote than with zinc chloride, but with the scarcity of creosote in 1918 larger use was made of zinc chloride, with the result that during the year covered by the report, 17,055,-382 ties were treated with that material as compared with 11,546,049 treated with creosote. A total of 2,007,778 were treated with zinc creosote emulsion, while no ties were subjected to treatment with miscellaneous preservatives. During 1918 lighter injections of preservatives were given. In the case of creosote, water-gas tar and paving oil, the amount of preservative forced into the wood was 7.77 lb. per cu. ft. For zinc chloride it was 0.47 lb. per cu. ft., while with the zinc creosote emulsion the injection averaged 2.61 lb. of creosote and 0.49 lb. of zinc per cu. ft.

The piles subjected to preservative treatment during the year were principally Douglas fir and Southern yellow pine with a small amount of oak. In treating piles with creosote, water-gas tar and paving oil an average injection of 13.79 lb. per cu. ft. was obtained, while in the case of zinc chloride the average absorption was 0.46 lb. per cu. ft., and in the case of the emulsion it amounted to 2.5 lb. of creosote and 0.51 lb. of zinc per cu. ft.

A SCHEME has been prepared for converting the section of the New York subway between Forty-second street and Times Square into a moving platform. It is proposed to provide four moving platforms. The nearest will run at walking speed, the second at 6 miles per hour, the third at 9 miles per hour, and the furthest at 12 miles per hour. The last will be 5 ft. 10 in. wide and have seats, each to hold three persons. The other platforms will be 2 ft. wide.

Director General Reports on Railroad Wages

11.2 Per Cent More Employees Worked 3.9 Per Cent Less Hours—Unit Wage and Monthly Earning Compared

DIRECTOR GENERAL HINES on November 14 submitted to the president of the Senate the following letter and accompanying statements in response to the resolution of the Senate of August 20, calling for information as to the amount of railroad labor, its rates of pay and its average compensation in December, 1917, and in each month from January to July, 1919:

The amount of labor, measured by the time worked and paid for, for which the United States Railroad Administration has paid in months from January to July, 1919, as compared with the month of December, 1917, is listed in the table at the right.

In considering this comparison, it is important to bear in mind that the amount of labor paid for in December, 1917, was reduced because of the extreme cold weather, which resulted in the suspension of much outside work and because the competition of war industries, generally

		Total number of hours worked	Increase in percentage as compared with December, 1917
1917	December	434,252,656	.....
1919	January	440,699,731	1.5% increase
	February	375,204,721	13.6% decrease
	March	398,689,315	8.2% decrease
	April	393,578,428	9.4% decrease
	May	409,674,681	5.7% decrease
	June	396,385,011	8.7% decrease
	July	417,182,290	3.9% decrease

AVERAGE MONTHLY COMPENSATION AND AVERAGE DAYS OR HOURS WORKED PER EMPLOYEE
Class 1 Roads Under Federal Control
July, 1919, Compared with December, 1917, and Monthly Average for Calendar Year, 1917

Item No.	Class of Employee	Average Monthly Compensation Per Employee: July, 1919	December, 1917	Calendar year 1917	Per cent increase July, 1919, over: December, 1917	Monthly average for calendar year, 1917	Average hours worked per employee: July, 1919	December, 1917
1 and 2	General officers	$359.60	$390.26	$379.84	*d* 7.9	*d* 5.3	*d* 27.7	*d* 27.9
3 and 4	Division officers	245.47	178.23	174.92	37.7	40.3	*d* 29.4	*d* 30.6
5 and 6	Clerks (except No. 37)	111.83	79.58	77.63	40.5	44.1	213	230
7	Messengers and attendants	70.44	44.26	42.86	59.2	64.3	*d* 28.1	*d* 27.5
8	Assistant engineers and draftsmen	138.96	104.74	95.40	32.7	45.7	*d* 26.6	*d* 26.7
9	M. W. & S. foremen (excluding Nos. 10 and 28)	142.68	106.90	99.74	33.5	43.1	*d* 27.2	*d* 29.1
10	Section foremen	108.18	78.21	73.84	38.3	46.5	*d* 28.2	*d* 28.9
11	General foremen—M. E. department	259.51	135.69	138.37	91.3	87.5	*d* 29.9	*d* 27.1
12	Gang and other foremen—M. E. department	195.41	122.26	112.64	59.8	73.5	*d* 28.4	*d* 28.9
13	Machinists	142.18	126.11	116.20	12.7	22.4	206	248
14	Boiler makers	147.74	127.67	118.76	15.7	24.4	213	253
15	Blacksmiths	136.35	110.92	104.84	22.9	30.1	200	224
16	Masons and bricklayers	115.37	80.88	77.64	42.6	48.6	202	223
17	Structural iron workers	131.58	86.17	84.53	52.7	55.7	201	226
18	Carpenters	117.30	81.70	78.35	43.6	49.7	201	234
19	Painters and upholsterers	118.64	85.89	79.22	38.1	49.8	194	225
20	Electricians	143.97	93.59	85.84	53.8	67.7	*d* 26.8	*d* 29.0
21	Air-brake men	132.37	100.59	90.53	31.6	46.2	217	280
22	Car inspectors	145.71	106.03	95.02	37.4	53.3	239	328
23	Car repairers	123.33	87.77	82.81	40.5	48.9	209	240
24	Other skilled laborers	132.15	95.00	88.77	39.1	48.9	213	254
25	Mechanics' helpers and apprentices	95.13	74.17	68.52	28.3	38.8	208	251
26	Section men	77.80	53.48	50.09	45.5	55.3	207	251
27	Other unskilled laborers	87.60	63.77	57.94	37.4	51.2	215	260
28	Foremen of construction gangs and work trains	128.04	101.71	85.91	25.9	49.0	226	316
29	Other men in construction gangs and work trains	81.84	59.24	51.95	38.1	57.5	206	248
30	Traveling agents and solicitors	177.60	154.29	136.82	15.1	29.8	*d* 25.8	*d* 28.5
31	Employees in outside agencies	140.85	119.72	88.85	17.6	58.5	*d* 27.8	*d* 32.5
32	Other traffic employees	165.40	125.16	110.83	32.2	49.2	*d* 27.0	*d* 24.8
33	Train dispatchers and directors	288.13	155.66	150.13	46.6	52.0	242	258
34	Telegraphers, telephoners and block operators	129.46	80.59	76.39	60.6	69.5	234	245
35	Telegraphers and telephoners operating interlockers	131.43	85.48	79.71	53.8	64.9	232	252
36	Levermen (non-telegraphers)	125.28	74.24	70.99	68.8	76.5	240	283
37	Telegrapher-clerks	129.23	80.23	74.35	61.1	73.8	237	273
38	Agent-telegraphers	139.64	87.51	79.06	59.6	76.6	244	305
39	Station agents (non-telegraphers)	139.50	92.36	86.52	51.0	61.2	*d* 29.5	*d* 31.4
40	Station masters and assistants	161.01	109.07	107.66	47.6	49.6	*d* 30.3	*d* 31.8
41	Station service employees (except Nos. 5, 6, 37, 38, 39, 40 and 66)	93.52	64.75	59.14	44.4	58.1	223	273
42	Yardmasters	247.39	157.98	150.19	56.6	64.7	*d* 30.3	*d* 32.4
43	Yardmasters' assistants (not yard clerks)	216.17	136.02	142.12	58.9	52.1	*d* 29.7	*d* 30.4
44	Yard engineers and motormen	175.14	148.62	149.16	17.8	17.4	237	275
45	Yard firemen and helpers	126.03	92.15	91.10	36.8	38.3	231	271
46	Yard conductors (or foremen)	159.09	129.68	132.03	22.7	20.5	235	269
47	Yard brakemen (switchmen or helpers)	141.51	111.85	110.55	26.5	28.0	224	258
48	Yard switch tenders	120.76	75.44	70.52	60.1	71.2	239	317
49	Other yard employees	92.12	60.70	55.54	51.8	65.9	243	322
50	Hostlers	132.73	110.80	103.73	19.8	28.0	240	337
51	Enginehouse-men	104.55	76.83	69.56	36.1	50.3	250	318
52	Road freight engineers and motormen	223.86	190.09	175.55	17.8	27.5	242	269
53	Road freight firemen and helpers	156.72	114.20	106.11	37.2	47.7	233	250
54	Road freight conductors	194.73	163.90	154.50	18.8	26.0	256	287
55	Road freight brakemen and flagmen	145.70	106.52	100.13	36.8	45.5	250	276
56	Road passenger engineers and motormen	256.41	201.50	186.02	27.3	37.8	220	225
57	Road passenger firemen and helpers	184.19	124.85	112.79	47.5	63.3	216	223
58	Road passenger conductors	226.20	171.47	163.82	31.9	38.1	235	232
59	Road passenger baggagemen	162.33	102.96	97.92	57.7	65.8	240	245
60	Road passenger brakemen and flagmen	151.43	98.97	91.09	53.0	66.2	227	234
61	Other road train employees	120.09	74.72	68.05	60.7	76.5	239	241
62	Crossing flagmen and gatemen	78.68	48.29	44.59	62.9	76.5	*d* 30.3	*d* 30.5
63	Drawbridge operators	98.75	69.94	63.43	41.2	55.7	*d* 31.0	*d* 33.0
64	Floating equipment employees	135.66	92.57	77.36	46.5	75.4	265	305
65	Express service employees	.....	.....	.....	.....	.....	.....	.....
66	Policemen and watchmen	117.79	78.44	74.66	50.2	57.8	*d* 30.2	*d* 31.7
67	Other transportation employees	97.52	77.82	70.41	25.3	38.5	*d* 25.5	*d* 32.0
68	All other employees	82.91	58.29	55.23	42.2	50.1	*d* 28.2	*d* 29.3
69	Totals	$119.38	$89.83	$83.64	32.9	42.7	...	...

"*d*" and italics—decrease.

NOTE.—*d* indicates days worked.

paying higher wages, and the demands of military and naval service created a scarcity of labor which prevented the obtaining of all the labor which could be worked even in such cold weather. On the contrary, in January, 1919, the winter was exceptionally mild and made practically the prosecution of an unusual amount of outside work and the labor supply was relatively greater because of the cessation of war activities and because of higher wages.

The total number of employees in December, 1917, and in the months of 1919 from January to July is as follows:

		Increase in percentages as compared with December, 1917
1917—December	1,703,748	.....
1919—January	1,848,774	8.5%
February	1,840,197	8.0%
March	1,823,220	7.0%
April	1,830,093	7.4%
May	1,864,561	9.4%
June	1,863,741	9.4%
July	1,894,287	11.2%

It will be observed that while the amount of labor which the government has paid for, as measured by the hours paid for, has decreased, there has been an increase in the number of employees. This is due to the fact that the general establishment of the eight-hour basis has necessitated a larger number of employees to perform the same number of hours service. In December, 1917, prior to the adoption of this basis, many employees worked unduly long hours. This is brought out by the attached comparison between hours worked per employee, by classes, in December, 1917, and July, 1919.

A comparison as to the increase in the average compensation of employees in December, 1917, as compared with conditions established up to July, 1919, is given below:

	July, 1919	December, 1917
Number of employees	1,894,287	1,703,748
Days worked	6,122,435	5,819,486
Hours worked	368,202,810	387,696,788
Total compensation	$226,140,935	$153,039,988
Average compensation per day for employees reported on a daily basis	4.93	3.52
Average compensation per hour for employees reported on an hourly basis	.532	.342

Per cent of increase for July, 1919, over December and calender year 1917, 35.3 per cent.

Number of Days or Hours Worked by Employees

Class I, Roads Under Federal Control, December, 1917, and January to July, 1919, inclusive

Item No.	Class of Employee	December, 1917		January, 1919		Februbary, 1919		March, 1919	
		Number of days	Number of hours	Number of days	Number of hours	Number of days	Number of hours	Number of days	Number of hours
1 and 2	General officers	208,056	.....	193,416	.....	182,704	.....	203,564	.....
3 and 4	Division officers	340,346	.....	362,983	.....	334,238	.....	362,858	.....
5 and 6	Clerks (except No. 37)	.....	44,805,376	.....	48,624,775	.....	42,918,612	.....	45,765,746
7	Messengers and attendants	242,015	.....	281,871	.....	261,445	.....	274,191	.....
8	Assistant engineers and draftsmen	288,585	.....	289,067	.....	259,552	.....	275,755	.....
9	M. W. & S. foremen (excluding Nos. 10 and 28)	226,174	.....	237,528	.....	206,634	.....	220,437	.....
10	Section foremen	1,138,383	.....	1,178,324	.....	1,043,068	.....	1,130,404	.....
11	General foremen, M. E department	45,168	.....	53,019	.....	43,808	.....	50,793	.....
12	Gang and other foremen, M. E. Department	532,500	.....	648,421	.....	593,674	.....	656,298	.....
13	Machinists	.....	10,651,011	.....	12,592,995	.....	10,984,995	.....	11,679,304
14	Boiler makers	.....	3,411,669	.....	4,078,782	.....	3,577,035	.....	3,778,833
15	Blacksmiths	.....	1,878,208	.....	2,074,276	.....	1,798,094	.....	1,883,839
16	Masons and bricklayers	.....	297,177	.....	269,289	.....	199,306	.....	220,421
17	Structural ironworkers	.....	192,511	.....	153,649	.....	109,736	.....	131,144
18	Carpenters	.....	11,883,446	.....	12,131,975	.....	10,421,794	.....	10,749,709
19	Painters and upholsterers	.....	2,223,531	.....	2,574,912	.....	1,980,469	.....	2,103,229
20	Electricians	287,368	.....	352,501	.....	313,360	.....	346,206	.....
21	Air-brake men	.....	1,636,340	.....	1,587,555	.....	1,406,559	.....	1,494,573
22	Car inspectors	.....	6,811 054	.....	6,336,603	.....	5,537,436	.....	5,675,237
23	Car repairers	.....	15,948,946	.....	18,236,118	.....	14,964,963	.....	15,610,970
24	Other skilled laborers	.....	14,030,197	.....	13,205,187	.....	11,332,593	.....	11,834,188
25	Mechanics' helpers and apprentices	.....	23,097,913	.....	24,801,164	.....	21,637,057	.....	22,578,405
26	Section men	.....	53,320,778	.....	59,495,365	.....	48,423,402	.....	53,036,684
27	Other unskilled laborers	.....	27,026,316	.....	29,444,243	.....	25,154,498	.....	26,210,592
28	Foremen of construction gangs and work trains	.....	707,328	.....	518,930	.....	444,767	.....	400,328
29	Other men in construction gangs and work trains	.....	7,119,116	.....	6,697,610	.....	5,603,575	.....	5,524,554
30	Traveling agents and solicitors	149,383	.....	33,262	.....	31,352	.....	34,092	.....
31	Employees in outside agencies	43,579	.....	34,133	.....	26,873	.....	27,966	.....
32	Other traffic employees	12,623	.....	10,200	.....	9,644	.....	10,780	.....
33	Train dispatchers and directors	.....	1,328,309	.....	1,327,900	.....	1,194,465	.....	1,310,541
34	Telegraphers, telephoners and block operators	.....	5,136,759	.....	5,222,225	.....	4,460,612	.....	4,903,408
35	Telegraphers and telephoners operating interlockers	.....	1,910,410	.....	1,893,374	.....	1,717,734	.....	1,834,239
36	Levermen (non-telegraphers)	.....	993,865	.....	969,160	.....	880,996	.....	968,258
37	Telegrapher-clerks	.....	3,052,479	.....	2,820 176	.....	2,514,293	.....	2,689,739
38	Agent telegraphers	.....	5,848,196	.....	5,158,275	.....	4,318,879	.....	4,654,494
39	Station agents (non-telegraphers)	452,606	.....	441,531	.....	381,266	.....	408,846	.....
40	Station masters and assistants	19,520	.....	19,518	.....	19,285	.....	19,558	.....
41	Station service employees (except Nos. 5, 6, 37, 38, 39, 40 and 66)	.....	30,206,592	.....	24,834,419	.....	21,022,046	.....	23,078,699
42	Yardmasters	124,312	.....	126,571	.....	110,951	.....	118 042	.....
43	Yardmasters' assistants (not yard clerks)	93,484	.....	109,475	.....	89,524	.....	94,892	.....
44	Yard engineers and motormen	.....	5,593,160	.....	4,867,441	.....	4,017,528	.....	4,260,727
45	Yard firemen and helpers	.....	5,639,441	.....	4,889,536	.....	3,996,772	.....	4,236,463
46	Yard conductors (or foremen)	.....	5,472,878	.....	4,800,808	.....	3,961,781	.....	4 100,946
47	Yard brakemen (switchmen or helpers)	.....	13,139,861	.....	11,749,143	.....	9,466,338	.....	9,790,417
48	Yard switch tenders	.....	1,534,079	.....	1.535.967	.....	1,364,800	.....	1,447.634
49	Other yard employees	.....	1,180,765	.....	1,252.221	.....	1,127,846	.....	1,155,690
50	Hostlers	.....	2.859,587	.....	2,972,926	.....	2,482,098	.....	2,748,388
51	Enginehouse men	.....	19,191,693	.....	21,425.629	.....	17.756.949	.....	18,431,070
52	Road freight engineers and motormen	.....	8,849,605	.....	7.749.304	.....	6,263.527	.....	6,556,893
53	Road freight firemen and helpers	.....	8.896,511	.....	7,823,401	.....	6,257,073	.....	6,580,927
54	Road freight conductors	.....	7,556.378	.....	6,580,869	.....	5,359,094	.....	5,620,466
55	Road freight brakemen and flagmen	.....	18.029.699	.....	15.738.811	.....	12.915,403	.....	13,481,742
56	Road passenger engineers and motormen	.....	2,877,377	.....	2,724,306	.....	2,347,697	.....	2,565,925
57	Road passenger firemen and helpers	.....	2,778,482	.....	2,636,626	.....	2,255,029	.....	2,463,100
58	Road passenger conductors	.....	2,460,948	.....	2,337,848	.....	2,082,034	.....	2,268.753
59	Road passenger baggagemen	.....	1,352,449	.....	1,254,982	.....	1,140,051	.....	1,256,022
60	Road passenger brakemen and flagmen	.....	3,356.350	.....	3,200,223	.....	2,845.733	.....	3,114,553
61	Other road train employees	.....	892.522	.....	881,618	.....	726,998	.....	804.316
62	Crossing flagmen and gatemen	474,942	.....	663,069	.....	623,223	.....	671,742	.....
63	Drawbridge operators	41,803	.....	52,121	.....	42,258	.....	46,726	.....
64	Floating equipment, employees	.....	2,517,476	.....	2,273,867	.....	2,089.886	.....	1,946,109
65	Express service, employees	.....	.....	.....	.....	.....	.....	.....	.....
66	Policemen and watchmen	389,373	.....	331,808	.....	302,594	.....	331,998	.....
67	Other transportation employees	175.669	.....	209,510	.....	174,057	.....	162,932	.....
68	All other employees	533,597	.....	528,578	.....	468,586	.....	519,675	.....
69	Totals	5,819,486	387,696,788	6,156,906	391,444,483	5,518,096	331,059,953	5,967,755	350,947,275

It is only fair to point out that this showing does not completely reflect the condition as it exists at this date, because in order to equalize the shop crafts with what has been done for other classes of railroad employees, it was found necessary in August, 1919, to make increases in their wages effective May 1, 1919. These, however, could not be included in August or the preceding months affected, but it is believed that if they could have been included in the accounts for July, 1919, the average percentage of increase in the unit of compensation for all railroad employees for the month of July, 1919, as compared with the month of December, 1917, would have been 56 per cent instead of 53 per cent.

It is important to point out, however, that the individual railroad employee did not get in the month of July, 1919, an actual increase in his earnings equal to the increase above indicated in his rate of pay. This is due chiefly to the introduction of the eight-hour day, as a result of which the employee did not on an average work as many hours in July, 1919, as he did in December, 1917. This is emphasized by the attached statement, above referred to, showing by classes of employees the average hours per employee worked in December, 1917, and in July, 1919.

On the other hand, a comparison with December, 1917, is not conclusive, because in that month employees were working a great deal more overtime than they were working on an average during the year 1917, and also many employees had received increases in the latter part of the year 1917, which were not enjoyed throughout the year.

In order to bring out these comparisons (and taking into consideration, as far as it can be done at present upon an estimate, the readjustments recently made to the shop crafts —which were retroactive to May 1, 1919), a comparison of average monthly compensation is as follows:

	July, 1919	December, 1917	Calendar year 1917
Average monthly compensation per employee for all employees, including an estimate of the effect of the increases recently granted to the shopmen	$121.50	$89.83	$83.64
Per cent of increase for July, 1919, over December and calendar year 1917	.....	35.3%	45.3%

The figures as they actually appear in the accounts, with-

Item No.	Class of Employee	April, 1919		May, 1919		June, 1919		July, 1919	
		Number of days	Number of hours	Number of days	Number of hours	Number of days	Number of hours	Number of days	Number of hours
1 and 2	General officers	199,727	.....	204,727	.....	200,497	.....	205,808	.....
3 and 4	Division officers	355,484	.....	365,650	.....	354,770	.....	367,898	.....
5 and 6	Clerks (except No. 37)	.....	45,239,362	.....	45,888,968	.....	44,636,991	.....	46,184,264
7	Messengers and attendants	269,707	.....	275,131	.....	266,247	.....	284,324	.....
8	Assistant engineers and draftsmen	277,704	.....	278,035	.....	264,443	.....	275,949	.....
9	M. W. & S. foremen (excluding Nos. 10 and 28)	213,821	.....	223,285	.....	215,079	.....	220,931	.....
10	Section foremen	1,118,197	.....	1,149,053	.....	1,069,281	.....	1,154,790	.....
11	General foremen, M. E. department	49,432	.....	49,497	.....	49,476	.....	51,039	.....
12	Gang and other foremen, M. E. department	648,615	.....	659,346	.....	647,830	.....	670,200	.....
13	Machinists	.....	11,504,967	.....	11,810,943	.....	11,467,285	.....	12,178,870
14	Boiler makers	.....	3,695,161	.....	3,815,911	.....	3,694,663	.....	3,916,276
15	Blacksmiths	.....	1,907,792	.....	1,901,339	.....	1,844,712	.....	1,981,134
16	Masons and bricklayers	.....	196,309	.....	212,304	.....	213,236	.....	239,603
17	Structural ironworkers	.....	137,573	.....	113,267	.....	126,836	.....	135,541
18	Carpenters	.....	10,327,132	.....	10,348,258	.....	9,904,552	.....	10,209,395
19	Painters and upholsterers	.....	2,169,426	.....	2,343,755	.....	2,310,807	.....	2,450,992
20	Electricians	342,039	.....	344,555	.....	341,953	.....	353,157	.....
21	Air-brake men	.....	1,562,933	.....	1,608,966	.....	1,575,594	.....	1,685,990
22	Car inspectors	.....	5,513,019	.....	5,709,398	.....	5,434,258	.....	5,794,623
23	Car repairers	.....	14,626,722	.....	15,114,145	.....	15,139,816	.....	16,793,844
24	Other skilled laborers	.....	11,469,089	.....	11,784,411	.....	11,225,333	.....	11,990,522
25	Mechanics' helpers and apprentices	.....	21,692,103	.....	21,945,320	.....	20,939,083	.....	22,341,446
26	Section men	.....	57,564,662	.....	62,072,471	.....	58,225,314	.....	59,165,115
27	Other unskilled laborers	.....	24,316,444	.....	25,183,317	.....	24,339,750	.....	25,525,610
28	Foremen of construction gangs and work trains	.....	385,573	.....	414,995	.....	409,043	.....	435,504
29	Other men in construction gangs and work trains	.....	5,495,415	.....	6,203,812	.....	6,094,356	.....	6,236,869
30	Traveling agents and solicitors	35,853	.....	35,295	.....	33,547	.....	35,014	.....
31	Employees in outside agencies	26,965	.....	25,804	.....	25,361	.....	25,738	.....
32	Other traffic employees	10,160	.....	11,261	.....	10,036	.....	11,519	.....
33	Train dispatchers and directors	.....	1,266,506	.....	1,303,775	.....	1,273,023	.....	1,310,770
34	Telegraphers, telephoners and block operators	.....	4,686,721	.....	4,852,013	.....	4,694,573	.....	4,880,990
35	Telegraphers and telephoners operating interlockers	.....	1,767,716	.....	1,826,077	.....	1,818,478	.....	1,911,941
36	Levermen (non-telegraphers)	.....	913,078	.....	921,364	.....	889,250	.....	941,603
37	Telegrapher-clerks	.....	2,605,280	.....	2,678,429	.....	2,576,838	.....	2,697,274
38	Agent-telegraphers	.....	4,552,146	.....	4,628,131	.....	4,412,929	.....	4,642,576
39	Station agents (non-telegraphers)	397,593	.....	406,522	.....	394,294	.....	409,301	.....
40	Station masters and assistants	18,961	.....	18,659	.....	18,190	.....	18,304	.....
41	Station service employees (except Nos. 5, 6, 37, 38, 39, 40 and 66)	.....	23,282,722	.....	24,465,857	.....	24,167,491	.....	25,727,848
42	Yardmasters	111,701	.....	114,803	.....	113,402	.....	118,470	.....
43	Yardmasters' assistants (not yard clerks)	89,051	.....	87,983	.....	88,355	.....	92,769	.....
44	Yard engineers and motormen	.....	4,113,141	.....	4,288,827	.....	4,221,025	.....	4,548,628
45	Yard firemen and helpers	.....	4,080,644	.....	4,253,900	.....	4,169,747	.....	4,515,982
46	Yard conductors (or foremen)	.....	3,950,611	.....	4,092,512	.....	4,086,242	.....	4,410,928
47	Yard brakemen (switchmen or helpers)	.....	9,465,557	.....	9,810,697	.....	9,791,973	.....	10,702,970
48	Yard switch tenders	.....	1,413,867	.....	1,482,802	.....	1,414,471	.....	1,466,045
49	Other yard employees	.....	1,094,018	.....	1,121,966	.....	1,103,666	.....	1,141,541
50	Hostlers	.....	2,518,097	.....	2,563,185	.....	2,503,726	.....	2,563,346
51	Enginehouse men	.....	17,297,610	.....	17,660,475	.....	16,551,016	.....	17,156,217
52	Road freight engineers and motormen	.....	6,378,342	.....	6,777,663	.....	6,732,136	.....	7,366,429
53	Road freight firemen and helpers	.....	6,399,224	.....	6,824,748	.....	6,800,513	.....	7,359,532
54	Road freight conductors	.....	5,454,037	.....	5,915,073	.....	5,766,293	.....	6,276,685
55	Road freight brakemen and flagmen	.....	13,179,768	.....	14,186,772	.....	13,967,199	.....	15,147,345
56	Road passenger engineers and motormen	.....	2,543,300	.....	2,653,495	.....	2,611,935	.....	2,804,575
57	Road passenger firemen and helpers	.....	2,440,253	.....	2,541,526	.....	2,510,448	.....	2,678,172
58	Road passenger conductors	.....	2,247,678	.....	2,364,492	.....	2,345,072	.....	2,504,709
59	Road passenger baggagemen	.....	1,215,378	.....	1,272,958	.....	1,259,796	.....	1,362,304
60	Road passenger brakemen and flagmen	.....	3,143,919	.....	3,329,657	.....	3,321,208	.....	3,544,158
61	Other road train employees	.....	762,651	.....	781,402	.....	784,196	.....	816,184
62	Crossing flagmen and gatemen	660,445	.....	693,947	.....	670,016	.....	699,031	.....
63	Drawbridge operators	49,597	.....	50,856	.....	49,576	.....	51,761	.....
64	Floating equipment, employees	.....	2,149,937	.....	2,317,097	.....	2,336,726	.....	2,458,460
65	Express service, employees	.....	.....	.....	.....	.....	.....	.....	.....
66	Policemen and watchmen	326,210	.....	340,090	.....	335,165	.....	348,746	.....
67	Other transportation, employees	138,268	.....	147,219	.....	140,565	.....	139,237	.....
68	All other employees	517,038	.....	554,308	.....	548,581	.....	588,449	.....
69	Totals	5,856,568	346,725,884	6,036,026	361,386,473	5,836,664	349,691,699	6,122,435	368,202,810

out taking into consideration the readjustments with the shop crafts, are as follows:

	July, 1919	December, 1917	Calendar year 1917
Average monthly compensation per employee for all employees	$119.38	$89.83	$83.64
Per cent of increase for July, 1919, over December and calendar year 1917	.....	32.9%	42.7%

While the above comparisons and those in the attached statements are made for the periods specified in the Senate resolution, it is important to remark that the view is generally held both by railroad officers and by employees that the wage statistics of the past are not entirely reliable. This is due to the fact that the subject of wage statistics is a matter of more recent development in railroad accounting than other sorts of statistics which have been compiled for a longer period and with greater care. For example, the month of December, 1917, was the first month for which the compilation of wage statistics was required, all former requirements of the Interstate Commerce Commission having been based upon annual requirements. There has been a gradual improvement in the accuracy with which these reports have been made and it is believed that the most recent reports are substantially more accurate than the reports for December, 1917, or for the calendar year 1917, with which comparisons are here attempted.

The Senate resolution calls for the information stated separately as to different classes of railroad employees and statements as below inumerated are attached hereto. It is very important, however, to call attention to the fact that the comparisons between the average compensation for individual classes of employees in 1919 with the single month of December, 1917, or, indeed, with the entire year of 1917, is misleading. To a considerable extent same classes of employees had, prior to December, 1917, obtained reductions in hours (which resulted in their average compensation per hour being substantially increased) or increases in rates of pay, or both, whereas other classes of employees secured corresponding treatment only after December, 1917, so that the disparity in the rates of increase of pay for the different classes of employees is not nearly so great as this

EMPLOYEES AND THEIR COMPENSATION
Class 1 Roads, Under Federal Control
July, 1919, Compared with December, 1917

Item No.	Class of Employee	Number of employees		Days worked		Hours worked		Compensation Amount	
		July, 1919	December, 1917	July 1919	December 1917	July 1919	December 1917	July 1919	December 1917
1 and 2	General officers	7,432	7,452	205,808	208,056	.....	.....	$2,672,523	$2,908,207
3 and 4	Division officers	12,511	11,136	367,898	340,346	.....	.....	3,071,053	1,984,738
5 and 6	Clerks (except No. 37)	216,764	195,097	.....	.....	46,184,264	44,805,376	24,241,123	15,526,105
7	Messengers and attendants	10,122	8,810	284,324	242,015	.....	.....	712,962	389,948
8	Assistant engineers and draftsmen	10,370	10,810	275,949	288,585	.....	.....	1,441,030	1,132,279
9	M. W. & S. foremen (excluding Nos. 10 and 28)	8,119	7,786	220,931	226,174	.....	.....	1,158,393	832,296
10	Section foremen	40 899	39,443	1,154,790	1,138,383	.....	.....	4,424,347	3,084,905
11	General foremen, M. E. department	1,707	1,665	51,039	45,168	.....	.....	442,981	225,917
12	Gang and other foremen, M. E. department	23,592	18,429	670,200	532,500	.....	.....	4,610,063	2,253,167
13	Machinists	59,067	42,973	.....	.....	12,178,870	10,651,011	8,397,900	5,419,490
14	Boiler makers	18,413	13,469	.....	.....	3,916,276	3,411,669	2,720,291	1,719,544
15	Blacksmiths	9,898	8,369	.....	.....	1,981,134	1,878,208	1,349,636	928,293
16	Masons and bricklayers	1,186	1,330	.....	.....	239,603	297,177	136,832	107,576
17	Structural iron workers	673	852	.....	.....	135,541	192,511	88,555	73,420
18	Carpenters	50,854	50,848	.....	.....	10,209,395	11,883,446	5,965,251	4,154,224
19	Painters and upholsterers	12,632	9,878	.....	.....	2,450,992	2,223,531	1,498,650	848,462
20	Electricians	13,200	9,894	353,157	287,368	.....	.....	1,900,387	926,027
21	Air-brake men	7,781	5 846	.....	.....	1,685,990	1,636,340	1,029,975	588,059
22	Car inspectors	24,258	20,763	.....	.....	5,794,623	6,811,054	3,534,628	2,201,447
23	Car repairers	80,417	66,443	.....	.....	16,793,844	15,948,946	9,917,826	5,831,462
24	Other skilled laborers	56,307	55,201	.....	.....	11,990,522	14,030,197	7,440,693	5,244,247
25	Mechanics' helpers and apprentices	107,263	92,018	.....	.....	22,341,446	23,097,913	10,204,313	6,825,060
26	Section men	286,300	212 663	.....	.....	59,165,115	53,320,778	22,274,798	11,372,899
27	Other unskilled laborers	118,932	104,050	.....	.....	25,525,610	27,026,316	10,418,428	6,635,365
28	Foremen of construction gangs and work trains	1,910	2,239	.....	.....	435,504	707,328	244.557	227,718
29	Other men in construction gangs and work trains	30,306	28,651	.....	.....	6,236.869	7,119,116	2,480,285	1,697,182
30	Traveling agents and solicitors	1,355	5.245	35 014	149,383	.....	.....	240.653	809,232
31	Employees in outside agencies	927	1,342	25 738	43.579	.....	.....	130 564	160.659
32	Other traffic employees	426	510	11,519	12.623	.....	.....	70,461	63,831
33	Train dispatchers and directors	5,413	5,158	.....	.....	1,310 770	1,328,309	1.234,867	802,874
34	Telegraphers, telephoners and block operators	20,859	20.975	.....	.....	4,880,990	5,136,759	2.700,463	1,690.418
35	Telegraphers and telephoners operating interlockers	8,243	7,588	.....	.....	1 911.941	1,910,410	1,083,416	648,654
36	Levermen (non-telegraphers)	3,926	3,513	.....	.....	941,603	993,865	491.852	260,794
37	Telegrapher-clerks	11,362	11,178	.....	.....	2,697.274	3,052.479	1,468,318	896,806
38	Agent-telegraphers	19,065	19,149	.....	.....	4,642,576	5,848,196	2,662.214	1,675,803
39	Station agents (non-telegraphers)	13,898	14,411	409,301	452,606	.....	.....	1,938,830	1,330,976
40	Station masters and assistants	605	614	18,304	19.520	.....	.....	97.409	66,970
41	Station service employees (except Nos. 5, 6, 37, 38, 39, 40 and 66)	115,255	110,647	.....	.....	25.727,848	30.206,592	10,778,339	7,164,361
42	Yardmasters	3,905	3.835	118.470	124.312	.....	.....	966,047	605,839
43	Yardmasters' assistants (not yard clerks)	3,122	3,080	92,769	93.484	.....	.....	674,871	418,949
44	Yard engineers and motormen	19.153	20.355	.....	.....	4.548,628	5,593,160	3.354,511	3,025,069
45	Yard firemen and helpers	19,559	20,821	.....	.....	5.515,982	5,639.441	2,465.102	1,918.553
46	Yard conductors (or foremen)	18,785	20,362	.....	.....	4,410.928	5 472,878	2.988,537	2,640,518
47	Yard brakemen (switchmen or helpers)	47,815	50,874	.....	.....	10,702,970	13,139,861	6,766.231	5,690,199
48	Yard switch tenders	6.129	4.841	.....	.....	1.466,045	1,534,079	740,127	365,213
49	Other yard employees	4,705	3,663	.....	.....	1,141.541	1,180,765	433,439	222,327
50	Hostlers	10.687	8,493	.....	.....	2 563,346	2.859,587	1,418,525	941,060
51	Enginehouse men	68,685	60 439	.....	.....	17.156,217	19,191,693	7,180.685	4,643.739
52	Road freight engineers and motormen	30,405	32,923	.....	.....	7 366,429	8.849,605	6.806,390	6,258,403
53	Road freight firemen and helpers	31.608	35.549	.....	.....	7,359,532	8,896,511	4.953,471	4.059,644
54	Road freight conductors	24.501	26,320	.....	.....	6.276,685	7.556,373	4,771,093	4,313,747
55	Road freight brakemen and flagmen	60.525	65 242	.....	.....	15.147.345	18,029.699	8,818 391	6,949.781
56	Road passenger engineers and motormen	12.761	12,826	.....	.....	2.804,575	2,877,377	3.272,012	2.584,447
57	Road passenger firemen and helpers	12,413	12,433	.....	.....	2 678,172	2,778,482	2,286.297	1.552,220
58	Road passenger conductors	10,649	10,607	.....	.....	2 504,709	2,460,948	2,408,764	1,818,760
59	Road passenger baggagemen	5.669	5.532	.....	.....	1,362.304	1,352,449	920.256	569,554
60	Road passenger brakemen and flagmen	15.636	14,362	.....	.....	3,544.158	3,356,350	2,367,684	1,421,430
61	Other road train employees	3,415	3.697	.....	.....	816,184	892,522	410,121	276,235
62	Crossing flagmen and gatemen	23.069	15.569	699,031	474,942	.....	.....	1,815,083	751,899
63	Drawbridge operators	1,669	1,267	51,761	41,803	.....	.....	164,813	88,618
64	Floating equipment, employees	9,288	8,243	.....	.....	2,458,460	2,517,476	1,260,040	763,084
65	Express service employees	.....	.....	.....	.....	.....	.....	.....	.....
66	Policemen and watchmen	11,541	12,275	348.746	389,373	.....	.....	1,359,386	962,869
67	Other transportation employees	5,470	5,492	139,237	175,669	.....	.....	533.415	427,405
68	All other employees	20,876	18,203	588,449	533,597	.....	.....	1,730,778	1,061,011
69	Totals	1,894,287	1,703,748	6,122,435	5,819,486	368,202,810	387,696,788	$226,140,935	$153,039,988

restricted comparison suggests. The records do not indicate the amount of "punitive" overtime, i.e., for which "time and a half" or more was paid, but it is probably true that in December, 1917, numerous classes of employees were working punitive overtime to a larger extent than in July, 1919, and consequently, the increase in rates of pay for these particular classes of employees has been somewhat more than this restricted comparison would indicate. There have also been numerous reclassifications of employees which materially affect the comparisons mentioned.

The statements submitted with the report, which were compiled by the Operating Statistic Section, are as follows:

Schedule 1. Statement for Class I railroads in federal operation showing the number of employees for the months of December, 1917; January, 1919; February, 1919; March, 1919; April, 1919; May, 1919; June, 1919; July 1919.

Schedule 2. Statement for Class I railroads in federal operation showing the total compensation of employees for the same periods covered by Schedule 1.

Schedule 3. Statement for Class I railroads in federal operation showing the number of days of employees reported on a daily basis and the number of hours of employees

Item No.	Class of Employee	Compensation Per day July 1919	Per day December 1917		Per hour July 1919	Per hour December 1917		Per cent Change in unit Compensation
1 and 2	General officers	$12.99	$13.98	...	...	....	..	*d7*
3 and 4	Division officers	8.35	5.83	...	...	....	..	43
5 and 6	Clerks (except No. 37)			...	$0.525	$0.347	..	51
7	Messengers and attendants	...	....	...	$0.252	$0.347	..	56
8	Assistant engineers and draftsmen	5.22	3.92	...	...	....	..	33
9	M. W. & S. foremen (excluding Nos. 10 and 28)	5.24	3.68	...	...	....	..	42
10	Section foremen	3.83	2.71	...	...	....	..	41
11	General foremen, M. E. department	8.68	5.00	...	...	....	..	74
12	Gang and other foremen, M. E. Department	6.88	4.23	...	...	....	..	63
13	Machinists	...	....	*.730*	.690	.509	*43*	36
14	Boiler makers	...	....	*.734*	.695	.504	*4F*	38
15	Blacksmiths	...	....	*.734*	.695	.504	*46*	38
16	Masons and bricklayers	...	....	...	.571	.362	..	58
17	Structural iron workers	...	....	...	.653	.381	..	71
18	Carpenters	...	....	*.657*	.584	.350	*88*	67
19	Painters and upholsterers	...	....	*.676*	.611	.382	*77*	60
20	Electricians	.538	3.22	...	...	....	*77*	67
21	Air-brake men	...	....	*.651*	.611	.359	*81*	70
22	Car inspectors	...	....	*.700*	.610	.323	*117*	89
23	Car repairers	...	....	*.663*	.591	.366	*81*	61
24	Other skilled laborers	...	....	...	.621	.374	..	66
25	Mechanics' helpers and apprentices	...	....	...	.457	.296	..	54
26	Section men	...	....	...	.376	.213	..	77
27	Other unskilled laborers	...	....	...	.408	.246	..	66
28	Foremen of construction gangs and work trains	...	....	...	.562	.322	..	75
29	Other men in construction gangs and work trains	...	....	...	.398	.238	..	67
30	Traveling agents and solicitors	6.87	5.42	...	...	...	..	27
31	Employees in outside agencies	5.07	3.69	...	...	...	..	37
32	Other traffic employees	6.12	5.06	...	...	...	..	21
33	Train dispatchers and directors	...	....	...	.942	.604	..	56
34	Telegraphers, telephoners and block operators	...	....	...	.553	.329	..	68
35	Telegraphers and telephoners operating interlockers	...	....	...	.567	.340	..	67
36	Levermen (non-telegraphers)	...	....	...	.522	.262	..	99
37	Telegrapher-clerks	...	....	...	.544	.294	..	85
38	Agent-telegraphers	...	....	....	.573	.285	..	101
39	Station agents (non-telegraphers)	4.74	2.94	...	...	...	..	61
40	Station masters and assistants	5.32	3.43	...	...	...	..	55
41	Station service, employees (except Nos. 5, 6, 37, 38, 39, 40 and 66)	...	....	...	.419	.237	..	77
42	Yardmasters	8.15	4.87	...	...	...	..	67
43	Yardmasters' assistants (not yard clerks)	7.27	4.48	...	...	...	..	62
44	Yard engineers and motormen	...	....	...	737	.541	..	36
45	Yard firemen and helpers	...	....	...	.546	.340	..	61
46	Yard conductors (or foremen)	...	....	...	.678	.483	..	40
47	Yard brakemen (switchmen or helpers)	...	....	...	.632	.433	..	46
48	Yard switch tenders	...	....	...	.505	.238	..	112
49	Other yard employees	...	....	...	.380	.188	..	102
50	Hostlers	...	....	...	553	.329	..	68
51	Enginehouse-men	...	....	...	.419	.242	..	73
52	Road freight engineers and motormen	...	....	...	.924	.707	..	31
53	Road freight firemen and helpers	...	....	...	.673	.456	..	48
54	Road freight conductors	...	....	...	.760	.570	..	33
55	Road freight brakemen and flagmen	...	....	...	.582	.385	..	51
56	Road passenger engineers and motormen	...	....	...	1.167	.898	..	30
57	Road passenger firemen and helpers	...	....	...	.854	.559	..	53
58	Road passenger conductors	...	....	...	.962	.739	..	30
59	Road passenger baggagemen	...	....	...	.676	.421	..	61
60	Road passenger brakemen and flagmen	...	....	...	.668	.424	..	58
61	Other road train employees	...	....	...	.502	.309	..	62
62	Crossing flagmen and gatemen	2.60	1.58	...	...	...	..	65
63	Drawbridge operators	3.18	2.12	...	...	...	..	50
64	Floating equipment, employees	...	....	...	.513	.303	..	69
65	Express service employees	...	....	...	...	....	..	..
66	Policemen and watchmen	3.90	2.47	...	...	...	..	58
67	Other transportation employees	3.83	2.43	...	...	...	..	58
68	All other employees	2.94	1.99	...	...	....	..	48
69	Totals	4.93	3.52	...	.532	.342	..	53

Averages per day and per hour shown opposite class 69, "Totals," are for those classes only whose time worked is reported by days and by hours, respectively.

This report is compiled according to the classification prescribed by the Interstate Commerce Commission in accordance with the Act to regulate commerce, which classification has been the prescribed form since July 1, 1915.

The Interstate Commerce Commission classification sub-divides Items 1 and 2, General Officers, and Items 3 and 4, Division Officers, as between those receiving over and under $3,000 per annum, and sub-divides Items 5 and 6, Clerks, as between those receiving over and under $900 per annum. As the sub-division of these classes on such a basis is purely arbitrary and has no relation to the class of work performed, the sub-divisions are omitted from these reports.

The classification of employees prescribed by the Interstate Commerce Commission and used in the reports does not correspond with the classification of employees used in the wage orders of the Railroad Administration, with the result that employees in a given class (of wage orders) receiving either higher or lower wages may be included with the employees of another class (of the Interstate Commerce Commission classification).

Generally speaking, the averages of a single month present such a restricted view that such figures should be used with the greatest caution.

Speaking specifically, some of the conditions which exemplify this (and it is obviously an exceedingly difficult thing to give in detail all the conditions which would affect the situation) are as follows:

A comparison between the rates of pay in 1919 with the single month of December, 1917, is likely to be misleading because to a considerable extent some classes of employees had, prior to December, 1917, obtained reductions in hours (which resulted in their average compensation per hour being substantially increased) or increases in rates of pay, or both, whereas other classes of employees secured corresponding treatment only after December, 1917, so that the disparity in the rates of increase of pay for the different classes of employees is not nearly so great as this restricted comparison suggests. The records do not indicate separately the amount of punitive overtime, but it is probably true that in December, 1917, numerous classes of employees were working punitive overtime to a larger extent than in July, 1919, and consequently, the increase in rates of pay for those particular classes of employees has been somewhat more than this restricted comparison would indicate.

NOTE.—Italic figures indicate estimate of increase to shopmen in September, 1919, retroactive to May 1, 1919.

d—and *italics*—decrease.

reported on an hourly basis for the same periods covered by Schedule 1.

Schedule 4. Statement for Class I railroads in federal operation showing the average daily compensation for employees reported on a daily basis and the average hourly compensation of employees reported on an hourly basis for the same periods covered by Schedule 1.

Schedule 5. Statement for Class I railroads in federal operation showing the number of employees; number of days worked for employees reported on a daily basis; number of hours worked for employees reported on an hourly basis; total compensation; average compensation per day for employees reported on a daily basis; average compensation per hour for employees reported on an hourly basis for the average for the months of May, June and July, 1919, and for the month of December, 1917, and showing the percentage of increase in the hourly or daily rates comparing the average for the months of May, June and July, 1919, with December, 1917.

Schedule 6. Statement for Class I railroads in federal operation showing the number of employees for the average of the months of May, June and July, 1919; the average monthly compensation per employee for the average for the months of May, June and July, 1919; for December, 1917; and for the calendar year 1917, together with the percentage of increase for the average of May, June and July, 1919, over the month of December, 1917, and the monthly average for the calendar year 1917.

Schedule 7. Statement for Class I railroads showing comparison by classes of employees and hours worked per employee in December, 1917, and in July, 1919.

In addition there were submitted copies of all orders making advances in wages, and of all schedules explanatory thereof, as requested in the resolution.

In connection with the schedules, attention was called to the fact that inasmuch as certain employees are required to be reported only in days worked, it is not possible to show a precise comparison of the hours worked in each month. In order to present an approximately correct comparison the statement of the number of hours worked was made on the assumption of eight hours per day for the employees whose time is reported on a daily basis (amounting to between 10 and 11 per cent of the total hours of all employees). It was also noted that the classification of employees prescribed by the Interstate Commerce Commission and used in the reports does not correspond with the classification used in wage orders of the Railroad Administration. The number of employees as used in the tables refers to the count as of the 16th day of the month except when that day falls on a Sunday or a holiday, in which case the count is made as of the last preceding business day. It is stated that, generally speaking, the averages of a single month present such a restricted view that such figures should be used with the greatest caution.

The total compensation as shown by Schedule 2 was as follows: December, 1917, $153,039,988; January, 1919, $230,800,589; February, 1919, $204,059,816; March, 1919, $211,228,547; April, 1919, $207,120,939; May, 1919, $218,606,040; June, 1919, $215,271,437; July, 1919, $226,140,935. Schedules Nos. 3, 5 and 6 (with which is combined No. 7), are reproduced herewith.

British Export Credits.—The Board of Trade has announced that the British Government is prepared, through the Export Credits Departments, to consider applications for advances up to 80 per cent of the cost of the goods, plus freight and insurance, for goods sold to Finland, the Baltic provinces (Latvia, Esthonia, and Lithuania), Poland, Czecho-Slovakia, Jugo-Slavia and the areas in Russia to which the scheme for insurance against abnormal commercial risks applies.

Orders of the Regional Directors

EXPORT BILLS OF LADING.—Supplement 1 to Circular 286 of the Central Western regional director states revise paragraph 1 in regard to what officers may issue through export bills of lading when traffic originates with Class 1 Federal controlled roads, the bills will be issued only by the initial road-haul carrier. Other Federal controlled roads, or non-Federal controlled roads may, if in a position to do so, issue through bills of lading, or the bills may be issued by their immediate Class 1 connections; or by port terminal lines through their offices at ports of exit. Through export bills of lading will be issued only by the general freight departments or designated general or commercial agents, district freight agents, export agents or division freight agents, unless other arrangements are specifically authorized.

Forest and Field Fires.—The Northwestern regional director, file 9-1-31, directs that rules for the prevention of forest and field fires, contained in the report of the committee on Conservation of Natural Resources, Section 11—Engineering, American Railroad Association, be put in effect on all railroads.

Demurrage on Coal.—The Northwestern regional director, file 35-1-88, quoting Edward Chambers, director of the Division of Traffic, directs that where coal has been held by the Railroad Administration under the order of the Fuel Administrator and has subsequently been released to a consignee, or to the original consignee, the demurrage rules become applicable from the time of such release.

American Red Cross.—The Northwestern regional director, file 33-1-17, urges that every officer and employee be given an opportunity to take a Red Cross membership for the coming year in view of the great humanitarian work the American Red Cross has performed.

Issuance of Through Bills of Lading.—Supplement 2 to Circular 252 of the Southwestern regional director states that on export forest products agents at shipping points will issue a domestic bill of lading and waybill to the point of trans-shipment, with the following notation: "Inland charges to be collected at port of exit." The terminal road at port of exit will issue through export bill of lading for such shipments in exchange for the initial road's domestic bill of lading, but only after collection of the inland charges.

Transportation of Bananas.—The Southwestern regional director, in Circular 253, states that messengers accompanying bananas in transit have no authority to sell or remove any of the freight from any car. Violations of this rule will be prosecuted. It does not conflict with tariff provisions for stopping in transit to partly unload, as stipulated on the way bill.

Interchange Records.—Supplement 1 to Circular 250 of the Southwestern regional director amends paragraph 5 of the original circular to require that the original copy of the monthly statement should be sent to J. W. Smith, manager, Car Hire Bureau, Buffalo, N. Y., instead of to W. G. Kendall, manager, Car Service Section, Washington, D. C.

Permit System for Grain Shipments.—Supplement 16 to Circular 270 of the Central Western regional director states that effective November 10, a blanket basis of permits was substituted for individual permits for shipments of grain from country stations to interior primary markets. Individual permits will be required for shipments between primary markets.

Merchandise.—Car Conservation.—Circular 256 of the Southwestern regional director states that statistics show that practically one half of all the box cars of the entire country are continuously used in handling L. C. L. traffic and that it is of the greatest importance, therefore, that every effort be made to increase the supply of cars for use in handling carload traffic by increasing the number of through merchandise cars.

President Will Address Congress on Railroads

Message on December 2 Related to Domestic Problems and Largely to the Labor Question

WASHINGTON, D. C.

SOME SURPRISE WAS CAUSED by the President's failure to include a discussion of the railroad question in his message to Congress at the beginning of the regular session on December 2, because it was hoped he would make a more definite announcement regarding the return of the railroads than his rather casual statement of last May that they would be relinquished at the end of the year. He said, however, that "in the matter of the railroads and the readjustment of their affairs growing out of federal control," he would address the Congress at a later date. The President will defer this message until after receiving a report from Director General Hines who was to confer with Chairman Cummins and Esch of the Congressional Committees on Interstate Commerce. Mr. Hines talked with Senator Cummins on Wednesday.

While the Railroad Administration has for some time been making active preparations for the return of the roads and plans for the organization it will retain to wind up its affairs, and has even allowed some of its officers who are to return to their former positions an opportunity to devote some time to their own preparations for the return to company management, the officers of the Railroad Administration in referring to the prospective relinquishment have usually been careful to make a reservation for "contingencies" and a plain statement from the President would be accepted with considerable relief.

The message was devoted entirely to domestic problems and repeated recommendations made at the last session, including those urging action to help reduce the cost of living. A large part of the message was devoted to the labor problem, which is of acute interest to the railroads at this time, but the President did not apply his remarks specifically. He particularly emphasized the need for the establishment of some acceptable tribunal for adjusting the differences between capital and labor, but while his statements were in sympathy with many of the principles urged by the labor organizations they can hardly find much support for their opposition to proposed legislation for compulsory arbitration in his statement that "the right of individuals to strike is inviolate and ought not to be interfered with by any process of government." No one is proposing to interfere with "individual" strikes and moreover, the President followed this statement immediately with the declaration that "there is a predominant right and that is the right of the government to protect all of its people and to assert its power and majesty against the challenge of any class."

The president's statement regarding the labor problem was in part as follows:

"No one who has observed the march of events in the last year can fail to note the absolute need of a definite programme to bring about an improvement in the conditions of labor. There can be no settled conditions leading to increased production and a reduction in the cost of living if labor and capital are to be antagonists instead of partners. The failure of other nations to consider this matter in a vigorous way has produced bitterness and jealousies and antagonisms, the food of radicalism. The only way to keep men from agitating against grievances is to remove the grievances. An unwillingness even to discuss these matters produces only dissatisfaction and gives comfort to the extreme elements in our country which endeavor to stir up disturbances in order to provoke governments to embark upon a course of retaliation and repression. The seed of revolution is repression. The remedy for these things must not be negative in character. It must be constructive. It must comprehend the general interest. The real antidote for the unrest which manifests itself is not suppression, but a deep consideration of the wrongs that beset our national life and the application of a remedy.

"Congress has already shown its willingness to deal with these industrial wrongs by establishing the eight-hour day as the standard in every field of labor. It has sought to find a way to prevent child labor. It has served the whole country by leading the way in developing the means of preserving and safeguarding lives and health in dangerous industries. It must now help in the difficult task of finding a method that will bring about a genuine democratization of industry, based upon the full recognition of the right of those who work, in whatever rank, to participate in some organic way in every decision which directly affects their welfare.

"The great unrest throughout the world, out of which has emerged a demand for an immediate consideration of the difficulties between capital and labor, bids us put our own house in order. Frankly, there can be no permanent and lasting settlements between capital and labor which do not recognize the fundamental concepts for which labor has been struggling through the years. The whole world gave its recognition and endorsement to these fundamental purposes in the League of Nations. It is, therefore, the task of the statesmen of this new day of change and readjustment to recognize world conditions and to seek to bring about, through legislation, conditions that will mean the ending of age-long antagonisms between capital and labor and that will hopefully lead to the building up of a comradeship which will result not only in greater contentment among the mass of workmen but also bring about a greater production and a greater prosperity to business itself.

"To analyze the particulars in the demands of labor is to admit the justice of their complaint in many matters that lie at their basis. The workman demands an adequate wage, sufficient to permit him to live in comfort, unhampered by the fear of poverty and want in his old age. He demands the right to live and the right to work amidst sanitary surroundings, both in home and in workshop, surroundings that develop and do not retard his own health and well-being; and the right to provide for his children's wants in the matter of health and education. In other words, it is his desire to make the conditions of his life and the lives of those dear to him tolerable and easy to bear.

"The establishment of the principles regarding labor laid down in the covenant of the League of Nations offers us the way to industrial peace and conciliation. No other road lies open to us. Not to pursue this one is longer to invite enmities, bitterness, and antagonisms which in the end only lead to industrial and social disaster. The unwilling workman is not a profitable servant. An employee whose industrial life is hedged about by hard and unjust conditions, which he did not create and over which he has no control, lacks that fine spirit of enthusiasm and volunteer effort which are the necessary ingredients of a great producing entity.

"Governments must recognize the right of men collectively to bargain for humane objects that have at their base the mutual protection and welfare of those engaged in all industries. Labor must not be longer treated as a commodity. It

must be regarded as the activity of human beings, possessed of deep yearnings and desires. The business man gives his best thought to the repair and replenishment of his machinery, so that its usefulness will not be impaired and its power to produce may always be at its height and kept in full vigor and motion. No less regard ought to be paid to the human machine, which after all, propels the machinery of the world and is the great dynamic force that lies back of all industry and progress. Return to the old standards of wage and industry in employment are unthinkable. The terrible tragedy of war which has just ended and which has brought the world to the verge of chaos and disaster would be in vain if there should ensue a return to the conditions of the past. The right of labor to live in peace and comfort must be recognized by governments and America should be the first to lay the foundation stones upon which industrial peace shall be built.

"Labor not only is entitled to an adequate wage, but capital should receive a reasonable return upon its investment and is entitled to protection at the hands of the government in every emergency. No government worthy of the name can "play" these elements against each other, for there is a mutuality of interest between them which the government must seek to express and to safeguard at all cost.

"The right of individuals to strike is inviolate and ought not to be interferred with by any process of government, but there is a predominant right and that is the right of the government to protect all of its people and to assert its power and majesty against the challenge of any class. The government, when it asserts that right, seeks not to antagonize a class but simply to defend the right of the whole people as against the irreparable harm and injury that might be done by the attempt by any class to usurp a power that only government itself has a right to exercise as a protection to all.

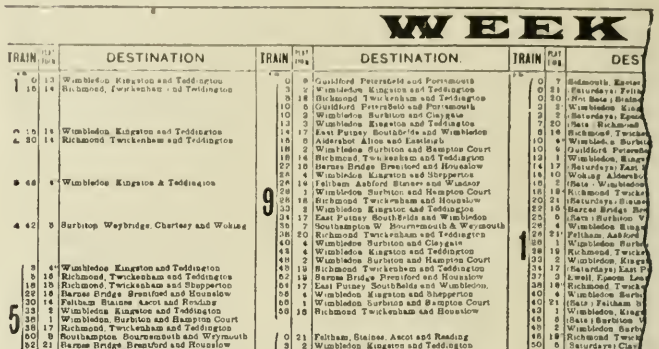
"In the matter of international disputes which have led to war, statesmen have sought to set up as a remedy arbitration for war. Does this not point the way for the settlement of industrial disputes, by the establishment of a tribunal, fair and just alike to all, which will settle industrial disputes which in the past have led to war and disaster?

"There are those in this country who threaten direct action to force their will upon a majority. Russia today, with its blood and terror, is a painful object lesson of the power of minorities. It makes little difference what minority it is; whether capital or labor, or any other class; no sort of privilege will ever be permitted to dominate this country. We are a partnership or nothing that is worth while. We are a democracy, where the majority are the masters, or all the hopes and purposes of the men who founded this government have been defeated and forgotten. In America there is but one way by which great reforms can be accomplished and the relief sought by classes obtained, and that is through the orderly processes of representative government. Those who would propose any other method of reform are enemies of this country. The instrument of all reform in America is the ballot. The road to economic and social reform in America is the straight road of justice to all classes. Men have but to follow this road to realize the full fruition of their objects and purposes. Let those beware who would take the shorter road of disorder and revolution. The right road is the road of justice and orderly process."

FELTON ENGINEERING PRIZE.—Samuel M. Felton, president of the Chicago Great Western Railroad, has established a prize at the Pennsylvania Military College, to be awarded annually to the student who has led his class in the study of engineering subjects for the junior and senior years. The gift will be known as the Felton engineering prize. Mr. Felton was a student in the college from 1868 to 1870.

Departure Poster, Waterloo Station

AT Waterloo station, London, on the London & Southwestern Railway the large bulletin, showing the numbers of the platforms from which passenger trains make their departure, is now printed in a novel style, illustrated in the engraving. The hour numeral being shown in bold figures greatly facilitates the location of the section of the poster which a passenger may desire to consult.



The part here shown includes about one-fourth of that section of the poster devoted to week-day trains.

The list of trains departing between one o'clock and two o'clock in the afternoon is abnormally long because of the inclusion of a number of trains which run only on Saturdays. The list of those between five and six o'clock in the afternoon shows 40 trains, departing from 16 platforms.

Scenes on the Government's Alaska Railroad. Mile 24, Matanuska Branch

Burleson Finds Railway Mail Service "Perfect"

WASHINGTON, D. C.

THE ANNUAL REPORTS of government departments which come out in great volume about December 1 are ordinarily rather dry reading, but occasionally they contain some news. The report of the postmaster general contains an example which will be of great interest to all who have had much experience with the mails during the past year or two. In connection with its discussion of the railway mail pay question and the inauguration of the space basis plan of compensating the railroads which was put in operation on November 1, 1916, the report says:

"So carefully were plans of the post office department worked out and so flexible was the new system of space that during the trying war period, notwithstanding it was subjected to the severest test, when the freight and express agencies broke down and laid embargoes on shipments practically throughout that period, the post office department was the only transportation medium that functioned unrestricted and transported not only the great normal parcel post load but an immense additional parcel post load thrown upon the department through the internal breakdown of these other agencies. This tremendous task was performed without interruption and with dependability and despatch except in so far as it was handicapped by the very irregular train schedules and the reduction of train speed and withdrawal of trains by the railroads as necessitated by the exigencies of war."

The report does not attempt to explain why the freight and express agencies, which were also under government control, broke down in spite of the increases in freight and express rates, but the inference is that the reason why they did not also perform a perfect service was that they were not under the management of the post office department which, the report says, was able to get its railroad transportation, for the fiscal year ending June 30, 1919, for $54,563,534.49 with a largely increased volume of mail, whereas the cost of transporting the mails by railroads for the fiscal year ending June 30, 1916, was $62,176,943.05.

"Notwithstanding the disruption of railroad schedules," the report says, "the railway mail service has functioned perfectly. The proof of this is that there was less unworked mail in the railway mail service during the year than in any previous year of which there is a record and a comprehensive investigation has shown that no serious delay to mail of any character occurred in the railway mail service during the year."

Since the close of the war the department notes a gradual improvement in the operation of railroad train schedules. A number of the trains which were withdrawn or discontinued during the war period have been restored and the schedules of others have been shortened and otherwise modified so as to furnish better connections for the transmission of mails. The passenger service, however, it says, is not as efficient as it was prior to the war and there is still an insistent demand on the part of business interests throughout the country for adequate service. The report adds that the "railroad companies" (*sic*) are now more responsive to the demands of the business interests and the post office department and it is hoped that shorter schedules will be put into effect and additional trains provided as rapidly as circumstances will permit. It should be added, it says, that the postal transportation service is limited to the facilities afforded by passenger train service, over which the post office department has no control.

The space basis plan is described as "a scientific and business-like method of railway mail pay" that "enables the department to pay for what it receives and the railroads to receive what they earn, which was not possible under the old system of average weights taken once in four years. As a result of the advantages of the new system the department was enabled during the war period to remit to the railway companies for other transportation work 72,906,490 car miles per annum no longer needed for mail transportation. This, reduced to a 60-foot car basis, means 15 trains of 10 cars each running every day between Chicago and New York." The report does not say that these 15 trains were actually run nor does it explain how the mail cars which it had previously required the railroads to buy were made useful for the transportation either of troops, coal or other war materials. It says that this great saving was accomplished through scientific loading of cars, rational rearrangement of letter distribution on cars, and the elimination of despatches of mail at periods when such despatches by reason of trains not making direct connections failed to expedite the delivery of mail.

The scope of the authorized service on space and weight basis routes combined, as of June 30, 1919, is stated as follows: Number of routes, 2,897; length of routes, 259,580.7 miles; annual travel (including emergency service), 519,674,375.69 miles; annual rate of expenditure, $51,086,238.68; average rate of cost per mile of route, $196.80; average rate of cost per mile of travel, 9.83 cents.

The annual rate of regular authorizations on space basis routes, which on June 30, 1918, was $52,022,070.43 had on June 30, 1919, been reduced to $49,918,031.16. The lowest annual rate of authorized service since the inauguration of the space basis system — $47,706,842.46 — was reached during the December quarter and, the report says, "it is obvious, therefore, that transportation requirements have been gaged and adjusted to the needs of the service."

In the investigation before the Interstate Commerce Commission as to the proper basis for paying railroads for carrying the mails and as to the fair and reasonable rates for such service, extensive hearings were held in Washington on November 4, 1918, January 7 and from April 8 to May 6, 1919, after which arguments were had before the commission. The report says the department believes that the space basis plan has been thoroughly justified and that its contentions with reference to rates have been sustained. The decision and order of the commission is looked for at an early date.

In describing the method of shipping blue tag mail "by fast freight," the report says that since the cessation of the war activities the railroads have been able to maintain their schedule of fast freight movements with regularity and but few complaints of delays have been received which were attributable to the movement of this matter by freight. Twelve requests were received from publishers for exemption of their publications from the blue tag freight movement, seven of which were approved by the department. The total shipments of periodicals (blue tag matter) by fast freight during the fiscal year consisted of 2,684 carloads at a cost of $866,639.63. This represents a saving to the department as compared with the cost of carrying it in the regular mails of approximately $498,857.65.

In the more detailed part of the report it is admitted that "in common with practically all other activities of a kindred nature, both governmental and private, employing large quantities of labor and dependent upon railroad transportation for success during the war, the postal service unavoidably deteriorated in some localities to a certain extent from the high standard previously maintained. This was a natural and inevitable effect of the war, due to conditions over which the department had no control, including impaired train service, loss of highly trained employees, inability to obtain competent clerical assistance to fill vacancies and delay in the receipt of equipment and supplies. Coupled therewith, in addition to handling a greatly increased volume of postal

business and the provision of adequate postal facilities for the great army camps established throughout the country, the department, owing to its extensive organization, was called upon to perform for other branches of the government innumerable duties wholly foreign to the postal service, but which were vital to the successful prosecution of the war. Notwithstanding these handicaps the postal service was continued throughout the critical period without curtailment or restriction of any character."

Railroad Bill Taken Up in Senate

CONSIDERATION of the Cummins bill for the reorganization of the railroads and for their regulation after their return to private management was begun in the Senate on Tuesday as the unfinished business before the Senate, which gives it the right of way over most other matters.

Chairman Cummins of the committee on interstate commerce, spoke for two afternoons explaining the provisions of the bill and urging the necessity for prompt action upon it in an effort to get it passed before the end of the year. He was frequently interrupted by Senators, although scarcely more than a dozen remained in the chamber, and apparently had considerable difficulty in getting them to understand his explanations of the complicated financial transactions and accounts between the railroad companies and the Railroad Administration. He said that Congress would have to appropriate at least $625,000,000 to settle the accounts of the Railroad Administration and possibly $330,000,000 more if it became necessary to return to the railroads the amount of working capital that was taken over at the beginning of federal control. He also expressed the opinion that 25 years of litigation would be required to settle the claims of the railroads against the government and the government's counter claims. He said the government's actual loss from the operation of the railroads for two years was estimated by the Railroad Administration at $646,000,000, but he would not predict that the amount would be greater after taking into consideration the deferred maintenance. Some roads, he said, would be returned in better condition than when they were taken over, while many would be in worse condition.

Senator Cummins recently filed with the Senate a supplemental report giving estimates and an explanation of the accounts between the government and the railroads by Swagar Sherley, director of the Division of Finance of the Railroad Administration, which included the following statement, giving a comparison of the amounts to be funded and appropriated under the provisions of the Cummins bill, the Esch bill as it was introduced and the plan proposed by the Division of Finance, which was later adopted by the House in an amendment to the Esch bill:

COMPARISON OF AMOUNTS TO BE FUNDED

[(1) Under the provisions of Senate Bill No. 3288. (2) Under the provisions of H. R. 10453 (as introduced). (3) Under the provisions of the section originally submitted by the Division of Finance of the Railroad Administration permitting offsets in accordance with the provisions of the standard contract.]

Class I roads	Senate Bill No. 3288	H. R. 10453	Standard contract
1. Total cost of additions and betterments (excluding allocated equipment	$775,551,000	$775,551,000	775,551,000
2. Amount that may be deducted therefrom account compensation or open account due company.....	223,823,000	133,911,000	415,016,000
3. Net amount of additions and betterments (excluding allocated equipment) to be funded.....	551,728,000	641,640,000	260,535,000
4. Open account due Government, to be evidenced by demand notes	158,884,000	16,876,000	105,646,000
5. Long-term loans (including N. Y., N. H. & H. R. R. and Boston & Maine...	68,375,000	68,375,000	68,375,000
OTHER PROPERTIES			
6. Additions and betterments and open account due Government to be funded	53,000,000	53,000,000	53,000,000
7. Total amount of funded and demand indebtedness (exclusive of allocated equipment)	831,987,000	779,891,000	587,556,000
OTHER REQUIREMENTS			
8. Allocated equipment not covered by equipment trust.	172,345,000	172,345,000	172,345,000
9. Additions and betterments—inland waterways	14,342,000	14,342,000	14,342,000
10. Operating loss 24 months—all properties (note 2).	646,777,000	646,777,000	646,777,000
11. Total requirements.....	1,665,451,000	1,613,355,000	1,421,020,000
12. Appropriations already made	1,250,000,000	1,250,000,000	1,250,000,000
13. Appropriations now required (note 1)	415,451,000	363,355,000	171,000,000

Note 1.—The foregoing estimate is predicated upon the conversion into cash of all assets of the Railroad Administration, other than those shown above as being carried. In point of fact, in dealing with figures as large as these and matters as complicated, it will necessarily follow that there will be a considerable amount of assets of the government subsequently convertible into cash that can not be immediately realized, or even realized contemporaneously with the need of paying out an account of liabilities of the government.

It is safe to estimate that this amount will be at least $200,000,000, so that, practically, to carry out the requirements under the Senate or House bill, or the substitute proposal in accordance with the existing standard contract, the Congress should appropriate a sum at least $200,000,000 in excess of that stated in item 13.

Note 2.—The operating loss shown above represents an estimate for the two years of federal control of the amount by which the net operating income of the railroads fell short of the standard return, estimated amount of interest on accounts due from the government to the railroad companies, and on accounts due from the railroad companies to the government; and is predicated on the present basis of earnings, the latest available figures on an actual basis being for the month of August, 1919, so that for the last four months the figures are necessarily speculative.

The operating loss also includes an estimate of $95,000,000 on account of adjustment of materials and supplies, under provisions of the standard contract. It should be added that beyond these things there are various matters that will reach adjustment, and a status sufficient to enable them to be stated in money only after presentation and determination of claims, respectively, by the government and the railroads, touching many items incident to federal control; so that in particular the items of operating loss must be considered as subject to considerable change in amount because of the subsequent bringing into it of debits and credits which can not now even be approximated.

In describing the proposed plan for the reorganization of the railroads in order to group them into systems of approximately equal earning power, Senator Cummins said he looked forward with very little optimism to private ownership and operation of the railroads but that he proposed to do his best to create conditions under which it could be successful. If the railroads cannot be returned under conditions which will result in an improvement in the system of railroad regulation which will give them a chance for a success, then he would feel obliged to favor government ownership although he was opposed to government ownership because he believed it would result in less efficient operation than private management. But without the provisions of the bill providing for the reorganization of the railroads, he said, it would not be advisable to pass the bill at all because it would be impossible for private management to succeed and the experiment would end in utter collapse.

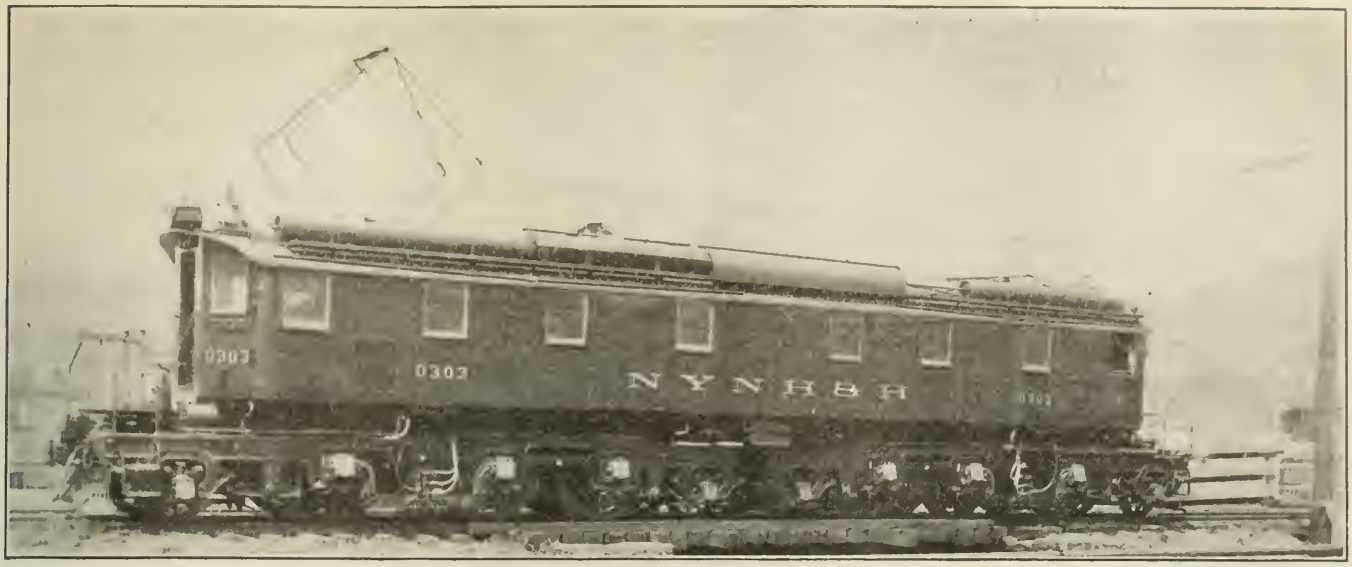
In the House Representative Sims reintroduced his bill providing for an extension of federal control until December 31, 1921, with an added provision to prevent increases in rates being put into effect without consent of Congress.

Chairman Good of the House committee on appropriations is reported to have announced that a bill to provide an appropriation for settling the accounts of the Railroad Administration will probably be considered soon. He estimated the amount at possibly $400,000,000 but expected to confer with Director Sherley of the Division of Finance on the subject.

Congress is being flooded with petitions and resolutions of various lodges of railroad labor organizations protesting against the provisions of the Cummins bill and urging a two-year extension of the present federal control.

Director General Hines conferred with Senator Cummins on railroad legislation on Wednesday.

LUMBER IMPORTS.—During the first eight months of 1919 an aggregate of 760,554,000 board feet of lumber, or an average of about 95,000,000 feet a month, was imported into the United States, duty free, from various foreign countries. Nearly all of this came from British Columbia.



One of the 180-ton Baldwin-Westinghouse Locomotives Built for the New York, New Haven & Hartford

The Use of Electrical Energy on the Railroads

Application of Electricity to the Operation of Railroad Equipment Is Being Greatly Extended

THE MANY APPLICATIONS of electrical machinery to railroad service were treated in five papers presented at the fifteenth annual electrical night of the New York Railroad Club. The program was a departure from the usual one in which electric traction has been the only topic under discussion. The papers presented touched on the use of electricity in all its ramifications.

There were 625 members and visitors present which was the largest attendance on record at any previous meeting except for a patriotic rally last year at which the attendance was about 750. Six papers were prepared, five of which were read. The subject of Electric Shop Power and Light was to have been covered by J. L. Minick, foreman, electrical department, Pennsylvania Lines East, but he was unable to attend the meeting and his paper, prepared in the form of notes, was therefore not transcribed. An abstract of the other five papers follows:

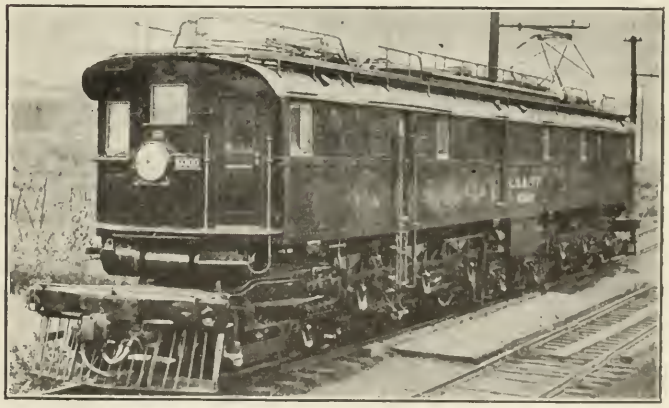
Electrification of Steam Railroads in 1919

By Edwin B. Katte

Chief Engineer Electric Traction, New York Central

First of importance comes the electrical extension of the Chicago, Milwaukee & St. Paul from Othello to Seattle, a distance of 127 miles over the Casacde range of mountains. This work is pratcically complete and is in partial operation, full service is delayed pending the delivery of the passenger locomotives. The system is 3,000 volt direct current with a double overhead working conductor or trolley, exactly the same as the existing and very successful 440 miles now in its third year of operation on the Rocky mountain and Missouri divisions.

The most interesting thing about this extension is two new types of passenger locomotives which are just ready for service. These locomotives are designed to operate a 950-ton train at 65 miles an hour on level track and to average 25 miles an hour over 18 miles of average 2.2 per cent grade and 20 miles of average 2 per cent grade. The Westinghouse Electric & Manufacturing Company will supply ten locomotives, each weighing 275 tons; the drive is through gears and quills by six twin motors of 700 h. p. each. The General Electric Company will supply five locomotives, each weighing 265 tons, and equipped with twelve bi-polar gearless motors of 270 h. p. each. One locomotive of each type has been completed and tested, and the balance of each order is well under way, so that soon after the new year, all 15 of



Baldwin-Westinghouse 275-ton Electric Locomotive. Ten Locomotives of this Type Will Be Used on the Rocky Mountain Electrified Division of the Chicago, Milwaukee & St. Paul

these locomotives will be in service. The table shows the more important and complete data.

	Westinghouse	Electric
Total weight	275 tons	265 tons
Weight on drivers	168 tons	220 tons
Number and horsepower of motors	12-350 H. P.	12-270 H. P.
Total H. P. one hour rating	4,200 H. P.	3,240 H. P.
Tractive effort, one hour rating	66,000 lb.	46,000 lb.

New Haven Passenger Locomotive

While describing passenger locomotives, I must mention the new electric locomotives of the New Haven which are

designed to haul 900-ton trains in express service between New Haven and the Pennsylvania Terminal, New York City, over the Hell Gate Bridge Connecting Railroad, operating either alternating current at 11,000 volt overhead trolley or direct current at 600 volts on the third rail. Each locomotive weighs 180 tons of which 115 tons are on the drivers. The motor equipment consists of six twin motors of 170 h. p. normal rating each. The drive is through gears and quills. The total one hour rating of the motors is 2,000 h. p. and at this rating, the tractive effort is 21,000 lb. The motor armatures are permanently connected in four groups of three in series. Several of these locomotives are now in successful operation.

Pennsylvania Freight Locomotive

A description of recent electric locomotives, be it ever so brief, would be incomplete without recalling that the engineers of the Pennsylvania and the Westinghouse Electric Company have developed and tested an electric freight locomotive weighing 250 tons for service over mountain grades. This locomotive, known as No. 3931, was tried out in June, 1917, and after the usual test track trials was put in regular freight service between Philadelphia and Paoli, where to date it has traveled about 5,000 miles. The electric equipment is designed to operate on 11,000 volts single-phase current, taken from an overhead trolley wire. At each end of the locomotive there are a pair of motors, each driving a jack shaft, the power being transmitted through springs and side rods to a set of three driving axles. The combined one hour rating of the motors is 4,800 h. p. and at this rating the tractive effort is 87,200 lb. The maximum speed is 20.6 miles per hour.

Electrification of the Melbourne Suburban System

Not only in this country have things been happening electrically on steam railroads during the past year, but also in other countries, notably Australia. The electrification of the metropolitan railway system of Melbourne was put in service last May.

In 1908, C. H. Merz, the distinguished English authority on electric railroading, first reported favorably on the electrification of the Melbourne suburban section of the Victorian Railway System. Proposals were received in 1912, based upon a single-phase 11,000 volt alternating current system, and other proposals upon the 1,500 volt direct current system. Under both methods the propulsion current was to be collected from an overhead catenary trolley supported by steel masts or bridges. It is reported that the single-phase scheme would cost 23 per cent more than the direct current, and it was estimated that the single-phase system would cost 21.7 per cent more in annual operation. Hence, the adoption of high voltage direct current. The delay in completing this work is attributed to war conditions.

The service is entirely suburban and the longest individual line extends a distance of 26 miles from the terminal. Trains running beyond the electric zone are drawn by steam locomotives. Multiple unit cars are used and they are of the compartment type with cross seats and wide side doors, following the usual English practice. The installation includes a large modern power station with two boiler rooms, set at right angles to the turbine room, much like the Fisk Street station of the Chicago Edison Company. The ultimate capacity of the turbine room is six 12,000 k. w. generators. This generating station is regarded as the nucleus of a scheme that will make available cheap electrical energy for future industrial development throughout the state of Victoria.

The electric power is transmitted at 20,000 volts. The transmission system is part underground cables and part aerial carried on the steel masts of the trolley system. There are 15 substations in the complete electrification scheme. Of these, seven are now in operation. The substations are in unit form and contain static transformers and rotary converters to change the transmission current from 20,000 volts, three-phases, 25 cycles, to the working current of 1,500 volts direct current on the trolley wire.

Electric Automechanical Freight Handling

By Zenas W. Carter

Secretary-Treasurer, The Material Handling Machinery Manufacture's Association

The railroads are to go back into private hands. The first problem executives and managing heads of all departments of railroading must face and work to solve is that of costs; both cost for materials and costs for manual service. The second problem is labor shortage; the third problem is lack of equipment; the fourth problem is condition of equipment; and last, but not least, is "attitude and productiveness of the entire personnel from the section hand to the directing chief."

Unfortunately, under government ownership and especially on account of the war re-action which is influencing men so strangely, there has been little serious attempt on the part of the operating and working forces to keep down costs. Further, man-power shortage is the natural result of the war. This same cause may be given as the reason for lack of railroad equipment and condition of equipment. Depreciation in productiveness is partly psychological and partly the result of the sudden increase in the distribution and rotation of money among the masses. Rotation of money tends to develop a sense of luxuriousness which directly results in a slacking of effort.

Knowing the problem and the factors of the problem is half the solution, however, and the real work for the railroad executive is the application of methods which will change the factors into a co-ordinated unit. It is possible therefore to visualize electric automechanical freight handling as a very important method which may be used to change the factors of high costs, labor shortage, lack of equipment, etc. We may even conceive that used thus, electricity may be the collodial to improve both the attitude of the individual toward his labor and to increase his productiveness. To visualize this it is only necessary to consider the changes electricity has already made in our daily life, and to make the application specific as it relates to the use of electricity in new ways in railroad progress, it is only necessary to check over the present activity at some few points. For instance, few men in this country, even in the railroad lists, are familiar with the fact that the British Government is right now considering very seriously the elimination of every one of the 74 freight yards and stations in the city of London.

The Gattie System

The idea is to combine the entire interchange of all freight both carload and l. c. l. into one immense central freight station and distributing point. This would be absolutely impossible without electricity as the all-powerful, infinitely flexible force with which to operate. When such an idea is even mentioned the average man simply must smile to himself and look to assure himself that the man who makes the statement is not a victim of shell shock. Nevertheless, this scheme, known as the "Gattie System," has received the consideration of the government and financial and business interests and although an unusual one it is not at all an impractical proposition.

Mr. Gattie has worked out every detail from planning an immense depressed area of 30 acres to be known as the "Crypt" to the detail of the floor section and stalls on each of the planned nine stories of a gigantic fifteen acre freight station. The "Crypt" will be used for all incoming trains

and in making up trains to travel over all lines radiating in and out of London.

Of course the use of gondola cars in England—much smaller cars than in America—has made his plan workable, and he is to utilize the flexibility of electricity throughout to operate 196 powerful overhead electric traveling cranes, supplemented by a system of conveyors. The entire plant being planned to handle heavy loads in bulk. The cranes will lift uniform containers bodily from the platform of a car on the London & Northwestern say, and take it over and place it on the platform of a car on the Great Eastern. This will eliminate the present need for that car to pass through dozens of switches and suffer from four to ten days delay in its transfer across London.

In the handling of l. c. l. freight the containers are lifted bodily and taken to one of the four distributing floors. All goods, as they term freight in England, will then be handled from these central distributing floors to every part of that tremendous station by electrically operated conveying systems, oscalators, elevators, chutes and electric trucks and trailers. Each lot goes from the central distributing floor directly to stalls where are particular containers for each railroad station or group of small stations. These containers filled with goods for one particular town will be lifted from the car platform by local cranes when the train reaches that town. The car platform then empty, may be at once utilized for a local container which has been previously loaded at that station just as we now load a box car with l. c. l., and the local traveling crane will place the container on the empty car platform and the train may then proceed towards its destination.

It will take just a little reflection to completely bring to your mind's view just what is necessary in the way of electric automechanical freight handling equipment to completely handle a system of this kind. Certain it is, however, that it is all-possible through the use of electrically operated shuttle cars, electric traveling cranes, electrically operated conveyors or both the overhead trolley and the belt and apron and gravity types, and automatic elevators, and electric trucks and trailers.

The result of using such a system will be great economy, the release of the great spaces now used for yards and switch storage tracks and freight stations and it is figured that the value of the 74 stations will be much greater than the entire cost of the proposed gigantic station. This would also solve much of the problem of reducing freight handling costs, labor shortage and equipment shortage. In addition the psychological effect upon groups of men operating machinery under sanitary and healthful conditions in all kinds of weather, and with a minimum of physical effort, is certain to be such as to change their very attitude toward this work, while the synchronization of the whole would automatically speed up the productivity of each worker. What is still more important it would tend to give both regularity of hours of toil and continuity of employment, with a resultant uplift in the mental calibre of the men employed which would be incalculable.

Freight Handling System for Cincinnati

Just to prove that electricity right here in the United States is going to help solve the coming problem of the railroad executives and managers and employees of the railroads in the United States—all the railroads of Cincinnati, Ohio, have made arrangements with a private operating company for the installation of a patented system of terminal operation. This company has almost completed all the installation of the electrically operated machinery necessary to carry out its method of handling l. c. l. freight at Cincinnati, and it is my opinion this or a similar system is going to revolutionize the transfer point interchange of l. c. l. freight all over the United States.

Starting from the results which will accrue at Cincinnati and working back to the principles of operation, the facts seem almost as revolutionary at first as the "Gattie System" will be in England. For instance, this Cincinnati plan to handle freight by automechanical methods, using electric and gas motor trucks and machines instead of steam coal, switch engines, engine and switch train crews, and switches, is estimated to release 66,000 freight cars previously used exclusively in "spotting," transfer, trap, or ferry service in the Cincinnati terminal territory. There is problem one, two, three and four met in a way which at first tends to stagger even our American imagination. Cost is reduced; equipment both released and saved from deterioration, and labor shortage overcome.

But that is only part of the saving. The complete motorization of Cincinnati l. c. l. will save the railroads entering that city just about 300,000 switch cut movements per year, and also will extend existing terminal facilities over 30 per cent and make a reduction of 25 cents per ton in handling costs. All at the insignificant cost to the railroads of approximately $150,000. Furthermore, to date over 140,000 tons of general classification merchandise freight have been moved without a single loss or damage claim resulting, and the current movement of all connecting line and substation freight has been greatly facilitated. Thus electricity functions tremendously as a force to help overcome these five problems of railroad management at Cincinnati.

The detail of the operation at Cincinnati is not a new untried scheme as it has been under practical every-day test for almost two years between main and sub-stations of the Big Four. The actual figures resulting from the tests were used in making the estimates for the complete plants now being installed. The system is a combination of motor trucks, overhead electric traveling cranes and uniform containers, with which will ultimately be combined many forms of mechanical handling machinery such as industrial electric trucks, stacking and tiering machines, portable conveyors, and other electrically operated devices which reduce physical labor and tend to improve the morale of the men who serve in the handling of freight.

It is the combination which is the essential element of saving as all of these devices and machines are now daily reducing manufacturing costs in most of our American industries, and most of them will soon be in service at terminal and transfer points handling ocean and river cargoes as well as freight.

The handling of l. c. l. interchange at Cincinnati is as follows: bearing in mind that at the present time the railroads are not making any attempt at store door delivery, although this also is undoubtedly going to be the outgrowth of the use of this system. At Cincinnati only railroad freight is being handled. The cars are spotted alongside the freight station in the usual manner. Doors are opened and hand trucks or electric trucks receive the goods in the usual manner. They are then conveyed to the uniform containers and packed into the container identically as you pack a freight car.

These containers are placed in rows in the freight station, each container being plainly marked for one of the seven railroads entering Cincinnati. The ocntainers are wood and steel boxes, 17½ feet long, 8 feet wide, 7 feet high, and are usually loaded not to exceed four tons. The containers each have wide side doors and wide end doors so they may be easily loaded with miscellaneous freight of all kinds. Also each container (at least most of them) is fitted with large substantial casters so that it may be rolled across the station floor or rolled along the platform alongside a car. When the container is filled or loaded it is lifted by a traveling electric crane, swung from its position and transported by the crane to the point where a motor truck chassis stands ready to receive the container as the complete body of the motor truck. Clamps are set and tightened, and the motor truck dashes

off to the station of the railroad over which the goods in that particular container are routed.

At some stations the traveling crane delivers the container to the motor truck sidewise and at others the delivery to the chassis is endwise. In most cases where endwise delivery is made, and in cases where crane operation is not necessary on account of the few containers per day to be handled, the containers are set on a type of skid, which is just high enough and wide between its supports to permit the truck chassis to be backed underneath the container, and the lifting and lowering is then done through the use of electrically driven chain hoists. Where this latter method is in use, the skids are in bays extending into the station shed.

When the truck reaches the destined station, the traveling crane immediately relieves the chassis of the container and then places a return container on the chassis, effecting a minimum of delay for the motor truck. A central despatcher handles the operation of all of the motor trucks, insuring their operation for a maximum percentage of the day.

The electric traveling came of course carries the container with its load to the point nearest the spotted car of the connecting line and it is unloaded direct from the container into the car of the connecting line; or, if the goods in the container are for various small stations along the line, they are placed in proper cars in the usual manner, remaining in the container until cars are spotted for that particular freight division on which the station is located. It is entirely practicable to haul the containers about by means of a winch or an electric tractor truck although they are not yet equipped for movement by electric tractor.

Of course, it is but a step from the development of this system into an electrically operated unit for the complete system of freight service, including delivery and receipt of freight from store door, which will be a very simple step ahead—involving merely the use of the same type of trucks and ocntainers for the door to door service as is now employed in the inter-railroad service. It is almost necessary for similar plans to be put into use throughout the country in order to meet the demands of the economic situation of costs, manual service need and equipment shortage.

Because of this engineers and railroad operatives are making exhaustive studies of these different machines and their co-ordination into handling systems. With its adoption will also ocme a fuller appreciation by the railroads of the value of all types of mechanical handling machinery. In our manufatcuring plants, men are given the benefit of every conceivable type of machine or device which will save physical effort and conserve time and energy, of speed up production, but little use has been made of these electrically operated machines in freight and ocean cargo handling.

An automobile plant is equipped with numerous systems of conveyors, cranes, etc., all electrically operated. And in all large plants coal is handled by crane, belt ocnveyor or trolley with grab bucket, oftentimes without manual labor service from coal car to furnace grate bars, and even the ashes are automechanically carried to refuse piles.

Endless instances of the use of mechanical handling machines could be given, where savings have resulted sufficient to pay for equipment in one or two months after installation; and it is logical to believe that the very first moves on the part of the actual owners of the railroads after January 1, will be to purchase and install electric auto-mechanical handling machinery of many kinds.

Electric Trucks and Tractors

The Elwell-Parker Electric Co.

By Frederick B. Fink

With the present labor shortage, high wages and shorter hours it becomes necessary for railroad officials to investigate ways and means for handling freight, baggage, materials in their shops, etc., at a less cost and in shorter time than is accomplished at present by the manual labor method. Man power is not entirely done away with by the adoption of electric trucks and tractors, but their usage will displace from six to ten men for each machine installed, depending upon conditions, and the services of those men can be employed in more profitable ways.

The use of electric trucks and tractors not only means a great saving in dollars and quicker service, but it makes the lot of the operator a more contented one. Thomas A. Edison has said, "It is my belief that the world's most immediate scientific need is inventions which will lighten the grinding toil of labor." The more machines brought forth to become identified with industry which can prove themselves labor saving, the more they will be the cause of enlarging the forces of employed labor, notwithstanding the belief by some classes of labor that these men-displaying units cause them to lose employment. This belief is wrong, as the men are placed in other classes of work. For example the automobile displaced many men, but it has given employment to hundreds of thousands of chauffeurs, a million men and women in automobile factories, branches, offices, service stations, and parts and accessory manufacturers.

The electric truck, and tractor, are offered as labor saving machines and also as assistants to the remedy for the shortage of labor, but principally as a means of saving money on the cost per ton of material handled, and this is accomplished by means of their displacing men and handling more material in a shorter space of time. For the purpose of more clearly analyzing the handling of material in railroad service, it would be best to divide the subject into four sections, viz., piers, transfers, depots, shops and storehouses.

Piers

In the handling of freight on piers, the first object is to do so as cheaply as possible; the second is to handle the freight quickly, keeping the bulkhead clear for outbound freight and the inbound freight moved rapidly to the piles on the piers, ready for consignees trucks.

Freight congestion at piers and freight terminals is caused by cramped quarters and lack of proper schedules. Old fashioned methods, hand trucks of the two wheel type such as now used, were in use when the pyramids were built, as any one interested sufficiently can see for himself by visiting the Metropolitan Museum of Art. A pier is not elastic and where a pier is handling from 5 to 10 times the freight it was designed to handle, it is not surprising that congestion should occur resulting in confusion and extensive delays. It is all very well to talk about longer piers and larger terminals, but these in many cases are physical, if not financial, impossibilities. We must work with what floor areas we have at present and by bringing efficient methods to bear upon the handling of merchandise, endeavor to relieve the pressure until such time as improved conditions are possible.

To do this properly, if the pier is of sufficient length to warrant the use of tractors, then tractors and trailers are advised. The height of the trailer should be governed by the height of the average tailboard from the floor of the bulkhead, on outbound freight, so that the freight may be placed directly on the trailer, pushed onto the scales and weighed. It is then ready to be made into a train for the tractor to pick up and pull onto the car float, where each trailer is dropped at the car door, to be pulled into the car, or pushed in by tractor if very heavy material such as machinery, etc., is on the trailer.

Objections to this method of unloading from tail board to trailers have been put forth because of the inability of the receiving clerk to give the exact weights to the different classifications, which he has to estimate if the consignor has failed to put the weight on the bill of lading. This, of course, applies only to mixed classifications on the same

trailer and does not apply to solid loads made up of one classification.

To offset these objections some of the railroad, companies unload to the platform of the bulkhead, where the freight is hand trucked to the scale and there hand trucked a few feet to waiting trailers on a level with the platform. Each trailer stands at a place bearing the corresponding number of the car, and when fully loaded the tractor picks it up and trails it to the car where the freight properly belongs and the verichecks are given either to the tractor operator or to the coupler of the trailers, who rides with the train.

Objections to the latter method have been raised, in that it causes an additional handling of the freight, thereby increasing the cost per ton for handling, but the users of this method claim accuracy for it, while with the tailboard to trailer method too much estimating has to be done.

Adherents of the tailboard to trailer method claim there is but little estimating to be done, but its greatest value is that by this method the bulkhead is kept clear, allowing the delivering street trucks to unload and get away quicker because the platform of the bulkhead is not congested. It is a noticeable fact that on those piers where hand trucks are still used the platforms are congested all day and at about 4 o'clock in the afternoon the freight is piled half way to the ceiling, while on the piers where electric trucks and tractors are used the freight is moved away as fast as it is unloaded and at 4 o'clock the platform is as clear as it has been at any hour during the day.

As a further indication of the saving to be effected by the use of electric trucks and tractors, at one pier on the Hudson river where the tonnage handled per day is comparatively small, an electric truck with platform, known as a "load carrying truck" to differentiate from a tractor, was placed to try out its possibilities for pier work. It was found however that the truck was not the proper unit, as the time consumed in loading and unloading was too great to warrant the investment. It was then decided to try it out using the truck as a tractor and five trailers were put in service with it. This is about one-tenth the proper number of trailers to a tractor and is mentioned here to indicate the handicap of the test. Notwithstanding the handicap and the unfamiliarity of the force with tractor and trailer operation, 119 tons were handled at a cost of .264 cents per ton.

To have moved this same tonnage by hand trucks, would have cost .56 cents per ton, showing a saving by the use of the tractor of .296 cents per ton. In spite of the handicap mentioned above the operation kept two doors of the bulkhead clear. We furthermore found in the experiment that when using hand trucks, the driver of the street vehicle would place the boxes or packages on the tailboard of his vehicle and wait for the freight handlers to unload it on to the platform, while there was no hesitancy on his part to place the boxes or packages on the trailer himself when it was backed up to the tailboard, thereby freeing at least one freight handler for other work.

Transfers

Here also seems to be a division of opinion, as to whether the tractor and trailer system or the load carrying low platform electric truck, is the most efficient and economical. Both systems of handling have their adherents, but with either method as compared to the use of hand trucks the handling is done quicker and with considerable saving in money. From figures received from transfers where load carrying trucks are used the conclusion can only be arrived at that while the initial investment is greater than that for tractors and trailers, the cost per ton is less.

To illustrate this, one of the large transfers using a number of load-carrying trucks, handles about 1200 tons per day at a total cost per ton, including everything chargeable to the operation, of 61 cents per ton, and this with trucks that are now about nine years old with the higher cost of maintenance due to their age. In this operation, manual labor is reduced to a minimum as the loaded truck runs into and to the end of the car where its load is removed from the low platform by hand, and vice versa when loading. In another large transfer, where only tractors and trailers are used, and where about 1200 tons average per day are handled, it is interesting to note that on November 7, 1918, 19 gangs of 5 men each with two-wheel hand trucks; 14 tractor gangs of 3 to a gang; 14 floaters and 41 packers, or 192 employees in all were thought necessary to handle 1352 tons of miscellaneous freight, at a cost of .955 cents per ton. By proper supervision and rearrangement of the handling it was found that, after the wrinkles had been ironed out, 1221 tons could be handled by 4 gangs of 5 men each with two-wheel hand trucks; 11 tractor gangs of 3 men each; 13 floaters and 39 packers, or a total of 105 employees at a cost of .769 cents per ton, or a saving of .186 cents per ton over the cost without proper supervision.

It will be seen therefore that in two transfers handling about the same class of freight and about the same tonnage per day, a difference of .159 cents per ton is shown in favor of the load carrying truck over the tractor and trailer system. Handling 1200 tons per day, would amount to $190 per day or $57,000 per year, thereby proving the contention that the difference in initial cost is soon made up. Further, in the use of the tractor and trailer method, the tractor drops the loaded trailer at the car door, when it becomes necessary for man power to be used to push the trailer into the car and possibly to the end of the car over floors that often are none too smooth and very often wet, and when unloaded has to be used to push the trailer out onto the platform for the tractor to pick up. By the use of the man power, in this operation the tractor becomes only partly a labor saving unit, which is wrong when units better adapted to the service are available.

However, in small transfer stations tractors are being used with good results, two of these small transfers reporting that in the handling of 300 tons each per day, each with one tractor, one transfer having 16 trailers and the second having 40 trailers—both tractors working under adverse conditions, as to crossovers, platforms, etc.,—the first showed a saving of six cents per ton, due to the small number of trailers used and the second a saving of 10 cents per ton. Both are showing a saving, but in addition, the receiving platforms are kept clear, something unknown before, and the entire operation is speeded up.

The belief that any one type of electrical truck or tractor is the proper unit is erroneous and there is an inclination toward the use of electric elevating platform truck for transfer work, as by its use castered platforms may be picked up with their load and deposited in the car at the point of stowage, the truck picking up an unloaded platform and returning it for a load, depositing it and immediately picking up a loaded platform which the laborers have loaded while the truck was in transit with its previous load. By this method the pushing of trailers into and out of cars is eliminated, as in the tractor and trailer system, and the objection to the load carrying truck without the elevating platform of having the truck tied up so long for loading and unloading has been overcome.

Another type of electric truck which is a valuable adjunct on piers, in transfers and shops, is the crane truck of 2000 lb. capacity, used for handling heavy pieces of machinery and other heavy materials and in the case of piers or transfers, lifting that machinery or other heavy material onto the load carrying trucks or onto trailers, as the case may be, thereby saving a great amount of labor and time.

The sight of electric trucks hauling baggage and mail in passenger terminals is a common one, but its importance can scarcely be enlarged upon, as while it is an established fact

that the savings shown by these trucks are from 58 to 80 per cent over the old method of pulling the trucks by hand, there are some items which must be taken into consideration and on which it is impossible to place a value in dollars and cents; those are the relief to terminal congestion and the prompt despatch of trains resulting from avoidance of baggage detention. This also applies to express and mail haulage.

Shops and Storehouses

The electric truck, particularly the elevating platform type and the crane truck, or a combination of the two types, are of such value in the shops and storehouses that the saving is almost unbelievable, as the records submitted on 51 electric trucks in 14 shops show a saving in labor as high as 89 per cent, and that without the later types of trucks designed for use in shops and storehouses.

Records show that with the installation of one truck in the shops on one of the large eastern railroads, four men were displaced who were receiving 39 cents per hour which equals $3,744 per year. On the same railroad, in the shops located in another city, three trucks were installed, which displaced 11 men, who were receiving 42 cents an hour, or $11,088 per year.

In the shop of another well known eastern road, an electric truck was installed for handling car seats to and from the upholstery department to the cars. This truck showed a saving of $3,024 a year, and that at the time when the labor the truck displaced was receiving but 24 cents per hour.

The shops of still another road in the east have in service four load-carrying trucks and one tractor and these have displaced 25 men with hand trucks, 8 horses or mules with drivers and the services of a switch engine for 2 hours a day; they show a saving over the former method of handling of $34,363 per year.

The electric crane truck of 2000 lb. capacity will be found to be a valuable unit in shops for the handling of pumps to and from the locomotive, as well as in the handling of heavy castings, etc., picking the material up, placing it on the platform of the truck, carrying it to its destination quickly and depositing it where wanted, saving a great deal of time and labor.

Electric Welding

By H. A. Currie

Assistant Electrical Engineer, New York Central

During the past three years numerous articles have been written describing the progress in the art of electric welding, covering the relative merits of machines, electrodes, methods of welding, current values and so forth. These show the ever-increasing interest in the subject.

The keen interest displayed by the Emergency Fleet Corporation was reflected in the appointment of the well known welding committee composed of representatives of shipping men, engineers, the government, colleges and railroads. The wide publicity given the work of this committee has had much to do with the great interest taken by manufacturers, builders and railroads.

This paper will be devoted to a brief resume of the welding facilities and general character of work done in the motive power shops of the New York Central. One phase of welding that has had but little attention paid to it is the fundamentally important one of preparation. This will be emphasized in the present paper. Railroad shops are are perhaps the largest users of arc welding machinery for repair purposes.

The facilities in New York Central shops consist both of D. C. and A. C. units of various makes. Depending on local requirements they are either portable or in a fixed location. Satisfactory results have been obtained from both types of equipment.

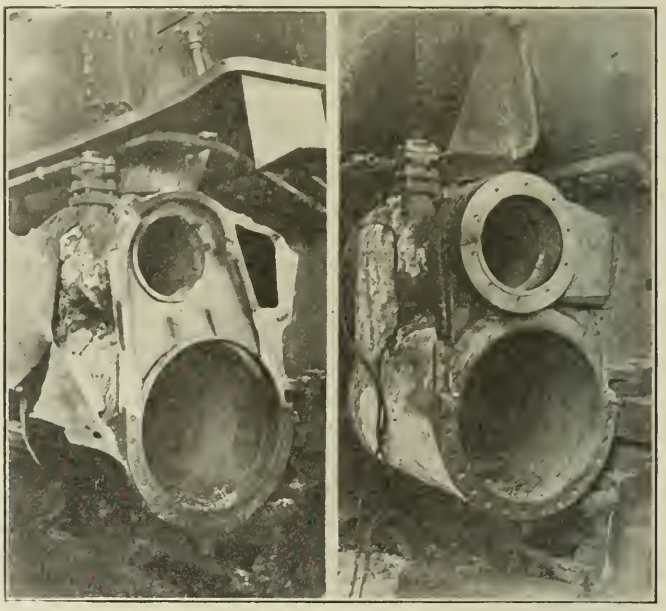
The welding facilities consist of the single operator type of machine suitably located throughout the buildings and so connected by bus lines that machines can be electrically connected to any outlet throughout the shops. This arrangement gives all the advantages of multiple operator machines with none of the disadvantages.

The saving in our locomotive shop since electric welding was installed can hardly be calculated and the additional mileage that is obtained from locomotives is remarkable. This is mainly due to the following:

A. Greater permanency of repairs.

B. Shorter periods in the shop, giving additional use of equipment.

C. Existing shop facilities permit taking care of a larger number of locomotives than originally expected. Shop congestion relieved.



Example of Locomotive Cylinder Repair Work Done by Electric Arc Welding.

D. The use of worn and broken parts which without electric welding would be thrown in the scrap pile.

E. The time required to make repairs is much less and requires fewer men.

F. A smaller quantity of spare parts carried in stock.

The following is a brief description of some of the work done on steam locomotives:

Flue and Fire Box Welding

The most important results are obtained by welding the boiler tubes to the back flue sheet. The average mileage between shopping an account of leaky flues on passenger locomotives was 100,000 miles. This has been raised to 200,000 miles with individual records of 275,000 miles. For freight this average has been raised from 45,000 to 100,000 miles. At the time of locomotive shortage this effect was of inestimable value.

Good results have been obtained without the use of sand blast to prepare the tubes and sheets. The engine is either fired or an acetylene torch used to burn off the oil, after which the metal is cleaned off with a scraping tool. The ferrules are of course well seated and the tubes rolled back. The boiler is filled with water in order to cool the tubes, which having a much thinner cross section than the sheets, would overheat sufficiently to spoil the weld or burn the tube.

The metal is then laid on, beginning at the bottom of the bead and working to the top. Records show that the time to weld a Pacific type locomotive boiler complete is 12 hours.

A variety of repair work is readily accomplished in locomotive fireboxes such as the welding of crown sheet patches, side sheet cracks and the reinforcing and patching of mud rings. Smokebox studs are also welded on.

Side Frames, Couplers and Wheels

Cracked main members of side frames are restored and wearing parts built up and reinforced. Because of accessibility no special difficulties are encountered in this work. Formerly this work was chiefly done with oil welding and some acetylene and thermit work, but it was very much more expensive as the preparation required considerable effort and took a good deal of time.

Fifty per cent of the engines passing through the shops have worn and broken coupler parts and pockets. By welding an average saving of about $15 per coupler is made. It costs about $30 in material and labor to replace a coupler and only $4 to repair the average broken coupler. The scrap value is about $5.

Great success has resulted from various repairs to steel wheels and tires. Flat spots have been built up without removing the wheels from the locomotives, thus effecting a great saving in time and money. Building up sharp flanges saves about 5/8 inch cut off the tread, which when followed through means about $30 for a pair of wheels, a great increase in tire life and reduction. in shop costs.

Cylinders

The most interesting feature developed by arc welding was the accomplishment of cast iron welding. The difficulty in welding cast iron was that while the hot metal would weld into the casting, on cooling the strain would tear the welded portion away from the rest of the casting. Small studding was tried out with no success. Not until wrought iron studs, proportioned to the sectional strength of the casting, were used did any satisfactory welds turn out. Studding of this large size was looked upon with distrust as it was thought that the only weld was to the studding. This naturally meant that the original structure was considerably weakened due to the drilling. This, however, was not the case. The large studding was rigid enough to hold against the cooling strains and prevented the welds in the casting from pulling loose, thus adding the strength of all the welded portion to that of the studs. In most cases where external clearance will permit, sufficient reinforcing can be added to more than compensate for the metal removed in drilling for the studs.

Perhaps more skill is required for this class of welding, but with a properly prepared casting success is certain. A concrete case of the economy effected in welding a badly damaged cylinder on a Pacific type engine is as follows:

Welded Job.	
Cost of welding broken cylinder, labor and material	$125.00
Length of time out of service, 5 days at $20 a day	100.00
Scrap value of old cylinder (8,440 lb. at 2.09 lb.)	177.00
Total	$402.00
Replaced Cylinder	
Cost of new cylinder ready for locomotive	$1,000.00
Labor charge to replace it	150.00
Locomotive out of service 18 days at $20 a day	360.00
	$1,510.00
Less cost of welding	402.00
Total saving	$1,108.00

Some 25 locomotives have been repaired in this way at one shop alone.

Many axles are being reclaimed by building up the worn parts. These are tender and truck axles which are worn on the journals, wheel fits and collars. The saving is about $25 per tender axle and $20 for truck axles.

The range of parts that may be repaired or brought back to standard size by welding is continually expanding. Wearing surfaces on all motion links and other motion work, crosshead guides, piston rod crosshead fits, valves and valve seats, air, steam, sand and other pipes, keyes, pins and journal boxes have all been successfully welded.

A large saving is effected in welding broken parts of shop tools and machinery. During the war this was of untold value, as in some cases it was out of the question to get the broken part replaced.

Training of Operators

This is the most important feature of arc welding. Success depends solely on the men doing the work. They must be instructed in the use of the arc, the type, size and composition of the electrode for various classes of work and the characteristics of the various machines they will be called upon to use. A properly equipped school for teaching these matters would be a valuable adjunct for every railroad. Manufacturers of equipment have recognized the importance of proper instruction and have equipped schools where men are taught free of charge.

Supervision

Co-ordinate with the actual welding is intelligent supervision. The scope of the supervisors should include preparation of the job for the welder and general oversight of the equipment in the shop.

Thus the duties of the inspector might be summarized in the following points:

1. To see that the work is properly prepared for the operator.
2. The machines and wiring are kept in good condition.
3. Proper electrodes are used.
4. To inspect the welds in process of application, and when finished.
5. To act as advisor and medium of interchange of welding practices from one shop to another.

In work such as flue welding and industrial processes which repeat the same operation, piece work rates may be fixed. For varying repair jobs this method cannot be used with justice either to the operator or the job.

Bare electrodes are used almost exclusively, even for A. C. welds. Whenever a new lot of electrodes is received it is good practice to make up test piece samples and subject them to careful tests and analysis.

The sizes of electrodes and uses to which they are put are shown in the table.

Size	Type of Work
1/8 -in.	Flue welding.
5/32-in.	For all repair work, broken frames, cylinders, etc.
7/32-in.	For building up wearing surfaces.

General Rules

In closing it will be well to point out a few general rules required to obtain satisfactory welds.

1. The work must be arranged or chipped so that the electrode may be held approximately perpendicular to the plane of welding. When this cannot be accomplished the electrode must be bent so that the arc will be drawn from the point and not the side of the electrode. For cast iron the studding must be properly arranged and proportioned. The surfaces to be welded must be thoroughly clean and free from grease and grit.
2. The proper electrode and current value must be selected for the work to be done.
3. The arc should be maintained as constant as possible.
4. For nearly all work the prepared surface should be evenly welded over and then the new surfaces welded together.

5. Suitable shields or helmets must be used with proper color values for the lenses.

For locomotive work a good operator will deposit an average of 1 and 1½ lb. of electrode per hour. The limits are from 1 to 2 lb. High current values give more ductile welds, in proportion to deposited metal. For locomotive welding the great advantage of the arc over thermit, oil or acetylene welding is that preparation at the weld is all that is necessary. No secondary preparation for expansion of the members is necessary. This is the great advantage in welding side frames.

German Ships

A fine tribute was paid to railroad work when a committee consisting of railroad men was appointed by Capt. E. P. Jessop, U. S. Navy, to report on the feasibility of making repairs by electric welding to the damaged German ships. This committee, headed by D. H. Wilson, after careful examination reported that it was practicable to weld the damaged parts, as similar cast iron welding work was daily done in railroad shops. Machines and operators borrowed from the railroads were responsible for the speedy and thorough repairs to these ships.

By being able to weld the damaged parts without removing them, the ships were released for transport service in three or four months instead of a year or more, as the Germans anticipated.

The Secretary of the Navy, in his report on the repairs to the German ships, has stated "that the repairs to these ships resulted in a saving of 12 months in time, enabling us to transport at least 500,000 troops to France and effected an economy which is conservatively estimated at upwards of $20,000,000. He further states that there was not a single instance of a defective weld, nor has one developed during the months of arduous service in which these ships have been engaged."

When it is considered that these repairs released a tonnage of nearly 290,000 tons, it will be realized what an important part electric welding played during the war.

Electric Car Lighting

By A. G. Oehler

Associate Editor, *Railway Age*

It is generally conceded that the railroads are in need of much new passenger car equipment. This, of course, includes car lighting equipment, and those interested in car lighting are asking what the equipment will consist of and how much is needed.

At one time cars were lighted with candles. Candles were superseded by oil lamps, and oil lamps in turn were largely displaced by gas light. Now, if present day practice is continued, gas will in time become little more than a memory.

Types of Equipment in Use

Electric train lighting can be divided into three general classes, *i. e.*, head end, straight storage and axle systems. Head end systems usually consist of a steam turbo-generator set located in the baggage car, supplied with steam from the locomotive, working in conjunction with two or more storage batteries placed on the coaches. Where head end systems are used in conjunction with electric locomotives, a motor-generator set on the locomotive supplies the power for train lighting. For short suburban trains, some consideration is being shown to the use of a turbo-generator set located on the locomotive. The cars for this service are equipped with train lines, but without batteries. There is also a head-end axle system in which a large axle generator in the baggage car supplies power for lighting all the cars in the train. Straight storage lighting is still in use to a considerable extent, but is being rapidly displaced by axle lighting.

There is still a large percentage of gas lighted cars in use in the United States, but the general tendency is to adopt the 32-volt axle generator systems.

There are six different types of axle lighting systems manufactured in the United States, each of which has its merits. Practically all of this equipment which is in service, is belt driven and generators are either truck-mounted or body-hung. There are two general types of batteries, namely, the lead-acid and the nickel-iron. There is but one make of nickel-iron battery, but several of the lead-acid type.

Maintenance

The two biggest maintenance costs are, first, batteries and second, belts. Battery maintenance is kept at a minimum by keeping battery compartments and containers clean and painted, by proper flushing and particularly in the case of the lead cells, by avoiding excessive overcharge and complete or nearly complete discharge. It is also essential that the battery box be dust tight, that vent plugs be kept in place, connectors carefully maintained and regular inspection made for leaky tanks and general repairs.

There are different kinds of current control for maintaining proper charge in the batteries. In this connection it is of interest to mention the fact that modern practice indicates that the cutting in speed of the automatic switch is of much less importance than the minimum full load speed of the generator. The size of the generator and of the battery is governed by the kind of car and the class of service in which the car is to be used. Recommendations have been made by the Association of Railway Electrical Engineers regarding a standard method for rating generators, material for armature shafts, bearings, grease retainers, etc., which will be of considerable interest to the prospective purchaser. These recommendations will appear in its 1919 proceedings.

The factors of first importance in applying belts, whether for truck-mounted or body-hung generators, are that the pulleys must be in line, that the belt will clear the end sill and brake rigging by at least three inches and that the pulleys run true. This last consideration has been deemed of sufficient importance by the Master Car Builders' Association to warrant the adoption, as recommended practice, of the use of rough turned axles for mounting axle pulleys. Careless switching in the yards is a common cause of belt trouble. Belts may be snapped off in the yards in this way, or so strained that they are lost when the generator load is applied.

Two gear-driven machines have recently appeared in the field which may prove to have considerable merit. Other types of gear and direct drive have been tried out in the past and discarded because of inherent faults such as difficulty of applying and removing the equipment and the high first cost. Much progress has been made, however, in the last few years in the use of gears in general and should a special axle be considered essential for belt operation, there would be several added arguments in favor of a gear drive.

Lighting Fixtures

The selection and placing of lighting fixtures in the cars has become a problem in illuminating engineering, and, following modern lighting practice, the tendency has been to provide general illumination with a few large units, placed along the center line of the car. Fixtures are designed and placed so as to give a certain number of foot candles illumination on the reading plane. Aside from light intensity are considered efficiency, uniformity, distribution, quality of illumination produced and artistic merit. For coach lighting and other classes of cars where efficiency is the primary object, the open-mounted reflector is the one most universally used, and where appearance is the primary consideration,

enclosing units are usually applied and efficiency somewhat sacrificed.

Special lighting is required for certain cars and consists of berth lamps, reading lamps for parlor cars and composite or club cars, and special novelties for table lighting in diners. Aisle night lights for sleepers are probably the most recent development in car lighting. They are placed under alternate seat ends and consist of a fixture fitted with a ten-watt straight side bulb which throws light onto the aisle carpet through a green glass. They tend considerably to enhance the value of the upper berths. For postal cars, the specifications of the Standard Car Committee of the Post Office Department must be met. Aluminum or aluminized metal reflectors are in very general use in postal and baggage cars, due to their high efficiency and durability.

Lamps

Both the type B and type C tungsten lamps are used, the type B supplying the need for units of 50 watts and less, and it appears that the type C lamps will be used to fill the requirements for 75 and 100 watt units. The type B lamps are made both as round and straight sided lamps. Based on 1918 records, the sales of straight sided lamps exceeded those for round bulb lamps. This is probably due to the lower cost of the straight sided lamp, particularly in the larger sizes.

Train Lines

The time is too short to say more about car wiring than to mention the fact that the practice of equipping cars with train lines is generally recommended. It has been practically demonstrated that good train lighting service may be had without them, but it is apparent that facilities for train line connections will greatly reduce the possibility of light failures. They are particularly desirable for the protection of mail cars.

Amount of Equipment Needed

I have stated that the railroads were in need of passenger cars and have endeavored to outline the fundamental considerations which enter into the purchase of car lighting equipment. Perhaps you would be interested in an estimate of how much the railroads are short.

Between the years 1910 and 1916, the number of passenger cars in service increased from 47,095 to 54,774 or 16 per cent. Meantime, the increase in amount of travel was 36 per cent. In 1917 the increase in the number of passenger cars in service was 1,167. Government control was established at the beginning of 1918 and during that year only 131 cars were ordered for all the railroads. This year no substantial orders for passenger cars have been placed and owing to retirement of cars, there may have been some decrease.

Passenger traffic in the meantime has increased. As already stated, the increase in travel from 1910 to 1916 was 36 per cent. In 1917 alone, it was 14½ per cent. In 1918 the increase over 1917 was 8 per cent. In the first eight months of 1919, the passenger business handled was 6.3 per cent greater than that handled in the same months of 1918. These cumulative increases since 1916 aggregate 32 per cent.

The large increase in passenger traffic in 1917 and 1918 has been attributed chiefly to the movement of troops and to the traveling of their relatives and friends to and from the cantonments where they were located. Since 1918, however, there has been a very large reduction in the movement of troops, and yet the statistics of the Railroad Administration show that the amount of travel in July, 1919, was 12½ per cent greater than in July, 1918.

There is no apparent reason for doubting that the present large amount of travel will continue, and even increase. In addition to this, the railroads have had to postpone their steel car program and, of course, in the past the replacement of wooden by steel passenger equipment has been a very important factor. If the railroads during the last three years had bought only as many passenger cars per year as they did in the preceding six years, they would have bought in this three years at least 7,000 more cars than they actually did. But the increase in passenger business in the last three years has been almost as great as in all of the preceding six years together. Taking into consideration both the very small number of passenger cars that has been bought during the last three years and the enormous increase in passenger business which has occurred, it is safe to say that the railways after they are returned to private operation would have to have at least 8,000 and probably 10,000 more passenger cars than they actually will have in order to handle their passenger business in the same way that they handled it in 1916.

The largest number of cars ever built in one year in the United States and Canada was only 4,412, so it is apparent that conditions can not be entirely corrected at once, but I hope that consideration of these figures may aid the car lighting men in anticipating the size of the job they have ahead of them.

A. R. E. A. Rail Studies

Bulletin no. 218 of the American Railway Engineering Association which has just been issued contains the annual compilation of statistics of failed rails and the results of a number of individual and committee investigations of different phases of the rail problem. The rail failure statistics, which have been compiled by M. H. Wickhorst, engineer of tests for the rail committee, include the failures reported by the railroads of the United States and Canada for the year ending October 31, 1918, and cover rails rolled for 1913 and succeeding years. The ages of the rollings in track average as follows for the years shown below:

1913	5 years	1916	2 years
1914	4 years	1917	1 year
1915	3 years	1918	several months

The tonnage covered by the statistics in the report are as follows:

Year rolled	Bessemer	Open-hearth	Total
1913	155,417	1,550,938	1,706,355
1914	59,918	1,060,763	1,120,681
1915	12,141	1,034,531	1,046,672
1916	42,399	1,191,628	1,234,027
1917	24,223	1,077,832	1,102,055
1918	12,967	470,768	483,735

It will be noted that rails of Bessemer steel have formed only a small part of the tonnage covered by the reports. The average weight of open-hearth rail reported for 1918 was 101.5 lb. per yard, while that of Bessemer rail was 87.4 lb. per yard, indicating that the open-hearth rail was placed in tracks demanding heavier service. In spite of this fact the Bessemer rail show a larger number of failures per 100 track miles as is indicated by the following table:

Year rolled	Years service	Failures per 100 track miles		Comparative failures	
		Open-hearth	Bessemer	Open-hearth	Bessemer
1913	5	90.3	107.7	100	119
1914	4	47.4	111.1	100	234
1915	3	33.8	62.7	100	186
1916	2	27.9	41.6	100	149

The most encouraging feature of the railroad situation as indicated by these reports is the steady decrease in the total number of failures per 100 track miles. The number of these failures per 100 track miles for five years' service, as

shown in the reports of the rail committee for 1913 to 1918 inclusive, is as follows:

	1913	1914	1915	1916	1917	1918
Bessemer	413.3	373.9	236.9	214.1	134.1	107.7
Open hearth	370.5	198.8	154.0	161.9	102.7	90.3
Total	398.1	277.8	198.5	176.3	107.1	91.9

Study of Transverse Fissures on the Santa Fe

On December 10, 1917, a train on the Gulf Lines of the Atchison, Topeka & Santa Fe was derailed by a rail which broke into 10 pieces and showed 13 transverse fissures. This rail was of 90-lb. Santa Fe section. The 51 remaining rails of this heat were located, removed from track, and sent to Topeka, Kan., where they were subjected to extensive tests to detect further indications of fissures. The drop and etching tests indicated the presence of great numbers of cracks in the interior of the head of some of the rails, a few of which acted as nuclei for the growth of fissures in service. Chemical analyses showed rail steel of about the usual composition, fairly evenly distributed and that the rails with fissures were all about the same composition as the other rails. The physical properties of the rails were about normal in the different parts of the section, except that the rails with fissures were low in ductility in the head, both longitudinally and transversely.

Relation Between Length of Service and Transverse Fissures

W. C. Cushing, chief engineer maintenance, Pennsylvania Lines West of Pittsburgh, has prepared a monograph describing a set of rails which have given long service to determine whether these rails show any indication of transverse fissures.

The study started with the assumption that if stored up internal stresses in rails proceeding in combination from three principal components which affect them in service, namely: (1) cooling strains of fabrication; (2) cold-rolling strains from wheel loads; (3) direct stresses in the track, tell the whole story of the cause of "transverse fissures" then it might be reasonably expected that rails especially long in service would be not only likely to have that type of defect, but would be almost certain to have it, particularly if the elastic limit of the metal were very low, thus reducing the ration between it and the wheel load, six rails were selected as follows:

	Years
English rails (wrought iron), Louisville Division	41
German rails (iron and steel pile), Long Island R. R.	45
P. R. R., Bessemer, Pittsburgh Division	25
P. R. R., Bessemer, Columbus Division	22
A. S. C. E., Bessemer, Pittsburgh Division	10
P. R. R., Bessemer, Cincinnati Division	19

Nothwithstanding the high internal stresses, low elasticity and lack of homogeneity in the structure, a close examination failed to disclose any signs of transverse fissures. Mr. Cushing concluded that "it is reasonable to expect, therefore, that, if severity of service, especially by exceedingly heavy wheel loads, be the sole cause of the defect known as transverse fissure, these rails, after their unusually long service, and in some of the cases under the heaviest wheel loads in use, would be sure to be filled with transverse fissures. That such was proved by careful examination not to be the fact, that rails adjacent to and undergoing precisely the same conditions of service as those in which transverse fissures have been found to not have any, and that rails never put into service as well as those which have been in service, have been shown by Waring and Wickhorst to contain microscopical cracks, seems to prove beyond a doubt that the cause, the real cause of transverse fissures must be sought in the processes of manufacture. The wheel loads are the instruments of development from the initial defect, and it is true that the service has become uncommonly severe. The real office of a rail is to undergo service, and we will continue to seek a material which will fulfill the requirements of the service."

Intensity of Pressure on Rails

A sub-committee of the Rail committee which has been investigating the intensity of pressure due to wheel loads submitted a report based on a series of tests from which the following conclusion is taken:

The service experiment seems to indicate that with this section and composition of rail (100 lb. P. S. section, practically the same as the A. R. A., "B" section, of 0.666 carbon), the load of 25,000 lb. per car wheel should not be exceeded, but the committee is not prepared to accept this as a general conclusion. The intensity of pressure which a given spot on the head of a rail will stand is evidently influenced by the resistance of the metal surrounding that spot, a larger or differently shaped head may yield to a much less extent. Some of the New York Central experiments show that where the wheel and rail contour fit, the areas of contact with a given load are much increased and this by longer contact across the head. If but one wheel contour and but one rail contour existed and could be maintained, this would go far toward settling the question, but it must be remembered that with the existing diversity due to modifications of the original contour produced by service, this ideal condition is not likely to be reached. It is very certain that the practice of allowing wheel contours to depart widely from the original standard before renewal or returning is at the direct expense of severe punishment of any rail section that can be devised.

Scenes on the Government's Alaska Railroad. Left, Effect of Blast Near Mile 97. Right, Steel Gang at Mile 166

Convention of State and Federal Regulators

Walker D. Hines and Clyde B. Aitchison Address the Railway and Utilities Commissioners

THE OUTSTANDING FEATURES of the thirty-first annual convention of the National Association of Railway and Utilities Commissioners, held at the Claypool Hotel, Indianapolis, Ind., October 14 to 16 inclusive, were the addresses by Walker D. Hines, director general of railroads, Clyde B. Aitchison, chairman of the Interstate Commerce Commission, Charles E. Elmquist, president of the Association, and Max Thelen, director of the Division of Public Service of the United States Railroad Administration. In addition the numerous reports, especially the one of the committee on public ownership and operation, evoked widespread interest and called forth earnest discussion.

Representatives of state commissions of 24 states answered the roll call at the opening session of the convention, the total number of delegates being approximately 100. With the heads of the Railroad Administration, the Interstaee Commerce Commission and the Division of Public Service on the program it was but natural that the major portion of the convention's time was devoted to the discussion of problems relating to the regulation of common carriers by both state and federal bodies. In many of the addresses and reports relating to these subjects it was conceded by both federal and state regulating officials that state regulation of common carriers was essential. The conflict over the right of state and federal regulating bodies to prescribe rules for the transportation systems which had arisen during the period of federal control seemed to be satisfactorily adjusted.

A majority of those who spoke on the general subject of public ownership and operation of railroads, including those named above, declared themselves heartily in favor of a return to private operation with suitable federal legislation. The champion of the opposing side was Laurence B. Finn, chairman of the Kentucky Railroad Commission, who addressed the convention at his own request on the necessity for government ownership and operation of common carriers.

The convention was opened on October 14, by John W. McCardle, a member of the Indiana Public Service Commission, who delivered the address of welcome. In addition Governor Goodrich of Indiana welcomed the delegates to Indianapolis and outlined his views on the railway situation as follows:

Governor Goodrich Emphasizes Need for Increase in Rates

"I am of the opinion that the railroads should be returned to their owners at the very earliest possible moment. There is no good reason for delay, once Congress has provided a method of control and arranged to compensate them for equipment purchased by the federal administration and not necessary in peacetime operation, and for other losses incident to the government's seizing these properties.

"If present rates are not adequate, the director should immediately increase them, or in case of his failure to act, Congress should direct the advance of rates so as to fully cover the deficit in current operating revenues. This deficit should not be met out of the federal treasury.

"So long as the railroads are under government supervision, they should be freed from the operation of the Sherman and Clayton acts and encouraged to consolidate, but in such fashion as to preserve the great competitive systems which have developed in our country and which have made the American railroads, before the government took possession of them, such marvels of efficiency and economic operation.

"There is only one way to restore the old spirit of loyalty, the morale of the organization, and that is to restore the roads to their owners and permit the rebuilding of the human element, which is so vital to efficient and economical management. The longer the return is delayed, the more difficult the problem and the longer will it take again to restore our railroads to their former efficiency.

"I can see no good reason why the roads cannot be returned at once under adequate rates to permit them to go on, with the assurance that the government will fully compensate them for losses incurred by reason of government operation, and aid them in financing their obligations to the government and then work out the final plan afterward."

Clyde B. Aitchison on Railroad Problem

Clyde B. Aitchison, chairman of the Interstate Commerce Commission, who followed Governor Goodrich at the opening session of the convention concurred in the letter's views regarding the necessity for a return to private ownership and operation, and in addition outlined specific recommendations for the final solution of the railroad problem.

Mr. Aitchison said there must be a far greater degree of unification and utilization of facilities, terminals and equipment than ever before and that future railway construction should be limited to that which is necessary and convenient for governmental purposes and the public.

As a necessary means of preventing wasteful competition, he recommended a national regulating body, which would have power to prescribe the minimum rate as well as the maximum. This authority, he said, has long reposed in many of the state regulating tribunals, but has never been vested in the Interstate Commerce Commission. He also said a modification of the present plan of district traffic committees, under the direction of public authority, may be necessary during the readjustment stage that the carriers and the country may be spared the burden of anything approaching a rate war.

With the return of the properties and until the corporations have had an opportunity to make their own adjustments it seems reasonable, Mr. Aitchison said, that the government should stand behind unavoidable losses from operation on the ground that to a large extent the increased costs constitute a direct cost of war and should be borne as such.

Regarding the labor situation, the speaker declared that legislation must be provided for speedy and adequate means of enforcing the just demands of employees, but that the country is entitled to protection against the irretrievable damage which must follow if either party to the dispute insists upon being the final judge of the justice of its own cause and stops the wheels of commerce.

President Elmquist on Federal and State Regulation

Charles E. Elmquist, president of the association, in delivering the president's address at the opening session, reviewed the war-time activities of the state public service commissions, their relationship with the federal Railroad and Fuel Administrations, and cautioned the commissioners to give particular attention in the future to the tendency of the public in peace time to demand lower rates from public utilities, while the cost of materials and supplies are in-

creasing. In regard to the railroad problem Mr. Elmquist said in part:

"Advocates of government ownership, or the Plumb plan, and those who favor a continuation of government operation for the political advantage which might arise therefrom in the ensuing national campaign, naturally oppose the final consideration of railroad legislation during the special session. But adjournment without passing such legislation may throw the whole question into the national campaign, in which event remedial legislation may be indefinitely postponed.

"There should be no uncertainty upon this question. Delay seriously interferes with the readjustment of our business activities and strengthens the conviction of many persons that the time has come for this government to assume the permanent ownership and operation of the transportation lines, coal mines, packing plants, flour and lumber mills, coal and oil lands, steel plants, banks and many other important industries.

"We are accustomed to privately operated railroads, and the experience which has been gained during the two years of federal operation has not convinced the American people that private operation is a failure. We are convinced, however, that regulation must be rounded out so as to give the people more perfect control over the rates, service, standardization, operating costs, consolidations, and extensions of those arteries of commerce. No serious consideration should be given to the question of public ownership until it has been demonstrated by experience that private operation, subject to more perfect regulation, fails to produce satisfactory service at reasonable rates, or that the enforcement of statutory laws will prevent periodical financial mismanagement.

"Congress is about to kick the anti-trust law into the middle of the ocean and permit consolidations subject to the approval of public authorities. It is difficult to say whether sentiment for the consolidation of railroads is real or artificial, but it nevertheless exists. Every combination of railroads means an extension of monopoly and imposes upon Congress and the states the absolute duty of seeing to it that the arm of regulation shall secure for the people that adequate service which competition has in a large measure provided for them.

"Remarkable as it may seem, the railroads, bankers and securities holders unite in demanding government regulation of capital issues.

"Corporations have taken advantage of federal operation to standardize and unify rates, charges, practices and classifications. They have persistently advocated centralization of all rate-making power in the federal government. 'Regulation by forty-eight commissions' is held forth as a great menace, although most railroad systems operate through only a few states. Railroad emissaries fail to mention the good work done by state authorities, but any mistake or alleged radical action of a state commission or court is shouted from the housetops."

In concluding his address Mr. Elmquist presented his resignation as general solicitor of the National Association of Railway and Utilities Commissioners to take effect on December 1, 1919. Mr. Elmquist has held this position for the past two years, and in addition to the aid he has given in the carrying on of valuation work both by federal and state commissions he has served as representative of the state commissions in dealing with the Railroad Administration and has been instrumental in the elimination of difficulties which have arisen over the right of state and federal regulating bodies.

The principal addresses before the convention were delivered at the annual banquet held on the evening of October 15. The speakers were Director General Hines, who talked of the railroads under government control; Chairman Aitchison, of the Interstate Commerce Commission, who spoke of the transition from government to private control; Charles E. Elmquist, retiring president of the association, who spoke on state commissions, and Max Thelen, director of the Division of Public Service.

Director General Hines Reports on His Stewardship

Mr. Hines said in part:

"My experience in Washington has convinced me if I had not been convinced of it before that this country is too big a place to be run from Washington; I attach the very greatest importance to representation of the public through local agencies which are directly in touch with the people, so from the time I became director general I felt one of the important things to do was to endeavor to avail myself to the fullest possible extent of the assistance and support of the state utility commissions throughout the country. It is therefore gratifying to me at this time that I have this audience of the state utility and public service commissioners of the country, to whom I can render an account of my stewardship as director general of railroads.

The railroads of the country at the present time are handling a larger business than they handled last year, and the business they handled last year was larger than the business they had handled in preceding years. They are doing that at rates which represent a lower proportion of the value of the things transported than I believe has ever been true in the past. We know from experience that the price of nearly everything has gone up far more than the cost of its production has justified, but the price of transportation has gone up in less proportion than has the cost of producing it.

"It is hard to express adequately the scope of the work of the movement of troops. In the twenty months ending with August, 1919, there were seven billion passenger miles of service performed in the handling of troops in this country, and that was to a very large extent in addition to a practically normal passenger traffic.

Inadequacy of Equipment

"In spite of this enormous volume of traffic the freight traffic is larger now than it was at the same time last year and it was larger then than in preceding years, so we have a condition where we are unable to meet the demands for traffic. This has always been true in times of heavy volume of business, but there are some special and obvious reasons for the difficulty which now confronts the railroads in handling all the business which is being offered, and that is the inadequacy of facilities and especially of freight cars. The reason more facilities are not provided is that in the year or two preceding federal control of the railroads the normal addition to cars and other transportation facilities were not met, because prices were very high, labor was scarce, and financing on the part of the railroad companies was unusually difficult. When federal control began it therefore began with a railroad plant that was not as large as it ought to have been to handle the business. During the first year of federal control there was a severe limitation as to the amount of material that could be taken from other war purposes to use for providing additional railroad facilities. After the most careful study it was decided that the Railroad Administration could not hope to get material for more than a hundred thousand freight cars, and that was the number that was ordered, and even then we found it was so difficult to get the materials for these freight cars that very few of the cars could be constructed in the year 1918.

"When the year 1919 began we were confronted with a new difficulty in the way of adding to the facilities and that was that federal control naturally was approaching its end from the time the armistice was signed. The government was not in a position with the end of federal control in sight to provide new government funds to acquire additional facilities beyond what had already been provided. More than

that, the failure of the appropriation on the 4th of March last, which had been sought by the Railroad Administration to enable it to meet its obligations already incurred, postponed the construction of even the hundred thousand cars that had been ordered, because they could not be paid for, and the equipment companies naturally had to slow down on their production. The railroad companies were unwilling to furnish money for new equipment because of uncertainty as to their own future, so the result has been that the Railroad Administration during the year 1919 has not been in position to provide any additional facilities except those which were needed, as an emergency measure, unless the railroad companies were willing to furnish the money, and the result is that at the present time the Railroad Administration has been unable to order or obtain authority to order any cars in addition to the hundred thousand that were ordered last year. So that that inadequacy of facilities, which were inadequate before the federal control began, and which have become increasingly inadequate since that time, principally accounts for the fact that the facilities now are not sufficient to handle all of the enormous business which is offering to the railroads of the country. And yet, even with that, we are handling more business than we did last year, and then we handled more than we ever did before.

Facing a Grave Peril

"We are in a waiting and uncertain situation with reference to the provision of transportation facilities, and it is a matter of very grave concern to the country. I have no reason to believe that the business will not be heavy again next year, when the railroads will be back under private control and when they may find it difficult to pool their facilities and use them as fully as they can be and are used under a unified control. Now, if this period of uncertainty and waiting shall be prolonged for any considerable length of time the result is going to be that there can be no timely planning for facilities to handle next year's business. In my judgment, if the legislation cannot take definite shape during the month of December, so that the railroads will know where they stand, and can begin making their plans to get the additional facilities they will undoubtedly need to handle the business of next fall, the country will be most disastrously handicapped next fall in having its business moved, so I regard that as perhaps the most compelling reason why the legislation providing for the future of the railroads shall be pushed through with the greatest expedition, and shall be adopted not later than some time in December, because unless these plans can be entered upon by the first of the new year I do not see how they can be effectively brought to a realization in time to handle the heavy business of the latter part of next summer and the following fall. I say, I think this ought to be done in December, and that carries with it the implication of what the President has already announced—his intention to hand the railroads back to the owners on the thirty-first of December.

"Our handling of this larger freight business at the present time is being accomplished without some of the important aids which we had last year in dealing with this matter. One matter of very great importance last year was the zoning of coal, whereby we acquired a very much larger efficiency out of the coal equipment, because consumers were required to get their coal from nearby mines, and unnecessarily long hauls of coal were prevented. That naturally terminated with the war and the result has been that the old custom has again been resorted to, and the amount of car mileage now required to carry a given tonnage of coal in the country has been very greatly increased.

"Again, under the control of the Food Administration and with the patriotic zeal of the people we got a heavy car loading last year, which had never been realized before, and which admitted of the traffic being carried in fewer cars than before. We are doing what we can to accomplish heavy loading this fall, but we can hardly hope to get the result which could be and was accomplished under war conditions.

Moving the Grain Crop

"We are endeavoring as far as necessary by an emergency movement to provide whatever cars are required to transport grain to the capacity of the elevators. We are now making a study to find any elevator space that is not occupied, with a view to finding the cars and supplying them to haul grain until that space is filled and then to supply cars to whatever extent is necessary to keep the elevators filled. The extent to which the elevators can be relieved of grain will largely depend on the rapidity of the export movement, and that will depend on foreign buying, and on the ocean tonnage available, so that in the last analysis the speed with which the grain crop will move is likely to be controlled by export movement, and that in turn will be controlled by the foreign buying and by the ocean tonnage.

"There were a number of very complicated influences which had the result of bringing about an unusual proportion of bad order cars, in the early part of the summer. In June we gave instructions to overcome that difficulty. About the time those instructions got into effect we had the very serious and widespread strikes on the part of the shop men in the month of August, and that set back our program to a very serious extent, but beginning with about the middle of August we have rapidly overcome that position. We have diminished the number of bad order cars by about 45,000, and at the same time we have brought into service some of the new cars which we ordered last year, to the extent of about 40,000; so that the situation with respect to the number of cars available for service is rapidly improving, and yet the demands for services are apparently increasing more rapidly than the cars can be found for that service. All of which goes back to the condition that there are not enough cars in the country and that there will not be until we can get a definition of the situation on the basis to which the railroad companies can proceed to buy the additional equipment they need.

The Labor Situation

"You have heard a great deal, and should, about extreme cases of increases in pay to the railroad employees. In that, as in so many other things, it is the extreme cases that are dwelt upon, whereas in a matter of this sort we must look at the general situation. The general situation is that the average increases in rates of pay which have been made for railroad employees throughout the United States has been about 50 per cent over the rates of pay which were in effect in December, 1917. I have yet to learn of any important industry which has shown a more conservative average of increase in pay in the same time, in view of the war conditions which made increases in pay both proper and necessary, and while this increase in the rate of pay has been about 50 per cent, the increase in the earnings per individual has been less than that, because the number of hours the individual employee works is less than the number of hours he was working in December, 1917, under the war pressure then prevailing and under the longer hours which were then established.

"I am aware that it is the present habit to condemn labor unsparingly. I believe this is unjust. I believe most of the extreme positions which have been taken by labor have been the reaction from extreme and unjust positions which have been taken in the past by employers, and I believe, too, that a large part of the present manifestations on the part of labor are simply a part of the world-wide unrest that we see on every hand. I think it is unfortunate for us to drift into an attitude of settled antagonism to labor, because labor is a very important part of the community, and in the long

run we must find a proper modus vivendi whereby we can secure the proper co-operation with labor, and I believe, by patience and fairmindedness, as well as firmness, that that can be accomplished, and I think it is unfortunate and not in the public interest to develop a bitter hostility on account of these manifestations at present, which I regard as temporary and which are momentary growths of the unsettled conditions which have been the result of the war.

Examples of Improved Efficiency

"I believe there is the most earnest desire to find ways to improve the efficiency of railroad operation. And I want to give you a few illustrations, which are mere types of many things that have been done.

"At the outset of the Railroad Administration it was decided to make a careful check of the practices that obtained in the roundhouses, in the handling of locomotives, and the practices that obtained in handling locomotives in terminals. A most careful study was made of that subject and it was found that there was room for very considerable improvement, and the present indications are that we are saving from fifteen to twenty million dollars a year on account of improved methods of handling the locomotives in the roundhouses and at the terminals.

"Another matter that was taken up with great activity was the matter of fuel conservation, to get a better quality of fuel, to see that it was fired with more care, to see that greater efficiency was gotten out of it. The railroad officers and engineers, the firemen and trainmen, and the shopmen throughout the country were interested in that work. Conferences and discussions were held all over the country, and our present belief is that we are saving from twenty to thirty millions of dollars a year on account of the improvements that have been made in our conservation of locomotive fuel, without any reference to the conservation of fuel in stationary power plants.

"We undertook early in the Railroad Administration to adopt standard operating statistics, so as to bring out the various elements of railroad efficiency, and so that we could compare what was done on one railroad with what was done before, and what was done on one railroad with what was done on another railroad. The result is that these statistics, which had never before been developed for the railroads of the country, as a whole, have been so developed that many of the railroads now get information about their own operation which they did not have before, and all the railroads now have an opportunity to compare theirs with those of other railroads, which was before impossible.

"Another matter: In the spring I took up the proposition that the railroads were not in a position to supervise their expenditures for maintenance of way and structures, and expenditures for equipment, to the same extent and with the same success that they supervised their expenditures in the movement of trains. The regional directors took the matter up at my request, and each one held conferences with all his federal managers. They exchanged the minutes of their meetings, and the federal managers then held conferences with all their subordinates, and local committees were formed and there has been a study of ways and means to improve the efficiency of supervision in all maintenance matters, and that is where a very large part of the total operating expense is found. There has been a greater study of that phase of railroad administration than ever before in the history of the country, and there has been a reaching out to find new units of comparison, so that each officer can see whether his subordinates are using their labor and material to the best advantage, so that one operating division can be compared with another, and so that there may be more efficient supervision of the men themselves. And I believe that we are getting very important progress in that direction.

"The most progressive railroads had been doing things of this sort for years. We do claim that we did take advantage of a very broad opportunity that was given to us to develop a similar interest on the part of all railroads, and to develop a comparative interest as between different railroads.

"In addition to that we have been endeavoring to encourage the enlistment of the interest of the employees in these matters, because the employees see a great deal that can be improved upon, and we are trying to encourage a situation where they will feel encouraged to come forward with their suggestions and criticisms, and will feel that they will be welcome in doing so, instead of being criticised. My sincere judgment is that in all these matters that I have used for illustrations, as well as in a great many others, the things that have been done by the Railroad Administration, simply on account of the opportunity it had, and which the railroads themselves did not have before, are going to bear fruit in increasing measure for a long time to come.

Maintaining the Properties

"We have another branch to our work which is of supreme importance. We are charged with the task, representing the United States government, of settling with the railroad corporations, after two years of occupation of property worth, perhaps, sixteen to eighteen billions of dollars, or more, and with perhaps two hundred and twenty-five or two hundred and fifty thousand miles of railroad, with all sorts of incidental properties which have been included.

"We devised a standard form of contract which the railroad companies and the government entered into. Those contracts are necessarily complicated, because they deal with one of the most complicated of subject matters. The questions that arise under those contracts are bewildering in number, and in their complexity, and it will be a work of supreme importance, involving hundreds of millions, and even billions, of dollars of the government money in working out a proper and just final settlement.

"One of the most important phases of that subject is the question of the maintenance of the properties. The statute contemplates, and the standard contract provides, that the properties shall be turned back in the condition in which they were received. But the contract also provides that the government shall be deemed to have complied with the obligation if it shall have spent upon the properties the same amount that was spent on them during the test period of three years, for similar purposes, making due allowances for differences in prices of wages and use of the property. So that is one of our greatest problems, to maintain the properties up to what the contract contemplates, and to avoid over-maintenance. We have given that a great deal of study. We have had in many instances to cut down budgets that were proposed for railroad companies. On the other hand, it has been impossible, on account of the scarcity of materials which existed during the war, to obtain for all railroads all of the materials that they put on the properties during the test period.

"Broadly speaking, my judgment is that we will be able to show, at the end of this year, that in the aggregate we have spent on the property what the contract contemplates; that what we may be short in some respects has been made up in other respects. The general impression, which has been disseminated to a considerable extent, is that the railroads have been seriously under-maintained during federal control, is altogether erroneous, and the balance, one way or the other, will not be a large figure, considering the enormous amounts that are involved.

"Now, in addition to these problems, we have another one, and that is not a small one. That is the problem of effecting the transfer of these properties back to private control. That is a vastly more difficult problem than was that of the government in taking over these properties. I am particularly anxious that this transfer back to private control shall

be made without disturbing the public service, and without subjecting the traveler or the shipper to confusion or uncertainty as to how he shall conduct his business when the railroad companies resume control, which control will not be unified, and may not have the uniform practices which have prevailed during government control."

The reports made by the several committees to the association were all adopted, although in several instances they brought forth lengthy discussion. These reports are briefly as follows:

Valuation

The valuation committee of the association reported the status of valuation work in the United States during the past year and outlined briefly the work of the association's Bureau of Valuation in assisting the federal government in this work. The committee also recommended that, in view of the fact that many of the carriers will urge that the cost of reproduction new should be based upon the prices which have prevailed during the abnormal war period, all regulating commissions should begin now to give close attention to that question.

Railroad Rates in Inter-Mountain States

The special committee appointed to confer with the director general of railroads in reference to passenger rates on federal controlled railroads in the states of Arizona, Nevada and New Mexico with a view of having the rates in those states reduced from 4, 5 and 6 cents to the general basis of 3 cents per mile, reported the results of its conferences with William G. McAdoo and Walker D. Hines, and after outlining the financial result of this extra fare in Arizona, Nevada and New Mexico stated that the commission of the three states involved have decided to file a joint complaint before the Interstate Commerce Commission in the hope of obtaining a 3-cent per mile rate by attacking the interstate rates from and to those states. Immediately following the presentation of this report Commissioner F. A. Jones of the Arizona Corporation Commission introduced a motion that the convention go on record as opposing more than a 3-cent per mile passenger rate on any of the Class A railroads of the United States. A substitute motion was later presented by Mr. Jones, and when the attitude of the convention seemed to be fully against adoption of the motion it was withdrawn.

Special War Committee

The report of the special war committee dwelt largely on the action taken by its chairman and members on legislative questions in connection with the solution of the railroad problem. In addition the report outlined the efforts of this committee to adjust satisfactorily the status of state commissions as regulating bodies, and the recommendations made by the committee to the House and Senate committees investigating the railroad problem. The position taken by the committee was, in general, in opposition to any form of government ownership or operation of the railroads and in support of the Esch-Pomerene bill with amendments which would preserve the police powers of the state with respect to service, utilities, abandonment, extensions and rates, and also to the proper co-operation between state and federal authority. In addition, the committee recommended that the existing interstate and intra-state rates, fares, charges and classifications, be continued in force for a period not beyond July 1, 1921.

Railroad Service, Accommodations and Claims

"Inquiries made by your committee through the commissions of the various states," said the committee on the above subject, "disclose that owing to jurisdiction being limited largely to acting in an advisory capacity to officers of the federal Railroad Administration, state authorities have been unable to accomplish as much as might be hoped for with reference to an improvement surrounding railroad service and accommodations, and the handling of railroad claims during the past year.

"With respect to restoration of train service, particularly on branch lines, the attitude of railroad officials has been generally that the trains which were discontinued were those which were the least profitable, and in fact unprofitable, and that therefore these trains should not be restored. While these contentions as to unprofitableness are in many instances true, the convenience of the public has frequently been overlooked. The reasonable convenience of the public, to whom the carrier owes its first duty, should be the determining factor in such matters. Even though the passenger revenue derived from a particular train on a branch line may not indicate a profit, it will generally be found that the total revenues of all kinds received from traffic on the branch will amply justify the operation of passenger trains as a convenience of the public. The operation of passenger trains for the reasonable convenience of the public is a part of the price which the carrier should justly pay for the privilege of enjoying the generally profitable freight business of a branch line.

"With reference to the handling of package freight, there appears to be some conflict of opinion as to the results obtained by the 'Sailing Day' plan inaugurated by the Railroad Administration, and which was later curtailed to a large degree. In most instances where the plan proved a failure, it was probably due to inadequate freight house terminal and transfer facilities, which continue to be the biggest problem to contend with in the handling of package freight. Considerable objection is made against delays occasioned by holding package shipments until a minimum weight of 10,000 lb. has accumulated. However, in order to properly conserve equipment, it is doubtful if this practice should be discontinued.

"The establishment of more refrigerator car lines on way-freight runs, should be encouraged in every possible way. Commissions in the various states might properly co-operate with the state agricultural and marketing departments, with a view of having refrigerator car lines established, in order to get the excess overproduction of perishable food stuffs to populous centers.

"The closing of stations and the abandonment of unprofitable lines, both steam and electric, constitute a class of cases which appear to be steadily increasing before many commissions. The reported decisions indicate that all commissions grant the desired authority in such cases only with the greatest reluctance, and after showing is made of hopeless insolvency or long continued operation at a loss. A carrier should be permitted to forego its obligations to the public, only in cases of the most extreme urgency, and it is needless to say that the caution displayed by all commissions with respect to such cases, is to be highly commended.

"Claims for loss and damage, and overcharges, while apparently being handled more expeditiously on the part of some carriers, continue to be a constant source of annoyance and friction with others. Overcharge claims as in the past are occasioned largely through failure of agents and rate clerks t o properly revise billing. It appears a hopeless matter for agents at small stations to keep their tariff files in proper order, making it impossible to keep in touch with the current rates, even if the agent possesses sufficient knowledge to interpret a tariff. Some of the more progressive lines have a corps of tariff inspectors employed, whose duty it is to visit all stations frequently for inspection of the tariff file, and to instruct agents and rate clerks in the proper use of such tariffs. This work is to be commended in every way, as enabling employees to make correct quotations to the public, and eliminating many overchange claims.

"Complaints are made in some sections, of refusal of cer-

tain carriers to join with shippers in reparation claims, unless claimant can furnish proof of actual financial loss, the practice resulting in some instances in injustices to claimants.

"Complaint is also made that numerous carriers are going back in their records, over a period of several years, and digging up undercharges of all kinds, and presenting bills for collection. This entails in most instances a severe hardship on former consignees, who had no knowledge of the fact that their freight bills were incorrect, and who cannot now collect, in turn, by deducting from the invoice, or adding to the selling price of the merchandise involved. The enactment of statutes of limitation, fixing a reasonable time within which undercharge claims may be collected, would appear to be a proper matter for serious consideration on the part of legislative bodies.

"Public health officials and physicians of prominence have issued country-wide warnings of the danger of a recurrence of the influenza epidemic during the coming winter and spring. Railway stations and waiting rooms, and passenger coaches, where large numbers of people necessarily congregate, offer a fertile field for the dissemination of the germs of this dread malady. Your committee respectfully urges upon all commissions, the propriety of immediate action, with view of having all station buildings placed and kept in proper sanitary condition. It is further urged that after consultation with the health officials of your states, instructions be issued to railroads, to be promulgated to all agents, as to proper care of waiting rooms, with respect to ventilation, heating, disinfectants, etc., with a view of minimizing the chances for the spread of this scourge."

Public Ownership and Operation

There is now before Congress what is known as the Sims bill, embodying the so-called "Plumb Plan" for government ownership and labor operation of the carriers. It is apparent that so far as it has gone it has gained little support in Congress, and that it will not have serious consideration in the framing of railroad legislation. It is the most radical movement toward government ownership yet broached, but the fact that sentiment for it has been aroused and fostered by as well organized and widespread propaganda as can well be imagined has given it publicity which it does not merit. There is need, however, of the committee's calling attention to the fact that so deep-rooted in some quarters has become the belief in this measure by the use of propaganda that it must be combated by sane dissemination of information and not summarily dismissed as visionary.

We cannot fail, also, to note the growth of the nationalization idea in this country, especially in the middle west. North Dakota has made more rapid strides in socialization than any other state in the union. We will be able in a few years to judge dispassionately of the proposition.

The movement toward public ownership and operation has received succor from a wide variety of sources. The argument that the public should hold in its name the fee and title of those activities which serve the public and which the public regulates is an argument which many people accept as the last word on the subject. The argument that the public can do as it pleases with that which is its very own is in many quarters equally conclusive. One of the arguments that is seldom used, and never can be truthfully used, is that public ownership and operation is more efficient than private ownership and private operation. Instances do exist where a well-managed, publicly-owned property is more efficient than a poorly-managed, privately-owned property, but these are rare and do not in any way weaken the statement that the final desideratum in a public property is that degree of efficiency which is being obtained under private ownership and operation.

There has been considerably more agitation for public ownership during the past few years than ever before. The underlying reasons are many, and may perhaps all be traced back to the war and the conditions growing out of it. The reasons for the impetus given to the movement for public ownership and operation may briefly be summarized as follows:

1. The propaganda started by the governmental control of wire lines and railroads.
2. The failure of utility managements to meet the increased demands upon them.
3. The failure of regulatory bodies, either state or local, to sense the seriousness of situations and to give utilities the needed assistance in time to avert disaster.
4. The inherent thought with many people that public ownership and operation is a panacea for all ills.
5. Increased rates have had a great effect.

Your committee recommends that the members of this organization as individuals and as members of regulatory bodies keep awake to the tendency and see to it that whatever legislation is perfected to help solve the problem be the result of experience and study.

This report was not concurred in by all members of the committee, George R. C. Wiles, chairman of the West Virginia Public Service Commission, filing a supplemental report stating that the committee's report was not vigorous enough in its denunciation of government ownership; W. G. Busby, chairman of the Missouri Public Service Commission, objected to some of its clauses, and Lawrence B. Finn upheld its conservative language.

State and Federal Legislation

Your committee met in conjunction with the Executive and Special War committees, and the president of the association on two occasions in Washington deliberated for several days each time and attended congressional committee hearings at which the results of their conferences were presented.

The first meeting was in January, 1919, and the position taken is as follows:

First, that no general reconstruction of the laws relating to carriers should be attempted by the Congress then in session, but that certain remedial legislation was imperatively needed.

Second, that federal control of the carriers should be subjected to the authority of federal and state commissions as it existed prior to government operation.

Third, that the proposal to continue federal operation of the railroads five years beyond the ratification of peace treaties, and the wires indefinitely, be rejected, and that Congress provide in lieu thereof that the railroads be returned to their owners on December 31, 1919, and the wires on June 30, 1919.

Fourth, that the Commerce Act be amended so as to provide for co-operation between the Interstate Commerce Commission and the state commissions affected in the establishment of non-discriminatory state and interstate rates.

Fifth, power to merge all railroad operation into one system in times of stress or emergency should be lodged in some federal authority, but the conditions under which the authority may be exercised should be carefully defined and provision made for the return of the properties when such conditions cease to exist. Consolidations should be permitted when in the public interest as determined by the Interstate Commerce Commission on interstate roads and by the proper state authorities as to terminals and intrastate roads.

Sixth, the construction of additional railroad facilities should be limited to those required by public necessity and convenience, with concurrent jurisdiction over the subject in both state and federal authorities as to interstate roads and where the proposed construction substantially affects

interstate commerce. The states should have exclusive jurisdiction over spur and industry tracks.

Seventh, the issuance of securities by interstate carriers should be regulated by the Interstate Commerce Commission.

Eighth, the membership of the Interstate Commerce Commission should be increased or state commissions empowered to act as regional commissions under the federal commission.

Ninth, co-ordination of railway and water transportation systems should be provided for and the regulating tribunals empowered to fix minimum as well as maximum rates.

Tenth, shippers should have the right to route traffic except in cases of emergency.

Eleventh, the proposal to empower the Interstate Commerce Commission to fix the wages of railroad employees was disapproved as a serious interference with the efficiency of the commission along other lines.

Twelfth, the proposal to create a federal secretary of transportation was disapproved; also the federal incorporation of the carriers.

Thirteenth, in the event extensive consolidations of the carriers take place, a larger control by both nation and state was favored.

The second meeting of the Association committees was held on the Esch-Pomerene bill. The consensus of opinion of the members present was that, assuming the constitutionality of the bill, it would deprive the states of practically all their powers over the railroads and wires. This conference recommended several amendments to the bill.

On September 3, 1919, Senator Cummins, chairman of the Senate Committee on Interstate Commerce, introduced a bill, which, together with the Esch-Pomerene bill, is to become the foundation of national railroad legislation, in the opinion of your committee. The Esch-Pomerene bill, amended in harmony with the greater part of the suggestions made by your committees, is incorporated in the bill.

Your committee has been unable to confer as to the general wisdom of the bill, but we believe that it embodies the most practical plan of dealing with the railroads fundamentally that has so far appeared. The committee recommends, in view of the prestige the bill has by reason of its authorship, that the convention consider it in detail and take definite position as to all its provisions.

Grade Crossings and Trespassing on Railroads

In addition to recommendations in 1916 which were endorsed by the association, this committee strongly urges the adoption of standard signs showing the hours on duty of crossing watchmen and "STOP" signs which should be displayed when such crossings are left unprotected, similar to those approved by the Public Utilities Commission of Connecticut. It is very important to the public using the railroad crossings that dangerous crossings not protected by a watchman should be provided with movable warning signals or other devices.

With the popularity of the automobile as a medium of locomotion, there is a widespread demand for the elimination of grade crossings or the separation of grades, especially in populous communities where trains pass frequently and where the physical conditions are such as to prevent a clear view of approaching trains. The public welfare certainly requires that there should be some protective device at all dangerous crossings to warn the unwary. It would seem advisable to carry out the recommendations of your committee in 1916 in reference to the installation of uniform crossing signs, supplemented by automatic warning signals at grade crossings where traffic is more or less continuous and no flagman or crossing gates are maintained, and standard signs showing the hours on duty of crossing watchmen. Every crossing should be plainly marked if it is only to be the familiar crossed arms and sign "Look out for the Cars."

Force stop rises or humps in the road or a pile of rocks in the center of the highway calling attention to the proximity of a grade crossing undoubtedly do a good job of abruptly checking the speed of an automobile bowling along toward the crossing at a lively clip, but they are at best crude devices and temporary expedients. It is questionable whether they are more of a menace than an aid to safety. The carriers in the opinon of this committee should spare no pains in making their crossings safe, and at crossings in cuts there should be dugouts or yards to provide an avenue of escape in the event of an impending collision. It might be well to have all crossings at right angles where possible as a further means of safety to give a motorist or driver an opportunity of getting out of a tight place should such an emergency arise.

Some of the states already have laws providing for the prorating of expenses incurred in the elimination of grade crossings, for the removal of the old crossing and the establishment of a new roadway. The commissions of most states probably can apportion the expense between the railroad companies and the public when grade crossings are ordered eliminated or separated.

Practically every state in the Union has a law or laws designed to prevent trespassing on railroads and providing penalties for violation. However, judging from the large number of trespassing accidents occurring annually, it would appear that these statutes are not strictly enforced. It is out of the question to expect the railroad companies to police their entire rights of way to guard against trespassing. Every effort should be made to co-operate with the railroad companies in suppressing the trespassing evil and curtailing the casualties resulting therefrom.

Statistics and Accounts of Railroad Companies

We recommend that a resolution by the convention be adopted that will provide that operating expenses of steam railroads shall be divided between states on the following bases:

1. Maintenance of way and structure expense accounts shall be charged to the state in which the expense is incurred. All other maintenance of way and structure expenses which are incurred for the common good of a railroad system shall be divided between states on the basis of the allocated expenses for this group of accounts found chargeable to the several states through which the system runs.

2. Maintenance of equipment group of expenses as to yard engines shall be charged to the state in which the engine performs service. Maintenance of road locomotives shall be charged to the state in which the service is wholly performed, on train divisions which overlap state lines, the expense of maintaining such engines shall be apportioned between states on the locomotive miles made by the locomotive in each state. The expense of maintaining passenger train cars shall be divided between states on the car mile basis, for the different classes of passenger train cars stated in the Interstate Commerce Commission's accounting circulars, which require railroad companies to state separately the mileage of passenger train equipment. The expense of maintaining freight and work train equipment shall be divided between states on the freight car mile basis.

3. The traffic group of expenses shall be charged to the state in and for which the services are performed as far as possible; all other expenses of this group of accounts shall be divided between states on the basis of the allocated expenses found for the traffic expenses for each state.

4. The transportation group of accounts shall be charged to the state in which the services are performed; such accounts as station wages and expenses, yard wages and expenses, road train operating expenses that run over train divisions which lay wholly within one state, should be charged to the state affected. On train divisions which run

crossed the state line the expenses of operating such trains shall be prorated between states on the train mileage basis of the trains affected. All other transportation expenses which cannot be allocated by states shall be divided between states on the allocated expense basis found for the transportation group of accounts.

5. The expense of operating dining cars shall be divided between states on the dining car mile basis.

6. The general expense group of accounts shall be divided between states after all expenses incurred in and for an individual state have been charged to that state, on the basis of the found allocated expenses for the several groups of accounts, maintenance of way and structures, equipment, traffic, transportation, and dining car services.

Accrued city, county and state taxes shall be charged to the state in which the taxes are accrued. All other taxes shall be prorated between states on the basis of the allocated taxes.

The hire of equipment, debit or credit, shall be divided between states on the ratio of the freight train car mileage in each state to the total freight car lines of the system.

We further recommend that the convention go on record as favoring the following plan or method for dividing operating expenses between freight and passenger services after said expenses have been divided between states.

1. Maintenance of way and structure group of accounts shall be charged direct where possible to the class of service for which the expenses are incurred. By this we mean that the expenses of maintaining freight yards shall be charged to freight. The expense of maintaining passenger stations should be charged to passenger, and exclusively freight depots should be charged to freight service. Station buildings used in common for both classes of traffic should be divided between freight and passenger on the space occupied basis. All expenses incurred for the maintenance of railway and track structures used in common shall be divided between passenger and freight on the "gross ton mile" basis. The expense of maintaining roadway buildings such as water tanks and coal chutes, shall be divided between freight and passenger on the gross ton mile basis.

2. Maintenance of equipment expenses shall be charged direct to the class of service for which the expenses are incurred. Road locomotives that perform mixed freight and passenger services shall be divided between the two classes of business on the gross ton mile basis of the trains affected. The expense of maintaining yard engines shall be divided between freight and passenger on the switch engine hour basis.

3. Traffic expenses shall be charged direct to the class of service for which the expenses are incurred; where possible, the common expenses shall be divided on the allocated expense basis for this group of accounts.

4. Transportation group of accounts shall be charged direct where possible to the class of service for which the money is expended. The train despatchers and telegraph operators shall be divided between passenger and freight on the revenue train mile basis. Station employees' wages and expenses that cannot be charged direct shall be divided between freight and passenger on the time employed basis. The yard group of expense accounts shall be divided on the switch engine hour basis. All other unallocated expense accounts in this group of accounts shall be divided on the found expenses freight and passenger in the transportation group of expenses.

5. Dining car expenses shall be charged direct to passenger service.

6. General expenses shall be divided between freight and passenger on the found expenses for all of the other group of accounts described in former paragraphs on this subject.

We further recommend that the convention adopt a resolution recommending to the Interstate Commerce Commission that that commission change their present accounting rules so that the money spent for the maintenance of equipment where the car or engine is given a general overhaul, be charged to the depreciation reserve account.

Resolutions Adopted at Closing Session

The following resolutions regarding the railroad problem were adopted at the closing session of the convention:

"The thirty-first annual convention of the Railway and Utilities Commissioners, in convention assembled at Indianapolis, Ind., being fully advised as to the purpose for which the railroads were taken over by the government and the results of its operations; and being of opinion that the war emergency is now over and that there is no need for the further continuation of the government control of railroads, declares itself in favor of the return of the railroads to private ownership and operation not later than December 31, 1919. The transition from federal to private control should be made with as little disturbance as possible. Realizing that the immediate restoration of pre-war intrastate rates would result in violent discriminations between intrastate and interstate commerce, we thus recommend that the existing interstate and intrastate rates, fares, charges and classifications initiated by the director general may continue in force for a period not beyond July 1, 1921, unless sooner changed by the state or federal authorities.

"Congress is now considering remedial railroad legislation. We believe that certain principles should be incorporated into the law and do earnestly recommend the favorable consideration of the following:

"We favor the prompt merger, without friction, of all the carriers' lines, facilities and organizations into a continental and a unified system in times of stress or emergency.

"We favor the merger, within proper limits, of the carriers' lines and facilities in such part and to such extent as may be necessary in the public interest to meet the reasonable demands of our domestic and foreign commerce. Consolidations of interstate lines or systems should be made with the approval of the Interstate Commission, with ample provision for proper state authorities to appear and be heard for or against the proposition.

"We favor the consolidation of terminal facilities whenever the public interest will be promoted thereby. In these matters the local state authorities are in a better position to pass upon the merit of the question than a federal body and, therefore, we suggest that such consolidation should not be made without the approval of local authorities. In passing upon consolidations, the public officers should have due regard to the value of competition.

"We favor the limitation of railroad construction to the necessities and convenience of the public and believe that no new construction should be permitted without the issuance of a certificate of public convenience and necessity.

"If the construction is for a line passing between two or more states, there can be no objection to having the federal authorities approve the same, but its action should be in addition to and not exclusive of the action of local authorities.

"Federal authority over this subject should not extend to the construction of sidetracks, spur, industry, team or switching tracks, street cars and electric interurban lines or the extensions of lines to be located wholly within one state.

"We favor the control of the securities of interstate lines by the federal government under such laws, rules and regulations as will require copies of the applications to be filed with the proper local authorities in the states through which the lines operate.

"In respect to this question we do not believe that the power should apply to street car companies or electric interurban companies nor should it apply to telephone or telegraph companies, the major portion of whose physical prop-

erties, devoted to public use, measured by its value, is located within one state.

"We favor the development and encouragement of inland waterways and co-ordination of railroad land and water transportation systems.

"We believe that employees of public service corporations should be adequately compensated and that rates should be established on a basis which will permit the payment of just wages. Public service should not be jeopardized by strikes or lockouts. The responsibility of capital and labor is equal. Each owes to the public the highest measure of duty. Thus, we favor the development of some plan for the final determination of wage disputes.

"We favor the creation of a transportation board charged with the duty of making a comprehensive study of transportation conditions, rail, water and highway, including consolidations of railroad systems and terminals. The conclusion of this board should be submitted to the Interstate Commerce Commission and its functions should be wholly advisory.

"We do not believe that a transportation board should be given any of the jurisdiction which is now exercised by the Interstate Commerce Commission over rates, valuation, accounting, car service, safety appliances or any other duties now embraced by statute.

"We are opposed to federal incorporation of railroads, either permissive or required.

"In view of the inherent social and practical objections to the establishment of a definite guaranteed return to private service corporations, we wish to record ourselves as unalterably opposed to such a plan.

"Under any form of regulation, due consideration must be given to the necessity of preserving local control over the rates, service, accounting, extensions and abandonment of the properties employed in public service.

"We iterate the resolutions heretofore adopted by this convention favoring co-operation between state and federal authorities in respect to rates.

"Proper co-operation between these officials will eliminate, to a very great extent, unjust discrimination which may exist between state and interstate rates."

Other Business

A special committee appointed to select a place for the 1920 convention reported that it had decided upon Washington, D. C. The date set for the next national gathering of the commissioners is November 9, 1920.

The election of officers resulted in the selection of the following men, each by a unanimous vote: President, Walter A. Shaw, commissioner, Illinois Public Utilities Commission; first vice-president, James A. Perry, commissioner, Georgia Railroad Commission; second vice-president, Carl E. Jackson, chairman of the Wisconsin Railroad Commission; secretary, James B. Walker, secretary of the Public Service Commission of New York (First District), and assistant secretary, L. S. Boyd, librarian of the Interstate Commerce Commission, Washington, D. C.

The movement of wheat over the lines of the Atchison, Topeka & Santa Fe, in Texas, New Mexico, Oklahoma and Kansas was greater during November than any similar movement in the history of the Southwest. Much of the grain was loaded from heaps on the ground and the total movement was about 2,000,000 bushels, principally to Galveston, for foreign shipment. A total of 3,693 cars were moved from Texas and New Mexico during the last week of the month. It is estimated that there are still approximately 1,000,000 bushels on the ground waiting to be moved in Texas and about 500,000 in Kansas.

Train Accidents in September

THE FOLLOWING is a list of the most notable train accidents that occurred on the railways of the United States in the month of September, 1919:

Collisions

Date	Road	Place	Kind of accident	Kind of train	Kil'd	Inj'd
10.	Monongahela	Brownsville	bc	F. & F.	1	2
15.	Balt. & Ohio	Brooklyn	bc	F. & F.	0	6
21.	Phil. & R'd'g	Acorn	bc	P. & F.	1	8
23.	A., T. & St. F.	Kennedy, N. M.	bc	P. & F.	0	42
29.	Central N. Eng.	Holmes	rc	F. & F.	3	7

Derailments

Date	Road	Place	Cause of derailment	Kind of train	Kil'd	Inj'd
1.	Atlanta, B. & A.	Fitzgerald	washout	P.	2	14
18.	Merchts. B'dge.	St. Louis	d. eq.	F.	2	0
21.	Southern	Black Oak	b. rail	P.	0	1
21.	Minn. & St. L.	London Mills	b. wheel	F.	2	0
23.	Balt. & Ohio	Confluence	.....	P.	2	0
27.	Seaboard A. L.	Seacoast	malice	P.	3	0
28.	Kansas City M. & O.	Foard City	.....	P.	0	12
28.	Southern Pacific	Salinas, Cal.	exc. speed	P.	2	40

Other Accidents

Date	Road	Place	Cause of accident	Kind of train	Kil'd	Inj'd
*17.	Louisville & N.	Hygeia	boiler	F.	1	1

The trains in collision on the Monongahela Railroad, near Brownsville, Pa., on the 10th, were through freights, the trains meeting on a curve while running at a moderate speed. There was a dense fog at the time. One trainman was killed and two were injured.

The trains in collision near Brooklyn, Ohio, on the 15th, were westbound freight No. 97 and eastbound No. 60, second section, the latter consisting only of a locomotive and two cabooses. The enginemen and firemen jumped off and escaped, but six trainmen were injured. The cause of the collision was the failure of No. 97 to regard the superior right of the opposing train. Train No. 97 was on a side track at Willow, about 4 miles east of Brooklyn. No. 60 was a first-class train, and the first section sounded the whistle to warn the westbound train to wait for the second section. The engineman claims that this whistle was given at both the front end and the rear end of No. 97; the men at the front end say that they did not hear it, and they also failed to observe the flags on first 60; the men at the rear of the standing train did hear the whistle, but nevertheless they took no action to prevent the engineman from moving forward on the main track; and the collision occurred 1½ miles east of Brooklyn.

No. 97 was a train of about fifty cars, and as the side track was not long enough or it, a flagman had to be sent out to stop first No. 60; the engineman of No. 60 acknowledged the flag, but there was conflicting testimony as to whether he sounded the whistle again until he reached the rear end of the freight train. In or near the freight caboose there was a pilot, who saw the green flags on the passenger train and communicated by word of mouth with men on the passenger train, and with the rear brakeman of the freight; but neither the pilot nor the brakeman took any action to prevent their own train from proceeding. The train might readily have been stopped by the use of the conductor's valve in the caboose. The flagman claims that he swung his red flag as a stop signal, but the line of road is curved and he did not know that any one at the front end of the train saw his signal. He and the pilot assumed that the engineman and the conductor (who was on or near the engine) had probably received some order from the passenger train. The freight had moved forward and cleared the main track before the passenger reached the east switch.

The train despatcher, in issuing orders to the freight had

*Abbreviations and marks used in Accident List:
rc, Rear collision——bc, Butting collision——xc, Other collisions——b, Broken——d, Defective——unf, Unforeseen obstruction——unx, Unexplained——derail, Open derailing switch——ms, Misplaced switch—acc, obst., Accidental obstruction——malice, Malicious obstruction of track, etc.——boiler, Explosion of locomotive on rad——fire, Cars burned while running——P. or Pass., Passenger train—F. or Ft., Freight train (including empty engines, work trains, etc.)—Asterisk, Wreck wholly or partly destroyed by fire——Dagger, One or more passengers killed.

furnished no copy for the pilot, explaining this by saying that he thought the conductor was better qualified for duty on that part of the road than the pilot was. The pilot had protested, when called, that he was not fully posted on the characteristics of the line, but he was told that the trainmaster said he must go. On reaching the train the conductor told the pilot that he did not need a pilot. Sometime after the freight had started from Willow the pilot asked the conductor, who had just come back from the front end of the train, where he was going for second No. 60; the conductor said that they were going to R D Tower, and that "second No. 60 has better stay there." The pilot, even then, did not ask to see the conductor's orders; he, the conductor, had been on that run for six or seven months and, said the pilot, must know more about the work than himself.

The men in charge of the freight train had been on duty about 13 hours, and all of the men, of both trains, were experienced and with long records of satisfactory service, except one brakeman; but the conductor and the pilot of the freight had been disciplined for not properly protecting their trains by flag, and the engineman of the freight had been responsible for a rear collision.

The investigator for the Interstate Commerce Commission concluded that all of the men involved had been inattentive to their duties; and he did not attempt to clear up all of the discrepancies in the statements of those who testified.

It appears that space interval rules are in force on this part of the road for the protection from each other of first-class trains moving in the same direction; and second No. 60 was held at R D Tower, the first office west of the point of collision, until first No. 60 had passed South Park, the first office east of the point of collision.

The trains in collision near Acorn, Pa., on the 21st were southbound passenger No. 112, and a northbound extra freight. The fireman of the freight was killed and eight passengers were injured. The collision was due to failure of the men in charge of the freight to observe, by the schedule of train No. 112, that it ran on Sunday. These men, Howard Long, conductor, and William Andrews, engineman, were tried in court on a criminal charge; and at Norristown, on November 15, they were sentenced each to six months' imprisonment.

The trains in collision near Kennedy, N. M., on the 23rd, were a westbound passenger and an eastbound locomotive without train. Forty-two passengers were injured, none of them very seriously. The collision was due to forgetfulness on the part of the engineman of the eastbound locomotive, who overlooked a train order.

The trains in collision on the Central New England at Holmes, N. Y., on the 29th, were an eastbound extra freight, and a train ahead of it consisting of two locomotives and one caboose, the caboose being occupied by a number of trainmen who were being carried to their homes deadhead. The freight, disregarding a stop signal, and also because not properly warned by the flagman of the leading train, ran into the caboose, and eight train-service men were injured, three of them fatally. Two other trainmen were injured by jumping off the engine of the freight just before the collision.

The train derailed on the night of the first of September, near Fitzgerald, Ga., was northbound passenger No. 20. The engine and first two cars were derailed at a washout and fourteen passengers were slightly injured.

The train involved in the accident on the Merchants Bridge, St. Louis, Mo., on the 18th, was an eastbound freight of the Wabash Railroad. One of the three locomotives at the rear of the train was thrown off the track while on the bridge and fell 50 ft. to the ground below. The engine turned over in its descent and as it fell against a pillar at or near the ground the steam dome was knocked off and the boiler exploded. The engineman and fireman were killed. The bridge was slightly damaged. The engine was derailed by the lifting of the wheels off the track on one side by the breaking of the main rod, the rod striking against a tie.

The train derailed at Black Oak, Tenn., on the evening of the 21st was southbound passenger No. 16, consisting of a locomotive and seven cars well filled. The engine and five cars were thrown off the track by a broken rail. Six passengers and one trainman were injured.

The train derailed near London Mills, Ill., on the evening of the 21st was a westbound freight. The engine was derailed by the breaking of a tender-wheel and with six loaded cars fell through a trestle bridge. The engineman and one brakeman were killed.

The train derailed near Confluence, Pa., on the morning of the 23rd was eastbound passenger No. 8. One of the two locomotives drawing the train, and the smoking car, were overturned. One fireman was killed and one engineman fatally injured. The collision occurred about 2 a. m.

The train derailed near Petersburg, Va., on the night of the 27th was southbound through passenger No. 5. The engine was thrown off the track at a switch, and with four freight cars and two baggage cars was overturned, the speed of the train at the time being about 40 miles an hour. The engineman, fireman, and one trespasser were killed. The derailment was due to malicious displacement of some part of the switch.

The train derailed on the Kansas City, Mexico & Orient, near Foard City, Tex., on the 28th was northbound passenger No. 4. Three coaches were overturned, and twelve passengers were injured.

The train derailed on the Southern Pacific near Salinas, Cal., on the 28th of September, was northbound passenger No. 77, first section. The engineman and fireman were killed, and 40 passengers were injured, most of the injuries being reported as slight; damage to cars and engine about $15,000. The train was running at excessive speed on a 10-degree curve.

The train involved in the accident at Hygeia, Tenn., on the 17th was a northbound freight. While it was standing in front of the station, preparatory to entering a side track, the boiler of the locomotive exploded, and several freight cars and the station building were set on fire. The fireman was killed, and the engineman injured. The explosion was due to low water.

Electric Car Accidents.—Of the eight serious accidents to electric cars, reported in the newspapers as having occurred in the month of September, two resulted fatally, a butting collision near Worcester, Mass., on the third, in which one person was killed and nine were injured, and a similar collision at Gary, Ind., on the 25th, when a motorman and one passenger were killed and about 50 passengers were injured. Both are reported as due to failure of block signals.

The Headquarters Yard "Goat" at Hailor, Mongolia, Where Some of the Russian Railway Service Corps Are Still Stationed

Doings of the United States Railroad Administration

Deficit for Ten Months—Regional Directors Given Authority to Curtail Passenger Service

The government's deficit from the operation of the railroads for the 10 months of this year ending October 31, as compared with ten-twelfths of the standard return guaranteed to the companies, was $269,768,158, according to a preliminary estimate issued by the Railroad Administration. The net operating income for the 10 months was approximately $479,000,000, as compared with the guarantee for that period of approximately $748,000,000.

In order to break even with the standard return it would be necessary to earn over $400,000,000 more of net operating income in November and December. In 1918 the net operating income for those two months was only about $85,000,000 but it was reduced by retroactive wage increases. The net operating income for October, in which the volume of traffic handled was greater than for October, 1918, or October, 1917, was about $77,000,000, whereas for October, 1918, it was about $87,000,000. After making allowance for the per diem balance, which will not appear until the November accounts are compiled, the Railroad Administration statement estimates that the net operating income for the month would be about $86,000,000. This does not reflect the loss of traffic caused by the coal strike but it does reflect extraordinary expenses incurred in making preparation for it. The statement authorized by the director general follows:

"Detailed statistics will shortly become available of the operating results for the month of October for practically all class 1 railroads and large terminal companies in federal operation. Those results are substantially affected by several abnormal conditions, two of them operating to understate the revenues and two operating to make the expenses more than normal. The revenues are understated by about $9,000,000, first, because beginning with the month of October per diem charges for the use of freight cars were reinstated with the result that in October there were approximately $6,000,000 included in car per diem debits while the corresponding car per diem credits which inure on this account to other railroads in federal operation on account of October transportation will not appeal until November, and second, because a large amount of revenue, estimated to be not less than $3,000,000, from coal traffic transported in October does not appear in that month because, on account of the impending coal strike, such coal traffic was held in transit in the last few days in October and the revenues shown on the waybills relating thereto where not taken in the revenues for the month. Taking these two conditions affecting revenues into consideration there would be a net operating income for the month of October, 1919, of about $86,000,000, but the results as shown by the reports for the month are about $77,000,000. The operating expenses were abnormally large, first, because of an extraordinary shifting of open top equipment in order to furnish the maximum number of cars to be loaded with coal in the two weeks immediately preceding the coal strike and, second, because of exceptional expenditures for maintenance of equipment growing out of the prevention of a normal amount of repairs in August on account of the unauthorized strikes of the shopmen. It is not practicable, however, to make a reliable estimate as to the effect of these two abnormal increases in operating expenses, although they are believed to amount to several million dollars.

"Last month a statement was made showing what the net gain or loss was by months from May to September, inclusive, after redistributing to those various months the appropriate charges on account of the back pay to shopmen. That table is repeated, together with a showing for October, taking into consideration in the last mentioned month the additional $9,000,000 of revenue which is not actually reflected on account of the two conditions above referred to:

Month	Net gain	Net loss
May	.....	$37,642,128
June	.....	26 031.860
July	.....	2,031,547
August	$12,397,112	.....
September	19,000,000	.....
October	11,000,000	.....

"The net gain or loss for these properties by months for the present calendar year, on the basis of the accounts as they stand is as follows:

	Net Gain or Loss to the Government after allowing for one-twelfth of the annual rental	
Month	Net gain	Net loss
January	.....	$57,782,557
February	.....	65,439,850
March	.....	64,881,856
April	.....	48,757,056
May	.....	33,642,128
June	.....	22,031,800
July	$1,968,453	.....
August	16,397,112	.....
September	2,392,584	.....
October (Estimated)	2,000,000	.....
Net loss for ten months		$269,768,158

"The following comparison of net ton miles per mile of road per day indicates that the freight business during the month was greater than in October, 1918, and October, 1917, and about the same as in September, 1919.

	Revenue and non-revenue ton miles per mile of road per day		
Month	1919	1918	1917
January	4,275	3,878	4,770
February	4.002	4,591	4,511
March	4,059	5,273	5,192
April	4,134	5,471	5,257
May	4,524	5,226	5,617
June	4,615	5,423	5,694
July	4,878	5,487	5,441
August	5.075	5,691	5,351
September	5,625	5,731	5.217
October	5,651	5,584	5,385
Ten months ended October 31	4,687	5,234	5,168

"The preliminary reports on passenger traffic during October indicate a substantial increase over October, 1918, so that both freight and passenger traffic were greater than last year."

The Fuel Situation

Hopes that the offer of a 14 per cent increase in wages would induce a considerable number of the striking coal miners to return to work seem to have been disappointed. Although there has been a gradual increase in coal production the coal loading for Monday, December 1, was only 40 per cent of normal and the highest percentage reached on any day has been 48 per cent. Production was 42 per cent of normal on Tuesday. Director General Hines announced on Tuesday that with a view to the further conservation of coal by the Railroad Administration the regional directors had been instructed to review the situation carefully and had been authorized to eliminate passenger trains which can be spared with the least inconvenience to the traveling public. It was also announced that in pursuance of Dr. Garfield's order instructions had been issued placing coal transported on the inland waterways on the same basis as coal handled

by rail, that is subject to allocation by the Railroad Administration coal committees.

The 40 per cent of normal coal production allows practically no coal to be distributed to industries which will be obliged to shut down when their reserves are exhausted, and some of them have already had to do so. The available new supply is only about sufficient for the railroads, public utilities and retail dealers. The requirements of the railroads are being gradually reduced as traffic is diminished. The use of coal for coking has been reduced by 25 per cent.

None of the winter resort trains to the South scheduled to be put in service before January 1 will be put on.

Overtime Pay for Express Employees

In amendment No. 1 to Supplement No. 19 to General Order No. 27, issued on November 22, by Director General Hines, effective November 16, it is ordered that the following articles shall supersede and be substituted for the articles of the same numbers in Supplement No. 19 to General Order No. 27, applying to employees in express service in federal operation. Except as changed hereby, Supplement No. 19 to General Order No. 27 remains in full force and effect.

Article VII.—Overtime and Calls

(a) For all employees, excepting these coming within the provisions of Article VI, Section (b), Supplement No. 19 to General Order No. 27, and Article VIII of this order, time in excess of eight hours, exclusive of meal period, on any day will be considered overtime. When the full number of hours per week (produced by multiplying by eight the days of the weekly assignment) are worked, overtime will be computed at the rate of time and one-half time. Where the total hours worked in regular assignment do not equal the number of hours so produced, overtime will be computed pro rata until the weekly period is fulfilled; thereafter overtime will be computed at the rate of time and one-half time.

It is not the intention of this section to change the number of days upon which the present monthly or weekly wages are based.

(b) For employees coming within the provisions of Article VI, Section (b), Supplement No. 19, the first two hours of overtime accruing after eight hours of service within the spread of twelve hours shall be computed pro rata, and thereafter (including overtime after 12 hours) at the rate of time and one-half time on the actual minute basis.

(c) Employees who are notified or called to work outside of the eight consecutive hours, exclusive of the meal period and continuous service, constituting their regular assignment, shall be paid a minimum allowance of two (2) hours at time and one-half time for 2 hours work or less; if held over 2 hours, time and one-half will be paid, computed on the actual minute basis.

(d) Exclusive of employees whose regular assignment includes Sundays or holidays, employees notified or called to work on Sundays and or holidays will be paid not less than a minimum allowance of two (2) hours at time and one-half time for 2 hours work or less, and thereafter on the actual minute basis at the pro rata hourly rate. When the entire number of hours constituting the week-day assignment are worked, they shall be paid for at the pro rata hourly rate up to eight hours service, with time and one-half thereafter on the actual minute basis.

(e) Employees will not be required to suspend work during regular hours to absorb overtime.

Article VIII.—Hours of Service and Overtime Rules.

Train Service Employees

(a) For all employees in the train service, except those in combination service as defined in Article IX of Supplement No. 19 to General Order No. 27, two hundred and forty (240) hours or less in regular assignment shall constitute a basic month's work. Deadhead hourage properly authorized to be counted as service hourage. Time for trip of employees up to designated scheduled time of first station shown in working time-table after midnight on a car scheduled to leave prior to 12 o'clock midnight of the last day of a month will be credited to the month in which the train handling the car is scheduled to leave.

(b) Train service employees included in the preceding Section shall be paid overtime on the actual minute basis for all time on duty each month in excess of two hundred and forty (240) hours at the rate of time and one-half times the hourly rate which shall be determined by dividing the monthly wage by 240. Time shall be counted as continuous for each trip from the time required to report for duty until released from duty, subject to the provisions contained in the last sentence of Section (a) of this Article. Even hours shall be paid for at the end of each day period; fractions thereof shall be carried forward.

(c) Extra employees performing road service in the place of a regularly assigned employee or on an extra assignment shall be paid the compensation a regularly assigned employee would receive for the same service, which will be determined, in the case of a regularly assigned run or trip over the same district, by dividing the monthly wage by the number of trips (initial terminal to final terminal) required for a month's work; for a trip where there is no regular assignment the compensation will be determined by multiplying the time on duty by the following rates per hour:

Express messengers .....50c.
Express messenger helpers.....40c.

The minimum allowance for a trip where there is no regular assignment will be eight hours. For the purpose of calculating time under this Section, where time end at first station shown in working time-table after midnight, the trip will not be considered as completed until released at terminal.

Article X.—Relief Period

Not less than 96 hours off duty each calendar month in 24 consecutive hour periods, or multiples thereof, will be allowed at designated home terminal for employees specified in Article VIII whose assignment and service do not permit of at least 12 hours off duty period at their designated home terminal each 48 hours. Employees required to work on assigned lay-over days will be paid extra therefor on the basis provided in Section (d) of Article VII.

Consolidated Classification to Be Put Into Effect

The director general has authorized the publication and filing with the Interstate Commerce Commission, effective on December 30, 1919, of Consolidated Freight Classification No. 1, which is a reissue in one volume of the Official, Southern and Western classifications.

This new classification, which is a substantial step toward uniform classification, is published in accordance with the Interstate Commerce Commission's recommendation in the Consolidated Classification Case, in which the commission approved the uniform rules, descriptions, minimum weights and package requirements as proposed by the classification committee of the Railroad Administration, but did not approve the changes proposed in ratings except as the establishment of new items may indirectly effect changes, and such as may be a reasonably necessary part of the establishment of uniform descriptions, specifications, or minimum weights.

In publishing this new classification the director general has followed all of the recommendations of the commission, except that he has modified Rule 10, applying on mixed

car loads, so that in Southern and Western classification territories the provisions of the rule are applicable only in connection with class rates. This modification has been made in response to the request of many shippers that the mixed carload rule should not be made effective in those territories. The rule as adopted will provide uniformity in all territories as to shipments moving at class rates, but in the South and West the exception on commodity rates will make no change in the movement of freight taking commodity rates, of which there are many more in the South and West than in the East or Official Classification territory, and it is believed that this modified rule will more nearly fit the different conditions and meet with more general approval by the shippers than would the rule as proposed by the classification committees.

Through Export Bills of Lading Via North Atlantic Ports

On June 28 announcement was made that an understanding had been reached between the Railroad Administration and practically all the steamship companies operating on the Pacific coast under which those companies would assume any demurrage or storage charges for which they might be responsible in connection with through export bills of lading issued by the railroads under federal control through those ports, that understanding to be effective as soon as tariffs could be published. At the same time announcement was made that a similar understanding had been reached with Osaka Shosen Kaisha, which had recently inaugurated service between the port of New Orleans and the Far East. It was stated that negotiations to bring about a similar understanding with steamship companies operating from Gulf and South Atlantic ports were being conducted and also that efforts made by the Railroad Administration to bring about the same understanding as to North Atlantic ports had up to that time proved unsuccessful, the steamship companies serving North Atlantic ports having failed to assume the storage or demurrage as had been done with regard to Pacific ports. It was added that in order to go as far as possible to meet the desires of exporters and pending further discussions with steamship companies, the Railroad Administration was making arrangements to issue instructions to restore through export bills of lading via North Atlantic ports on the basis that prevailed prior to January, 1918; namely, that through bills of lading would be issued to shippers who would agree to assume any demurrage or storage charges which might accrue in accordance with published tariffs.

Announcement is now made that in pursuance of an agreement entered into between the Railroad Administration and the Shipping Board through export bills of lading will be issued in connection with the Shipping Board or its agents under practically the same conditions outlined. The following is the basis of the arrangement agreed upon with the Shipping Board:

Through export bills of lading will only be issued when founded on written ocean contract, and then only when shipper gives written guarantee that any demurrage or storage charges accruing at the seaboard will be paid (see Exception).

Exception

In pursuance of an agreement entered into between the United States Railroad Administration and the United States Shipping Board, through export bills of lading will be issued in connection with the United States Shipping Board and or its agents on the following basis:

1. Through export bills of lading will be issued when founded on written ocean contract with the United States Shipping Board and or its agents.

2. Carload freight covered by through export bills of lading issued in connection with the United States Shipping Board and or its agents will be held in warehouse, or, at option of carriers, in cars, (free of charge at the port of exit for a period of not exceeding 15 days, exclusive of date of arrival).

3. In the event of the omission or failure of the United States Shipping Board and or its agents to clear carload freight on any vessel for which booked, all demurrage or storage charges accruing after the period of free time of 15 days shall be paid by the United States Shipping Board.

4. If the rail carriers fail to transport shipments regularly booked to the port in time to clear on steamer for which specifically booked, demurrage or storage charges will not apply until announced date of the steamer on which it is again booked, after which the liability of the United States Shipping Board will be the same as in connection with the original tranaction.

5. In the event storage or demurrage charges should accrue, due to interference with transportation by shipper, or his agents through the issuance of orders to hold such freight, or to divert such freight, or due to delay in securing, or error in preparing proper export documents, or for any other cause for which shipper or his agent may be responsible, such charge shall be collected from and paid by the shipper.

6. The arrangement covered by the five preceding paragraphs is applicable only in connection with carload export freight moving under through export bills of lading and which has been booked for transportation on vessels owned or operated by or for the account of the United States Shipping Board via the following named ports and agents of the United States Shipping Board:

Boston — Lawrence & Co., via Providence and Portland, Me.; J. S. Emery & Co.; Red Star Line; Atlantic Transport Line; American Line; C. H. Sprague & Sons; Patterson & Wylde.

New York — Moore & McCormick; New York & Cuba Mail; France & Canada SS Co.; U. S. & Brazil SS Co.; Munson Steamship Line; Kerr Steamship Line; Barber Steamship Line; Oriental Navigation Co.; J. L. Elwell & Co.; South Atlantic Maritime Corp.; Independent Steamship Co.; U. S. & A. Line; Luckenbach SS Co.; A. H. Bull & Co.; W. R. Grace & Co.; Nafra Line; Red Star Line; Cosmopolitan Line; The Globe Line; American Line; J. H. Winchester & Co.; Atlantic Transport Co.; Phelps Bros.

Philadelphia—American Line; International Freighting Corp.; Red Star Line; Atlantic Transport Line.

Baltimore—Red Star Line; Export Transportation Co.; Baltimore Steamship Co.; Standard Steamship Co.; Baltimore Oceanic Steamship Co.

Norfolk—American Line; Harriss McGill & Co.; Robert Hasler.

As indicating the attitude taken by the Railroad Administration the following is an extract from a letter sent by the representative of the Railroad Administration to the Secretary of the Trans-Atlantic Associated Freight Conferences, which is an association of the principal foreign lines operating out of North Atlantic ports:

"Referring to conference in New York with Messrs. Peteroff, Love and Blake, the committee appointed by your association to confer with the undersigned relative to demurrage and storage charges at North Atlantic ports on export traffic.

"The proposition that we submitted contemplated that the interest responsible for the accrument of demurrage or storage, should assume the amount,—that is to say,—if the railroad fails to deliver the cargo at port in time to connect with designated sailing, demurrage or storage charges would

be waived; and on the other hand, if the steamship company failed to lift the cargo within the free time period, the steamship company should pay any charges that might accrue.

"In the event storage or demurrage charges should accrue, due to interference with transportation by shipper, or his agent, through the issuance of orders to hold such freight, or to divert such freight, or due to delay in securing, or error in preparing, proper export documents, or for any other cause for which shipper or his agent may be responsible, such charges shall be collected from and paid by shipper.

"We also offered to extend the present free time period, which is 10 days, to 15 days, although the Interstate Commerce Commission has held that the 10 days period is reasonable.

"We also advised your committee that the United States Shipping Board had accepted our proposition, and that tariffs would be published accordingly, as quickly as might be possible.

"Your committee rejected the proposition, which in our judgment, was a fair and liberal one in all the circumstances. We believe you will agree with us that differing conditions on export traffic at the same ports are impracticable, or at least, undesirable. Furthermore, we feel that as a progressive measure in transportation of export traffic, the time has come when the shipper should know, at the time he contracts for shipment, what the through transportation charges will be, and that the plan that has heretofore obtained, of attempting to hold the shipper responsible for something for which he is not responsible, cannot any longer be justified."

Terminal Committees Appointed and Special Storage Charges Imposed

To study the expedition of the movement of freight cars, both loaded and empty, within terminals in order to overcome avoidable delays and thus increase the efficiency of the freight car equipment of the country, special terminal committees have been arranged for at 70 of the principal terminals of the nation, each to be composed of local railroad representatives and a representative of shippers. The work on these committees will be pushed vigorously and every possible effort made to prevent delays to freight cars at terminals.

The Railroad Administration has received numerous complaints recently that refrigerator cars were being unduly detained at destinations and that cars loaded with lumber held for reconsignment were also being unduly held. During the present emergency, in order to prevent undue detention of equipment, authority has been given to publish immediately for account of all carriers under federal control effective on seven days' notice, the following rules:

1. On refrigerator cars which are not unloaded at the expiration of five days after the hour at which free time begins to run under the demurrage rules, a storage charge of $10 per car will be assessed for each day or fractional part of a day thereafter that such car is held under load.

2. On cars loaded with lumber held for reconsignment, a storage charge of $10 per car will be assessed for each day or fractional part of a day that a car is held for reconsignment after 48 hours after the hour at which free time begins to run under the demurrage rules.

3. These charges will be assessed regardless of whether cars are held on railroad hold tracks or delivery tracks, including consignee's or other private sidings and will be in addition to any existing demurrage and storage charges.

These rules were authorized for publication after consultation with shippers.

Number of Bad Order Cars Reduced

Since the unauthorized shopmen's strike early in August, which interfered with the repairing of cars, very gratifying progress has been made in connection with the bad order car situation, according to a statement authorized by Director General Hines. Excluding cars held out of service as not worth repairing, the percentage of bad order cars has fallen from 172,270 or 6.9 per cent on October 4, to 146,702 or 5.8 per cent on November 1. Including cars held out of service as not worth repairing the percentage of bad order cars has fallen from 191,656 or 7.6 per cent on October 4, to 166,514 or 6.5 per cent on November 1.

Miles Per Car Per Day Increased in September

The volume of freight traffic in September nearly approached the record of last year, according to the monthly report of the Operating Statistics Section. The net ton miles of revenue and non-revenue freight handled amounted to 38,860,311,000, a decrease of only 1.8 per cent as compared with September, 1918. Train miles decreased 3.5 per cent and car miles decreased 4.8 per cent, while the loaded car miles increased 4.8 per cent. The net ton miles per mile of road per day were 5,625 as compared with 5,731. The net ton miles per train mile show an increase of 1.8 per cent, from 735 to 748, but the net ton miles per loaded car mile shows a decrease from 30.2 to 28.3.

The percentage of loaded to total car miles was 69.6 as compared with 66.9 in September last year. The percentage of unserviceable freight cars shows an increase from 6.5 to 8.5 and the number of serviceable cars was 2,265,549 as compared with 2,304,497 in September last year. The average miles per car per day was 26.55 as compared with 26.5 last year and the net ton miles per car day averaged 523 as compared with 535. For the nine months ending with September the net ton miles amounted to 288,485,-362,000, a decrease of 12 per cent as compared with last year. This was handled with 14.1 per cent less train miles and 8.6 per cent less car miles.

Comment has been made, from time to time, upon the fact that the average miles per freight car per day made by the railroads during the early part of this year was relatively low. The Railroad Administration has explained that the low average per car per day in the early part of the year was due in part to the fact that the freight business was exceedingly low and that many cars were on that account entirely out of service for the time being and yet these cars out of service were figured with the divisor which is used to determine car miles per car per day and thus diminish the resulting average. The fact that this explanation was correct and also the fact that increased efficiency is being attained is shown by the figures for September when the increased business was reflected and when the average miles per freight car per day made by the railroads exceeded the record of September, 1917, and has equaled the splendid record of September, 1918, two months prior to the signing of the armistice, when business was unusually heavy.

The statistics compiled by the Division of Operation for the month of September, 1919, show the average miles per freight car per day for that month as compared with September of 1917 and 1918 to be as follows:

September, 1917	26.4
September, 1918	26.5
September, 1919	26.55

The method of making the foregoing computation is somewhat misleading as an indication of relative car performance for the reason that the divisor used to determine car miles per car day includes all cars entirely out of service for the time being.

Subtracting the latter figure and confining the computation to the efficiency of the cars in service, the average miles per freight car per day were as follows:

September, 1917	28.3
September, 1918	29.1
September, 1919	29.1

Results of the Gulf Coast Storm

THE EFFECTS on the railroads operating in the districts recently devastated by a tropical storm and tidal wave, which swept across the Southern Texas gulf coast, have but recently been fairly definitely determined. On account of the fact that the water driven onto sections of the main land by the storm receded very slowly, it has been practically impossible up to this time to ascertain the amount and extent of the damage done to the right of way of lines passing through this district. However, the conditions on some of these lines have been reported as follows:

The Gulf, Colorado & Santa Fe's main line escaped extensive damage, although a series of washouts on the causeway over Galveston Bay interrupted traffic for approximately 48 hours. On the Port Bolivar division the water thrown on the peninsula, on which a part of this line runs, has drained off slowly and several days elapsed before it was possible to do any repair work. As a result it was necessary, on September 16, to place an embargo on that district, covering freight and passengers for Seabreeze, Tex., Galveston and intermediate points, which embargo was cancelled on September 20. During that period freight and passengers destined to Galveston were detoured via Houston.

The main line on the Galveston division of the Southern Pacific was under water at several places between Seabrook, Tex., and Galveston, obstructing passenger service approximately 44 hours and freight traffic approximately 72 hours. On the El Paso division of the Southern Pacific, on the edge of the storm area, rainfall aggregating 7.5 inches for the first 36 hours quickly filled Osman Canyon, the head of which is approximately 50 miles north of the Galveston, Harrisburg & San Antonio main line, which follows the canyon several miles and crosses it a number of times, and completely washed out eight bridges, aggregating approximately 3,000 lineal feet, including one 144-ft. steel girder span, together with approximately one-half mile of bridge approaches and track. Temporary repairs were undertaken immediately, but continued rains and high water have been washing out foundations and greatly interfering with repair work. The latest estimate of property damage in this district is approximately $200,000. Traffic over this line was detoured and an embargo placed upon the sale of through tickets over Southern Pacific lines pending the restoration of service.

Six miles of track, including a long reef bridge, in the vicinity of Corpus Christi, on the San Antonio & Aransas Pass, were washed away, and heavy damage was also inflicted upon the Rockport branch of this road. The work of reconstructing the damaged portions has been greatly retarded by high water, which is now beginning to recede. The heavy rains which resulted in the washouts on the El Paso division of the Southern Pacific have swollen all streams in the territory served by the San Antonio & Aransas Pass, the Nueces and Frio rivers being out of their banks and endangering approaches. The total estimated damage on this line is $125,000.

Heavy damage was inflicted between Odem, Tex., and Corpus Christi on the San Antonio, Uvale & Gulf, approximately 13 miles of track being washed off the embankment. The approaches to bridges have also been washed out, and the decks and stringers swept away. Because of the high water, which has not yet receded, it has not been practicable to estimate the amount of property damage, but from casual inspections the damage is said to be in excess of $100,000. It will be at least 30 days, according to reports made by officers of the road, before the line can be opened for traffic.

The tidal wave which accompanied the tropical storm passed over the Gulf Coast Lines at several places, washing out the right of way at Lavaca, Tex., for a distance of one-half mile and damaging it to the extent of $2,000; at a point near Calallen, Tex., 5,500 ft. of track was washed entirely outside of the right of way and the ballast carried away. Near Angelita, Tex., one-third of the bank (which was 8 ft. high) was washed away and the track completely washed out for a distance of one mile, causing an estimated damage to the track and embankment at this point of approximately $10,000. At Kingsville, Tex., on the Gulf Coast Lines, the machine shop, roundhouse and car shop were damaged to the extent of $3,000, and the station at Port O'Connor, Tex., was completely destroyed, in addition to which a half mile of track was completely washed out, inflicting an estimated damage of $5,000. The latest reports indicate that the Gulf Coast Lines' fuel oil tanks at Aransas, Tex., were badly damaged and that much of the 30,000 barrels of fuel oil stored at this point has been lost. Such oil as is left in the tanks cannot be recovered for several months. After restoring the line between Houston and Corpus Christi another washout occurred at Agua Dulce creek near Driscoll, Tex., cutting off traffic on this line for 24 hours. The total damage on the Gulf Coast Lines prior to the Nueces river flood has been estimated at approximately $30,000, and when the present flood damage is computed and an accurate check made this damage will probably total close to $50,000.

In addition to the damage already enumerated, the heavy rains and water have softened roadbeds in many places in this district and the storm inflicted minor damage to the right of way and to terminal facilities, making it practically impossible to estimate the total amount of damage. Reconstruction work is being carried on as rapidly as possible by all of the affected railroads, and in the majority of cases traffic has already been restored to a normal basis.

Improvements on Jordan Spreader

IN KEEPING with the increasing demands for labor saving devices, the O. F. Jordan Company, East Chicago, Ind., recently added two improvement to the Jordan spreader, which increase its range and adaptability. Under the old arrangement a solid bar rigidly supported the outer end of the spreader wing, keeping it horizontal at all times throughout its range of operation, which included a vertical movement of the entire wing and allowed it to cut to a maximum depth of 26 in. below the top of rail. The first improvement substitutes for the old rigid type of wing support and an adjustable brace operated by a 12-in. air cylinder mounted on the upper end and connected to the main air supply by a flexible air hose, thus permitting the same vertical movement as before. Through the addition of this air cylinder and the adjustable brace, a longitudinal movement of 39 in. is obtained along the length of the brace whereby the wing may be inclined to provide a maximum cutting depth at the tip of 60 in. or a slope of 34 in. along its length. This is especially important where it is desired to give a designated slope to enbankments as in the construction of second track, where settlement is to be provided for, etc.

The second feature of the Jordan spreader consists of a substitute wing or improved ditching attachment which is used in place of the regular spreading wings for the purpose of cutting new ditches or the cleaning of old ones. This wing is built in two sections which are hinged at the joint, the inner one being the templet or cutting wing which, because of its design, is enabled to produce ditches of the standard cross section desired by the road using the spreader. This wing is fastened to the same support used for the regular Jordan spreader wing, is raised and lowered, by the air from the train line and is controlled through the regular valve installations; the adjustable brace is fastened

in this case near the joint of the inner and outer wings. With the outer wing fully extended it will shape the ballast and cut a ditch and bank of any cross section up to 19 ft. from the center of the track and to a maximum depth of 3 ft. below the top of rail and by the use of a specially designed spreader it is possible to form a ditch 4 ft. below the top of rail.

The improved ditching attachment is intended for operation under two conditions, depending upon the depth of the cut. When used for ditching in cuts over 7 ft. in depth the outer wing is swung forward and held parallel to the car by two braces fastened at the tip of the wing and running in triangular form to an adjustable sliding support on the forward end of the car. This support is connected to the main raising and lowering supports by two braces, the two adjustable supports working together whenever the depth of cut is changed, thus keeping the same relatve position of outer wing and templet.

The tip of the outer or carrying wing is provided with a cast steel nose plow at its lower front corner, which is adjustable to different angles and when in operation holds the carrying wing down to its work. In actual operation the wing is lowered sufficiently so that the pocket formed by the

Outer Wing Swung Forward Forming Wing Pocket. Deep Cut

two wings will be filled as the spreader is pushed through the cut. This is repeated dropping the wing lower each time until the desired depth is reached, the pocket holding from 8 to 10 cu. yd. of material which is considered to be the maximum amount which can be handled at one time in a satisfactory manner. The usual procedure is to start the ditcher at the end of the cut where the dirt is to be wasted so that not more than 10 cu. yd. will be handled at a time, the spreader being then moved back so that approximately the same amount of dirt is removed in the process of each operation.

In forming ditches in shallow cuts, the carrying wing is swung back to form a continuation of the templet and the outer end, which is adjustable for slopes from horizontal to 1 to 1 is then raised to the desired height and secured in that position by a diagonal brace. Two additional braces are attached to the rear of the car to hold the wing out when at work. When operating the attachment in this manner, it is sometimes necessary to take two or three cuts to form a ditch and bank on account of the total amount of material to be removed.

The first of these improved ditching attachments, owned by N. K. Snead, railroad contractor, Huntington, W. Va., has been employed on the Gulf, Florida & Alabama where it worked in both deep and shallow cuts where no ditches of any kind had been maintained for a considerable length of time. Under these conditions and in open cuts not over 5 or 6 ft. deep where the original cross section of roadway was about 4 in. higher than the top of the ties, two and one-half miles of completed ditches were formed per hour, the bottom of the finished ditch being 36 in. below the top of rail and necessitating the removal of ⅔ cu. yd. of material per lineal foot of ditch. On a bisis of $125 per day for the entire cost of operating the ditcher the dirt was removed in this case for 0.17 cents per cu. yd. or at the rate of $0.25 per mile of completed ditch on one side of the track.

In cuts over 6 ft. deep the problem was somewhat different

Outer Wing Extended Cutting Both Ditch and Slope. Shallow Cut

though the original ground level was about the same as in the preceding case, being about 4 in. above the top of the tie. For this work it was necessary to move the material a considerable distance to be wasted on fills in spite of which 400 ft. of ditch was completed to a depth of 36 in. below the top of rail in 35 min. The dirt in this instance was moved at the rate of ⅔ cu. yd. per lin. ft. of ditch over an average distance of 250 ft. at a cost of approximately 3½

Standard Spreader Equipped with Adjustable Wing Brace and Air Cylinder

cents per cu. yd. or $121.44 per mile of completed ditch on one side of the track.

In case of a deep cut ending at a road crossing or where for other reasons it is impossible to waste the material on fills it may be carried to piles of from 30 to 50 cu. yd. each which will materially facilitate its handling with a steam ditcher.

Where ditches have already been formed and only cleaning is necessary the amount of material to be moved is much less with an accompanying reduction in cost. Ditches formed by this attachment were perfectly uniform in cross section, with no loose material in the bottom to retard the flow of water, nor was there any fouling of the ballast.

General News Department

At Brookfield, Mo., 700 citizens, mostly farmers and employees of the Chicago, Burlington & Quincy, have organized a co-operative store, to sell groceries, meats and clothing at cost. One store selling groceries, meats, bakery goods and work clothes is now in operation and it is planned to open a second one.

"The Increasing Necessity for Steam Railway Electrification will be the subject to come before the next meeting of the Western Railway Club which will be held at the Hotel Sherman, Chicago, on December 15, with a paper by Norman W. Stone, of the Westinghouse Electric & Manufacturing Company.

George Bradshaw, supervisor of safety of the Grand Trunk Western lines and the Pere Marquette, says that the Grand Trunk Western had the fewest casualties per 100 employees during the period of the recent "No accident drive" of any railroad in the United States having the same or a greater number of employees.

The Federal Trade Commission on December 2 began hearings on complaints against the continuance of the use of the Pittsburgh basing-point system in fixing prices for steel products, under which the freight rate from Pittsburgh is added to the price at Gary. The commission is to decide whether to issue a formal complaint against the practice.

The steam locomotives used in the recent test with the C., M. & St. P. electric locomotive at Eria, Pa., have 79 in. and 69 in. drivers. In the October 10 issue of the *Railway Age*, page 749, the diameters given for the Pacific and Mohawk type locomotives were 72 in. and 62 in., respectively, whereas these dimensions are for the driving-wheel centers; the diameter over the tires being 79 in. and 69 in.

At Steubenville, Ohio, two young men who stepped out of the way of a passenger train and into the path of a yard engine and who, in consequence, were both carried to a hospital, got their names into the papers recently, with a prominent headline, by reason of the fact that when they made this mistake they were on their way home from a safety-first campaign on the Pennsylvania Lines.

Delegates from farmers' organizations, denouncing the recommendation of government retention of control of the railroads for two years more, voted by the Public Ownership Conference held in Chicago, November 15, 16 and 17, declared that the action was the outcome of "steam-roller" methods. These delegates, from the South and Southwest, deny that such was the opinion of their constituents. William Hale Bowen, of Arlington, Tex., representing the Texas Farmers' Union, J. T. McElderry, of Talladega, Ala., representing the Alabama Farmers' Union, and John A. Simpson, of the Oklahoma Farmers' Union, in statements made public following the conference, assert that organized farmers oppose government control and operation of any private industry by a large majority. The delegates say that their organizations instructed them to oppose such government control resolutions, but that, despite their opposition, resolutions embodying the disputed points were "railroaded" through.

At the fiftieth anniversary dinner of the Western Society of Engineers, held at the Hotel Morrison, Chicago, on Tuesday evening, December 2, announcement was made of the setting aside of $5,000 by Robert W. Hunt, president of Robert W. Hunt & Co., Chicago, the income from which is to constitute a prize to be awarded annually to the person, not over 30 years of age, presenting the best paper before the society on the manufacture of iron and steel. Three prominent engineers are to constitute a committee on award, one of whom must be a person of recognized authority in the iron and steel field. In the event that the judges do not consider that any paper worthy of this prize has been presented during a given year, the income from the fund for that year will go to St. Luke's hospital, Chicago, while in the event that no award is made for five consecutive years, the principal itself will be turned over to the hospital and the trustees discharged. The establishment of this award has for its purpose the encouragement of the younger men and to direct attention to the problems of the steel industry in the Middle West.

Meetings and Conventions

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

AIR BRAKE ASSOCIATION.—F. M. Nellis, 165 Broadway, New York City. Next convention, May 5-7, 1920, Chicago.

AMERICAN ASSOCIATION OF DEMURRAGE OFFICERS.—F. A. Pontious, Supervisor of Demurrage and Storage, C. & N. W. Ry., Chicago.

AMERICAN ASSOCIATION OF DINING CAR SUPERINTENDENTS.—S. W. Derr, C. R. R. of N. J., Philadelphia, Pa.

AMERICAN ASSOCIATION OF FREIGHT AGENTS.—R. O. Wells, Illinois Central, Chicago. Next annual meeting, June, 1920.

AMERICAN ASSOCIATION OF GENERAL BAGGAGE AGENTS.—E. R. Reynolds, C. G. W. R. R., Chicago.

AMERICAN ASSOCIATION OF PASSENGER TRAFFIC OFFICERS.—W. C. Hope, C. R. R. of N. J., 143 Liberty St., New York.

AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—J. Rothschild, Union Station, St. Louis, Mo.

AMERICAN ELECTRIC RAILWAY ASSOCIATION.—E. B. Burritt, 8 W. 40th St., New York.

AMERICAN ELECTRIC RAILWAY MANUFACTURERS' ASSOCIATION.—C. F. J. Dell, 50 E. 42nd St., New York.

AMERICAN RAILROAD MASTER TINNERS', COPPERSMITHS' AND PIPE FITTERS' ASSOCIATION.—Otto E. Schlinck, 185 W. 5th St., Peru, Ind.

AMERICAN RAILROAD ASSOCIATION.—J. E. Fairbanks, 75 Church St., New York:

- Section I, Operating (including former activities of Association of Railway Telegraph Superintendents). W. J. Frippe (chairman), N. Y. C. R. R., New York, N. Y.
  - Telegraph and Telephone Division—M. H. Clapp, U. S. R. R. A., Washington, D. C.
- Section II, Engineering—E. H. Fritch, 431 South Dearborn St., Chicago.
  - Signal Division.—H. S. Balliet, 75 Church St., New York.
- Section III, Mechanical (including former activities of Master Car Builders' and Master Mechanics' Association).—V. R. Hawthorne, 431 South Dearborn St., Chicago.
- Section IV, Traffic (including former activities of Freight Claim Association).—Robert C. Wright, (chairman), Assistant Director, Division of Traffic, U. S. R. R. A., Washington, D. C.
- Section V, Transportation (including former activities of Association of Transportation and Car Accounting Officers).—E. J. Pearson chairman), Federal Manager, N. Y., N. H. & H. R. R., New Haven, Conn.
- Section VI, Purchases and Stores (including former activities of Railway Storekeepers' Association). J. P. Murphy, N. Y. C. R. R., Collinwood, Ohio.
- Section VII, Freight Claims (including former activities of the Freight Claim Association).—H. C. Pribble (chairman), A., T. & St. Fee, Topeka, Kan.

AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, C. & N. W. Ry., 319 N. Waller Ave., Austin Station, Chicago.

AMERICAN RAILWAY ENGINEERING ASSOCIATION.—(Works in co-operation with the American Railroad Association, Section II.) E. H. Fritch, 431 South Dearborn St., Chicago. Next convention, March 16-18, 1920, Chicago.

AMERICAN RAILWAY MASTER MECHANICS' ASSOCIATION.—(See American Railroad Association, Section III, Mechanical.)

AMERICAN RAILWAY PERISHABLE FREIGHT ASSOCIATION.—E. F. McPike, 135 E. 11th Place, Chicago. Regular meetings, 2d Wednesday in March and September.

AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—R. D. Fletcher, 1145 East Marquette Road, Chicago.

AMERICAN SOCIETY FOR TESTING MATERIALS.—C. L. Warwick, University of Pennsylvania, Philadelphia, Pa.

AMERICAN SOCIETY OF CIVIL ENGINEERS.—Charles W. Hunt, Engineering Societies Building, 33 W. 39th St., New York. Regular meetings, 1st and 3d Wednesday in month, except July and August, 33 W. 39th St., New York.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 39th St., New York.

AMERICAN TRAIN DESPATCHERS' ASSOCIATION.—D. L. Darling, Northern Pacific Ry., Spokane, Wash.

AMERICAN WOOD PRESERVERS' ASSOCIATION.—F. J. Angier, B. & O., Mt. Royal Sta., Baltimore, Md. Next annual meeting, February 10-12, 1920, Hotel Sherman, Chicago.

ASSOCIATION OF RAILWAY CLAIM AGENTS.—Willis H. Failing, C. R. R. of N. J., Jersey City, N. J. Next meeting, May, 1920, Atlantic City, N. J.

ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—Jos. A. Andreucetti, C. & N. W., Room 411, C. & N. W. Sta., Chicago.

ASSOCIATION OF RAILWAY TELEGRAPH SUPERINTENDENTS.—(See American Railway Association, Section I, Operating.)

ASSOCIATION OF TRANSPORTATION AND CAR ACCOUNTING OFFICERS.—(See American Railroad Association, Section V, Transportation.)
BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.—M. J. Trees, Chicago Bridge & Iron Works, Chicago.
CANADIAN RAILWAY CLUB.—W. A. Booth, 131 Charron St., Montreal, Que.
CAR FOREMEN'S ASSOCIATION OF CHICAGO.—Aaron Kline, 626 North Pine Ave., Chicago. Regular meetings, 2d Monday in month, except June, July and August, New Morrison Hotel, Chicago.
CAR FOREMEN'S ASSOCIATION OF ST. LOUIS.—Thomas B. Koeneke, Federal Reserve Bank Bldg., St. Louis, Mo.
CENTRAL RAILWAY CLUB.—Harry D. Vought, 95 Liberty St., New York. Regular meetings, 2d Thursday in November, and 2d Friday in January, March, May and September, Hotel Statler, Buffalo, N. Y.
CHIEF INTERCHANGE CAR INSPECTORS' AND CAR FOREMEN'S ASSOCIATION.—H. J. Smith, D. L. & W. R. R., Scranton, Pa.
CHIEF INTERCHANGE CAR INSPECTORS' AND CAR FOREMEN'S SUPPLY MEN'S ASSOCIATION.—D. B. Wright, Lehon Company, 45th and Oakley Sts., Chicago.
EASTERN RAILROAD ASSOCIATION.—D. G. Stuart, Washington, D. C.
FREIGHT CLAIM ASSOCIATION (See American Railroad Association, Section IV, Traffic).
GENERAL SUPERINTENDENTS' ASSOCIATION OF CHICAGO.—A. M. Hunter, 321 Grand Central Sta., Chicago. Regular meetings, Wednesday preceding 3rd Friday in month, Room 856, Insurance Exchange Bldg., Chicago.
INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.—A. L. Woodworth, B. & O., Lima, Ohio.
INTERNATIONAL RAILWAY FUEL ASSOCIATION.—J. G. Crawford, 702 E. 51st St., Chicago. Next annual meeting, May, 1920, Hotel Sherman, Chicago.
INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—Wm. Hall, 1061 W. Wabash Ave., Winona, Minn.
MAINTENANCE OF WAY MASTER PAINTERS' ASSOCIATION.—F. W. Hager, 1323 Hurley Ave., Ft. Worth, Tex.
MASTER BOILER MAKERS' ASSOCIATION.—Harry D. Vought, 95 Liberty St., New York. Next annual meeting, May 25-28, Curtis Hotel, Minneapolis, Minn.
MASTER CAR AND LOCOMOTIVE PAINTERS' ASSOCIATION OF THE UNITED STATES AND CANADA.—A. P. Dane, B. & M., Reading, Mass.
MASTER CAR BUILDERS' ASSOCIATION.—(See American Railroad Association, Section III, Mechanical.)
NATIONAL ASSOCIATION OF RAILWAY AND UTILITIES COMMISSIONERS.—James B. Walker, 49 Lafayette St., New York.
NATIONAL FOREIGN TRADE COUNCIL.—O. K. Davis, 1 Hanover Square, New York. Next convention, May 12-15, 1920, San Francisco.
NATIONAL RAILWAY APPLIANCES ASSOCIATION.—C. W. Kelly, Kelly-Derby Co., Peoples Gas Bldg., Chicago.
NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meetings, 2d Tuesday in month, excepting months of June, July, August and September.
NEW YORK RAILROAD CLUB.—Harry D. Vought, 95 Liberty St., New York. Regular meeting 3d Friday. in month, except June, July and August, 29 W. 39th St., New York.
NIAGARA FRONTIER CAR MEN'S ASSOCIATION.—George A. J. Hochgrebe, 623 Brisbane Bldg., Buffalo, N. Y. Regular meetings, 3d Tuesday in each month, Tenjost Hall, Buffalo, N. Y.
PACIFIC RAILWAY CLUB.—W. S. Wollner, 64 Pine St., San Francisco, Cal. Regular meeting 2d Thursday in month, alternately in San Francisco and Oakland.
RAILWAY ACCOUNTING OFFICERS' ASSOCIATION.—E. R. Woodson, 1116 Woodward Bldg., Washington, D. C. Next convention, May 12, Atlantic City, N. J.
RAILWAY BUSINESS ASSOCIATION.—Frank W. Noxon, 30 Church St., New York. Next annual meeting, December, 1919, New York, N. Y.
RAILWAY CLUB OF PITTSBURGH.—J. D. Conway, 515 Grandview Ave., Pittsburgh, Pa. Regular meetings, 4th Thursday in month except June, July and August, Americus Club House, Pittsburgh, Pa.
RAILWAY DEVELOPMENT ASSOCIATION.—D. C. Welty, Missouri Pacific R. R., Little Rock, Ark.
RAILWAY ELECTRIC SUPPLY MANUFACTURERS' ASSOCIATION.—J. Scribner, General Electric Co., Chicago. Annual meeting with Association of Railway Electrical Engineers.
RAILWAY EQUIPMENT MANUFACTURERS' ASSOCIATION.—D. L. Eubank, Galena Signal Oil Company, Richmond, Va.
RAILWAY FIRE PROTECTION ASSOCIATION.—G. L. Ball, St. Louis-San Francisco Ry., St. Louis, Mo.
RAILWAY REAL ESTATE ASSOCIATION.—R. H. Morrison, C. & O., Richmond, Va.
RAILWAY SIGNAL ASSOCIATION.—(See American Railroad Association, Section II, Signal Division.)
RAILWAY STOREKEEPERS' ASSOCIATION.—(See American Railroad Association, Section VI, Purchases and Stores.)
RAILWAY SUPPLY MANUFACTURERS' ASSOCIATION.—J. D. Conway, 1841 Oliver Bldg., Pittsburgh, Pa.
RAILWAY TELEGRAPH AND TELEPHONE APPLIANCE ASSOCIATION.—G. A. Nelson, Waterbury Battery Co., 30 Church St., New York.
ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—P. J. McAndrews, C. & N. W. Ry., Sterling, Ill.
ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo. Regular meetings, 2d Friday in month, except June, July and August.
SIGNAL APPLIANCE ASSOCIATION.—F. W. Edmunds, West Nyack, Rockland County, New York.
SOCIETY OF RAILWAY FINANCIAL OFFICERS.—L. W. Cox, 1217 Commercial Trust Bldg., Philadelphia, Pa.
SOUTHERN AND SOUTHWESTERN RAILWAY CLUB.—A. J. Merrill, P. O. Box 1205, Atlanta, Ga. Regular meetings, 3d Thursday in January, March, May, July, September and November, Piedmont Hotel, Atlanta.
SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—E. W. Sandwich, Western Ry. of Ala., Atlanta, Ga.
SUPPLY ASSOCIATION OF AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—C. N. Thulin, Duff Manufacturing Company, 935 Peoples Gas Bldg., Chicago.
TRACK SUPPLY ASSOCIATION.—W. C. Kidd, Ramapo Iron Works, Hillburn, N. Y.
TRAIN DESPATCHERS' ASSOCIATION OF AMERICA.—J. P. Finan, A. T. & S. F. Ry., Needles, Cal.
TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, N. Y. C. R. R., Cleveland, O.
WESTERN ASSOCIATION OF SHORT LINE RAILROADS.—Clarence M. Oddie, Mills Bldg., San Francisco.
WESTERN RAILWAY CLUB.—J. M. Byrne, 916 W. 78th St., Chicago. Regular meetings, 3d Monday in month, except June, July and August.
WESTERN SOCIETY OF ENGINEERS.—Edgar S. Nethercut, 1735 Monadnock Block, Chicago. Regular meetings, 1st Monday in month, except July and August.

Traffic News

The shipment of approximately 500 deer carcasses daily through Birchwood, Wis., to the homes of hunters in Wisconsin and Illinois is reported as causing considerable delay to both passenger and freight trains in the Birchwood district.

The first big shipment of news print paper into the Great Lakes region of the United States from Western Canada recently arrived at Minneapolis, Minn. The shipment consisted of 26 carloads, made at Powell River, B. C., 2,000 miles away, and valued at $75,000.

A special terminal committee has been appointed to study the best means to expedite the movement of cars through the El Paso (Tex.) terminals. This committee will function in a similar manner to committees appointed in other large terminals. A. U. Tatlock, traffic manager of the El Paso Chamber of Commerce, has been appointed shippers' representative on the committee, the appointment having been made by Max Thelen, director of the Division of Public Service, United States Railroad Administration.

George R. Browder, traffic manager of the Container Club, Chicago, an organization intended to maintain proper standards for fibre shipping cases, has been appointed general manager in charge of the Chicago office,. He is to have general supervision over the activities of the club under the direction of the executive committee. The position of traffic manager has been abolished. W. S. Felt will continue to act as secretary and treasurer of the club, A. J. Neumann as assistant secretary-treasurer and Dr. E. O. Merchant as statistician.

Oregon is the state which forms the subject of the latest illustrated booklet which has been issued by the Agricultural Section, Division of Traffic, United States Railroad Administration. It has the endorsement of Governor Olcott and President Kerr, of the Agricultural College. Oregon, with a total area of 96,699 squares miles, has great diversity of soil and climate; irrigated lands with mild seasons; the broad prairies of the Central and Southeastern sections and the foothills of the mountain ranges. These latter offer innumerable home sites that for natural beauty are unexcelled. Information is given about public lands, including state schools and forest homesteads.

The Beauties of Arkansas are presented in an illustrated booklet issued by the Agricultural Section, United States Railroad Administration, to meet the demand of homeseekers and other investors for information. It contains descriptions of the three agricultural empires of the State—Alluvial Area, Coastal Plains and Ozarks. There are chapters on cotton, rice, corn, alfalfa, oats, wheat, peanuts, apples, peaches, strawberries, melons, grapes, Irish potatoes, sweet potatoes, pecans, beef cattle, hogs, sheep, dairying, poultry and bee culture. Almost always two, and often three, crops may be secured from the same tract of land in one year. No section of the United States offers natural advantages which are superior to Arkansas for livestock production of all kinds.

The report on overseas traffic for the week ended 26th November, shows 6,813 cars of commercial export freight received at North Atlantic ports, as compared with 832 cars for the same week of 1918, an increase of 5,981 cars, or 718 per cent. The deliveries to ships during the same period increased 6,497 cars, or 566 per cent. At South Atlantic and Gulf ports as of November 24, 1919, there were 11,589 cars of export freight on hand as against 12,289 cars on November 17, an increase of 700 cars. Of grains, 14,692,819 bushels were in elevators at North Atlantic ports in the week ended November 26, 1919. There were received during the week 3,473,231 bushels, while 5,100,666 bushels were cleared. There were 8,453,717 bushels of grain stored in elevators at Gulf ports on November 26, 1919, representing 82.3 per cent of the total elevator capacity.

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF SEPTEMBER, 1919

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses						Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
					Maintenance of										
		Freight.	Passenger.	Total (inc. misc.)	Way and structures.	Equipment.	Traffic.	Transportation.	General.	Total.					
Alabama & Vicksburg	141	$150,665	$63,674	$230,352	$44,059	$44,506	$1,846	$77,776	$9,242	$180,038	78.15	$50,314	$11,417	$38,869	$22,663
Alabama Great Southern	312	590,596	223,247	859,854	151,894	232,054	11,007	312,133	17,548	730,574	84.96	129,280	24,728	104,391	—145,530
Ann Arbor	301	319,207	62,374	404,500	32,073	89,010	4,407	157,060	9,470	292,042	72.19	112,458	16,700	95,694	147,822
Arizona Eastern	377	179,665	51,913	256,250	51,037	62,854	1,648	92,789	15,733	227,327	88.71	28,922	16,282	12,597	—126,361
Atchison, Topeka & Santa Fe	8,665	12,735,280	4,068,102	17,873,535	1,844,440	4,292,109	141,567	5,249,647	228,497	11,724,846	65.59	6,148,689	649,655	5,494,096	4,229,978
Atlanta & West Point	93	110,144	84,037	222,304	27,936	42,133	3,051	79,989	6,659	164,148	73.83	58,156	8,500	49,656	—48,797
Atlanta, Birmingham & Atlantic	639	333,031	83,761	444,782	108,628	126,024	8,734	225,185	12,193	480,824	108.10	—36,042	16,000	—52,158	—61,440
Atlantic City	177	108,148	289,918	415,338	49,816	47,708	3,649	214,110	1,098	316,468	76.20	98,870	12,000	86,870	—79,486
Atlantic Coast Line	4,874	3,071,459	1,331,326	4,754,207	792,444	1,413,481	63,655	2,099,576	107,056	4,497,986	94.61	256,221	225,000	29,454	—818,080
Baltimore & Ohio, Chicago Terminal	90	.....	.....	217,785	38,609	75,514	1,280	129,667	4,529	254,613	116.95	—36,828	26,542	—63,373	36,970
Baltimore & Ohio	5,151	14,777,638	2,761,785	18,708,038	2,589,354	5,805,553	163,234	6,890,914	336,525	15,842,193	84.68	2,865,846	290,454	2,574,661	—1,445,427
Baltimore, Chesapeake & Atlantic	87	95,595	55,902	158,971	22,815	26,271	893	85,536	3,770	139,286	87.60	19,686	4,015	15,671	—8,739
Bangor & Aroostook	632	330,606	95,052	449,705	111,146	135,783	2,942	153,574	11,108	421,239	93.67	28,466	21,000	7,466	—57,307
Beaumont, Sour Lake & Western	118	89,319	27,532	122,190	16,637	19,173	2,517	43,213	5,046	86,586	70.86	35,603	2,700	32,885	—16,194
Belt Ry. Co. of Chicago	31	34,902	.....	403,135	33,807	86,412	366	200,958	9,095	330,637	82.01	72,497	15,682	56,815	162,853
Bessemer & Lake Erie	217	1,236,671	75,858	1,340,520	160,402	405,363	8,984	375,854	17,920	975,745	72.53	364,775	14,500	350,249	—355,163
Bingham & Garfield Ry	37	79,574	1,694	84,249	42,835	45,217	1,086	24,478	3,774	120,904	143.51	—36,654	11,549	—48,203	—193,861
Birmingham Southern	29	34,902	.....	42,524	4,538	5,667	717	24,957	3,403	39,283	92.38	3,241	1,999	1,242	—39,585
Boston & Maine	2,258	4,222,761	2,231,960	7,140,558	879,969	1,453,914	31,063	3,242,571	174,785	5,833,523	81.69	1,307,035	199,036	1,107,974	—792,133
Buffalo, Rochester & Pitts.	589	1,241,948	138,593	1,446,194	215,897	536,710	12,538	563,191	32,805	1,363,151	94.25	83,043	27,000	56,038	—181,842
Buffalo & Susquehanna	296	211,555	6,040	221,764	51,773	116,439	1,940	73,419	8,401	251,972	113.62	—30,209	3,250	—33,459	—23,465
Canadian Pacific Ry. Lines in Maine	233	84,357	55,236	150,917	55,817	31,694	2,573	70,917	3,057	163,323	108.22	—12,407	11,000	—23,407	5,044
Charleston & W. Carolina	342	217,376	46,378	278,905	57,996	61,710	4,971	112,581	4,729	241,987	86.76	36,918	8,500	28,378	21,682
Central New England	301	621,086	27,326	671,899	140,540	119,829	3,144	233,577	13,477	510,566	75.98	161,333	16,000	144,661	—14,449
Central of Georgia	1,918	1,136,185	524,408	1,855,973	410,264	495,733	33,659	754,243	63,636	1,772,836	95.51	83,137	78,080	4,313	342,411
Central of New Jersey	685	3,045,337	830,361	4,131,526	545,261	1,290,030	26,707	1,906,006	73,046	3,859,452	93.41	272,073	333,192	—61,098	—1,148,090
Central Vermont	411	425,159	115,086	587,315	102,361	157,228	7,195	300,965	17,817	588,420	100.18	—1,105	17,400	—18,515	—63,181
Carolina, Clinchfield & Ohio	282	505,196	37,470	550,452	73,061	148,825	3,952	152,607	13,822	392,078	71.22	158,374	16,300	142,068	554
Chesapeake & Ohio	2,509	5,055,657	1,104,223	6,546,830	1,093,996	1,618,959	34,769	2,454,098	110,037	5,346,145	81.66	1,200,686	158,400	1,042,258	—998,653
Chicago & Alton	1,050	1,704,043	564,190	2,414,784	382,344	770,484	25,949	921,376	48,894	2,158,387	89.38	256,397	52,207	203,890	104,010
Chicago & Eastern Illinois	1,131	1,827,168	445,997	2,449,370	319,013	894,650	14,864	881,358	48,404	2,169,481	88.57	279,889	56,500	223,196	—371,265
Chicago & Erie	269	782,665	84,865	948,420	82,892	169,368	8,909	402,782	25,518	692,655	73.03	255,765	27,678	228,083	39,984
Chicago & North Western	8,090	9,927,449	3,400,304	14,504,392	1,979,708	3,042,024	74,956	5,670,907	263,631	11,129,071	76.73	3,375,322	475,000	2,897,801	429,147
Chicago, Burlington & Quincy	9,371	10,771,272	3,585,313	15,487,099	1,832,972	3,101,604	85,273	5,260,980	327,875	10,741,485	69.35	4,745,614	464,855	4,279,095	2,516,726
Chicago Great Western	1,496	1,502,843	547,488	2,204,613	336,310	465,946	25,177	828,522	49,850	1,720,856	78.05	483,757	54,975	428,279	131,439
Chicago, Indianapolis & Louisville	657	785,604	262,974	1,152,262	149,714	381,258	14,825	468,309	26,975	1,048,048	90.95	104,214	48,701	55,472	—143,632
Chicago Junction	12	.....	.....	329,441	89,181	69,932	106	219,574	5,752	384,545	116.72	—55,105	2,128	—57,237	16,856
Chicago, Milwaukee & St. Paul	10,648	10,929,605	2,855,022	15,137,097	2,308,215	3,874,965	97,206	5,916,508	351,369	12,591,212	83.18	2,545,885	539,252	2,002,115	—116,690
Chicago, Peoria & St. Louis	247	146,065	25,368	181,884	45,786	81,768	3,412	87,432	7,834	226,225	124.37	—44,341	6,100	—50,441	58,340
Chicago, Rock Island & Gulf	474	364,294	103,191	505,498	61,100	91,515	7,647	177,913	11,743	350,311	69.30	155,187	13,155	142,004	33,841
Chicago, Rock Island & Pacific	7,594	7,539,045	3,198,282	11,386,285	1,966,013	2,609,533	109,430	4,162,639	192,793	9,080,910	79.75	2,305,376	306,190	1,998,559	167,819
Chicago, St. Paul, Minn. & Omaha	1,749	1,745,141	738,145	2,639,486	393,813	513,691	24,625	1,058,026	64,275	2,069,375	78.40	570,111	130,992	438,510	—44,263
Chicago, Terre Haute & S. E.	374	450,641	22,083	483,721	60,709	198,205	3,267	156,611	10,410	431,796	89.26	51,924	14,500	37,423	—97,967
Cincinnati, Indianapolis & Western	321	206,297	56,044	286,662	47,652	113,874	6,379	131,773	13,927	315,772	110.15	—29,110	14,537	—43,657	—92,224
Cincinnati, New Orleans & Texas Pacific	337	912,392	275,834	1,243,337	234,076	506,461	18,045	669,154	33,747	1,465,636	117.87	—222,299	37,001	—259,302	—296,220
Cincinnati Northern	251	230,984	20,867	259,607	28,371	62,945	2,112	86,914	5,495	185,838	71.58	73,769	13,400	60,369	—557
Cleveland, Cincinnati, Chicago & St. L.	2,395	5,258,521	1,624,216	7,474,754	780,044	1,412,045	77,840	2,732,152	105,742	5,161,694	69.05	2,313,060	166,000	2,145,702	—473,532
Colorado & Southern	1,099	853,121	274,807	1,206,750	181,256	309,124	8,992	394,084	33,483	936,010	77.56	270,741	47,000	223,559	—61,717
Colorado & Wyoming	41	24,160	1,300	77,637	12,439	12,345	213	31,980	3,705	60,682	78.16	16,955	4,000	12,955	10,419
Cumberland Valley	163	435,298	80,630	553,637	100,894	105,539	5,908	181,018	13,241	406,993	73.51	146,643	7,382	139,279	—162,161
Delaware & Hudson	875	2,571,153	3,743,356	3,131,892	379,248	1,000,596	33,043	1,290,712	113,762	2,838,184	90.62	293,708	60,000	233,707	—957,975
Delaware, Lackawanna & Western	956	4,399,394	1,159,418	6,213,781	769,931	1,521,875	48,323	2,445,393	121,121	4,968,244	79.95	1,245,537	318,427	926,096	—1,187,709
Denver & Rio Grande	2,593	2,491,425	787,474	3,498,069	459,455	774,712	20,129	1,052,754	72,391	2,432,469	69.53	1,065,601	115,000	950,082	197,280
Denver & Salt Lake	255	251,122	48,707	309,371	72,233	128,946	842	139,570	5,571	347,162	112.21	—37,790	9,000	—46,841	34,362
Detroit & Mackinac	381	110,871	31,934	152,449	28,099	43,472	5,351	60,941	16,907	154,753	101.52	—2,303	8,439	—10,743	—19,678
Detroit, Toledo & Ironton	454	305,819	17,064	339,384	90,130	95,441	4,249	145,628	12,948	348,396	102.66	—9,011	8,149	—17,160	—58,542
Detroit & Toledo Shore Line	61	269,414	.....	268,651	20,291	25,279	1,126	74,586	3,903	125,186	46.89	143,466	7,900	135,566	90,816
Duluth & Iron Range	292	1,013,570	19,080	1,006,006	104,543	128,830	800	219,896	15,558	470,154	46.98	635,852	55,046	580,787	—187,256
Duluth, Missabe & Northern	412	2,180,937	44,696	2,968,017	170,783	183,858	2,267	436,280	30,289	824,851	27.79	2,143,166	149,267	1,993,899	—282,225
Duluth, South Shore & Atlantic	598	311,596	121,311	461,308	86,702	84,752	4,067	184,971	8,190	373,742	81.02	87,566	20,000	67,496	30,204
Duluth, Winn. & Pacific	178	122,514	27,630	153,533	36,323	32,906	2,632	59,963	8,137	140,008	91.19	13,525	9,938	3,587	6,245
East St. L. Connecting	3	.....	.....	102,554	13,880	21,329	267	73,407	3,664	112,661	109.85	—10,107	2,000	—12,107	—7,367
El Paso & Southwestern	1,028	902,550	191,858	1,156,325	211,872	260,651	11,081	262,473	26,589	781,172	67.55	375,154	48,364	326,790	—236,272
Elgin, Joliet & Eastern	832	1,492,932	2	1,699,903	158,425	566,927	7,611	607,206	28,001	1,367,374	80.43	332,529	53,250	279,271	—196,052
Erie R. R.	1,989	6,904,200	1,206,752	8,881,185	1,046,221	2,748,803	64,901	3,756,711	193,790	7,859,716	88.49	1,021,469	269,475	750,501	579,505
Florida East Coast	764	437,654	173,515	704,357	132,511	165,464	7,428	257,823	25,807	596,358	84.66	107,999	42,547	65,081	219,922
Fonda, Johnstown & Gloversville	88	37,210	68,132	109,302	14,125	9,103	545	44,644	5,066	73,483	67.22	35,819	4,900	30,919	—17,720
Ft. Smith & Western	253	112,446	36,694	157,534	22,308	31,515	3,738	51,887	6,217	116,587	74.00	40,947	5,000	35,888	17,991
Cincinnati, Lebanon & Northern	76	78,115	8,736	101,794	31,104	21,625	1,320	54,533	1,001	109,584	107.65	7,790	4,404	—12,194	—16,262
Ft. Worth & Denver City	454	642,641	366,089	1,049,897	77,112	223,787	3,366	343,344	25,718	677,521	64.53	372,377	17,238	355,109	296,569

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF SEPTEMBER, 1919—CONTINUED

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses						Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
		Freight.	Passenger.	Total (inc. misc.)	Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.					
Ft. Worth & Rio Grande	235	98,166	71,030	181,166	28,916	23,943	1,374	66,499	5,586	126,309	69.71	54,807	2,983	51,800	36,054
Galveston, Harrisburg & San Antonio	1,381	1,122,404	407,793	1,625,222	254,053	519,350	16,512	540,594	54,263	1,396,519	85.92	228,764	52,872	175,549	—180,129
Galveston Wharf Co	13	.....	.....	68,195	36,290	521	.....	23,261	960	79,134	104.61	—10,940	12,500	—23,440	—3,250
Georgia	328	378,428	133,516	562,078	58,834	96,108	9,846	244,046	17,447	426,450	75.87	135,627	5,950	129,677	—143,846
Georgia Southern & Florida	402	226,979	86,353	347,454	66,400	98,453	5,800	161,752	11,206	345,212	99.35	2,242	15,122	13,134	18,347
Georgia & Florida	348	59,604	23,039	87,825	41,661	21,207	1,407	50,665	5,664	120,603	131.32	—32,778	4,206	—36,978	—47,810
Grand Rapids & Indiana	569	532,430	274,884	862,689	82,820	181,507	10,855	343,490	37,718	665,467	77.13	197,222	25,951	171,262	224,517
Grand Trunk Western Lines	1,001	1,615,122	347,013	2,141,971	289,992	330,977	19,108	879,926	46,960	1,571,550	73.36	570,420	56,742	519,345	191,808
Great Northern	8,171	8,110,754	2,010,451	11,077,055	1,337,500	2,098,380	66,125	3,918,455	146,103	7,701,444	69.52	3,375,611	566,158	2,809,591	24,891
Gulf & Ship Island	307	153,724	40,649	206,336	47,754	66,144	5,129	80,799	9,967	210,206	101.87	—3,871	10,216	—14,088	—51,138
Gulf, Colorado & Santa Fe	1,937	1,499,530	536,385	2,153,320	403,407	421,871	12,055	831,126	47,657	1,107,511	79.30	443,810	71,168	374,358	—69,546
Grand Trunk Lines in New England	172	101,022	47,373	165,572	111,066	62,102	2,894	115,964	10,357	310,028	187.22	—144,455	14,500	—158,955	—275,647
Gulf, Mobilye & Northern	461	175,230	50,504	239,234	51,766	66,115	6,954	108,887	11,435	241,581	100.98	—2,348	11,627	—14,021	—34,334
Hocking Valley	350	1,187,381	118,086	1,383,082	119,786	382,684	5,183	402,176	17,780	926,056	66.95	457,026	50,500	406,526	199,886
Houston & Texas Central	847	599,502	223,488	884,640	185,590	200,332	5,266	328,313	19,409	738,701	83.55	145,938	34,458	110,709	—2,256
Houston, East & West Texas	190	161,883	50,122	223,257	32,965	37,240	932	86,569	3,904	161,611	72.38	61,646	6,249	55,307	29,528
Illinois Central	4,799	6,968,926	2,147,700	9,840,095	1,919,941	3,221,334	78,836	3,815,589	215,509	9,299,157	94.50	540,938	432,384	105,895	—2,244,449
Indiana Harbor Belt	116	.....	.....	620,110	101,610	136,559	1,811	423,916	19,484	683,380	110.20	—63,270	9,964	—73,234	63,856
International & Great Northern	1,159	871,951	333,416	1,295,424	265,512	399,318	17,207	629,878	43,676	1,368,386	105.63	—72,962	23,506	—96,525	—264,511
Kanawha & Michigan	176	352,751	51,671	417,146	62,185	162,224	1,820	132,658	13,121	372,008	89.17	45,138	18,958	26,180	—24,601
Kansas City, Mexico & Orient	272	133,111	17,574	156,915	58,316	58,489	929	80,168	7,636	205,538	130.98	—48,622	6,250	—55,007	—73,816
Kansas City, Mexico & Orient of Texas	465	99,583	23,166	129,253	32,944	48,682	1,104	88,287	7,877	178,804	138.33	—49,550	5,000	—54,623	—5,871
Kansas City Southern	774	1,014,158	228,883	1,332,293	135,966	307,080	9,756	468,063	29,598	948,446	71.19	383,847	65,852	317,546	—18,867
Kansas City Terminal	27	.....	.....	129,012	29,996	31,862	.....	53,539	1,619	118,259	91.66	10,753	57,950	—47,197	—4,089
Lake Erie & Western	902	842,928	78,581	966,786	137,221	223,639	12,160	374,121	22,606	769,721	79.61	197,065	46,700	150,365	149,253
Lehigh & Hudson River	96	265,756	4,202	277,178	31,766	58,794	1,081	99,019	5,608	196,268	70.80	80,911	7,856	73,044	61,190
Lehigh & New England	234	403,195	1,524	418,732	68,948	92,235	4,893	128,456	12,024	306,556	73.21	112,176	7,380	104,796	171,675
Lehigh Valley	1,435	5,020,310	619,760	6,076,055	966,288	1,886,050	43,785	2,438,449	98,568	5,454,779	89.77	621,276	182,750	438,502	—706,232
Long Island	398	641,114	1,398,348	2,277,174	237,466	403,928	16,266	1,192,179	50,419	1,915,102	84.09	362,072	94,428	267,370	—520,269
Louisiana & Arkansas	302	128,640	43,516	178,369	58,639	58,639	45,709	3,132	6,880	180,163	101.01	—1,794	11,114	—12,908	9,555
Louisiana Railway & Navigation Co	340	252,366	36,847	298,961	92,201	60,710	5,265	105,549	7,916	271,640	90.86	27,322	18,000	9,296	74,975
Louisiana Western	201	206,425	101,497	328,626	58,156	93,316	3,721	94,442	10,481	262,560	79.89	66,066	8,778	57,274	—34,969
Louisville & Nashville	5,013	7,174,693	2,156,065	9,846,324	1,451,534	3,205,385	136,680	3,647,933	191,868	8,670,824	88.06	1,175,499	260,773	914,351	—871,920
Louisville, Henderson & St. Louis	199	177,618	70,927	265,067	48,177	31,895	4,363	79,713	8,696	172,845	65.21	92,222	4,000	87,988	—20,267
Maine Central	1,216	964,793	512,131	1,603,178	252,764	469,508	12,817	767,446	36,773	1,549,990	96.68	53,188	75,623	—22,517	—242,173
Maryland, Delaware & Virginia	82	80,690	58,714	143,218	6,820	20,206	806	77,525	2,370	107,728	75.22	35,490	1,894	33,596	14,527
Michigan Central	1,361	5,086,056	1,872,809	7,707,649	759,114	1,627,399	67,343	2,479,249	103,672	5,116,771	66.38	2,590,877	285,000	2,305,255	880,021
Mineral Range	101	55,890	203	56,829	15,191	23,275	271	23,843	939	63,230	111.26	—6,401	3,500	—9,901	—31,060
Minneapolis & St. Louis	1,646	1,052,018	254,086	1,371,679	233,097	335,796	11,615	559,839	30,443	1,171,676	85.41	200,003	48,102	151,880	—28,289
Minn., St. Paul & Sault Ste. Marie	4,243	3,077,225	830,438	4,186,108	574,893	826,892	23,917	1,514,776	78,885	3,040,960	72.64	1,145,147	251,337	893,756	418,832
Miss. Central	164	45,011	27,322	75,947	25,697	30,348	1,068	33,625	6,145	96,883	127.56	—20,936	2,801	—23,736	—65,069
Missouri & North Arkansas	365	160,689	50,581	159,897	44,678	41,284	2,835	63,582	9,440	161,769	101.17	—1,872	6,242	—8,262	—5,416
Missouri, Kansas & Texas R. R.	1,713	2,321,135	769,001	3,291,043	546,349	868,891	39,622	990,860	82,624	2,546,382	77.37	744,660	113,334	631,051	—173,378
Missouri, Kansas & Texas of Texas	1,796	1,446,423	823,916	2,429,787	503,693	500,244	29,296	1,204,482	80,443	2,336,034	96.14	93,753	83,094	10,130	—30,854
Missouri, Oklahoma & Gulf	332	110,902	20,431	139,709	68,565	66,718	2,114	76,017	6,710	220,374	157.73	—80,665	8,500	—89,461	—86,251
Misosuri Pacific	7,301	6,641,727	1,874,176	9,093,853	1,733,435	2,190,124	83,758	3,360,984	21,017	7,618,400	83.77	1,475,452	277,373	1,195,904	—510,724
Montour	54	.....	126,328	130,889	32,842	56,343	1,228	37,307	6,803	134,530	102.77	—3,640	1,936	—5,576	—36,240
Mobile & Ohio	997	1,131,319	193,131	1,405,149	277,516	469,761	26,353	615,156	52,638	1,441,896	102.62	—36,747	45,000	—81,831	91,391
Monongahela	108	280,517	21,255	308,137	47,041	48,115	951	97,356	6,473	199,937	64.88	108,200	5,000	103,200	8,546
Monongahela Connecting	6	.....	.....	183,418	31,897	59,069	511	54,344	7,311	183,133	99.84	286	1,543	—1,258	—52,852
Morgan's Louisiana & Texas R. R.	400	410,216	161,618	617,406	169,309	179,484	8,653	230,000	19,440	608,535	98.56	8,871	29,796	—20,963	12,937
Nashville, Chattanooga & St. Louis	1,247	1,315,206	482,125	1,908,985	292,140	469,464	39,478	742,604	42,420	1,593,108	83.45	315,878	50,000	265,788	185,934
Nevada Northern	168	105,593	9,174	126,277	27,419	22,194	1,145	37,972	3,594	92,339	73.12	33,937	22,223	11,715	—111,939
New Orleans & N. E.	196	368,857	115,909	546,204	176,384	171,798	6,651	228,694	14,486	602,747	110.35	—56,543	28,357	—85,164	—145,881
New Orleans Great Northern	284	147,042	46,169	200,832	39,923	52,143	2,602	70,341	9,915	175,381	87.32	25,452	9,000	16,382	—2,813
New Orleans, Texas & Mexico	191	137,919	40,933	184,867	44,606	54,079	2,711	61,780	6,413	172,035	93.05	12,832	10,000	2,709	—17,528
New York Central	6,075	18,172,686	7,821,872	29,486,945	3,740,177	7,167,675	249,399	10,783,311	646,832	23,000,499	78.00	6,486,446	1,058,199	5,427,610	—3,866,162
New York, Chicago & St. Louis	574	1,864,157	133,043	2,067,197	217,601	440,236	23,818	760,269	54,749	1,499,950	72.55	567,246	30,000	537,201	90,171
New York, New Haven & Hartford	1,965	4,888,592	4,162,241	10,216,559	1,275,056	2,399,861	50,529	4,262,752	267,758	8,409,024	82.30	1,807,535	392,000	1,412,778	—1,173,517
New York, Ontario & Western	569	536,550	256,737	953,330	167,880	253,331	10,392	441,473	21,121	894,199	93.79	59,131	30,000	29,131	—17,864
New York, Philadelphia & Norfolk	121	615,091	105,021	770,772	63,109	237,557	9,404	326,834	11,462	667,804	86.64	102,969	18,962	83,990	—64,805
New York, Susquehanna & Western	135	223,600	65,328	323,747	52,405	81,043	2,948	183,153	7,587	327,136	101.04	—3,389	37,111	—40,509	—57,311
Newburgh & South Shore	7	.....	.....	63,197	15,315	23,392	.....	44,819	5,038	88,563	140.13	—25,366	5,216	—30,582	73,793
Norfolk Southern	906	379,255	172,795	590,162	125,326	131,050	7,308	240,462	20,617	524,936	88.94	65,226	16,010	48,940	—2,155
Norfolk & Western	2,088	6,048,285	1,002,049	7,348,329	912,066	2,598,916	39,173	2,437,148	116,400	6,124,107	83.34	1,224,220	260,000	463,967	—1,013,911
Northern Pacific	6,610	6,869,237	2,127,281	9,739,959	1,380,627	2,068,531	49,500	3,350,430	189,125	7,163,141	73.54	2,576,817	719,153	1,852,915	—488,001
Northern Alabama	112	94,386	13,316	109,424	34,566	7,173	1,599	50,524	1,604	95,453	87.23	13,971	3,400	10,563	—53,360
Northwestern Pacific	538	352,178	209,357	628,741	109,569	77,891	4,225	251,031	15,337	460,237	73.19	168,505	25,424	142,680	—49,664
Oregon Short Line	2,347	2,998,946	679,070	3,852,205	239,060	775,749	17,228	1,039,669	118,997	2,251,613	58.44	1,600,592	172,005	1,428,056	268,023
Oregon, Washington Navigation Co	2,070	1,917,153	686,927	2,789,325	417,283	471,086	32,699	993,844	105,169	2,040,939	73.16	748,386	113,614	634,593	164,183

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF SEPTEMBER, 1919—CONTINUED

Name of road.	Average mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
Panhandle & Santa Fe	772	503,902	137,453	670,346	68,192	252,061	4,578	240,651	14,182	579,572	86.45	96,774	20,895	69,709	193,672
Pennsylvania Railroad, West	1,754	7,530,695	1,998,732	10,401,552	1,263,791	3,103,966	83,454	4,004,758	207,770	8,754,927	84.16	1,646,625	307,001	1,338,761	314,437
Pennsylvania Railroad, East	5,367	23,544,057	16,265,724	36,906,615	4,831,180	11,831,056	284,111	15,376,303	746,346	33,695,344	91.29	3,211,271	881,016	2,324,401	—1,674,875
Perkiomen	41	87,086	11,020	101,419	8,398	4,075	17	38,447	607	51,562	50.84	49,857	1,800	48,057	—71,598
Peoria & Pekin Union	19	20,132	3,792	99,556	19,888	72,912	595	68,813	5,469	167,678	168.43	—68,128	9,500	—77,628	—47,836
Pere Marquette	2,230	2,457,427	615,201	3,321,641	215,750	738,575	25,834	1,274,959	55,168	2,321,609	69.66	1,011,031	61,993	948,787	265,654
Philadelphia & Reading	1,127	5,700,845	861,309	6,954,896	742,156	2,002,494	40,693	2,900,677	143,127	5,846,083	84.05	1,108,813	143,229	865,573	—909,668
Pittsburgh & Lake Erie	224	2,278,233	244,015	2,695,503	197,844	897,956	13,502	910,009	44,033	2,064,097	76.57	631,406	72,000	559,406	—858,142
Pittsburgh & West Virginia	63	109,689	9,660	128,670	28,916	56,627	1,644	56,832	6,605	159,592	124.03	—30,922	13,460	—44,382	—1,234
Philadelphia, Bethlehem & N. E.	71	.....	.....	69,890	7,187	10,975	421	54,062	1,115	73,761	105.53	—3,871	1,110	—4,981	—18,538
Pittsburgh & Shawmut	103	111,128	4,499	116,313	31,963	36,059	1,628	37,698	2,971	110,320	94.84	5,993	973	5,019	938
Pittsburgh, Cincinnati, Chicago & St. L.	2,383	6,308,470	2,148,648	9,079,693	1,283,488	2,929,683	94,627	3,617,033	191,469	8,199,403	90.30	880,921	241,239	638,559	440,954
Pittsburgh, Shawmut & Northern	204	111,507	6,577	121,432	28,092	63,364	1,034	48,738	5,647	146,881	120.95	—25,449	1,892	—27,341	—30,309
Port Reading	21	140,583	.....	218,348	20,958	9,665	18	90,246	3,056	123,943	56.76	94,405	9,000	85,405	—50,758
Richmond, Fred. & Pot	81	257,028	265,647	598,934	43,359	108,458	4,056	213,027	13,241	395,703	66.06	203,231	13,135	190,094	—303,144
Quincy, Omaha & Kansas City	255	66,480	26,735	100,824	36,617	21,723	300	57,059	879	115,860	114.91	—15,036	3,053	—18,088	43,181
Rutland	415	223,904	149,335	453,720	76,335	101,811	5,073	194,716	12,241	391,871	86.36	61,849	19,944	41,906	—43,398
St. Joseph & Grand Island	258	211,809	44,812	272,513	53,687	59,526	2,107	117,849	12,960	246,130	90.31	26,383	11,856	14,510	22,331
St. Louis, Brownsville & Mexico	548	306,983	174,039	512,726	112,387	83,247	7,326	127,778	16,101	346,838	67.64	165,888	10,000	155,673	—72,845
St. Louis, Merchants Bridge Terminal	9	.....	642	336,038	49,459	41,899	752	195,651	5,990	293,751	87.41	42,287	8,000	34,286	34,956
St. Louis-San Francisco	4,761	4,944,936	2,118,016	7,452,641	989,186	1,477,763	58,636	2,518,325	153,647	5,194,030	69.69	2,258,611	196,310	2,060,088	—266,176
St. Louis, San Francisco & Texas	134	86,822	21,869	116,853	30,441	133,676	1,632	71,639	5,979	143,369	122.69	—26,515	1,629	—28,144	—81,063
St. Louis Southwestern	939	990,646	201,543	1,260,501	195,303	264,394	14,994	327,575	52,953	859,726	68.21	406,774	37,777	362,954	61,862
St. Louis Southwestern of Texas	814	456,149	142,064	641,353	152,758	199,107	9,350	305,734	23,403	690,918	107.72	—49,564	21,000	—70,578	43,062
San Antonio & Aransas Pass	936	286,295	147,042	458,832	123,915	119,423	6,156	216,120	16,143	481,593	104.96	—22,762	15,000	—38,523	—110,381
Seaboard Air Line	3,563	1,967,638	893,354	3,161,083	556,306	823,821	60,531	1,498,708	100,330	3,065,146	96.96	95,936	135,000	—39,186	—967,868
St. Louis Transfer	6	.....	.....	129,129	12,621	11,226	182	42,137	1,887	68,054	52.70	61,075	100	60,975	46,299
South Buffalo	11	31,863	.....	57,062	7,794	17,052	451	35,265	1,587	62,149	108.91	—5,687	3,666	—8,754	—12,036
Southern	6,982	7,174,232	3,009,398	11,317,590	2,356,749	2,543,032	136,565	4,627,260	279,608	10,052,436	88.82	1,265,153	341,791	916,312	—3,804,190
Southern, Railway in Mississippi	278	93,586	51,056	155,062	39,509	22,327	2,982	76,626	4,135	145,579	93.88	9,484	9,600	427	721
Southern Pacific Steamship Lines	....	840,533	66,000	955,617	13,673	218,398	14,283	816,360	28,410	1,091,124	114.18	—135,507	9,966	—145,487	127,150
Spokane, Portland & Seattle	538	443,855	179,215	669,870	88,967	90,230	6,709	211,905	21,383	422,473	63.07	247,397	59,200	188,090	30,611
Southern Pacific	7,049	11,103,263	4,233,540	16,588,993	1,633,921	3,222,011	156,683	5,622,468	249,291	11,195,316	69.48	5,393,677	725,443	4,667,067	—103,511
Spokane International	156	103,589	19,772	125,819	18,161	10,201	1,952	36,895	4,439	71,473	56.31	54,340	4,012	50,328	22,571
Staten Island Rapid Transit	23	88,783	82,711	192,149	28,776	35,052	1,023	100,247	9,652	174,750	90.94	17,398	17,000	398	—31,852
Tennessee Central	292	146,526	55,674	213,834	72,471	59,058	3,399	103,069	6,214	244,236	114.51	—30,402	4,960	—35,368	12,568
Terminal R. R. Assn. of St. Louis	36	.....	3,931	390,684	67,385	52,915	854	149,599	3,918	278,079	71.17	112,604	30,750	81,712	26,004
Texarkana & Ft. Smith	87	116,769	18,962	146,691	21,947	18,804	51,632	52,123	3,017	97,234	66.28	49,458	6,616	42,850	29,871
Texas & New Orleans	469	459,494	175,055	702,658	105,151	242,166	3,521	238,268	13,545	636,143	90.53	66,515	21,256	44,998	402,078
Texas Pacific	1,946	2,006,838	1,126,420	3,340,274	482,822	785,242	24,602	1,187,426	66,946	2,581,466	77.28	758,808	100,000	657,339	276,453
Toledo & Ohio Central	435	857,490	74,731	992,381	136,289	277,218	6,704	388,333	16,219	827,653	83.40	164,728	32,034	132,682	264,430
Toledo, Peoria & Western	247	76,438	53,324	137,701	22,219	39,135	1,653	72,987	4,798	140,719	102.19	—3,019	8,500	—11,519	6,582
Toledo, St. L. & Western	454	771,782	36,840	853,699	188,725	208,669	6,567	305,856	11,631	720,659	84.41	133,040	26,000	107,040	134,634
Trinity & Brazos Valley	368	118,000	23,855	149,148	56,570	56,273	1,918	56,436	7,138	172,337	115.54	—23,188	5,714	—28,903	59,649
Ulster & Delaware	128	66,014	69,406	156,797	21,165	20,011	1,245	69,905	5,509	118,322	75.46	38,474	4,800	33,675	42,347
Union R. R. of Pennsylvania	40	.....	.....	654,588	80,228	150,082	80,249	352,988	7,523	591,070	90.28	63,518	8,281	55,236	—216,831
Union Pacific	3,614	8,496,929	2,164,698	11,452,999	1,130,798	2,056,807	45,368	2,806,187	248,821	6,513,178	56.86	4,939,821	284,385	4,654,353	—84,492
Vicksburg, Shreveport & Pacific	171	191,128	79,847	296,684	44,390	62,758	2,336	97,331	8,273	218,251	73.56	78,434	15,734	62,925	13,789
Virginian Ry.	523	1,091,202	69,295	1,280,080	173,015	200,796	3,953	387,854	16,627	784,381	61.27	495,690	24,500	471,199	128,409
Wabash	2,505	3,406,734	929,813	4,634,277	832,142	1,045,973	57,782	1,958,639	115,644	4,036,645	87.10	597,632	112,091	485,470	—71,158
Washington Southern	35	88,498	181,821	341,168	33,210	51,278	1,920	117,151	6,846	216,468	63.45	124,701	6,379	118,322	108,126
West Jersey & Seashore	361	332,200	835,814	1,248,189	175,599	308,776	9,666	568,737	21,388	1,089,312	87.27	158,877	52,025	106,838	33,744
Wichita Falls & N. W.	328	188,272	55,674	252,745	71,919	28,343	1,493	127,293	6,751	235,800	93.29	16,945	9,908	6,881	34,877
Western Maryland	688	1,310,074	100,449	1,542,747	275,684	514,232	18,690	492,389	50,504	1,366,761	88.59	175,986	43,200	132,786	323,633
Western Pacific	1,041	1,199,502	177,894	1,433,015	161,608	198,130	1,644	404,470	25,208	829,505	57.88	603,509	50,911	552,556	232,081
Western Ry. of Alabama	133	107,884	62,187	190,750	122,548	44,337	43,095	65,284	5,178	144,862	75.94	45,887	7,500	38,386	100,389
Wheeling & Lake Erie	511	1,052,006	59,221	1,237,697	236,405	352,522	7,044	454,766	21,072	1,074,678	86.82	163,019	61,900	100,921	—238,709
Yazoo & Mississippi	1,381	1,890,781	469,528	2,462,013	362,106	603,945	15,918	716,381	45,441	1,743,960	70.83	718,054	64,564	653,111	51,883
Lake Erie & Ishpeming	34	173,112	200	195,755	20,869	14,720	212	32,111	2,479	70,411	35.96	125,344	3,871	121,472	43,704
Copper Range	141	73,085	13,084	90,512	32,455	27,404	1,588	37,019	2,769	101,235	111.85	—10,722	6,526	—17,248	5,034
Utah Ry.	98	140,567	498	139,560	22,834	24,367	169	27,078	2,397	76,845	55.06	62,715	4,072	58,643	1,445
Green Bay & West	252	93,763	17,050	117,933	29,858	33,514	927	41,139	1,895	107,331	91.01	10,602	4,390	6,212	—10,521
Los Angeles & Salt Lake	1,168	951,547	415,188	1,472,350	101,082	351,167	21,051	495,672	31,863	1,043,279	70.85	429,071	71,431	357,497	—108,291
Midland Valley	388	239,208	87,356	339,245	92,737	82,530	7,480	131,491	17,720	331,958	97.85	7,287	6,786	404	—84,039
Minn. & International	194	46,503	25,957	77,528	241,257	21,316	472	39,675	3,217	88,937	114.71	—11,408	5,880	—17,289	6,968

Commission and Court News

State Commissions

The Railroad Commission of Louisiana, acting on complaint of land owners, well contractors, and others interested in the Harmon-Bayou oil field, has ordered the Texas & Pacific to put on an additional passenger train between Shreveport, La., and Gahagan, 47 miles. The railroad objected, arguing that automobiles would take much of the traffic to and from these oil fields, but the commission held that poor roads would make automobile traffic impracticable in the winter season. Heretofore there has been one train a day between these points, and many of the patrons of the road were obliged to take two days for a round trip.

Personnel of Commissions

Edgar E. Clark has been nominated by the President for reappointment as a member of the Interstate Commerce Commission.

James H. Wilkerson, a member of the Illinois Public Utilities Commission, has been appointed chairman of that body, succeeding Thomas E. Dempcy. Mr. Dempcy has resigned as chairman because of ill health, but retains his membership in the Commission.

The Department of Public Utilities, of Massachusetts, succeeding to the functions of the Public Service Commission, consists of five members, and the chairman is Henry C. Attwill, who has been appointed commissioner for a term of five years. The other appointments for four, three, two years, and one year, respectively, are E. E. Stone, A. R. Weed, D. A. Ellis and H. G. Wells. Messrs. Attwill and Stone were members of the Public Service Commission. Under the reorganization which took effect December 1, under a law passed this year, this department will take up the work of the gas and electric light commission. Under the new organization the chairman will have a salary of $8,000 a year, and each of the other four members will have $7,000. The new chairman was formerly attorney general of the state. The former chairman of the Public Service Commission, F. J. MacLeod, is now out of office.

Court News

Fraud of Railroad's Agents by Overcharges

Although there is a presumption that knowledge of an agent is that of the principal, that presumption does not apply where the agent is engaged in a scheme to defraud his principal. Therefore the Circuit Court of Appeals, Eighth Circuit, holds that a railroad company will not be charged with a scheme between its station agent and an employee of a shipper whereby freight in a greater amount than was earned was collected, and the two divided the surplus.—Scullin Steel Co. v. North American Co., 255 Fed. 945.

Excessive Valuation for Taxation

The Illinois Supreme Court holds that where the railway committee of the State Board of Equalization arbitrarily increased the assessed valuation of certain railway property by fixing it at six times the valuation returned by the railroad and such valuation was arbitrarily approved by the board under suspension of the rules, the railroad's objection as to five-sixths of the tax should have been sustained.—People v. Chicago, Lake Shore & Eastern, 286 Ill. 576, 122 N. E. 109.

Federal Employers' Liability Act—Assumption of Risk

The Circuit Court of Appeals, Second Circuit, holds that an interstate commerce employee, of experience, who after refusal of a light, and without assurance of safety or a light forthcoming in a reasonable time, continues to work in the dark removing a metal platform which had been used as a passageway between freight cars on parallel tracks, must be held to have assumed the risk. It is only risk of employment from violation by the master of a federal statute which the employee is not held to assume under the federal Employers' Liability Act.—D. L. & W. v. Tomasco, 256 Fed. 14.

Standing Cars Not Attractive Nuisances

While the doctrine of the "attractive nuisance," or of the so-called "turntable cases," has been accepted in the state of Missouri, the Supreme Court of that state holds that a standard gage railroad flat car of light construction on a side track, unbraked and unlocked, requiring from 6 to 8 boys from 9 to 13 years of age to move it was not within the attractive nuisance rule as to a 10-year-old child, caught between the car and an adjacent pile of construction material while the car was being moved by children. The danger is obvious, like that from fire or water, and not latent.—Buddy v. Union Terminal (Mo.), 207 S. W. 821.

Change in Passenger Rates—Ejection from Drawing Room

Suit was brought by a passenger for ejectment from the drawing room of a Pullman car. He was informed when he bought a first-class ticket from Reno to Tonopah and when he entered the train that under the railroad's rules he could not occupy the drawing room unless another person holding a first-class ticket occupied it with him, or unless he bought another first-class ticket. He said that he expected a friend to occupy it with him. During the night, no one else having appeared with the required ticket, the conductor awoke him and informed him that he would have to vacate the drawing room or pay for another first-class ticket. After discussion, and against his will, he was ejected from the drawing room. The sole question in the case was whether the railroad was justified in ejecting him. For a long time the company had permitted a passenger holding one first-class ticket between Reno and Tonopah to occupy the drawing room, but some time prior to the date of the plaintiff's ejection the company had changed its tariff so as to require two passage tickets for use of a drawing room. It was held that the change in tariff had been properly made and it was lawful to eject the plaintiff.—Crumley v. Southern Pac. (Nev.), 177 Pac. 17.

Apportionment of Cost of Crossing and Interlocking

The Washington Supreme Court affirmed an order of the State Public Service Commission apportioning the cost of crossing of the track of the Northern Pacific by the Tacoma Eastern (the railroads having been unable to agree thereon) as follows: the cost of the grading, of the frogs, and the installment thereof to be borne entirely by the Tacoma Eastern; the cost of the interlocking plant and its installation, one-third by the Northern Pacific and two-thirds by the Tacoma Eastern; maintenance of the whole to be borne in equal proportions by the two companies. The court held, at the same time, that, the necessity for the crossing being found, there can be no favor shown the company whose line is crossed merely because it is a pioneer company. If, when a petition is filed for permission to cross an existing road, the State grants the right to cross, all questions of prior right or occupancy of the ground must give way, for the order is a finding by the sovereign state that the need of the public demands two roads instead of one, and the order ipso facto forecloses all questions of seniority or priority between the contending roads. In this the court followed State ex rel. Puget Sound & Willipa Harbor v. Northern Pacific, 94 Wash. 10, where it was held, contrary to former holdings of the Washington Supreme Court, that it was within the power of the legislature to apportion the cost of a crossing and interlocking devices between the two companies. State ex rel. Tacoma Eastern v. Northern Pacific (Wash.) 176 Pac. 539.

Foreign Railway News

LONDON.

Railway Construction in Madagascar.—According to the London Times Trade Supplement, railways lines are being built from Antsirable to Tamatave on the east coast, and from the famous lake of Alaotra to Majunga.

A strike of employees of the Central Railway of Peru, which had caused a suspension of traffic for eight days, was settled on September 27. According to press despatches the strikers were granted all of their demands, the government having authorized an increase of freight rates to cover the addition to the payrolls.

Railway Communication Between Rome and Athens

Italy and Greece have signed a convention providing for railway communication between Rome and Athens, with a ferry from Otranto to Valona.

New Alpine Tunnel

French and Italian engineers lately arrived at Salanches to reconsider plans made by the engineer, M. Monod, in 1908, for piercing Mont Blanc with a new railway line from Salanches, on the Swiss side of the frontier, to Aosta, in Italy. The new line will be 50 miles long, with a tunnel 9 miles in length, similar to the famous Simplon tunnel. It is expected that work on the new undertaking will begin next spring.

Electrification in Chile

The London Times Trade Supplement states that the government of Chile has decided to electrify all railways under State control, utilizing for this purpose the abundant water power available from falls of the western slopes of the Andes. The State railways, administered from Santiago, comprise about 2,300 miles projected or under construction; they include the Longitudinal Railway, the Arica-La Paz, the Copiapo, and branches, the line to Coquimbo and branches, the Los Vilos line and the Central system.

Deficit on Paris Metropolitaine Railway

LONDON.

An extract from the Engineer states that during the year 1918, there were a dozen stations on the Paris Metropolitaine at each of which over six million tickets were sold. Among these were: Vincennes 11¼ millions, Porte Maillot 10 millions, Bastille 9¾ millions, Gare du Nord 9¼ millions, Gare de l'Est 9 millions. While the total receipts increased by 3½ million francs, the expenditure rose by 12½ million francs, and the receipts were not sufficient to pay the fixed charges, there being a deficit of three million francs. In 1913 the ratio of expenditure to receipts was 42.79 per cent, in 1916 it was 47.14 per cent, in 1917, 50.93 per cent, but last year it was 61.28 per cent.

Some Figures Regarding Great Britain's Railways

LONDON.

An article in the Times Trade Supplement states that there is in Great Britain some 23,500 miles of railway, and reckoned in single track, including the length of sidings, the total mileage in operation is in round figures 55,000 miles. The total length of running track included in this total is over 40,000 miles. The number of passenger journeys made in the last year of normal conditions was approximately 1,233,000,000. which produced a revenue of about £54,250,000. The amount of goods traffic was 372,037,000 tons. The engine mileage of loaded trains was 405,300,000, and the shunting mileage 137,-865,000, the total engine mileage, including the haulage of empty trains, being 628,324,000.

New Scale of Pay for English Railway Clerks

LONDON.

An extract from the Engineer states that under the new scheme of pay for railway clerks, station masters, agents, etc., arranged between the Railway Excutive Committee, the Railway Clerks' Association and the National Union of Railwaymen, clerks engaged continuously on night duty re-commencing before 4 a. m., or ceasing after 10 p. m., are to be relieved where possible, one turn of duty every ten nights. When it is not possible to find the relief, an extra day's pay is to be given. Clerks continuously working on a middle turn, that is, when the hours of duty fall between 8 a. m. and 6 p. m., are to have a weekly half-holiday.

Station masters, too, are to have a half-holiday. Twelve days' holiday is given to all and in some of the higher grades 15 and 18 days.

Considering New Wage Demands in France

LONDON.

The London Times of October 8, published a cable from Reuter, Paris, in which it is stated that the permanent commission of railwaymen employed on the Paris-Etat lines has addressed a note to all unions and groups of French railwaymen inviting them to take an urgent decision with regard to a proposal to demand a new rise of wages of 100 per cent plus present bonuses, with a minimum wage of 800 francs per month. The note adds that the commission is also anxious to have within a period of ten days the opinion of the unions on such questions as intervention in Russia, the amnesty, definite recognition of syndical organizations, etc. This initiative has apparently been taken by the Paris-Etat group on its own responsibility and outside the National Federation of Railwaymen, which has not even been consulted.

New French Plan of Railroad Control

A decree has been issued, says a press despatch from Paris, instituting the "Committee of Exploitation" to have control of the railroads in France. This is in accordance with the plan of M. Claveille, minister of public works, which provides for the collaboration of representatives from the different classes of railway workers with the heads of departments and directors in the management of the roads.

The committee will comprise a high official of each line as president, the operating managers of all the lines, three representatives of commerce and industry designated by the minister of public works and three representatives of the employees, also designated by the minister.

A technical committee has also been instituted to supervise the rolling stock. This is composed of the chief engineers of all the lines, three manufacturers of railroad material and three representatives of the employees appointed by the minister of public works.

A representative of the government will attend the meetings of the committees, and his assent will be necessary for the execution of exceptional measures.

Railway Traffic Needs of Danish Island

LONDON.

The Times Engineering Supplement states that the demand for railway bridges across the Little Belt, between the Island of Funen and Jutland, and across the Storstrom between the islands of Sjelland and Falster, as a link in the Danish-German railway traffic, has of late been pressed in an increasingly urgent manner, and the director general of the Danish state railways has now promised that measures for their construction shall be laid before the Danish Legislature in the course of the next session, if the plans are ready in time.

Some interesting figures in connection with the traffic across the two waters in question are available. The steam ferry traffic across the Little Belt in 1893 was 110,000 tons of freight; in 1913 this rose to 562,000 tons and in 1917 to 880,000 tons. The passenger traffic was 222,000 in 1893, 598,000 in 1913, and 713,000 in 1917, and the actual expense of the ferry traffic, exclusive of interest on cost of material and harbors, repairs, etc., rose from 144,000 krone ($38,000) in 1893, to 393,000 krone ($98,250) in

1913, and 873,000 krone ($218,250) in 1917. A bridge across the Little Belt it is argued would greatly enhance the practical capacity of the rolling-stock now stationed in the Island of Funen, and at the same time would save time, increase the comfort of passengers and facilitate traffic.

Special Correspondence From South Africa

JOHANNESBURG, September 8.

Considerable progress has been made towards the complete application of the eight-hour working day for Railway and Harbor servants. From April 30 to August 7, 12,000 additional servants of the Administration were placed on the 48-hour week. On August 7, 28,000 of the European staff in service at that date were working 48 hours or less and 9,000 more than 48 hours a week. More than 800 additional learners have been taken on in connection with this change and in addition a very large number of railway servants returned from active service have been absorbed. The Administration has decided that all daily-paid employees in the grades to which the 48-hour week will be applied—that is, the whole of the daily-paid staff, with very few exceptions—will be paid on the 48-hour week basis as from the beginning of January, 1920, pay month.

The question of electrifying certain sections of the South African Railway System is being vigorously inquired into by Charles Merz, of the firm of Merz & McLellan, who is at present in this country. He will report to the Union Government in this connection in due course, as well as in regard to the generation of electrical power in South Africa generally.

The proposal for the establishment of a Union owned line of steamers is being received with general acclamation. Already three of the boats captured in South African waters are in commission, one of these being engaged in coal bunkering trade between East London and Durban.

Owing to the necessity of withdrawing a considerable number of trucks from general traffic for the conveyance of coal to the ports, coupled with the already sadly depleted available railway material, traffic on the South African Railways has been affected most acutely lately. Durban requires at least 60,000 tons of coal, while the ships at Delagoa Bay, or due there within the next week or so, will want another 50,000 tons to be supplied. Cape Town also requires an additional quantity of this commodity. To relieve the position no other course was open than to utilize trucks employed in the carriage of general goods. Fortunately the inconvenience is only of a temporary nature, every nerve being strained to meet the situation. The position is due largely to the arrival of more transports and other ships than anticipated. Exclusive of coal for locomotives and railway workshops—something like 150,000 tons per annum—the traffic conveyed by the South African Railways has since the outbreak of the war increased by at least 2,000,000 tons per annum, last year's quantity having been approximately 14,000,000 tons. To cope with this increased volume of traffic besides meeting other requirements 4,000 wagons have been on order for some time past already, 2,500 of these being for livestock and sheep, but also suitable for coal traffic and general purposes. There are also included in the former number 200 insulated and refrigerator trucks of the latest pattern for the carriage of meat and other perishables. The need of additional engine power is most pronounced. At the beginning of the year there were 174 engines on order and of these 29 only are in service, while another 20 have arrived and are being assembled in the railway workshops. A further 66 are expected by the end of this year.

Equipment and Supplies

Locomotive Deliveries

The following locomotives were shipped during the week ended November 22:

Works	Road	Number	Type
American	MP	2	USRA Mount.
Baldwin	P&R	3	USRA Consol.
	LV	1	Santa Fe
		4	
Total		6	

Locomotives

THE SOROCOBANA RAILWAY, Brazil, has ordered 8 locomotives from the American Locomotive Company.

Freight Cars

THE SOROCOBANA RAILWAY, Brazil, is inquiring for 200 freight cars.

THE BAS CONGO-KATANGA, Belgian Congo, Africa, is inquiring for 80 box cars.

THE CENTRAL OF NEW JERSEY has bought 1,000 55-ton steel hopper cars from the Standard Steel Car Company.

THE CARNEGIE STEEL COMPANY is in the market for 40 tank cars of 10,000 gal. capacity and 27 tank cars of 15,000 gal. capacity.

THE AMERICAN LINSEED COMPANY, Woolworth Building, New York, has ordered 10 10,000 gal. tank cars from the Pennsylvania Tank Car Company.

THE CHILEAN EXPLORATION COMPANY, New York, reported in the *Railway Age* of October 10, as being in the market for 50 70-ton ore cars, has ordered this equipment from the Pressed Steel Car Company.

Miscellaneous

RODNEY D. CHIPP, United States representative, at New York, of the San Paulo-Rio Grande Railway Company and the Parana Railway, is in the market for 450 locomotive and tender tires; 450 truck and car springs; eight complete sets of mounted axles and wheels; 26,400 lb. of ingot copper; 26,400 lb. of ingot lead; 7,700 lb. of ingot tin; 1,320 lb. of ingot zinc; 1,320 lb. of ingot phosphor bronze; 100 tons of pig iron; 55 tons of refined iron in bars and sheets; 11 tons of steel bars and sheets; 1,320 lb. of high speed tool steel; also miscellaneous railway hardware, tool, etc., for the above railroads.

Locomotives Shipped in October

The Railroad Administration has compiled the following statement of locomotives shipped for the month of October, 1919.

		On order prior to Federal control		USRA orders		Constructed in railroad shops			
Name of road	Region	Type	No.	Type	No.	Type	No.	Total	Builders
B. & O.	Allegheny		..	USRA Pacific	4		..	4	American
C. C. & O.	Southern		..	USRA Mallet	6		..	6	Baldwin
K. C. S.	Southwestern		..	USRA Pacific	3		..	3	American
L. V.	Eastern	Santa Fe	7		..		..	7	Baldwin
N. & W.	Pocahontas	Mallet	3		..		..	3	Baldwin
Penn. R. R.	Allegheny		..		..	Pacific	4	4	Penn. R. R.
P. L. W.	Allegheny	Santa Fe	4	USRA Mikado	1		..	5	Baldwin
P. L. W.	Allegheny	Mallet	1		..		..	1	Baldwin
P. L. W.	Allegheny		..	USRA Mikado	4		..	4	American
P. L. W.	Allegheny		..	USRA Mikado	28		..	28	Lima
P. L. W.	Allegheny		..	USRA Santa Fe	5		..	5	American
P. & R.	Allegheny		..	USRA Consol.	5		..	5	Baldwin
S. A. L.	Southern		..	USRA Santa Fe	1		2	1	Baldwin
So. Pacific	Southwestern		..		..	Switch	2	2	So. Pacific
W. & L. E.	Eastern		..	USRA Mallet	3		..	3	Baldwin
Total			15		60		6	81	

Supply Trade News

H. S. Waterman, sales manager for the **Hutchins Car Roofing Company**, Detroit, Mich., died in that city on December 1, after an illness of 10 days.

W. D. Horton, district sales manager of the Patton Paint Company, has resigned to accept a position with the Murphy Varnish Company, Western Railway Department, with headquarters at Chicago, effective December 1. Mr. Horton was born in Brooklyn, N. Y., December 3, 1880, and was educated in the public schools of that city. On June 1, 1908 (at the time of the consolidation of the *Railway Age* and the Railroad Gazette) he joined its staff and from 1908 to 1914 acted as traveling subscription representative, on April 1, 1914, being appointed circulation manager. Mr. Horton has had a wide selling experience, having spent several years, previous to 1908, selling various commodities, such as stationary engines, boilers, wood-working and other machinery. In this work he traveled extensively throughout the United States, Canada, Mexico, Cuba, the West Indies, and in South and Central America. As circulation manager, he obtained a wide personal acquaintance among executive officers and department heads of nearly all the railways in the United States and Canada.

W. D. Horton

Westinghouse Air Brake Company Celebrates Fiftieth Anniversary

At the meeting of over 800 veterans of the Westinghouse Air Brake Company and its subsidiary companies at the William Penn Hotel at Pittsburgh, September 27, which was announced in our Emergency Bulletin of October 16 to celebrate the fiftieth anniversary of the formation of the company, A. L. Humphrey, president of the company, presided as toastmaster, and in commenting on the celebration, said: "Officials of our company realizing that September 28 marks the closing of 50 years of air brake development, as well as standing as a milestone in the remarkable growth of a Pittsburgh industry, debated a long time concerning a fitting method of recognition. We decided that the men themselves who had been with the founder, the late George Westinghouse, and others who had been associated with us for over 21 years, were justly entitled to the honor of the occasion. With this end in view we invited every employee of this company and its subsidiaries to a jubilee dinner at the William Penn Hotel. A large number of these men have seen the Air Brake Company expand from a modest beginning at the old Twenty-eighth street plant and in Wilmerding to its present size, and who is more interested in this day than they are?"

Veterans were present in large delegations from the National Brake & Electric Company, Milwaukee, Wis.; Pacific Coast Brake Company, Emeryville, Cal.; Canadian Westinghouse Company, Hamilton, Ont.; American Brake Company, St. Louis, Mo.; Locomotive Stoker Company, Pittsburgh, Pa., and Union Switch & Signal Company, Swissvale, Pa. On the same evening celebrations were also held in London, England, by the Westinghouse Brake Company, Ltd., of London; at Paris, France, by the Compagnie des Freins Westinghouse, Sevran, France, and at Turin, Italy, by the Compagnia Italiana Westinghouse dei Freni.

The first speaker of the evening at Pittsburgh was Thomas Kerr, New York, general patent solicitor of the Westinghouse Air Brake Company. As the office boy for a Pittsburgh attorney, Mr. Kerr witnessed the application for the fundamental Westinghouse air brake patent No. 88,929. H. H. Westinghouse, brother of the late George Westinghouse, spoke on "Westinghouse and Allied and Subsidiary Interests." E. M. Herr, president of the Westinghouse Electric & Manufacturing Company, and a member of the board of directors of the Westinghouse Air Brake Company, responded to the toast, "Our Husky Infant." Paul B. Cravath spoke on "Mr. George Westinghouse, As I Knew Him and His Achievements." Thomas Oakley, a machinist at the Wilmerding works, who has been in the service of the company continuously for over 35 years, spoke on "A Word to My Present and Future Co-workers."

Trade Publications

NICKEL.—For the purpose of briefly describing its nickel products, the International Nickel Company, New York, has published a small illustrated booklet. These products consist of nickel shot and ingots, electrolytic nickel, nickel oxides and nickel salts, for use in the manufacture of malleable nickel.

METALLIC PACKING.—A four-page folder, issued by Harry Vissering & Company, Inc., Chicago, describes and illustrates the construction of Crescent metallic packing for valve stems and piston rods of locomotives. This packing is made of four flexible pieces, all the joints overlapping, and is adapted for use with either saturated or superheated steam.

STEEL TREATING.—Detailed instructions for treating Colonial tool steel and tools have been compiled as the result of experience, by the Colonial Steel Company, Pittsburgh, Pa., and published in a booklet entitled The Colonial Tool Steel Treating Book. In addition to tre directions for hardening and treating, the book contains a complete list of tools with the grades of Colonial steel best adapted for their use, with a separate list of railroad tools.

HIGH SPEED AND ALLOY STEEL.—An attractive cloth bound book of 92 pages, 4 in. by 6 in., entitled Catalogue and Hints on Steel, is being distributed by the Halcomb Steel Company, Syracuse, N. Y. This catalogue contains a brief description of the company's various grades of crucible and electric tool and alloy steel and their uses, with instructions for treating. It also contains a large number of tables of useful information on areas, weights, etc.

HIGH TEMPERATURE CEMENT.—Hytempite, a material for bonding firebrick and kindred uses, which is manufactured by the Quigley Furnace Specialties Company, New York, is described in a pamphlet entitled Hytempite in the Foundry. This material can be used as a binder wherever fire clay, silica brick or tile are used, requiring no heat to effect a bond between materials joined. A number of applications of Hytempite in foundry work are described, with directions for applying the materials.

A "SHOCKLESS" CROSSING.—The Alexander Railroad Crossing & Equipment Company, Chicago, has issued a folder, entitled "Take the Shock Out of Your Crossings." In addition to describing and illustrating the swing rail construction of the crossing manufactured by this company, the folder discusses briefly the disadvantages of ordinary types of crossing construction and points out the highly satisfactory experience which a number of railroads have had with the Alexander crossing during ten years of actual service.

CASEHARDENING MATERIALS.—Bell & Gossett Company, Chicago, Ill., briefly describe several products manufactured by them for use in casehardening, in a pamphlet entitled Casehardening Materials. These specialties include a carbonizer known as Hi-Carbon Compound; B-G Compound for hardening, serving the same purpose as cyanide without giving off deadly fumes; Enamelite, which when applied to low carbon steel will prevent the steel from absorbing carbon during the casehardening process, producing soft areas where they are desirable; Bath-ite, a compound used for preheating between 1,200 and 1,600 deg. F., making it possible to heat the work to a uniform temperature away from the air in order to eliminate scale and oxidization, and Cleancoat, for scouring the steel heated in lead baths.

Railway Officers

Railroad Administration

Operating

C. E. Milliron has been appointed superintendent of dining car service with headquarters at Columbus, Ohio, succeeding **E. W. Westlake,** transferred to Chicago as supervisor of dining car service.

S. V. Rowland, has been discharged from military service and resumed his position as trainmaster on the Northern division of the Chicago Great Western, with headquarters at St. Paul, Minn., succeeding **E. J. Whalen,** who has been transferred.

Engineering and Rolling Stock

C. E. Trotter has been appointed master mechanic of the Lake Erie & Western, the Fort Wayne, Cincinnati & Louisville and the Northern Ohio at Lima, Ohio.

T. J. Mullin, general foreman shops of the Lake Erie & Western at Lima, Ohio, has been appointed shop superintendent of that road, as well as of the Fort Wayne, Cincinnati & Louisville and the Northern Ohio, with the same headquarters.

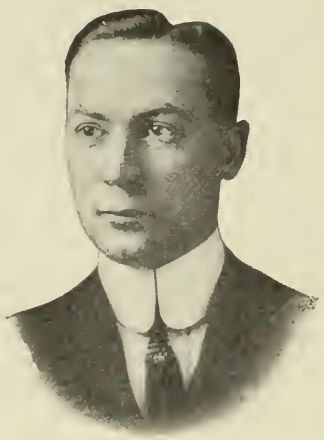
Purchasing

W. N. Pollard, division storekeeper of the Southern at Columbia, S. C., has been transferred to South Richmond, Va., succeeding **W. F. Lamb,** deceased; **J. H. Smith** has been appointed Mr. Pollard's successor.

Corporate

Operating

W. G. Curren, who has been appointed general superintendent of transportation of the Baltimore & Ohio, with headquarters at Baltimore, Md., succeeding **H. B. Voorhees,** promoted, was born in Webbs Mills, N. Y., and graduated from the high school there. In December, 1901, he entered railroad service as agent of the Northern Central, now part of the Pennsylvania. The following year he became trainmaster's clerk and secretary to the division superintendent of the Erie. In 1903, he was transferred to New York as secretary and chief clerk to the superintendent of transportation of the same road and later that year promoted to fast freight clerk. Three years after he was made night transportation clerk and later the same year passenger transportation clerk. Appointed general car distributor in 1906, he was promoted to inspector of transportation in 1908. In September of 1908 he went to the Kansas City Southern as chief clerk to the general superintendent and in November two years later became superintendent of car service. The Baltimore & Ohio appointed him assistant superintendent in 1912 and he was promoted that year to supervisor of transportation and later to the position of assistant to the general superintendent of transportation, with headquarters at Baltimore, Md. The next year he was transferred to Cincinnati, Ohio, with the Baltimore & Ohio, Lines West, including the Cincinnati, Hamilton & Dayton. In 1917 he was appointed superintendent of transportation of the Baltimore & Ohio and in 1918 transferred on furlough to the staff of the regional director of the Eastern region at New York City as special agent in charge of transportation. He was promoted to transportation assistant in 1919. He returned to the Baltimore & Ohio as general superintendent of transportation, as mentioned above, September 15 of the present year.



W. G. Curren

Executive, Financial, Legal and Accounting

John Duffy, assistant to F. L. Blendinger, federal manager of the Lehigh Valley, has been appointed assistant to **E. E. Loomis,** president.

J. L. Lancaster, federal manager of the Texas & Pacific, the Trans-Mississippi Terminal, the Weatherford, Mineral Wells & Northwestern, the Gulf Texas & Western, the Denison & Pacific Suburban, the Fort Worth Belt, the International & Great Northern, the Galveston, Houston & Henderson and the Houston & Brazos Valley, has been appointed receiver of the Texas & Pacific Railway Company. A successor will not be appointed for the remaining period of federal control but **A. G. Whittington** will be general manager of the International & Great Northern, the Galveston, Houston & Henderson and the Houston & Brazos Valley; and **J. A. Somerville,** general manager of the remaining lines. The general managers will have jurisdiction over all departments of the lines under their control, reporting to the regional director of the Southwestern region.

Engineering and Rolling Stock

Henry Gardner, supervisor material conservation of the Baltimore & Ohio, with headquarters at Baltimore, Md., has been appointed corporate mechanical engineer succeeding **Morgan K. Barnum,** notice of whose death appeared in the Railway Age of October 3 (page 722). Mr. Gardner was born in Salem, Mass., in 1872, and graduated from the Massachusetts Institute of Technology in 1896. Immediately after graduation he began railroad work as special apprentice of the Boston & Maine shops in Boston, Mass., at which work he remained until 1900 when he was appointed shop draftsman and inspector at Concord, N. H. During 1904 and part of 1905 he was assistant master mechanic at the same place. Between 1905 and 1911 he was respectively erecting shop foreman for the American Locomotive Company at Allegheny, Pa., locomotive designer for the H. K. Porter Company, Pittsburgh, Pa., assistant superintendent apprentices of the New York Central at New York City; and from 1911 to 1914 was superintendent apprentices and shop systems. In 1914 he went to the Baltimore & Ohio as assistant superintendent of shops at Baltimore and the following year was appointed special engineer in the office of the vice-president, at Baltimore also, an office he held until 1917 when he was chosen for the position he filled at the time of his recent appointment.

H. Gardner

EDITORIAL
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EDITORIAL

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Rebuilding Obsolete Locomotives

The problem of disposing of locomotives when they become obsolete for through service is one for which no generally satisfactory solution has been found. On roads which have a proportionately large mileage of branch lines, small engines can be gradually retired by reassigning them from time to time on divisions having light traffic. This, however, represents an unusual condition. The majority of roads have more light locomotives than can be used to advantage, and the tonnage per train in through service is limited by the necessity for keping light power on important divisions. In considering such a condition, railroad managers are confronted with a dilemma; the cost of new equipment is extremely high, yet the operation of light power is wasteful as regards both fuel and wages. Many roads have added superheaters, brick arches and other devices on comparatively small engines. Such changes save fuel and also reduce wages by shortening the time trains are on the road. A rather unusual policy in the modernizing of power is that adopted by the Northern Pacific, as described elsewhere in this issue. This road has not only added devices to increase the efficiency of the engine, but has also taken advantage of the possibility of securing greater tractive effort by adding another pair of drivers and lengthening the boiler. The operating results secured from the rebuilt locomotives show the large savings that can be effected by a relatively small change in the design. Roads that have an overabundance of small power may well consider the advantages to be gained by converting locomotives to a heavier type, thereby increasing the capacity and postponing the time when they must be retired as obsolete and uneconomical.

The Coal Strike Muddle

No other industry except that of coal mining itself is more affected by the coal strike than the railroad industry. The railroads are the largest consumers of coal and therefore the strike directly affects their operation. Coal constitutes the largest single class of their traffic and therefore a cessation of production speedily and seriously affects their earnings.

The immediate causes of the coal strike and the chaotic conditions, business and other, which have resulted from it are obvious. Everybody who has dealt directly with the matter has blundered. Probably there has never been committed a more perfect and unbroken series of blunders in the handling of any great industrial and public problem.

First, the mine operators, although they knew that the irregularity of employment in the mines was little short of barbarous and should have known that the ultimate result would be an explosion, did nothing constructive to remedy the conditions which caused this irregularity.

Second, the United Mine Workers demanded an increase of 60 per cent. in wages and the establishment of a maximum 30-hour week simply because, as they contended, miners were given opportunity to work an average of only 30 hours a week. In other words, they tried to capitalize the irregularity of their employment—which instead, should have been remedied—and in addition, tried to get an exhorbitant advance in wages.

Third, the United Mine Workers, before any conferences had been held with the operators, ordered a strike to begin on November 1 unless before that time all their demands had been complied with.

Fourth, the government officials have made one blunder after another. The Secretary of Labor publicly announced that the miners should have an advance in wages of 31 per cent. The operators offered 20 per cent, provided they should be allowed to advance prices. Fuel Administrator Garfield who, as this paper once before remarked, knows nothing about fuel and less about administration, decided, with the concurrence of the cabinet, that the miners should be offered only a 14 per cent advance, which should not be accompanied by any increase in the price of coal. Naturally, the miners were not disposed to accept 14 per cent after the operators had indicated they were entitled to 20 per cent and the Secretary of Labor had indicated they were entitled to 31 per cent.

Finally, the Department of Justice compelled the officers of the United Mine Workers to recall the order for a strike by proceeding under the Lever act, and having done this took no further steps to compel the miners to carry out the spirit as well as the letter of the order of the court. The Lever act was a war measure. The miners knew that the war was over. It is not very surprising that even the law-abiding men among them were not much disposed to obey a court mandate issued under a law passed to deal with a war emergency which had ceased to exist. It was probably a blunder to use the law at all. Having once used it, however, it was certainly a blunder not to use it effectively.

The result of this extraordinary series of outrages and blunders is, that the strike has been in effect since November 1, that there has been an enormous reduction in the supplies of coal on hand, that the country's business has been compelled largely to shut down, and that while industry and the people suffer government officials continue to play with legal and economic theories and conditions go from bad to worse. It is one of the ironies of the situation that at the very time when the Department of Justice was using the Lever law to break the strike, the President of the United States in his annual message pronounced the right of labor to strike inviolate!

Presumably, the country will finally, after great loss and suffering, muddle through the terrible situation which has been created by the recklessness of some people and the stupidity of others. There is much talk of applying the principle of compulsory arbitration to the coal mines, of smashing unions, and so on. Certainly, the situation existing does raise in a very serious form the question whether the increase of the great labor unions in numbers and in power, and the growth of radicalism in their ranks, are not beginning to constitute a danger of the first magnitude to the industrial and political institutions of the country. It seems evident that if the great labor organizations continue to take the country by the throat and try to choke it into submission to their wishes, as they have been doing within recent months,

the result is bound to be a great struggle between the government and the public on the one side and the labor unions on the other to decide which is the master

Meantime, however, it is best that we should recognize frankly the fact that conditions such as now exist in the coal mining industry, have real causes: that labor never shows such a spirit of discontent without their being some reason for it; and that while the struggle is going on to prevent organized labor from getting control of government and industry an effort should be made to remedy the conditions which cause so much discontent.

The miners have real reason for being discontented with the conditions of their employment. They are at fault for having attempted to improve their lot in the way they have, but many classes of persons are at fault because of the conditions which have given rise to their discontent. The great irregularity of their employment has been due to irregularity in the operation of the mines. This in turn has been due to wide fluctuations from season to season in the market for coal. Because most coal is consumed in the late fall, winter and early spring months it has been customary to produce it in much larger volume in some seasons of the year than in others. It must continue to be consumed in much larger quantities in some parts of the year than in others, but it would be perfectly feasible for the public, the railroads, and the coal operators to enter into arrangements which would cause a more nearly uniform coal production throughout the year.

Everybody agrees that it is desirable that coal for domestic consumption should be stored in houses and apartment buildings in the spring and early summer, but the public will not buy it at that time unless given an incentive to do so. That incentive should be afforded by the railways making lower rates and the coal operators and dealers making lower prices in the spring and summer than they do in the fall and winter, and then using their utmost efforts to get people to buy at the right time. The railroads, which are the largest consumers of coal, should move and store a much larger part of their supplies than they do now in the spring and summer Of course, stored coal has to be rehandled, but the cost of rehandling could be offset by the operators making lower prices in the spring and summer than in other parts of the year and by the railroads moving it at that time, when the amount of traffic moving is normally less than at other seasons and when, therefore, the operating expense of moving it would be less than at other seasons. Manufacturers also could buy and store a great deal more coal in the spring and summer months than they have in the past, and probably would do so if they were given the incentive of lower railway rates and lower prices.

The effect of the adoption of these measures would be greatly to reduce the irregularity of employment in the mines, and thereby to reduce the number of miners that would be necessary, and the economic cost of producing and transporting fuel. The reduction of the irregularity of employment would be beneficial to the miners, and the reduction in the cost of production and transportation would be beneficial to all classes of consumers. Why have not these obvious remedies for the entirely unsatisfactory conditions under which coal has been produced and transported been adopted? Because the leaders of the public and the miners, and the leaders in the fields of transportation and mine operation have not seen and admitted that they have had a duty to perform and co-operated in the performance of it.

The strike will be ended sooner or later. When it is ended the plain duty, which the crisis through which we are passing points out, should be performed. Somebody must take the initiative in bringing about its performance. If nobody else takes it the managers of the railways ought to take it. Some people doubtless will say that government officials should take it, but in view of the way that government officials have dealt with the coal strike it seems probable that the less interference there is from them the better the results will be for everybody.

The Cost of British Locomotives

London, Eng., October 19, 1919.

OUR LONDON CONTEMPORARY, the Railway Gazette, in a recent editorial criticises the Egyptian State Railway Administration for spending several thousand pounds for locomotives in America, indicating that the purchases were made without due consideration of prices even though the British concerns quoted prices from 76 per cent to 81 per cent higher than that quoted by the successful American locomotive builder. Its implication was, although they took great pains to forestall any criticism in this respect, that even though the quotations of the British manufacturers were much higher than those of the American manufacturer "the quality of British workmanship and the class of material put into the engines, compared with those produced in other countries, result in an economy in repairs and maintenance and an increased life which more than repay the higher first cost."

The figures quoted as the bids of the British manufacturers were from £15,000 ($63,000)* to £17,000 ($71,400)* with a possible delivery in 1921, as against the American locomotive builder's figures of £8,500 ($35,700)* to £9,400 ($39.500)* with delivery in four months. In other words the Railway Gazette would imply that the workmanship of the British locomotive builders is sufficiently better to warrant the Egyptian State Railways paying from $27,000 (76 per cent) to $32,000 (81 per cent) more a piece for their locomotives. We are well aware that the expense of maintenance and repairs should be as carefully considered as the first cost of an article, but at the same time we also believe that the interest on the investment is as important a factor as the cost of maintenance. Figuring money at five per cent, which is an exceedingly conservative rate at the present time, had the Egyptian State Railways purchased their locomotives from the British manufacturers at the quoted figures they would have had additional yearly capital charges varying from $1,400 to $1,600 to apply to each one of these engines.

Before the war, the manufacturers in Great Britain were in a particularly advantageous position as regards the cost of labor. They could economically put more labor in their manufactured articles and produce a product of greater refinement at a much lower cost than was possible in the United States. At the same time the low cost of labor made unnecessary the development and use of so-called labor saving machinery. During and since the war, however, the cost of labor has increased in Great Britain to such an extent that the cost of the final product when made according to pre-war practice, is greatly increased. America on the other hand having had to carefully watch its labor cost has constantly improved its manufacturing methods by the installation of inproved machinery and on the other hand has found it impractical and uneconomical, in the final analysis, to go to the refinement of the British manufacturers.

The real lesson to be learned from the fact that the colonies of Great Britain can buy so much cheaper from America is that greater development has been made in America in the use of improved machinery. It has been repeatedly stated by careful students in manufacturing costs that with the greatly increased cost of labor both Great

*Based on an exchange rate of $4.20.

Britain and many of the European countries will find it increasingly necessary to improve their manufacturing methods and to use more modern labor saving machinery than they have in the past.

The Salaries of Railway Officers

Representative Sims has rendered a real service to railway officers, the railways and the public by publishing in the Congressional Record a list of the salaries amounting to $20,000 or more, which were paid by the railway companies in 1917, the last year of private operation. This list was given in the delayed issue of the *Railway Age* for October 10, which was published on November 26.

There has been much talk for years about the "fancy" salaries paid by the railways. What has been said on this subject has led many persons to believe that the large salaries were so numerous and excessive as to result in "exploitation" of employees, stockholders and public. Doubtless the large salaries paid in 1917 were larger, and there were more of them than ever before. It is, therefore, interesting and instructive to find how few really large salaries were paid and what a trifling sum they aggregated in comparison with the total earnings, expenses and pay roll of the roads.

There were about 20,000 general and divisional officers in 1917. The list published in the Congressional Record shows that just 200, or about 1 per cent of these, received $20,000 or more. The aggregate amount paid to these 200 officers was $6,644,074. This was $16 out of each $10,000 of the total earnings of the roads; $24 out of each $10,000 of their operating expenses, and $31 of each $10,000 that they paid out in salaries and wages. The amount was so small that if instead of having been paid to the officers it had been divided between the employees the average employee would have received less than $4 a year more than he actually did. The aggregate salaries of all those receiving $50,000 or more were less than $1,900,000. This amount, if divided between the employees, would have added less than $1.25 to their average wages for the year.

It may be asked, however, why this many salaries ranging from $20,000 to $100,000 a year were paid? There are two answers: First, bidding among the railway companies themselves for the best brains in the business has placed a premium upon those brains and this premium is represented by the salaries paid to the principal officers. Second, the railways have had to bid for brains against other industries. It has been no uncommon thing for men of ability to leave the railroad business in order to secure in other lines of business incomes larger than they could get in the railroad business. If the railroad companies did not pay high salaries to men of first-class ability most of the men of first-class ability in the industry would be attracted away to positions in other fields.

While to a man who is receiving an income of perhaps $1,000 or $2,000 a year salaries of $20,000 to $100,000 may seem very large, the fact is that the incomes which railway officers have enjoyed in proportion to the amount of energy and ability they have devoted to their work have been much smaller than the incomes made by men of corresponding rank in other lines of industry. While it is very unusual for a railway officer to receive a salary of $75,000 a year, it is by no means unusual for men in purely industrial and commercial businesses to make incomes largely exceeding this amount. In fact, there are thousands of men running small businesses in the country in which they own substantial amounts of stock, who are receiving salaries and dividends ranging anywhere from $100,000 to $1,000,000 a year. We know of the case of a railway president who a very few years ago refused a salary of $250,000 a year as head of a large manufacturing concern. We know of two cases of railway officers of lower rank than that of president who very recently became the heads of large industrial concerns under arrangements which will yield them larger incomes than that received by any of the railway officers whose names appeared in the list published in the Congressional Record. It is the misfortune of a man of ability in the railroad field that he has to depend for his income almost entirely upon his salary, because in the railway field the opportunities for making profitable investments are much more restricted than in almost any important line of commerce or industry.

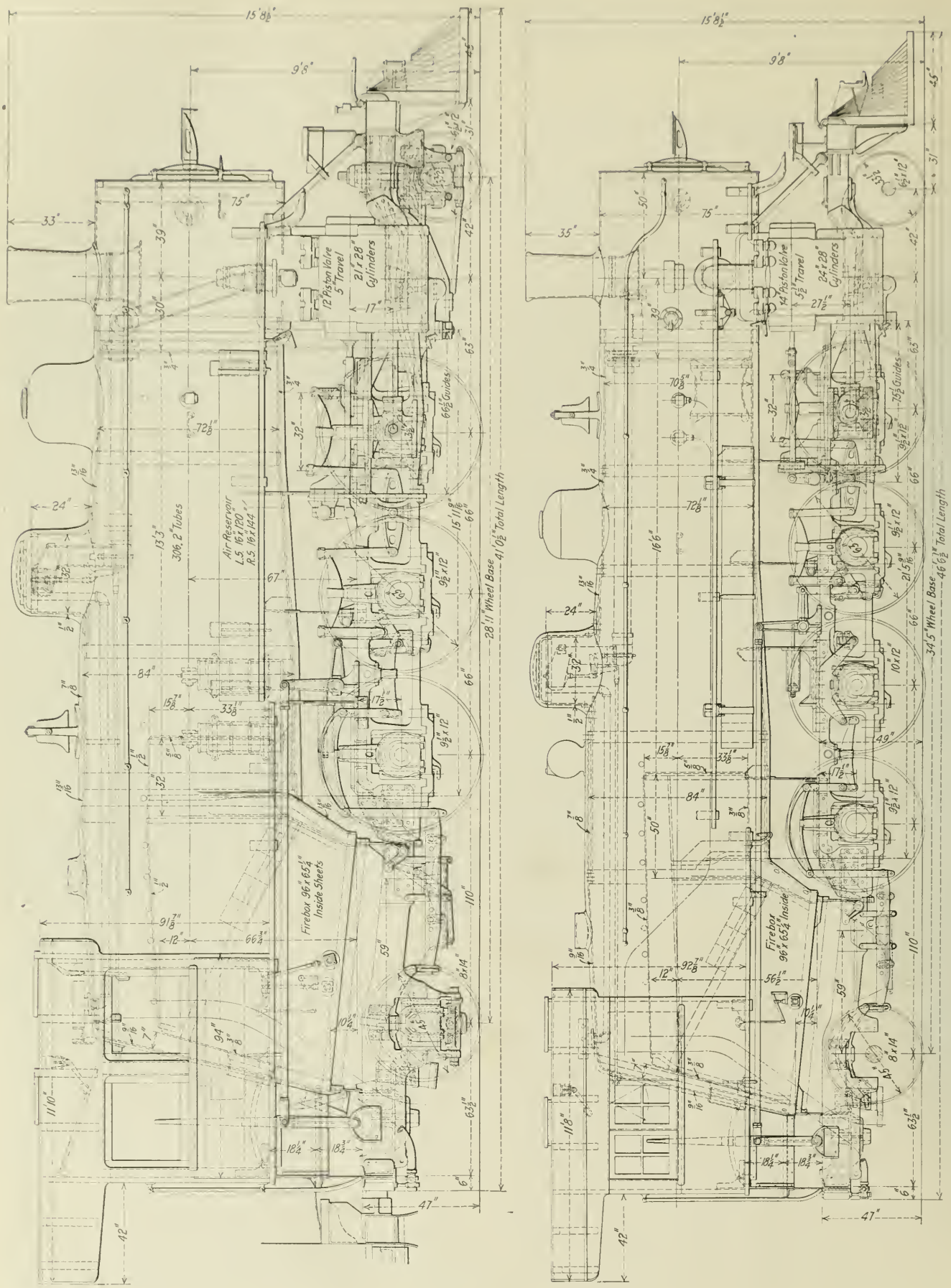
A certain newspaper, in commenting upon this list of salaries of railway officers, remarked that it was adapted to increase the sentiment for government ownership among railway employees, because it would make them feel more sharply the difference between their incomes and those of the higher officers. As a matter of fact a very large majority of the men receiving large salaries on railways have risen from the ranks of the employees. The number of individual officers receiving $50,000 or more whose names appeared in this list is 29. The following list gives the positions in which and the ages at which 18 of these 29 men entered railway service:

R. H. Aishton, axman, 18 years old,
W. G. Besler, trainmaster's clerk, 16 years old,
H. E. Byram, call boy, 16 years old,
A. J. Earling, telegraph operator, 17 years old,
J. M. Hannaford, clerk in general freight office, 16 years old,
Walker D. Hines, attorney, 23 years old,
Marvin Hughitt, telegraph operator, 19 years old,
L. E. Johnson, fireman, 20 years old,
E. F. Kearney, telegraph operator, 17 years old,
J. Kruttschnitt, engineering department, 24 years old,
L. F. Loree, assistant in engineering corps, 19 years old,
R. S. Lovett, local attorney, 24 years old,
W. T. Noonan, employee in accounting department, 14 years old,
Edmund Pennington, warehouseman and brakeman, 21 years old,
Samuel Rea, engineering corps, 16 years old,
E. P. Ripley, contracting freight agent, 23 years old,
T. M. Schumacher, telegraph operator, 17 years old,
W. H. Truesdale, clerk, 18 years old.

A. H. Smith, William Sproule and F. D. Underwood have modestly rendered it impracticable for us to ascertain offhand how old they were when they entered railway service, but Mr. Smith entered it as a foreman of bridges, Mr. Sproule as a clerk, and Mr. Underwood as a clerk, who soon graduated into a brakeman.

It will be noted that a large majority of these high-salaried men entered railway service when they were mere boys; and most of them had been continuously in the service for more than 30 years before they became heads of railroads and began to draw really large salaries. When it is considered that the 200 men included in the list as receiving $20,000 or more were the principal officers and managers of properties representing an investment of approximately $19,000,000,000 and having earnings of over $4,000,000,000 a year and operating expenses of almost $3,000,000,000 a year, it is rather difficult to understand how anybody having any knowledge of the character of the work they had to do and the responsibilities they had to carry can say that they were paid too much.

Furthermore, since a very large majority of them rose from the ranks, it would seem that the larger were the salaries paid to them the greater would be the incentives afforded to the ambitious men in the service to strive, by increasing their efficiency, to increase their chances of rising to the highest positions.



Elevation of Mikado and the Prairie Type from Which It Was Built

Northern Pacific Converts Prairie Type to Mikado

Increased Tractive Effort and More Efficient Use of Fuel Secured by Changing Old Power

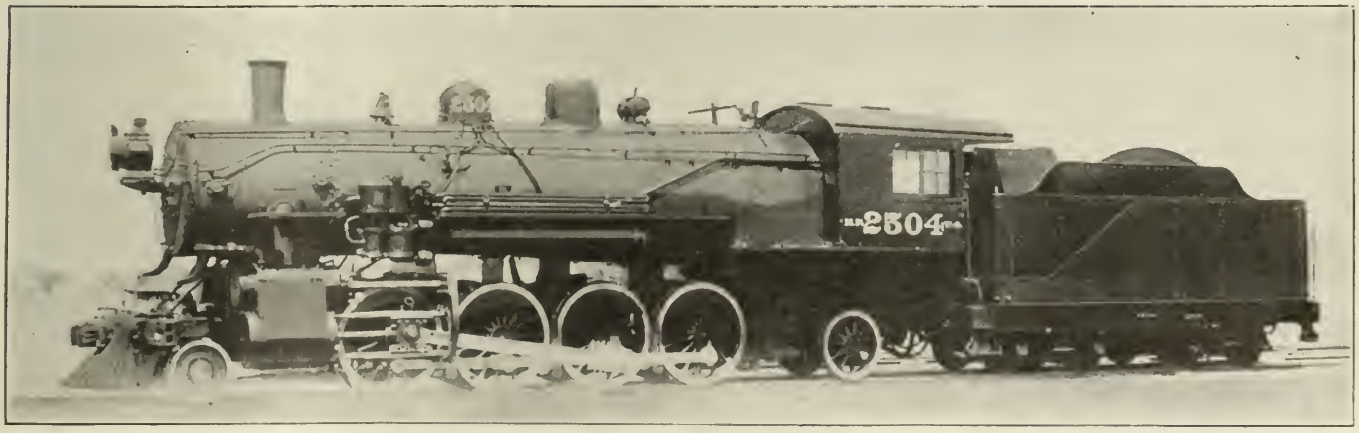
THE RECONSTRUCTION of a Prairie type locomotive to the Mikado type, with a consequent increase of 21 per cent in the tractive effort and a substantial improvement in the efficiency of the boiler and cylinders, has recently been effected on the Northern Pacific. The details of this work are of particular interest as illustrating how motive power which is no longer suitable for heavy service can be redesigned to increase the train load and decrease the unit consumption of fuel. The changes that were made not only raised the tractive effort but also improved the steaming qualities of the locomotive, so that an even greater increase in the train load was secured.

The reconstructed locomotives were intended for use between Glendive and Billings, Mont. On this division the heaviest grade is opposing the westbound movement, the ruling gradient being 26 ft. per mile. In this direction the rating of the Prairie type, or class T, which has a rated tractive effort of 33,300 lb. is 1,600 tons, while the rating for the Mikado, class W-4 with 40,300 lb. rated tractive effort is 2,600 tons, an increase of 62 per cent. On the eastbound movement the rating is controlled by the passing siding, the ratings for the two types being as follows: From Billings to Forsyth, class T, 2,900 tons, class W-4, 3,400 tons; from Forsyth to Glendive, class T, 2,800 tons, class W-4, 3,300 tons.

An additional advantage secured by the conversion to the Mikado type is uniformity of train loads on several divisions. The heavier Mikados in use on the Northern Pacific have tractive efforts of 46,000 lb. and 57,100 lb. and, in connection with the class T and class W-4, provide motive power units adapted for hauling approximately equal tonnage on lines with grades that vary widely, thus facilitating through movement without breaking up trains at division points.

The class T Prairie locomotives which were rebuilt were purchased in 1906. The weight on drivers was 153,500 lb. and the total weight of the engine 204,500 lb. The new class W-4 Mikado weighs 204,000 lb. on drivers, with a total weight of 249,000 lb. It will be noted that in making the change, the weight per driving axle remains substantially the same and, by the addition of the fourth pair of wheels, the weight on drivers was increased in a greater ratio than the tractive effort. The 21 in. by 28 in. cylinders were replaced by cylinders 24 in. by 28 in. with 14 in. piston valves and outside steam pipes. To provide ample steaming capacity for the larger cylinders, the size of the boiler was increased and a superheater was added. The grate area was not changed and no alterations were made in the brick arch. The boiler barrel was lengthened 57 in. by adding a new front course. This was utilized by increasing the distance between the tube sheets, making the tubes and

Northern Pacific Prairie Type Locomotive, Class T



Mikado Type, Class W-4, Rebuilt from Class T

flues 10 ft. 6 in. long, and by increasing the length of the combustion chamber from 32 in. to 50 in. The increase in the length of the frame to provide for the fourth wheel was 66 in. The additional space of 9 in. was taken up by the increased length of the smokebox from the center line of the stack to the first ring of the boiler which was necessary to provide room for the superheater header. The length of the smokebox ahead of the cylinder center was also increased from 39 in. to 50 in. The change in the boiler and the application of the superheater increased the equivalent heating surface from 2,359 sq. ft. to 3,186 sq. ft. or 35 per cent.

The frames were replaced with new cast steel frames of larger section. The uniform spacing of 66 in. between driving wheels was retained, thus reducing the number of new parts required. A heavy cast steel crossbrace was added over the main driving axle. In redesigning the running gear no radical changes were necessary. The engines as originally built had a short rigid wheel base and the distance from the cylinder to the front axle was unusually short for locomotives of the Prairie type, making it necessary to couple the main rod to the rear driving wheel. For this reason, the distance from the transverse center line of the cylinders to the center line of the front drivers was maintained unchanged in the new design, making it possible to use the same spring rigging on the Mikado with the addition of equalizers for the main drivers. The equalizing system, as before, is divided between the second and third wheels.

In order to provide for the increased stresses due to the larger cylinders, the axle of the main wheel was made 10 in. in diameter. The piston rod was lengthened 3½ in. and the main rod was shortened a corresponding amount. The valve gear was changed by substituting an indirect for a direct rocker arm, the travel being increased from 5 in. to 5½ in.

The improvements in the smokebox were designed to overcome the trouble of throwing sparks. With the class T engines this has been very annoying in the past, particularly when used in the district where semi-bituminous coal is burned.

The converted engines ride much easier than the Prairie type and, because of the better load distribution, are much easier on the track.

For the purpose of comparison, the principal weights, dimensions and ratios of the two types are tabulated below:

General Data

	Class T 2-6-2	Class W-4 2-8-2
Gage	4 ft. 8½ in.	4 ft. 8½ in.
Service	Freight	Freight
Fuel	Bit. coal	Bit. coal
Tractive effort	33,300 lb.	40,300 lb.
Weight in working order	204,500 lb.	249,000 lb.
Weight on drivers	153,500 lb.	204,000 lb.
Weight on leading truck	20,500 lb.	19,600 lb.
Weight on trailing truck	30,500 lb.	25,400 lb.
Weight of engine and tender in working order	353,000 lb.	397,500 lb.
Wheel base, driving	11 ft. 0 in.	16 ft. 6 in.
Wheel base, total	28 ft. 11 in.	34 ft. 5 in.
Wheel base, engine and tender	57 ft. 3½ in.	62 ft. 9½ in.

Ratios

Weight on drivers ÷ tractive effort	4.61	5.06
Total weight ÷ tractive effort	6.14	6.18
Tractive effort × diam. drivers ÷ equivalent heating surface*	889.3	796.9
Equivalent heating surface* ÷ grate area	54.2	73.2
Firebox heating surface ÷ equivalent heating surface,* per cent	10.0	8.15
Weight on drivers ÷ equivalent heating surface*	65.1	64.0
Total weight ÷ equivalent heating surface*	86.7	78.2
Volume both cylinders	11.20 cu. ft.	14.62 cu. ft.
Equivalent heating surface* ÷ vol. cylinders	210.6	217.9
Grate area ÷ vol. cylinders	3.88	2.98

Cylinders

Kind	Simple	Simple
Diameter and stroke	21 in. by 28 in.	24 in by 28 in.

Valves

Kind	Piston	Piston
Diameter	12 in.	14 in.
Greatest travel	5 in.	5½ in.
Outside lap	1 in.	1 in.
Inside clearance	0 in.	0
Lead in full gear	1/32 in. neg.	1/32 in.

Wheels

Driving, diameter over tires	63 in.	63 in.
Driving, thickness of tires	3½ in.	3½ in.
Driving journals, main, diameter and length	9½ in. by 12 in.	10 in. by 12 in.
Driving journals, others, diameter and length	9½ in by 12 in.	9½ in. by 12 in.
Engine truck wheels, diameter	33½ in.	33½ in.
Engine truck journals	6½ in. by 12 in.	6½ in. by 12 in.
Trailing truck wheels, diameter	45 in.	45 in.
Trailing truck journals	8 in. by 14 in.	8 in. by 12 in.

Boiler

Style	Ext. Wagon Top	Ext. Wag. Top.
Working pressure	200 lb. per sq. in.	185 lb. per sq. in.
Outside diameter of first ring	72⅛ in.	70⅝ in
Firebox, length and width	96 in. by 65¼ in.	96 in. by 65¼ in.
Firebox, plates, thickness	Door, crown and sides ⅜ in.; tubes ⅝ in.	Door, crown and sides ⅜ in., tubes ⅝ in.
Firebox, water space	Front 4½ in., back and sides 4 in.	4½ in. and 4 in.
Tubes, number and outside diameter	306-2 in.	173-2 in.
Flues, number and outside diameter		28-5⅜ in.
Tubes and flues, length	13 ft. 3 in.	16 ft. 6 in.
Heating surface, tubes and flues	2124 sq. ft.	2138 sq. ft.
Heating surface, firebox	235 sq. ft.	259 sq. ft.
Heating surface, total	2359 sq. ft.	2399 sq. ft.
Superheater heating surface		526 sq. ft.
Equivalent heating surface*	2359 sq. ft.	3186 sq. ft.
Grate area	43.5 sq. ft.	43.5 sq. ft.

Tender

Tank	Rectangular	Rectangular
Journals, diameter and length	5½ in. by 10 in.	5½ in. by 10 in.
Water capacity	8000 gal.	8000 gal.
Coal capacity	12 tons	12 tons

* Equivalent heatting surface = total evaporative heating surface + 1.5 times the superheating surface.

Orders of the Regional Directors

Oil in Train Loads.—Order 248, of the Southwestern regional director cancels the instructions in Order 211 stipulating that 20 or more cars of oil for one destination, distributing center or junction would be symbolled, reported and handled as a trainload

Clergy Tickets.—Order 246 of the Southwestern regional director modifies current instructions governing the issuance of half fare clergy tickets. Ticket sellers must punch each ticket, coupon and contract "one-half," and stamp thereon "Clergy." Federal auditors must see that tickets and coupons punched "one-half," are checked against local or interline reports, and call attention of reporting carriers to all tickets reported at one-half fare, where coupons are found not punched and stamped.

Export Bills of Lading.—Supplement 2 to Circular 248. Southwestern Region, contains instructions for the distribution of the 11 copies which should be made of all through export bills of lading.

Fires Resulting from Derailments.—Supplement 2 to Circular 189 of the Southwestern regional director calls attention to recent derailments in which loaded oil tank cars caught fire resulting in damage of $6,380, and points out the necessity for observing certain precautions prescribed by the Bureau of Explosives.

Vacations for Train Despatchers.—Supplement 14 to Circular 28 of the Northwestern regional director contains rules and regulations regarding rates of pay and vacations for train despatchers adopted at a recent meeting of regional directors in Chicago, with W. T. Tyler, director of the Division of Operation. These rules were effective on October 1.

Through Bills of Lading Via North Atlantic Ports.—Circular 282, canceling Circular 277, of the Central Western regional director contains instructions governing the issuance of through export bills of lading via North Atlantic Ports which supersede all previous instructions. The Southwestern regional issues similar instructions in Circular 2521.

The Coal Strike and the Railroads

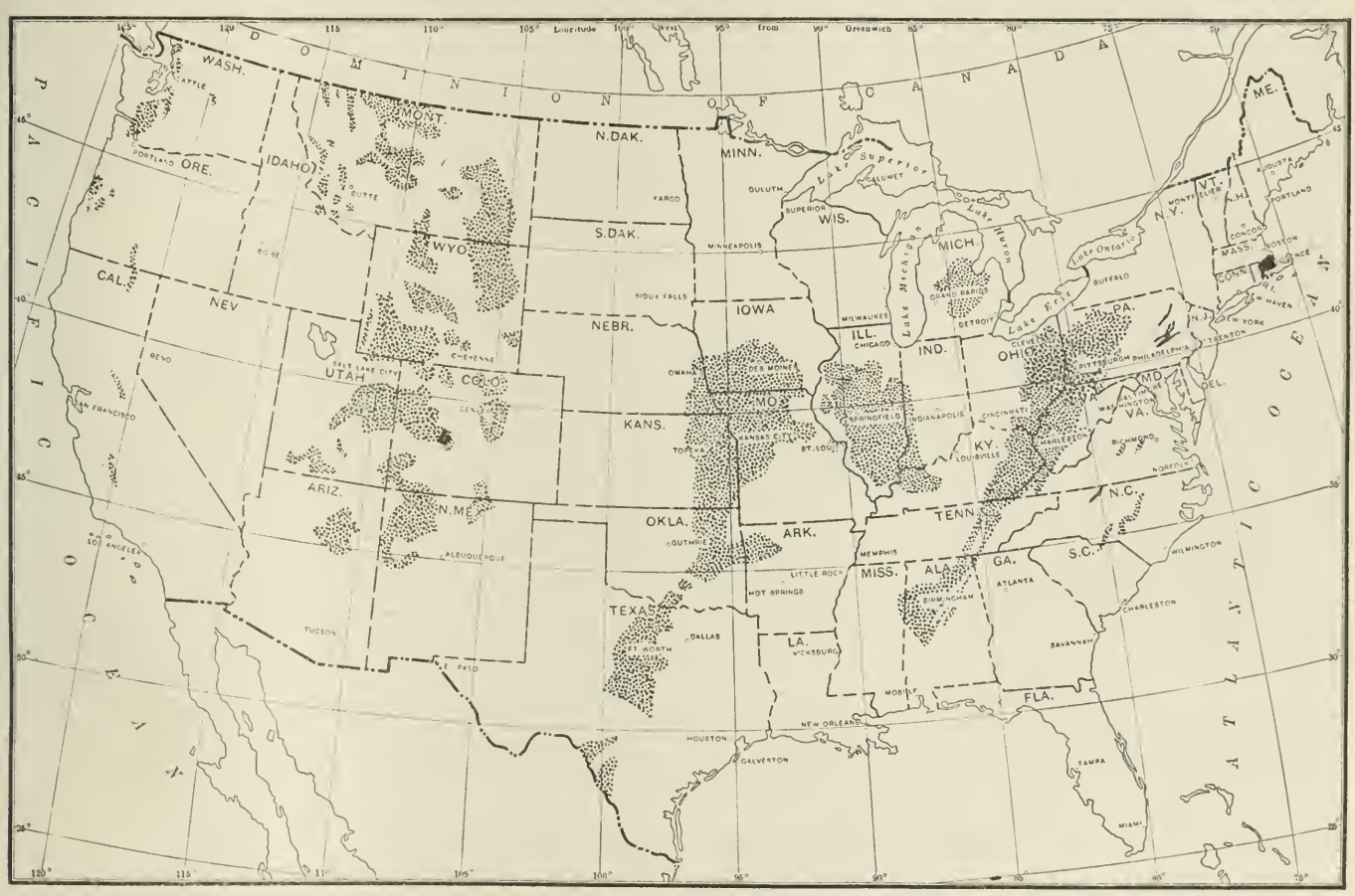
Coal Necessary to the Operation of Railroads and Railroads Necessary to Distribute Coal to Consumers

Director General Hines on December 6 authorized the following statement:

"The shortage of coal has reached a point where it is vitally necessary to reduce passenger train service and to call upon the public to assume the inconvenience and discomfort which this action will inevitably entail.

"On Monday, December 8, in the Western regions; Tuesday, December 9, in the Southeastern regions, and Wednesday, December 10, in the Eastern and Allegheny regions, certain passenger trains will be annulled and a large number of parlor cars will temporarily be discontinued. The people will appreciate the gravity of the situation and will give full and cheerful co-operation."

The railroads of the country under present conditions consume about 30 per cent of the total output of bituminous coal of the United States. The strike has reduced coal production to about 40 per cent of the normal production at this time of year. The railroads head the list of the industries to which priority in coal deliveries are to be allowed. Were they, therefore, to continue to consume as much coal as heretofore but 10 per cent of the total normal production would be left for the domestic consumers and for industries



The Principal Coal Fields of the United States. Bituminous Fields Shown Shaded and Anthracite Shown Black

average seating capacity of a parlor car is less than half the average seating capacity of a coach, and this step is taken for the purpose of providing the maximum seating capacity consistent with the necessary reduction in train mileage. These changes are being worked out in detail by the regional directors, and promptly upon their completion will be given wide publicity. Before making arrangements for travel inquiry should be made of railroad agents as to available trains.

"It is the plain duty of the administration to warn the public that until this emergency has passed travel conditions will be difficult and unsatisfactory, and to urge everyone who can possibly do so to refrain from travelling.

"It is unfortunate that the emergency comes as the holiday season approaches, but it is hoped and believed that our

in general. They will not, however, continue to consume their full quota. In the first place, bituminous coal as a commodity carried by railroads furnishes about 27 per cent of the total tonnage of freight carried by all the railroads of the country. Were the tonnage of coal carried to industries therefore to be cut down to one-seventh of normal a very considerable part—varying from 15 to 20 per cent—of freight service would automatically cease. Furthermore, as soon as industries begin to shut down on account of shortage of coal a large part of freight traffic other than coal would also cease to flow.

The problem, therefore, for the railroads is to themselves consume as little coal as possible while continuing to deliver as large an amount as possible to domestic consumers and to industries. Obviously the first step is reduction in

passenger train mileage. The administration has announced a general cut in passenger train service.

The aim in the Eastern region is to reduce passenger train mileage 10 per cent. The Twentieth Century Limited is to be taken off, as is also, in the Allegheny region, the Pennsylvania's 20-hour train, the Broadway Limited. In the West the reduction is more drastic.

A reduction of even 10 per cent in passenger train mileage over the entire country would mean a saving of 57,500,000 passenger train miles a year, or a saving, roughly, of 10,000 tons of coal per day, making a rough allowance for the continuance of full service on roads burning oil for fuel.

The Director General Takes Control of Coal

On October 31 Director General Hines issued an order by which the Railroad Administration took control of all coal in the possession of the railroads. The order said: "The title of the purchaser, consignee or consumer, in the case of any such shipments of coal or coke, which by custom or law might become vested at the time and place of such shipment, shall, from and after the effective date hereof, be subject to the condition that the coal or coke so shipped may be diverted . . . the title and interest of such purchaser . . . shall be completely divested and terminated, and his liability to pay therefor shall cease. The person or the consumer to whom any such coal or coke is diverted shall become liable, as of the time of such diversion to pay the shipper thereof the price in force at the date of shipment . . . plus transportation charges and a handling charge of 15 cents a net ton. . . ."

On November 4 the following order of priority was fixed:

(Class A) Railroads—This includes inland and coastwise vessels.

(Class B) army and navy, together with other departments of the federal government—This includes bituminous coal consumed by manufacturers or producers of supplies for departments of the federal government when such department officially approves the request.

(Class C) State and county departments and institutions—This includes municipal institutions.

(Class D) Public utilities—This includes the manufacture of newsprint paper for daily issue and the printing and publishing of same."

Coal Operators' Difficulties

This order threw on the coal operators the burden of financing all the coal that they produced and shipped for an indefinite period. The Railroad Administration took over the coal as soon as it was loaded into railroad cars. No payment was made to the operator, nor could the operator bill anyone for this coal, since its disposition was fixed by the Railroad Administration. The coal operators claim that the sum involved is very large indeed and that the period over which they may have to carry an unknown purchaser is likely to be as much as six months. To remedy this situation the Railroad Administration proposed to issue a receipt for the coal, which the operators could discount at their banks and which their banks could discount with the federal reserve bank.

The Secretary of the Treasury, however, has held that the coal operators can now draw a note to cover their shipments of coal and that this note can be discounted with their own banks and rediscounted at the federal reserve banks without attaching to it a receipt for the coal delivered to the Railroad Administration. This, however, throws the burden of financing back on the individual operators. They are using their credit to finance the purchase of coal by unknown parties. They claim, therefore, that since the Railroad Administration—the government—takes title to the coal as soon as it is put into railroad cars the administration or some other branch of the government should pay the operators and undertake collection from those to whom the Railroad Administration delivers the coal.

The Situation in the East

On the Pennsylvania Railroad the average loading of bituminous coal before the strike was 38,000 cars daily. The minimum so far has been 1,491 cars daily, and the present loading (December 5) is 19,000 cars daily. On the Baltimore & Ohio, Eastern Lines, the average daily loading from May to October was 2,117 cars daily. In November the average was 1,204 daily, and the average loadings in the first three days of December was 1,421 cars. On the Baltimore & Ohio, Western Lines, the average daily loadings prior to the strike were 627 cars. This dropped to no loadings at all for some days, and the average loadings since November 1 to December 4 have been but 7 cars a day.

In the Ohio-Indiana region the average daily loadings amounted to 2,740 cars during October, dropped to an average of 144 cars in November and averaged 83 cars in the first three days of December.

In the Pocahontas region the average before the strike was 4,874 cars loaded, and on November 4 this had dropped to 3,250 cars. On November 12 3,897 cars were loaded, and on November 25 the record was 5,216 cars loaded; the present rate of loading is about 4,393 cars.

Situation in the West

A conference was held in Chicago on December 3, in which Hale Holden, regional director of the Central Western region; F. E. Clarity, assistant regional director of the Central Western region; P. S. Eustis, chairman of the passenger traffic committee of the Northwestern, Central Western and Southwestern regions, and M. J. Gormley, assistant regional director of the Northwestern region, participated. As a result of the discussion it was agreed that Mr. Eustis should draw up the requirements for the curtailment of passenger traffic and the resulting orders should be issued simultaneously in the Central Western, Southwestern and Northwestern regions.

The order as prepared by Mr. Eustis, in general, calls for a reduction in passenger service on lines using coal for fuel of at least one-third in train miles, eliminating those passenger trains which can be spared with the least inconvenience to the traveling public. At the same time the order calls for the abolition of practically every train luxury calculated to increase coal consumption.

The regulations as prepared by Mr. Eustis and distributed from the three regional offices are as follows:

(1) Effective at 12:01 a. m. Monday, December 8, the existing regular passenger train service using coal for fuel must be reduced on your road at least one-third in train miles, eliminating those passenger trains which can be spared with the least inconvenience to the traveling public.

(2) Discontinue all parlor cars, and also all exclusive club and lounge cars. Also withdraw from service all observation sleeping cars where the result is to save any switch engine service, provided you can obtain for substitution sleeping cars of regular type where necessary.

(3) No special trains are to be run for business or pleasure traffic.

(4) There must be no second sections of regular trains. Business must be cared for by adding extra cars, but not beyond the prescribed limit, and by lengthening the schedules of existing trains. When capacity of regular trains is reached, overflow of travel will of necessity wait over or seek carriage elsewhere.

(5) Exclusive mail and express trains need not be reduced in number, but no additional trains nor extra sections may be run for such traffic. The prospective heavy business to be cared for by adding extra cars to and lengthening the schedules of existing trains.

(6) Care must be used to give publicity as early as possible

to changes in your train service. This may be done by paid advertisements in the press and by bulletin notices in stations in such manner as you decide. Keep all ticket agents fully advised that the public may obtain information on application.

(7) It has been arranged to keep all consolidated ticket offices and passenger departments posted as to reductions, but you should also fully inform your immediate connections of changes.

(8) The Western Passenger Committee will, by general notice through press associations and by advertisement in some large cities, advise the public of intended curtailment of service, with the request that people abstain from unnecessary travel. Please have your officers and agents supplement and emphasize this plea as quickly as possible.

It is believed that, by thus conserving the use of coal which would ordinarily be used in passenger service, extensive embargoes on freight traffic will not be necessary. It is also true, on the other hand, that if the present shortage continues it will be practically impossible to carry out even this program for passenger service for any length of time, and it may be necessary to extend the curtailment of service to freight traffic as well.

Although suffering a heavy loss in coal traffic because of the cessation of mining operations, the railroads in the Northwestern and Central Western regions have felt practically no other direct effect of the coal strike until the last few days. While some of the roads curtailed passenger train service several weeks ago, these measures were initiated more for the purpose of preparing well in advance to meet the inevitable fuel shortage than because of any immediate necessity at that time for a reduction in fuel consumption. The roads in the Northwestern region have now loaded practically all of their reserve supply and little more than two or three days' supply is in sight. This led to the drastic orders referred to above.

The Northwestern Region

Generally speaking, the territory tributary to the lines of the Northwestern region is not coal-producing, the figures for 1917 production indicating that less than 3 per cent of the total bituminous coal production of the country came from that territory. The coal mined is mostly lignite, and in some of the fields a large percentage of it is used by the railroads. A comparison of classified traffic figures for the months of November, 1919 and 1918, respectively, show an increase of 8 per cent in the number of car loads of coal and coke originating on the Northwestern roads in 1919, with a similar increase of 7 per cent in the total number of car loads of freight originating on these lines and an increase of about 5 per cent in the total number of revenue cars handled, including that originating in the regio and received from connections. This increase in coal-loading during the month of November, 1919, that is, during the period affected by the strike, has been due to the large amount of Eastern coal loaded from storage at the head of the lakes.

The principal mining districts in the Northwestern region are in Washington, Montana and Iowa, the latter territory also being tributary to the railroads in the Central Western region. The Montana and Washington lignite mines are closed tight, with the result that the railroads in this territory have been forced to supply the divisions depending upon these fields with coal received from the East. The result has been an additional long haul and the further depletion of reserves stored at the lake ports.

The railroads in the Northwestern region draw heavily on the Illinois field for their coal supply, and this source has been shut off entirely throughout the period of the strike. This has been made up by a heavy draft on the coal received at the lake ports by such roads as the Northern Pacific, the Great Northern and the Soo Line and accounts for the increased loading of coal and coke shown by the railroads in the Northwestern region during the month of November, 1919, as compared with November, 1918. That the winter's supply of coal received at lake ports during the summer and fall has been depleted for immediate use is indicated by the fact that the coal loading of the Great Northern has increased from 6,049 cars in November, 1918, to 9,328 cars in 1919; the Northern Pacific from 12,451 cars in November, 1918, to 17,653 in 1919, and the Soo Line from 2,179 cars in November, 1918, to 4,503 in 1919. The total coal loading for the region was 57,217 cars in November, 1919, as compared with 52,813 for November, 1918.

Central Western Region

The territory through which the Central Western railroads operate produced approximately 20 per cent of the bituminous coal mined in the United States in 1917, but a number of the more important western fields are not served exclusively by the railroads in this region, the traffic being divided between Central Western, Southern and Southwestern lines. In general, in spite of the severe curtailment in coal production in this region during the month of November, there has been only a slight reduction in the total amount of traffic handled. This is accounted for by an increase in general merchandise freight, which may be due to an attempt on the part of the consumers to provide against the contingency of a curtailment of transportation should the coal strike continue. The principal exception to this is the Chicago & Eastern Illinois, on which there has been a 45 per cent decrease in traffic, due to the coal strike.

Some coal is now being produced in the central western territory. The Utah, Wyoming and Colorado mines, which normally produce about 5,000 cars a day, are now producing 1,000 cars daily. The Wyoming field, which was closed by the strike, is now in partial operation. The mines along the Union Pacific, which have successively been closed and placed in operation several times since the strike was called, are now closed. The Illinois field, which produces half of all the coal originating on central western lines, is now and has been closed tight throughout the period of the strike.

While the operation of the roads, with the exceptions above noted, has been normal up to the present time, reserves have now been reduced so that there is not more than two or three days' supply in sight.

General Situation

The annual capacity of the bituminous coal mines is estimated at 700,000,000 net tons. The production in 1917 was 551,000,000, and in 1918 it was 579,000,000. The production from January 1 to November 1, 1919, was 404,040,000, as compared with 504,339,000 during the corresponding period of 1918, according to the Geological Survey report of November 8, which said that, bearing in mind the great decline in consumption following the armistice, it is believed that the stocks now in the hands of consumers compare favorably with those at the same season in previous years.

The railroads had on hand, on wheels and in storage, on November 1 about 22,000,000 tons (439,000 cars) of soft coal, and on December 4 it was 265,000 cars, or nearly a month's supply, and they expect to be able to maintain that amount. From November 6 to November 9 2,655,300 tons were released by the railroads to consumers other than railroads, which was 1,213,200 tons more than the amount loaded in the same period. On the day the strike order was officially called off the railroads had on hand about 15,000,000 tons, or about a 30-day supply. On December 31, 1917, when the railroads were taken over by the government, the stocks on hand in storage amounted to 9,000,000 tons. On July 1 of this year they had about 12,500,000 tons in storage. During the first week of the strike the average car-loading of bituminous was 26 per cent of the pre-strike

average, and the second week it was 30 per cent; the third week it was nearly 40 per cent; on December 1 it was 40 per cent; on December 2, it was 42 per cent; on December 3, it was 43 per cent, and on one day recently it reached 48 per cent.

The total tonnage of bituminous coal transported by the railroads in 1917 was 631,0000,000 tons. This, of course, includes duplications where it was handled by more than one railroad. The tonnage originating on road was 355,873,000 tons.

The strike does not seem to be reducing railroad earnings materially as yet, because traffic that was held back by car shortage is taking the place of coal. Operating expenses in the latter part of October were increased by the extraordinary shifting of open-top equipment in order to furnish the maximum number of cars to be loaded with coal in the two weeks immediately preceding the strike and in the effort to give 100 per cent car supply. There is also an extraordinary movement of coal cars, and many are kept empty near the mines so as to be ready for use at once. The decrease in coal traffic, however, has relieved the condition of car shortage which existed up to the middle of October, and has enabled the railroads to handle practically all of the coal offered, which they were not able to do for a time before the strike. It has also released open-top cars for other traffic, which in turn released some box cars for other traffic, such as grain, that can be handled only in box cars.

As to the effect on the movement of freight traffic, the ton mileage handled in October showed an increase for the first time this year since January, and was greater than for October, 1918 and 1917. November traffic was also affected to some extent by the steel strike, and December traffic will be still further reduced by the loss of steel tonnage because of the shortage of coal and coke for the steel plants. The use of coal for coking has been cut down by 25 per cent.

On December 6 an embargo was issued, effective Monday, December 8, against the shipment of fuel oil from the west to points east of the Illinois-Indiana state line and north of the Ohio river, except on permits issued by W. L. Barnes, assistant manager, Car Service Section, Chicago, who will give permits for industries that have used fuel oil before November 1, or for export. The object is to avoid the eastward shipment of fuel oil that might be used in the west to avoid the westbound shipment of coal, on the theory that new users of oil should be those located in the west, where there is no coal, rather than in the east where the coal is.

There have been some newspaper statements that the Railroad Administration was trying to get its coal now at a lower price than others and that it has had a lot of coal standing around that it refuses to let go of. It has deliberately tried to build up and keep a reserve which could be used for the most essential purposes, as coal has been consumed faster than it has been mined.

During the month of November the Railroad Administration delivered to essential consumers other than railroads a quantity of coal equal to the entire tonnage mined during the month—that is, the railroads used up some of their own reserve stocks.

The railroads are now paying the full government prices for coal under the orders re-established on November 1, which represents a considerable increase, as they have been getting coal during the year at prices considerably less than the fixed prices which they paid last year.

Lieut.-Gov. Oglesby of Illinois and other representatives of the governor called on Mr. Hines December 6 to urge an increase in coal shipments to Chicago and Illinois. After they had explained the situation to the Central Coal Committee it was arranged to place additional orders for 1,500 cars a day to the Central Western and Northwestern regions, from which 500 cars will go to the Chicago district and 600 cars to Illinois outside of Chicago.

On December 6 Fuel Administrator Garfield issued an order extending the previous orders regarding the fixing of prices and the allocation of coal to apply to beehive or by-product coke.

End of Coal Strike Expected

Prospects for the ending of the bituminous coal strike this week appeared certain Saturday night, December 7, when John L. Lewis, acting president, and William Green, secretary-treasurer of the United Mine Workers, agreed to urge the acceptance by the miners of a "definite, concrete proposition" from the President "looking to a speedy termination of the strike situation and an adjustment of the entire controversy," placed before them during the day at a conference at the office of the attorney general, who had earlier in the day conferred with the President. The officers of the miners' union, faced with prosecution in contempt of proceedings for violation of the Indianapolis injunction under which the strike order was ostensibly recalled on November 11, agreed, in response to the suggestion of the President, to call a meeting of the general scale committee, the representatives of the district organizations and the international executive board of the United Mine Workers to be held at Indianapolis on Tuesday, December 9, at which time the President's proposal was to be considered and its acceptance by the miners urged by Mr. Lewis and Mr. Green. Tuesday was the day set for the hearing in the contempt proceedings before Judge Anderson, and it was understood these would be postponed or called off.

The nature of the President's proposal was not disclosed, but as it is understood the administration has approved the position taken by Fuel Administrator Garfield that no increases in wages should be allowed that will require an advance in coal prices it was thought that the proposed basis of settlement would approximate the 14 per cent advance proposed by Dr. Garfield.

The leaders of the miners' union had been put in a position, by the efforts of the Department of Justice, where the prospect that some of them would go to jail had become prominent as one of the alternatives to be considered. The department was said to be in possession of evidence that the notices recalling the original strike order, sent out on November 11 by order of the court, had not represented a compliance in good faith with the court's order, but had been sent out without the official seal of the union and in such a way as to leave doubt in the minds of those to whom it was addressed as to whether it was official. Evidence was also said to be available that some of the strike leaders had adopted surreptitious means of advising their followers to keep the strike alive pending the wage negotiations. Coal production had been gradually increased, and during the week ended November 29 was 5,429,000 tons, or about 45 per cent of the normal bituminous output.

Government Ownership No Alternative.—If money put into railroad securities is only to be thrown away, there will be no money put into railroad securities. And if the railroads cannot support themselves in a healthy condition, able to obtain fair rates for their maintenance, and new capital for their expansion, why, then, they cannot exist. There is no use of suggesting government ownership as an alternative. The American people have had of late about as much connection of the government with public utilities as they can stomach. As tested practically, it has been shown to mean little else than deficits soaring into the billions.—*Albany Knickerbocker Press.*

The Senate Discusses the Railroad Bill

Various Amendments Have Been Offered, but Comparatively Little Progress Has Been Made

LITTLE PROGRESS HAS BEEN MADE thus far in the consideration of the railroad bill in the Senate, which was begun on December 2. The first three days were taken up with an opening speech by Senator Cummins, chairman of the committee on interstate commerce, who explained in detail the provisions of the bill and the reasons which actuated the committee in adopting them and answered various questions put by the Senators. On December 5 the bill was read for amendments, and amendments were offered by Senators Curtis, Watson and Spencer, after which Senator Kellogg began a long speech which was occasionally interrupted by calls for a quorum Senator Kellogg favored the bill's principal provisions, including the anti-strike provision, and charged the Railroad Administration with enormous extravagances in the operation of the railroads and with building up a great central organization which, he said, "had benumbed the incentive and enterprise of every railroad organization." He also declared that inequalities in wage awards had added grossly to the cost of operation and lowered the morale of the service.

Senator Cummins said he thought it would tend to simplicity and clearness if the Senate should proceed with the consideration of the Senate bill, and after having made such changes in it as commended themselves to the judgment of the Senators should substitute it for the Esch bill as passed by the House, and in that way present a foundation for a conference between the two houses. That course, he said, was approved by the committee.

Senator Cummins said he did not intend to discuss at any length the merits of private operation, as compared with public operation, because the committee was so nearly unanimous that it was unnecessary for him to defend its position. He believed the great majority of the people of the United States, in view of the experience of the last two years, did not desire that public operation shall be continued, and it desired that the railroads shall be returned to their owners under such strict supervision and regulation as will insure justice at once to the owners of the properties and to the public as well. He expressed the opinion that the operation of a system of transportation is a proper governmental function, and it is only a question of how the people of the country can be best and most efficiently served. He would adopt public ownership and operation in a moment if he believed the people would thereby secure better, more adequate and cheaper transportation. In answer to the claim that government operation has not had a fair trial during the last two years, he said:

"Whatever may be the merits of government operation, I feel no hesitation in saying that the trial of the last two years in the United States has been the fairest trial to which that form of regulation could be submitted. The government has had every possible advantage in demonstrating efficiency in operation. First, the volume of the traffic of 1918 was substantially the same as the volume of the traffic in 1917, and in 1919 that volume had been not greatly diminished. The government has had the advantage of absolute authority. It has had no interfering or embarrassing conflicts with any department of the government. The director general, together with those officers who have been appointed to assist him in the administration, has been supreme; and I say again that it is not in my heart to criticise the action of the director general, save in one or two respects that may become material a little later on; but I now want to impress upon those who believe in government operation that the director general has been master of the whole situation. It was for him, and him only, to say what unification should take place. It was for him, and him only, to declare upon what routes traffic should be moved. There was no one to dispute his authority, no one to question his decisions, and if government operation could have a fairer opportunity to demonstrate its efficiency I can not imagine it. The director general had complete authority over rates. We dispossessed the Interstate Commerce Commission of all authority over the subject when we transferred these properties to the President of the United States."

Government Operation Expensive

Senator Norris asked whether if the government had not taken over the railroads they would have gotten through the war without trouble, and whether the country would have escaped the difficulties that have ensued.

"In my opinion," replied Senator Cummins, "they would have had very much less trouble than we have had so far as losses are concerned. Of course, if the people of the country desire to pay the price, government operation is entirely feasible. There is nothing that stands in its way if the people are willing to pay the cost." He added that he was not saying that either private operation or government operation could have gone on doing business at the same rates that prevailed before the war, but, he said, the government had a great deal better chance for successful operation under war conditions than the railroad companies had under peace conditions and that the main thing gained by public operation was the right to move traffic on any line that it was desired to move it on

"It is my judgment," he said, "that the railroads at the time the President took them over were doing better in the movement of traffic than they ever did afterward, but I do not say that the railroads could have continued to do business upon the rates which were then in effect any more than the government could continue under those rates."

Senator Norris said that those who favored government ownership would be opposed fundamentally to the kind of government control that we have had in the last two years. Senator Cummins said it was his judgment that the organization we have had for the last two years was better qualified, more competent to operate the railroads than the organization suggested by the Senator from Nebraska. He did not think it was an ideal organization, because it had too much arbitrary power. He believed that Mr. McAdoo and, following him, Mr. Hines, and especially Mr. Hines, had done the very best that could be done and had operated the properties just as cheaply as they could be operated, barring the increase in wages. No one, he said, can question the energy and the ability with which the railroad operations have been carried on. Senator Walsh suggested that the government's operation had been less successful than it might have been because it retained so many railroad men who retained all their prejudices and predilections against government ownership and that "while perhaps there was nothing in the nature of a conspiracy to depreciate in the public mind the policy of government ownership, yet there was no disposition evinced to make it a grand success."

Senator Cummins replied that if there has been a spirit

or motive of that kind, in his judgment it has been with those who have been excluded from the active management of the properties, and he firmly believed that the regional director, the superintendents and the railroad men, all the way down the list, have been faithful and loyal and have done all they could to secure an efficient and economcial management. However, he said, the government during the war has had the advantage of something which it can never again enjoy. It has had the advantage of the war loyalty.

Radical Change in Regulation Required

Turning to the changes in the methods of regulation proposed by the bill, Senator Cummins said it would be absurd for the government to restore these properties to the railroad corporations which formerly owned them unless the government believed at least that those corporations could resume the operation of the railroads and render to the people of the country the service which must be rendered if our commerce is to be sustained. One of these conditions is ability to borrow money. "No matter what we may think with regard to the wrongs which have been done in the past by the railroad companies, the railroads must be able to borrow money, because even if the government carries a billion dollars of their obligations for 10 years, as it must, in my judgment, or some such amount as that, the railroads must borrow another billion dollars, or some such large sum, in the coming year."

"Private operation of railroads cannot be continued as a permanent policy unless there is a radical change in our system of regulation. Our Interstate Commerce Commission has been a faithful. intelligent body of men. It has been, however, utterly impossible for the commission to establish a body of rates that would enable the railway systems to maintain themselves. It has been utterly impossible for any body of men to make a system of rates that will sustain the weaker railroads of the country without giving to the stronger railroads an income excessive and intolerable in its extent, and there lies the great fundamental obstacle in our system of rate-making. I look forward with very little optimism so far as private ownership and private operation are concerned. I am going to do my best to make private ownership and operation possible, but if these railway properties cannot be restored to their owners under such conditions and with such regulation as, in my judgment, will make private ownership and operation successful, then I am instantly and from that time forward for government ownership and operation."

In discussing the proposal that the commission shall be required to allow an average return of 5½ per cent, Senator Cummins said that 5½ per cent is more than he thought it ought to be. It seemed to him that a lower basis would furnish the credit which the railway companies must have, but the majority of the committee were of the opinion that 5½ per cent is a fair basis, and to that he finally agreed. He said he had previously stated that the compensation provided by the federal control law was something like $200,000,000 more than it ought to be. He was of the same opinion still, but he wished to point out that that was not inconsistent with his advocacy of a 5½ per cent basis, because in the federal control bill Congress was providing for an income for each individual railway, and he felt that the amounts which it was agreed to pay to a great many were excessive, but under the proposals of the bill there is no provision to pay to the stronger railroad companies the excessive income which is permitted under the federal control act.

Moreover, he said, the war has wrecked the world in a way. Conditions are abnormal and uncertain, and he looked with no optimism at best upon the return of the properties to their owners, because in view of a movement that is sweeping over the world with regard to property, its ownership, its use and its profit, he had the gravest doubt about whether those who have money will be willing to invest it in railway securities, no matter what rate of return is provided.

Regarding the provision for a division of excess earnings above 6 per cent, Senator Cummins said that, singularly enough, it is assailed from two quarters. The railway executives attack it bitterly on the ground that it is not only unjust but unconstitutional, and some very enthusiastic citizens who have no interest in railways attack it on the ground that it is an approach towards socialism or communism.

Dealing With Labor as a Commodity

Regarding the provision for a division of excess earnings Cummins said he was the father of a somewhat famous statement in the Clayton anti-trust law that the labor of a human being is neither a commodity nor an article of commerce, but, he said, "I am just as much opposed to Mr. Foster dealing with human labor as a commodity as I am opposed to Mr. Gary dealing with it as a commodity. It is just as fatal to the welfare of the United States to allow the American Federation of Labor to deal with labor as a commodity as it is to allow the National Association of Manufacturers to deal with it as a commodity."

He also said he believed in collective bargaining, and that nothing could be more wicked than the assertions which are being made that the bill would manacle the working man and reduce him to involuntary servitude. The bill, he said, does not pretend to interfere with or embarrass any man who desires to leave his employment. "He can quit, or 100 of them or 1,000 of them, can quit whenever they desire to do so, but I am not willing to allow the statement to go unchallenged that it is a fundamental and a constitutional right that every man can enjoy to quit his employment whenever he pleases. That is not true. A soldier cannot quit whenever he desires, an engineer upon a railway train cannot quit whenever he may desire to quit; a physician or surgeon cannot leave a dangerous operation half performed because it is his pleasure no longer to continue the work of his profession. It is our profound conviction that the civilization of America cannot continue, cannot endure unless organized society can find some plan to preserve industrial peace and order. This bill punishes only a combination or agreement between railway employees. Even if I were to grant that the individual right to cease employment is perfect and complete, I cannot grant that the right to enter into a combination or conspiracy to accomplish a purpose inimical to the welfare of society is a natural or constitutional right."

Compulsory Consolidation Objectionable

Provisions in the bill for compulsory consolidation were attacked as "objectionable" and "unworkable" by Senator Kellogg, who continued his speech on December 6. Senator Curtis, who followed him, opposed the proposed transportation board and urged that complete supervision of the railroads be placed in the hands of the Interstate Commerce Commission. He also opposed the consolidation provisions. Senator La Follette was expected to speak in opposition to the bill on Monday.

Director General Hines has conferred with Chairmen Cummins and Esch of the interstate commerce committees of the Senate and House, respectively, regarding the legislative situation, with a view to reporting to the President. He has also conferred with Senators Kellogg and Watson, who are members of the Senate committee.

A settlement of the coal strike would remove one of the factors of uncertainty in the plans for the return of the railroads.

German Railways Suffer from Lack of Equipment

Loss of Locomotives and Cars Delivered to Allies Severely Felt, Complaints Against Peace Treaty

By Robert E. Thayer
European Editor of the *Railway Age*

LONDON, August 12, 1919.

LITTLE INFORMATION has been made public relating to the actual condition of the German and Austrian railways, but what has penetrated beyond the frontiers of those countries has shown that the equipment of the railways is in poor condition, and that there is a large amount of rehabilitation to be done there in the matter of deferred maintenance and in the recuperation of the losses suffered from the war, both from destroyed and abandoned equipment and materials, and from equipment and materials that had to be given over to the Allies under the terms of the Armistice and the Peace Treaty

An Investigation

Considerable information of value, however, is given in a report of British army officers who made an investigation of transport conditions in Germany the early part of last April. In this report, which was made public only recently, conditions are analyzed in the several industrial districts of Germany.

Conditions in Silesia

It was shown that in Silesia there was a very great and real shortage of locomotives and rolling stock at that time. Furthermore, due to the use of substitute materials and lack of lubricating oils, those locomotives which were available were constantly breaking down. Table I gives some statistics of the Breslau railway.

TABLE I.—STATISTICS FROM THE BRESLAU RAILWAY

	Monthly average of locomotives	Average service of locomotives in kilometers
1913—		
October	1,277	3,640
November	1,286	3,444
December	1,295	3,527
1914—		
January	1,295	3,401
February	1,293	3,017
March	1,295	3,433
1918—		
October	1,233	2,789
November	1,248	2,517
December	1,226	2,436
1919—		
January	1,145	2,475
February	1,120	2,230

Percentage of total locomotives under repair

1918—	1919—
October ..... 34.1 per cent	January .....36.9 per cent
November .....33.7 per cent	February .....40.1 per cent
December .....34.2 per cent	March .....40.3 per cent

Cars requisitioned and supplied for the transport of coal during February

	Upper Silesian coal area		Lower Silesian coal area	
	1919	1914	1919	1914
Asked	171,447	273,363	30,092	33,437
Supplied	97,502	273,363	16,104	33,437
Lacking	73,945	.....	13,988	.....
March—				
Asked	158,865	276,493	30,847	32,163
Supplied	134,323	276,493	24,608	32,163
Lacking	24,542	.....	6,239	.....

Requisition of trucks of all descriptions (with exception of coal trucks) in February and March, 1919

February, 1919—	Required	Supplied	Lacking
Covered wagons	46,953	46,566	387
Open wagons	41,017	26,819	14,198
Straw wagons	6,563	3,951	2,612
Trucks for logs, etc.	1,760	565	1,195
Rail trucks	1,295	662	633
Lime trucks	1,828	1,116	712
Workmen's trucks	7,190	5,970	1,220
March, 1919—			
Covered wagons	63,137	61,130	2,007
Open wagons	68,825	23,360	40,465
Straw wagons	8,888	5,603	3,285
Trucks for logs, etc.	3,943	672	3,271
Rail trucks	2,777	960	1,817
Lime trucks	1,825	1,654	171
Workmen's trucks	12,342	8,745	3,597

During peace time the number of box cars and open top cars in actual use were as follows:

In February, 1914....	60,492 covered cars	72,548 open cars
In March, 1914.....	75,964 covered cars	80,702 open cars

The situation in this part of the country was, at that time, extremely critical owing to the lack of transport. Factories were at a standstill, and unemployment was daily increasing.

Conditions in Bavaria

The Bavarian railway system (apart from the Palatinate) is divided into five areas, three of which were visited by the English military officers, as follows, Wurzburg, Nurnberg and Regensberg.

Tables II, III and IV were arranged from information and figures compiled by the presidents of the railway administration of these three areas. There is notably a lack of locomotives and cars, which was alleged to be due—

(a). To the obligation to deliver locomotives and cars to the Entente.

(b). Losses on the eastern front.

(c). Delayed repairs owing to the war.

(d). Shorter running life of locomotives and wagons owing to inferior materials (iron, for example, as a substitute for copper removed from the locomotives to be used in the manufacture of munitions, lack of lubricating oil, etc.).

(e). Lack of raw materials for executing repairs.

The situation has been partially improved by reducing passenger service as much as possible in favor of goods service. There were no repair shops at Wurzburg, but at Konig, the Bauer's Printing Press Factory was being used for repairing cars, and rails were being laid to enable that plant to repair a greater number of cars. There were at Nurnberg 42 locomotives and 59 wagons awaiting repairs. An average of 13 to 14 were being delivered monthly. The Maschinenfabrik Augsburg-Nurnberg has undertaken to repair all railway equipment at this point and 12 locomotives and some 70 cars were in the course of repair. It takes from 8 to 10 weeks to repair the locomotives and from one to three weeks to repair the cars. In the Regensberg area on April 5 there were 119 locomotives under repair, 230 passenger cars and 1,208 freight cars with average weekly deliveries of 10 heavy and 81 light locomotive re-

TABLE II.—NUMBER OF TRAINS IN WURZBURG, NURNBERG AND REGENSBERG AREAS ON AUGUST 1, 1914, OCTOBER 1, 1918, AND APRIL 1, 1919

	Main line passenger trains	Branch line passenger trains	Freight trains
Nurnberg—			
August 1, 1914.	453	346	197
October 1, 1918.	197	210	180
April 1, 1919.	125	188	135
Regensberg—			
August 1, 1914.	164	307	143
October 1, 1918.	86	171	94
April 1, 1919.	60	147	77

Wurzburg—	Express trains	Slow trains	Local trains		
August 1, 1914.	77	79	24	..	159
October 1, 1918.	18	42	22	..	195
April 1, 1919.	8	30	18	..	136

Note. It is alleged that, owing to the condition of the locomotives, freight cars can only carry 80 per cent of their pre-war capacity.

TABLE III. NUMBER OF LOCOMOTIVES IN WURZBURG, NURNBERG AND REGENSBERG AREAS ON AUGUST 1, 1914, OCTOBER 1, 1918, AND APRIL 1, 1919

	Passenger train locomotives					
	Light			Heavy		
	Total	In repair	In use	Total	In repair	In use
Wurzburg—						
August 1, 1914...	70	12	58	35	6	29
April 1, 1919.....	56	20	36	29	15	14
Nurnberg—						
August 1, 1914....	70	12	58	35	6	29
October 1, 1918...	212	64	148	46	17	29
April 1, 1919.....	210	63	147	32	10	22
Regensberg—						
August 1, 1914....	192*	28	164	44	5	39
October 1, 1918...	190*	55	135	38	12	26
April 1, 1919.....	188†	56	132	38	17	21

* Including 144 branch line locomotives.
† Including 112 branch line locomotives.

	Freight locomotives					
	Light			Heavy		
	Total	In repair	In use	Total	In repair	In use
Wurzburg						
August 1, 1914...	48	9	39	96	17	79
April 1, 1919.....	56	27	29	112	68	44
Nurnberg						
August 1, 1914....	210	50	160	10	2	8
October 1, 1918...	179	65	114	32	12	20
April 1, 1919.....	178	61	117	36	18	18
Regensberg—						
August 1, 1914....	152	23	129	7	2	5
October 1, 1918...	144	32	112	15	5	10
April 1, 1919.....	121	41	80	12	5	7

TABLE IV.—DEMAND FOR FREIGHT LOCOMOTIVES AND NUMBER ACTUALLY SUPPLIED IN NURNBERG AND REGENSBERG AREAS ON OCTOBER 1, 1918, AND APRIL 1, 1919

	Covered wagons	Open wagons	Special wagons
Nurnberg—			
October 1, 1918—			
Demand	1,363	678	162
Actually supplied	707	469	67
April 1, 1919—			
Demand	723	1,193	184
Actually supplied	627	455	62
Regensberg—			
October 1, 1918—			
Demand	1,008	496	161
Actually supplied	549	425	103
April 1, 1919—			
Demand	622	952	353
Actually supplied	529	369	57

pairs, 22 heavy and 68 light passenger car repairs, and 129 heavy and 670 light freight car repairs.

At that time there was a lack of raw material, both for the purpose of repair and to keep the rolling stock in use in good repair. Lubricating oil, copper and rubber were most urgently needed. Iron, varnish, tin, axles, leather and cotton waste (as a substitute for which thin wood shavings were used) are also needed.

Conditions in Munich

Owing to the disturbed condition in Munich during the time the British representatives were there, but little information was obtainable. However, it was reported that on all except the most important lines fast trains had been entirely discontinued. On April 13 two trains per day were running to Berlin (by different routes), and one fast train ran three times a week on the Landshut, Salsburg and Lindau lines. The last three services were run with one locomotive only. The slow trains had been reduced to one-sixth their former number, while the number of freight trains had fallen by about ten per cent. In the case of the latter, however, the average load had been reduced by some 30 per cent owing to the fact that the heaviest locomotives had been handed over to the Entente, and those which remained were not capable of doing the same amount of work. The number of locomotives available in August, 1914, and April, 1919, are as follows:

	August, 1914	April, 1919
Augsburg area	91	51
Munich area	209	147
Ratisbon area	148	92

During the week ending March 29, 1919, there were required 22,260 box cars and 36,591 open top cars. Of these 2,200, or about nine per cent of the box cars, and 29,699, or 81 per cent of the open top cars, could not be put into service. Furthermore, there were practically only 10 to 12½ tons capacity cars available, as the 15 and 20-ton capacity cars had been handed over to the Entente under the terms of the Armistice.

At that time about 40 per cent of the locomotives were under repair, whereas before the war the average was 18 per cent. The output of the shops has diminished by over 30 per cent, in spite of an increase in the number of employees from 8,000 to 13,000 men. This was due chiefly to the fact that the equipment was in very bad shape, and also to the reduction of the efficiency of the workmen owing to insufficient food.

The efficiency of the railroads as a whole is about 40 per cent less than before the war, owing to the increased necessity for repairs, and the delivering of the best heavy locomotives to the Entente. Over 10,000 freight cars were waiting repair at the time this report was written, and the work cannot be carried forward very fast owing to the lack of tools and material.

Articles published in German papers and abstracted in the Reconstruction Supplement to the Review of the Foreign Press, a fortnightly publication issued by the War Office of Great Britain, bring to light further interesting information.

German Complaints on the Peace Treaty

German papers have complained bitterly of the effect the Peace Treaty has on the German-Austria railway system. The Neue Freie Presse in commenting on the new boundaries states:

The frontier now cuts off from German-Austria the railway line from Hungary to Switzerland, passing through Pragerhof, Marburg, Unterdrauburg, Klagenfurt, Villach, Frauzenfeste, Bozen, Meran and Mals, and forms a connecting link with the eastern part of Switzerland, on the one hand, and Landeck, in the Tyrolese Upper Inn Valley, on the other (the Arlberg line). Only the short section leading from Vienna into the Klagenfurt Basin is to be left to German-Austria. This line is not only regarded as a through line, but is intended to link up the railway lines of German-Austria with the south. If the new frontier is legalized all the lines running from north to south would be cut through at, for the most part, unimportant places, and would be left without any connection, one with another, in German-Austria. It would be impossible to extend the Aspang line to Pettau, as the Slavs would naturally prefer to build a line to the Hungarian plains. The Spielfeld-Luttenberg and Vienna-Trieste lines would be open to foreign countries at Spielfeld, the Zeltweg-Unterdrauburg line at Lavamund, the Luttenberg-Launsdorf line at Brückl, the Vienna-Klagenfurt line at a point south of St. Veit, and the Brenner line at the Brenner, but a connection inside German-Austria would only be possible by a roundabout route, and there is no money for the building of new branch railways. Only the Vienna-Semmering-St. Michael-Villach-Arnoldstein line, affording direct connection with the sea at Venice, would be left to German-Austria, and Central Styria, being far removed from the line, would lose all importance. In the north the railway junction at Gmünd and the March, and with the latter the possibility of a Danube-Oder Canal and a sufficient coal supply would be lost to German-Austria.

Undue Preference to Poland Alleged

Dr. Walther Plenk writes to the Oesterreichische Volkswirt (June 28) complaining bitterly of the undue preference shown to Poland in the Peace Treaty. In no direction is this more apparent than in the matter of the railways, for not only is German-Austria compelled to surrender to Poland all the railway construction works and plant in a perfect condition and all the rolling stock appertaining thereto in a condition of normal repair, but in addition an Experts Committee appointed by the Allied and Associated Powers is to determine how many locomotives, passenger coaches, and trucks are to be surrendered.

Poland, a country which now demands rolling stock from German-Austria, was unable, Dr. Plenk says, to provide one single locomotive passenger coach, or goods wagon in order to maintain the railway traffic indispensable for the economic life of the country, but year by year many millions of Austrian money were invested in Russian Poland for railway purposes, the investors relying on the loyalty of Polish people. When at the end of 1918 the Austro-Hungarian Empire collapsed, nearly all the Austrian rolling stock remained in Russian Poland, but this in Dr. Plenk's view, should not be regarded as Polish war booty, but as property loaned to a neighbor friendly up to that time. It is therefore extremely unfair to demand further rolling stock from German-Austria in addition to the locomotives and wagons thus illegally detained.

The Austro-Hungarian army authorities bent on strengthening Russian Poland economically and in opening up to traffic districts hitherto neglected by Russia were not frightened by the vast expense of constructing light railways 400 km. in length. Huge masses of railway and light railway material belonging to the army authorities were left behind in Poland, and German-Austria, as one of the States succeeding to the heritage of the old Empire, has a right to a share of this material. But the Peace Treaty ignores this fact, complains Dr. Plenk, and only pays attention to the advantages of the Allies.

Equipment Builders

On account of the coal shortage in Germany and the labor trouble the output of the manufacturers has been reduced to the extent that the Danish and Norwegian State railways, customers of long standing of the Hanover Engineering Company, have gone to America for large locomotive orders. On the other hand, the war manufacturing plants are turning their energies to equipment building.

The Frankfurter Zeitung (July 11) states that the directors of the Krupp Works in Essen-Ruhr intend to re-engage in the manufacture of railway material in future.

Before the war Krupps had a considerable output of railway material, and an arrangement has been made with the Prussian state Railways Administration that contracts will be assured to the firm; but this could only be achieved by granting the Government comprehensive insight into the conduct of the business of the construction of locomotives and carriages. The late gun-carriage works have been recently fitted out for the production of railway material, so that this section can now employ 2,000 workmen. The State Railways Administration has promised to order 100 locomotives and 2,000 carriages every year. In accordance with the agreement, only a certain percentage of profit is to be allowed to Krupps, the State Treasury is to benefit from any surplus. Any loss which may arise is to be borne by the firm. The State is to examine every item in the cost of production. The firm is endeavoring to secure other peace work for the former artillery workshops, but this is very difficult. A staff of 34,000 would be required to keep the works fully employed. Lack of coal and raw material in general keeps the present output at a low level.

Expediting the Release of Cars in Company Service

Measures to Be Taken by the Maintenance Department to Avoid Unnecessary Use of Equipment.

THE NECESSITY for practicing economy in the use of cars employed in company work is fully as urgent as with those employed in revenue service, but all railway employees and officers have not realized this fact to the fullest extent. This matter is of greater importance to those engaged in some branch of maintenance of way work since this department uses the largest number of cars, and with the idea of indicating what can be done, four officers of this department discuss measures which may be taken to reduce the use of cars to a minimum.

Understanding of Traffic Methods Essential

By John Evans

Division Engineer, Michigan Central, Detroit, Mich.

As shippers, maintenance employees can aid in car conservation by the intelligent selection of loading points when there is more than one place from which shipment can be made; by loading cars as soon as placed; by loading to capacity; by promptness and care in carding and billing and by sending consignee immediate and complete notice of shipment.

Where material to be shipped is available at more than one point, consideration should be given to the amount of switching necessary and the probable amount of time required in getting the empty car to the point of loading and in getting the loaded car from point of loading to destination.

In carding and billing, care should be used to make shipping instructions correct, clear and complete. This is particularly important on shipments into large terminals. On these shipments the particular yard and track to which cars are destined should be shown. If shipments involve a large number of cars, the operating department should be consulted on making out the billing so that any additional information which might facilitate movement or tend to avoid confusion may be shown.

The shipper should lose no time in sending notice to consignee. If the shipment arrives in advance of this notice, it is frequently necessary to defer unloading while the consignee is trying to find out where the material is from and what work it is to be used on. On account of the possibility that car cards may have been made out incorrectly and also on account of the liability of cards becoming lost or misplaced, it is not advisable to take them as authority for unloading cars in the absence of notice from the shipper. All parties handling shipping information between loader and consignee should give the forwarding of this data preferred attention.

A foreman should be given to understand that he is responsible for getting the car placed and should advise his superior in case his request for placing is not complied with within a reasonable time. The interests of the maintenance and operating departments in the prompt release of cars are mutual and the matter will be taken care of, if called to the attention of the proper authorities. Therefore, in case of serious delay in unloading the cars, the excuse that the car was not placed should not be accepted.

The car shortage has been met by commercial shippers to some extent by the use of motor trucks in both long and short hauls. There are localities where the use of teams or trucks in handling maintenance of way material offers a promising field. This is particularly the case around terminals where the amount of material to be moved is large and where the hauls on cars, though short in distance, require a great deal of time on account of the slowness of yard movements.

Shipping Bureau Suggested

By M. A. Box, Roadmaster, and F. C. McKnight, Roadmaster's Clerk, Kansas City Southern, Neosho, Mo.

Centralization of responsibility, with a directing head, is essential to any scheme which will effect the efficient handling of company material with the fewest possible number of cars. For this reason, in so far as it is possible to do so without encroachment on the powers of any department, it would be wise to create a subdivision in an appropriate department vested with authority to plan and direct the assembling, transportation and distribution of company material, or with authority to determine and exact certain requirements of any department wishing the use of cars for such work. Such a subdivision might be established in and conducted through the roadmaster's office with the following particular advantages: (1) This office is in direct control of permanent labor forces at all points of the road, by reason of which it could arrange more effectively for the use of these forces in co-operation with other departments for the prompt release of rolling equipment without interference with the regular duties of such forces; and (2) the great bulk of company material is handled under the immediate direction of this office, by reason of which this office would have the problem well in hand at the outset and might, therefore, the more readily determine its solution.

The following is a summary of measures suggested as affording considerable benefit in effecting an economical use of cars:—(1) Utilizing local freight service in assembling and distributing small shipments of track and switch material. (2) Distributing small shipments of rail on one car, each section crew to unload its own allotment. (3) Instituting shipping days when track gangs can arrange to be near stations to assist in loading or unloading. (4) Emphasizing the necessity of foresight in ordering before the need becomes emergent. (5) Impressing the doctrine of "capacity loads" on work train foremen. (6) Avoiding shipments of material away from a point where it will soon be needed. (7) Providing emergency facilities for coaling engines to avoid holding coal cars. (8) Co-operation between departments in making shipments. (9) Using placards, posters and circulars to urge employees to exercise vigilance in releasing cars.

Handling Bridge and Building Materials

F. L. Burrell, supervisor of bridges and buildings, Chicago & North Western, Fremont, Neb., submits a method of procedure which he follows in handling bridge and building material.

Our plan is to load the cars and send them to the station nearest to the unloading point, have the local train following pick them up and the bridge men unload the materials and rebill the car to the division material yard. Instructions have been given the yard material foreman to see that all cars are loaded to their full capacity.

In order to get the capacity load we take one or more bridges, as the case may be, requiring renewals, and have the material loaded in such manner as to allow unloading at each bridge, without having to tumble the load about to get at any of the material.

In the matter of repairs, the gang or line foreman is given a schedule of the work to be done and he will either send in a statement of the territory he is to cover and have us make up the loading or he can make up a list of the material that will be a full load.

To insure promptness in the handling of cars we have a list of the cars received each morning and of those unloaded and if any delay is shown we ascertain the reason. If the reason is unsatisfactory we go after the man responsible and straighten him out.

The Supply Train

The supply train has a number of advocates. S. C. Tanner, master carpenter, Baltimore & Ohio, Baltimore, Md., gives the following rules under which his system has proven successful:

(1) In all carload shipments the car should be loaded to full capacity, billed out promptly and the exact destination given so that the transportation department can deliver the car with the least possible delay, and the agent at destination should advise by wire as soon as the car arrives. (2) Cars should be unloaded and released as soon as they arrive. This should be arranged for by the officer in charge before shipment is made. (3) When large shipments of rails or ties are made, a work train should be ordered to unload and distribute the material as soon as it arrives. (4) Single carload shipments, and less-than-carload shipments should be handled by the monthly supply train, and should not be loaded until a day or so before the supply train starts out.

On a heavy territory like the Baltimore division of the Baltimore & Ohio the supply train will cover an average of 60 miles per day. The force consists of 10 to 15 local track men in charge of a track supervisor and an assistant storekeeper. The rail unloader is always part of the equipment of this train. Bridge and building materials are also shipped on the supply train, and so marked that the proper amount will be unloaded at stations, or between stations, as the case may be, and at the exact location needed. Surplus materials are also collected by the supply train and moved to other places where they are most needed.

Freight Traffic Movement and Car Performance

In October for the first time this year since January, the number of net ton miles of revenue and non-revenue freight handled by the railroads exceeded that for the corresponding month of last year, according to the monthly report of the Operating Statistics Section. The net ton miles in October this year amounted to 40,343,750,000, an increase of 1.3 per cent. For 10 months of the year the net ton mileage was 328,792,002,000, a decrease of 10.6 per cent as compared with the corresponding period of 1918. For the 10 months' period decreases are shown in all regions. For October there were decreases in the Central district, the Ohio-Indiana district and the Eastern region as a whole, and in the Northwestern region.

In the New England district there was an increase of 20 per cent. The net ton miles per mile of road per day in October averaged 5,651 as compared with 5,584. The train mileage showed an increase of 1 per cent and the car mileage of 6.6 per cent. The net ton miles per train mile increased from 720 to 722, but the net ton miles per loaded car mile decreased from 29.7 to 28. The car miles per car day increased from 26 to 27.3 and the net ton miles per car day averaged 524 as compared with 525. The percentage of loaded to total car miles was 68.4, as compared with 67.9. The average number of freight cars on line daily show an increase of 1½ per cent, while the percentage of unserviceable cars was 7.4 as compared with 5.9.

For the 10 months' period the net ton miles per mile of road per day averaged 4,687 as compared with 5,234. The train miles show a decrease of 12.6 per cent and the car miles a decrease of 7 per cent. The net ton miles per car day averaged 442 as compared with 492 in 1918. The net ton miles per train mile were 697 as compared with 682 and the net ton miles per loaded car mile were 27.9 as compared with 29.2.

Development of Present Railway Situation in Canada*

The Events and Policies Which Have Tended to Create a Dominion Owned Transcontinental Line

THE PECULIAR SITUATION which now exists in Canada, viz., that of a government-owned transcontinental line in direct competition with a privately owned transcontinental line, each with its network of branch lines throughout the traffic-producing districts and practically paralleling each other across the continent, cannot be thoroughly understood without a knowledge of the events which led up to this situation. No explanation of the extensive adoption of railway nationalization in Canada has been made other than that it seemed inevitable because of the financial difficulties into which certain roads fell. It has been taken for granted by government officials that the people of Canada would regard this action as inevitable, and most of the people have done so, and in consequence the tendency toward nationalization has not been made a clear-cut issue, while neither has nationalization been openly announced as part of the government policy, nor has there been a serious discussion of its effects upon the public welfare. In Canada's railway history are to be found the causes of the present peculiar situation. In the policies pursued by earlier political administrations, and the action taken as a result of these policies, one will find the real causes of the present situation, fraught as it is with possibilities of disaster, but which is, as yet, too new to admit of the forming of definite conclusions.

Early Railway History

Canada's railways were born of the necessity for uniting the provinces of eastern British North America as well as to secure for Canada the opportunity of carrying its share of the products of the West to the world's markets. In this early development were included the inception and construction of the Grand Trunk and of the Intercolonial, in both of which the Maritime provinces in the east and the Imperial government were interested.

In 1846 the repeal of the Corn Laws by England, enabling American grain to enter Great Britain on the same terms as Canadian grain, brought the Grand Trunk project to a head and made doubly necessary the construction of lines to lower the cost of transportation from the producing areas in the west to England. The St. Lawrence river and the Gulf of St. Lawrence were very difficult of navigation, and consequently involved higher charges than were in effect from New York. The construction of the Grand Trunk was also hastened by the extension of railways into the grain-producing districts of the United States, and the resultant fear on the part of the Canadians that Canada's grain would eventually find its way southward to these direct and convenient lines in the United States, thereby injuring the heavy capital investments already made in the western provinces. Thus the Grand Trunk was conceived as a main trunk line to connect with Canada's inland navigation system and to compete with the railways of the United States.

Up to this time the Intercolonial and Grand Trunk projects could not be viewed as separate. The scheme as formulated provided for a main trunk line having an outlet at Halifax, with an extension into the Maritime provinces. Two surveys had been made for a road of this kind, one by the British government from Halifax to Quebec along the coast of New Brunswick, because of the military considerations involved; the other, an earlier proposed route, in a more direct line to Quebec along the American boundary. The people of New Brunswick were not desirous of contributing to the construction of a line of railway which would pass through a sparsely settled portion of their province and terminate at a Nova Scotian seaport.

As the discussion of the building of Canada's first railways continued it became apparent that because of the inability of the Imperial government and the provincial government to agree the two projects would eventually be separated. The expected break finally came and the main trunk line scheme, which afterwards became the Grand Trunk, was officially started by the passage in the Canadian Parliament of three measures in 1852 providing for a Dominion guarantee of £3,000 to the mile, the amalgamation of a number of existing charters and the incorporation of the Grand Trunk. A prominent English contractor made arrangements with the Hon. Francis Hincks, then Inspector General for Canada, both to construct a line and to promote the company.

The years immediately following the start of the Grand Trunk, from 1852 to 1857, were years in which the building of railroads comprised the chief financial activity in Canada. Towns and villages, under a municipal loan act, pledged their credit for railroad enterprises recklessly, and in the end created a serious financial situation. The Grand Trunk project was soon in difficulties and the provincial government was forced to come to its aid repeatedly.

As the line neared completion this unfortunate condition failed to improve, because the traffic the railway had expected to carry did not materialize. The road was originally projected to co-operate with the St. Lawrence river, but it was located entirely independent of this idea, due principally to the efforts of its English directors. The route selected made the Grank Trunk a through line and consequently a competitor of American railroads and also of the Canadian canals. In addition, the Grand Trunk came in competition with the Great Western, built beween 1853 and 1856 from the head of Lake Erie to Niagara to compete with the Welland canal. As a result of this change in policy and location not enough traffic was offered to the road to make it a paying proposition, and the company was in financial difficulty practically from 1855 to 1862, when it defaulted in interest payments on its bonds and threatened to close the road. The result was that the government was forced to supplement its previous loan by permitting the issue of second preference bonds and by withdrawing the interest claims on its loan until dividends were earned on the common stock.

In 1862 the company was reorganized and its bond issues converted into preferred stock. From this point the history of the Grand Trunk concerns itself with the following of a safer policy, a policy freer from political interference and national consideration. Connections were obtained enabling it to bid for long-haul service, branch lines were developed to further the local service and several connections were acquired, among them the Great Western and the St. Lawrence & Atlantic, the latter a Portland, Me., connection.

Meanwhile the Intercolonial portion of the original railway scheme had been developing. After the subdivision of the original plan into the two projects already mentioned, the eastern colonies began constructing roads which they believed best served their respective interests. In the end

*This is the second of a series of articles on railway nationalization in Canada. The first appeared in the *Railway Age* of November 7, page 907. The concluding article, treating the development of the present situation, will appear in the next issue.

these separate provincial enterprises were consolidated because of the strained relations existing between Great Britain and the United States and the desire to bring about confederation of the Canadian provinces. The Intercolonial was made part of the compact to bring the Maritime provinces into the confederation and, in being located uneconomically as it was, it served the purpose of uniting the colonies and providing a military road far from the American frontier. It was realized that a road so located could never be successful from the standpoint of traffic, but this consideration was thrown aside because of the demand of the government for a line accessible to the sea and at the same time remote from the American boundary. The whole line was opened for traffic in 1876 and, true to form, has never been a financial success to this day.

Thus Canada's railway system was born of a mixed and complicated policy of government and provincial assistance, ownership and operation, and private ownership and operation. Indirectly the present situation in Canada can be traced back to these early policies. The completion of these two roads marks the close of the first period of Canada's railway history. The colonies in the confederation were united, the provinces of Quebec and Ontario were made accessible to Canadian ports during all seasons, and Canada was enabled to compete effectively with American roads for the grain traffic to Europe. Following the construction of these two main lines the customary development and construction of branch lines continued, giving Canada after a time a fairly well-defined railway system.

The Era of Transcontinentals

The next step in Canada's railway history concerns itself chiefly with the extensions westward. Not only does it concern itself with these extensions but also the carrying westward of the same considerations that had been instrumental in building both the Intercolonial and the Grand Trunk in the east.

There enters into the first transcontinental railway project the necessity for the uniting of Canada's provinces —in this case British Columbia to the other provinces— the race westward between railway construction in Canada and in the United States and the fear prevalent at that time that the United States might, through the development of its railways, win the traffic of the grain provinces of western Canada and the military necessity for the establishment of communications with these new western territories.

It might be well to note here that with the apparent complexity of the policy pursued by the government in regard to railway construction, and the controversies it has caused, there had been up to this time a remarkable consistency in this policy. The construction of the Canadian Pacific Railway, or the Pacific railway as it was called at that time, came as a step subsequent to the entrance of British Columbia into the Canadian federation. A provision in the British Columbia entrance agreement stipulated that a transcontinental line should be built for, first, national unity and, second, commercial advantage. It is on these two fundamentals that the Canadian government's railway policy has thus far been constantly built.

From 1872 to 1880 the Pacific railway project was to a large extent a matter of controversy between political parties and competing contractors. The Liberal party, then in opposition, urged the gradual construction of the transcontinental line as traffic developed, whereas the Conservatives advocated pushing the project through to the coast as rapidly as possible. The project remained in a nebulous state until 1880, when the Conservatives, on their return to power, submitted a contract to Parliament providing for the construction by the Canadian Pacific Railway Company of a road from Lake Nipissing to the Pacific coast, the portion already constructed to be taken over as part of the system. This contract was accepted.

Sir John MacDonald, then head of the Canadian government, stated that it was the government's intention to be liberal with the company, and the agreement as prepared provided for a money subsidy of $25,000,000 and a land subsidy of 25,000,000 acres. These grants, however, did not complete the assistance granted the Canadian Pacific. The company was allowed entire freedom in locating its lines, a provision was included in the agreement to the effect that for 20 years no line of railway should be permitted to be constructed south of the new line, and the road was granted such privileges as freedom from taxation and the remission of customs duties on construction materials. On the other hand, there was included in the agreement a clause which provided that if the profits should exceed 10 per cent of the capital invested the rates then in effect might be reduced. Thus the Canadian Pacific began as a private company, but with liberal assistance from the government.

The main line was completed in 1885, the whole distance of 2,906 miles being covered approximately five years before the termination of the contract time. Meanwhile, the promoters of the Canadian Pacific had been busy forming connections for the road, acquiring other branch line properties and in general building up a network of traffic-producing lines throughout the territory which it was designed to serve. This development work on the part of the road's directors created a system of 4,338 miles by the time the main line was completed in 1885.

However liberal the terms may have been, they were not sufficient to prevent the Canadian Pacific from applying to the Dominion treasury for financial assistance. The amount of this assistance at the time of the Drayton-Acworth report in 1917 was placed at $66,905,481, which is exclusive of the value of the land grants and also of the road built and surveys made by the government previous to this agreement and turned over to the company free of cost. The cost of this government work, according to the Drayton-Acworth report, was $37,785,320, and the proceeds of land sold to June 30, 1916, $123,810,124, making a total public assistance to the Canadian Pacific of $228,500,925. The period immediately following the completion of the line in 1885 was one of rapid development in mileage, due both to the construction of branches and the acquisition of lines already constructed.

This brief résumé of Canada's railway history brings it up to approximately 1903. Aside from the deficits which the government was called upon from time to time to make good, it was up to this time free from any serious trouble from the railways. Beginning with that year there is a more direct connection between the policies followed and the present situation.

As the Canadian Pacific developed and expanded rapidly it began to encroach upon territory in Ontario formerly served exclusively by the Grand Trunk. The latter naturally viewed this development jealously, and when the rapid development of the provinces of Manitoba, Saskatchewan and Alberta began to tax the transportation facilities and equipment of the Canadian Pacific a second transcontinental line was conceived. This project, backed by Sir Wilfrid Laurier and his party, was presented to the people of Canada, who immediately endorsed the project on the basis of the necessity for the development of the northwest. Back of this support there seemed to be a certain amount of hostility toward the Canadian Pacific, especially in the western provinces, on the grounds that it was monopolistic and that it was charging unduly high freight rates. In defense of the Canadian Pacific it should be said that this hostility was due to the monopolistic position of the road rather than to its actions.

The agreement for the construction of the new road was drawn up between the Grand Trunk railway and the Dominion government, providing that the road was to consist of two sections, from Moncton, N. B., to Winnipeg, Man., a distance of 1,800 miles, and from Winnipeg to the Pacific coast, a distance of 1,756 miles. The eastern division, called the National Transcontinental, was to be constructed by the government and, after its completion, leased to the Grand Trunk Pacific for operation. The western division, the Grand Trunk Pacific, was to be built by that company under a bond guarantee of three-quarters of the cost of construction, such cost not exceeding $13,000 per mile. Furthermore, the government agreed to make up under an implement clause the difference between the amount realized on certain bonds and their par value. In the case of the mountain division the government agreed to pay the interest on the bonds for seven years. It was under such an agreement, which can readily be seen to have made it practically a government undertaking, that the second transcontinental line was conceived.

At this stage the project seemed feasible and, because of the exceptionally rapid development of the western grain provinces, it gave every promise of being a success. When, however, the actual work of construction on the two sections of the road began it was found that the estimates were far below the actual cost. The expenditures on the National Transcontinental so far exceeded the estimates that, upon its completion, the Grand Trunk Pacific refused to undertake its operation, it being provided in the agreement that the rental of the road should be based upon its cost of construction. The refusal of the Grand Trunk Pacific to take over the National Transcontinental made it necessary for the government itself to place it in operation.

During this period there was an enormous amount of railway construction under way in western Canada and a consequent rapid development of this territory, all of which produced a great increase in the price of all railway materials and in the cost of labor. The Grand Trunk Pacific found that the task of financing its own line had proved to be too heavy. The result was that the government had not only to operate the National Transcontinental but to assist the Grand Trunk Pacific to complete its lines. This aid at the time of the Drayton-Acworth report totaled $70,311,716, which includes subsidies and other cash aid and which, coupled with the Dominion government investment in securities and guarantees made by the Dominion, totaled $114,470,884. More recently in the 1918 session of Parliament the Grand Trunk Pacific was granted $7,500,000, which was expected to enable the line to operate until July, 1919. However, owing to a bad harvest and heavy increases in operating expenses, this subsidy was rapidly exhausted and it was necessary to take the action indicated in the first of this series of articles.

It is almost impossible to speak intelligently of the situation of the Grand Trunk Pacific during these past few years without taking into consideration its relation to the Canadian Northern project. The Laurier government, soon after entering into the agreement with the Grand Trunk Pacific for the construction of the second transcontinental line, backed the promoters of the Canadian Northern for the construction of lines which constituted practically a third transcontinental, and which parallels approximately 2,000 miles of the Grand Trunk Pacific.

The Canadian Northern came into being with the purchase in 1896 of the charter of the Lake Manitoba Railway & Canal Company by Sir William MacKenzie and Sir Donald Mann. The following two years chronicled rapid additions of new and old charters and the construction of a network of lines in the prairie provinces, until finally the MacKenzie-Mann roads reached the head of the lakes at Port Arthur. The system at this time might be termed successful. MacKenzie and Mann had secured large dominion and provincial subsidies, and all of the new lines were constructed cheaply with heavy grades and little grading, timber bridges, etc., the idea being first to open large areas with as small expenditures as possible and then, as the traffic developed, gradually to improve the lines to a normal basis. In so opening up the country the roads developed a heavy tonnage of grain, and this traffic largely made their early success.

Had the system remained in this position it probably would have been successful today, but MacKenzie and Mann felt that their system could not be the success they wished it to be unless it extended to the eastern ports. Port Arthur is closed for approximately four months of the year, and the extension eastward was conceived to give the Canadian Northern all the year traffic. While the Grand Trunk was maturing its plans to build into the grain areas of the west, the Canadian Northern was authorized to build eastward toward Ottawa and Montreal and at the same time westward to the Pacific coast. At the same time the Grand Trunk idea of extending into the grain areas of the west was maturing, and it would naturally be supposed that in some way the two plans would have become co-ordinated, but this did not take place.

The Candian Northern built its line to Toronto, Ottawa, Montreal and Quebec through a wilderness. This extra mileage, built at a heavy expense, brought practically no additional traffic in eastern Canada, where the older roads were strongly entrenched. The heavy load of this added expenditure overcame the earnings of the western lines and soon put the Canadian Northern in financial difficulties. In 1914 the road notified the Dominion government that it would be unable to meet its fixed charges, and since then, up to the time of the Drayton-Acworth report, approximately $60,000,000 had been given the Canadian Northern in order to maintain operation. As a result of this lack of co-ordination and lack of foresight in the railway policies adopted by the Dominion government at that time, both the Canadian Northern and the Grand Trunk Pacific have been in financial difficulties ever since.

Results of Canadian Railway Development

The preceding is a brief resumé of the beginning and development of Canada's transportation system. The government from the beginning has extended encouragement and aid to practically every transportation project which has been brought to its notice, and has not only aided the original project but has granted liberal assistance for the maintenance of service on the lines after their completion. The results of this policy are now coming to light. In fact, the climax came with the appointment of a Royal Commission of Inquiry in July, 1916, for the purposes of presenting a solution of the grave financial problems presented by the position of the Grand Trunk Pacific, the Canadian Northern and the Canadian government railways.

The policy of the government always has been based on national considerations. Whether it was for the purpose of obtaining eastbound traffic, for military purposes in case of an American invasion, for development of the western territory or for the retention of western Canada traffic for Canadian trade channels, the fundamental purpose has been the same. In addition, there have been economic considerations, although these, unfortunately, have not been given much weight. Had the construction of the railways been based on economic grounds many of them would not be developed to the stage to which they are now.

Whatever may be said in justification of this national policy, one fact remains indisputable, namely, that roads so conceived and constructed could not reasonably be expected

to be for a long time, nor have they been, successful from an economic standpoint. Those who were responsible for the construction of many of Canada's roads apparently were unable to see this. Perhaps in their enthusiasm for the development of Canada they believed that this development would compensate for any deficits which might be incurred in the early operation of the roads. In the long run this view may prove to have been right. It is certainly true that portions of Canada are still undeveloped, and in the future these railroads which have been in financial difficulties may be able to vindicate their existence. This, however, does not alter the present situation. One development which cannot be defended is the wholesale duplication of lines in territories in which the traffic was unable to support more than one line. Especially has this been true in the case of the Canadian Northern and the Grand Trunk Pacific. Traffic sufficient to maintain these parallel lines simply could not be produced. The undercurrent of animosity in western Canada toward the Canadian Pacific must also be considered a cause contributing to the present situation. This animosity partially led to the acceptance by the public of the construction of much of the western mileage, and especially the Grand Trunk Pacific and the Canadian Northern.

There are two causes which might be said to be the final and direct causes of the present situation. The first of these is the war. When Canada entered the war in 1914 as part of the British Empire the cost of railway materials and labor shot upward far faster than railway rates and revenues. It was in this period that large parts of both the Canadian Northern and the Grand Trunk Pacific were private ownership of the Grand Trunk this is difficult to bring about, but if the Grand Trunk were to become the property of the government it is argued that it would be but a natural step to turn the branch lines of this portion of the government system over to the Hydro Electric, and other government enterprise, for electrification. This has caused a great deal of propaganda to be spread in Ontario supporting the nationalization program.

In the third and last article of this series it is proposed to discuss what may be expected to ensue as a result of the present railway situation in Canada and the probable effects upon the country's transportation system and upon Canada in general.

Women in Railroad Service

The director general has received from the manager of the Woman's Service Section a statement showing the number of women employed on railroads under Federal control on January 1, 1919, April 1, 1919, and July 1, 1919. Because of the extremely heavy character of the work instructions are outstanding that women shall not be employed in station parcel room, as section laborers or truckers.

The figures show that between April 1, 1919, and July 1, 1919, there was a decrease of 4.9 per cent in the number of women railroad employees. The total number on April 1, 1919, was 86,519 and on July 1, 1919, it was 82,294. The class showing the largest shrinkage was roundhouse work, in which the decrease in the number of women employed between the two dates mentioned was 23.0 per cent. There was a shrinkage of 18 per cent both in the number of women employed in signal service. There was a falling off of only 4.4 per cent in the number of women employed in clerical positions. The largest number of women employed in railroad service continues to be engaged in clerical or semi-clerical work. The double column table shows the figures for all classes of work in which women were engaged.

Number of Women Employed and Character of Employment (Class I Roads)

Classes of Employees	Eastern territory			Southern territory			Western territory			Total			Per cent increase or decrease Apr. 1 to July 1	
	Jan. 1	Apr. 1	July 1	Jan. 1	Apr. 1	July 1	Jan. 1	Apr. 1	July 1	Jan. 1	Apr. 1	July 1	Increase	Decrease
1. Attendants	1,043	775	724	61	75	91	712	576	460	1,816	1,426	1,275	....	10.6
2. Bridge and lock tenders	....	....	19	....	3	....	1	....	....	1	3	19	....	....
3. Car Department	695	492	491	143	96	42	687	508	398	1,525	1,096	931	....	15.1
4. Clerical or semi-clerical	41,224	36,674	34,570	8,318	8,079	7,499	25,202	22,795	22,533	74,744	67,548	64,602	....	4.4
5. Cleaning	3,178	2,689	2,764	856	740	613	1,437	1,323	1,297	5,471	4,752	4,674	....	1.6
6. Elevator operators	63	64	60	14	12	11	23	24	25	100	100	96	....	4.0
7. Messenger service	509	406	349	22	12	15	223	206	198	754	624	562	....	9.9
8. Personal service	1,371	963	936	354	344	283	1,138	1,120	1,185	2,863	2,427	2,404	....	.9
9. Roundhouse work	588	307	240	141	73	25	561	399	330	1,290	779	595	....	23.6
10. Shop work	2,047	848	745	219	128	116	588	356	224	2,854	1,332	1,085	....	18.5
11. Signal service	221	159	127	3	5	4	10	7	7	234	171	138	....	18.7
12. Station agents, assistants, agt. operators	349	349	313	370	363	393	455	489	428	1,174	1,201	1,134	....	5.7
13. Supervisors of women employees	63	46	47	8	7	6	34	35	33	105	88	86	....	2.3
14. Switch tenders and other yard work	35	20	17	2	....	....	....	8	9	37	28	26	....	7.1
15. Telegraph operators	1,166	796	690	171	129	116	1,250	1,043	962	2,587	1,968	1,768	....	10.2
16. Telephone operators (Train orders)	1,090	808	772	156	97	71	1,036	779	734	2,282	1,684	1,577	....	6.4
17. Train service	94	80	71	....	....	....	....	....	....	94	80	71	....	11.3
18. Warehouse and docks	378	125	138	130	82	89	214	159	181	722	366	408	11.5	....
19. Watchwomen	662	519	507	10	16	12	49	53	46	721	588	565	....	3.9
20. Other service	199	129	122	34	34	44	102	95	112	335	258	278	7.8	....
Total	54,975	46,249	43,702	11,012	10,295	9,430	33,722	29,975	29,162	99,709	86,519	82,294	....	4.9

Freight rates will be one of the subjects which will be discussed at the annual convention of the Michigan State Horticultural Society at the Hotel Statler, Detroit, on December 3, 4 and 5. Among those who will address the convention are F. B. Coombs, secretary of the Michigan Traffic League; former governor Charles S. Deneen of Illinois and R. G. Phillips, secretary of the International Apple Shippers' Association, Rochester, N. Y.

Bridge and Building Men Meet in Cleveland

Twenty-Ninth Annual Convention Had Record Attendance and Interest in Papers and Discussions.

The American Railway Bridge and Building Association met for its twenty-ninth annual convention at the Hotel Statler, Cleveland, on October 21-23 inclusive. Over 250 members were in attendance, the largest number in the history of the association, while the interest in the reports and discussions was equally high. Over 80 new members were received, a larger number than in any previous year. The report of the secretary-treasurer showed a balance in the treasury of $1,328, an increase of $300 over last year.

The convention was called to order by Lee Jutton (C. & N. W.) president, who introduced D. C. Moon, assistant to the federal manager of the New York Central at Cleveland. In welcoming the association to that city Mr. Moon referred to his contact with bridge and building men for over 40 years. He emphasized the necessity for the display of sound judgment in the construction and maintenance of bridges which may cost $1,000 or more per lineal foot while the earnings are no greater than for a similar stretch of track costing $5 per foot. He stated that as between so-called practical "horse sense" and technical or book knowledge, he would select a man with the former qualifications for the majority of positions. He urged members to combine these qualifications and to study formulae, for they must be used, but not to forget the practical phases of the work.

Report on Bridge Inspection Methods

There are, generally speaking, two kinds of inspection of bridges, one for the detection of defects involving immediate safety, and the other for the detection of waning serviceability. Since the first is primarily a matter of constant patrol of the railway lines, the second is the subject of this investigation. What is herein contained pertains exclusively to the matter of inspection as involved in current maintenance from year to year.

Metal Bridges

While climatic conditions have a marked effect on the durability of metal bridges, from the replies to a questionnaire received from 40 roads with an aggregate mileage of 90,000, no general statement can be made that territorial location is responsible in any way for the methods used in inspection. It can be stated generally that an annual inspection of metal structures is more generally in effect than that of any other periodicity. It may also be stated that the officer conducting the inspection of metal bridges is more frequently chosen directly from the staff of the chief engineer than from any other group of officers. The motor car seems to be the most common means of locomotion for the inspection party.

By far the greater number of railways and the greater portion of the mileage represented in the replies to the committee report the use of regular forms for taking and recording notes in the field. These forms are diversified in character and extent and range from ordinary mimeograph forms to bound note books.

By far the greater number of railways make inspection of metal bridges separately for the various members. It is probable that in most cases in the inspection of metal bridges, the general appearance and the judgment of the inspector are the criteria as to whether actual measurements are necessary.

A decidedly major portion of the replies indicate that recommendations as to repairs and renewals are made at the time of inspection and are recorded with the notes, but in the case of metal bridges, it is more than likely that such recommendations are appended to the inspector's report after mature consideration of the conditions reported. While different courses of movement of the inspection reports are described in the replies, it may be said that before definite action is taken their consideration is strictly a matter for the bridge engineer with whom the reports are finally lodged.

Wooden Bridges

Entirely different results are to be expected from the effects of climate on wooden bridges than with metal structures, although railroads in the same territory differ as to the frequency of inspection. A tabulation of the returns shows the periodicity of inspection and the percentage of the total mileage reporting under that periodicity as follows:

	Per cent
Annually	41.55
Semi-annually	32.22
Three times annually	5.95
Four times annually	2.62
Six times annually	13.11
Monthly	4.55

The officer most often made responsible for bridge inspection is either the supervisor or superintendent of bridges and buildings. Nearly 75 per cent of the mileage represented in the replies customarily uses the motor car as a means of conveying the inspection party over the line, while only about 21 per cent uses regular or special trains.

Regular forms for recording inspection notes in the field are used by 85 per cent of the mileage represented in the returns to the questionnaire. The condition of each member is recorded separately by lines aggregating about 70 per cent of the total mileage reporting, but we are inclined to believe this pertinent to metal bridges only. Actual measurements are reported as being taken by 52 per cent of the reporting mileage, while general appearance and judgment are used by the remainder, viz., 48 per cent. By far the larger portion of the lines record in the notes recommendations as to repairs and renewals at the time the notes are taken.

General practice is about evenly divided as to giving authority to the inspector to order repairs or replacement in distinction from simply making recommendations as to these matters.

Conclusions

1. A well organized plan of thorough and periodical bridge inspection should be in effect on all railroads. Inspection should preferably be made semi-annually and in any event not less frequently than annually

2. The inspector should be particularly fitted by training and experience for the work, technical education and training being requisite for metal bridges and both judgment and experience for wooden structures.

3. Motor cars afford the best means of conveying the inspection party over the line.

4. Such tools, either special or standard, as he may consider useful for his purpose should be furnished the inspector.

5. Special inspection forms for taking and recording notes are essential. Adequate provision should be made for reporting the condition of bridge members individually or by groups and classes, dependent upon the facts disclosed by the examination.

6. Sufficient assistance to insure the thorough and com-

prehensive examination of structures inspected should be supplied.

7. Where necessary to determine the extent of the deterioration, actual measurements of members should be made.

8. Recommendations of the inspector as to corrective measure which should be applied to observed conditions are not only desirable but practically necessary. These recommendations should be recorded in the notes at the time of inspection and upon its completion should be followed up through proper channels for necessary action thereon.

9. The inspector should be vested with authority to order through proper channels the correction of any imminently unsafe conditions discovered.

10. Prescribed limitations in stress should, if possible, be established, especially for metal bridges.

11. The general program of inspection can best be formulated by the individual railroad and must needs be developed by a consideration of the operating organization in vogue, methods of effecting repairs and renewals and the number, magnitude and character of bridges maintained.

12. At least one complete counterpart of all notes, recommendations, records and papers pertaining to the inspection and corrective measures applied as a result thereof should be kept in one file of ready access.

The report was signed by Arthur Ridgway, (D. & R. G.) chairman; J. S. Huntoon, (M. C.); J. H. Johnston, (G. T.); Herbert C. Keith, (cons. engr.); G. W. Rear, (S. P.); J. L. Winters, (S. A. L.).

Discussion

This report brought out active discussion. G. W. Rear (S. P.) described the system followed on that road in inspecting over 715,000 lin. ft., of wooden structures. To promote uniformity of inspections over the system, inspectors are employed throughout the year, working on the Southern lines in the winter and the Northern lines in the summer. These inspectors are accompanied by the division engineer, division bridge inspector and division bridge supervisor on their respective territories. They examine every structure on the line and recommendations for their repair or renewal are agreed upon at the time, these recommendations being subject to review in the general office to bring them within the limits of available appropriations. Copies of the recommendations are also sent to the division superintendents, who prepare requests for work authorities for tranmission to the general manager for approval.

The action of the committee in dividing the subject between structures of metal and wood was criticised by Mr. Rear, who advocated their classification as between truss and stringer bridges. The action of the committee was defended by R. H. Reid (N. Y. C.) who pointed out that the nature of the deterioration of timber and metal structures is essentially different, and that they therefore require different forms of inspection.

A wide divergence of opinion was expressed regarding the frequency of inspections. Some members thought the annual inspection was all that was necessary, while others favored semi-annual inspections and C. W. Wright (L. I.) advocated making them every two or three months.

A number of those present opposed the computation of stresses in old timber too closely, one member stating that it had been his experience in the handling of a large number of structures that in almost every case the timber was found to have been in worse shape than had been anticipated.

Report on Inspection and Repair of Roofs

A roof should receive as close if not more careful inspection than any other part of a building. It should include everything on the roof, such as skylights, ventilators, flashings, gutters, eaves, troughs, adjoining masonry, etc.

A supervisor should always make a thorough inspection of the masonry and fire walls adjoining the roof, because the joints in the coping and brick work become so washed out within a few years, that water percolates down inside the wall, resulting in a report of a leak in the roof for which the roof proper is in no way responsible. The remedy is to remove the coping, repair and point up mortar joints in brick, lay in a damp-proofing course of prepared roofing, and replace the coping, pointing it up with a plastic bituminous cement. Sometimes a layer of plastic cement is used instead of the prepared roofing.

Flashings are a common source of leaks; those which are supposed to be permanently cemented to the brick work are rarely found thus after a few years of exposure to the elements. Large cut nails and flashing hooks should be used freely to hold the upper edges of flashings in place. A rich cement mortar or bituminous cement should be employed in the repair work, applying it along the upper edge of the flashing.

In localities where melting ice during the day and frozen leaders during the night are a common experience, gutter heads are an active cause of leaks, which are rarely cured entirely. The flat metal portion of the gutter head should always be nailed down securely over the full thickness of the roofing and wall jointings; then the flat metal should be covered with solid moppings of felt and pitch, carried back at least 18 inches from the opening. If the metal is not closed in on both sides, the expanding ice in the downspout or leader will surely break the roofing away from it while it is cold and brittle. Straight runs of gutter which are improperly applied underneath roofing of various sorts frequently cause trouble of the same kind. The best remedy for leader troubles is the use of inside drains with heads like the Holt roof connection, clamped securely in place without the use of nails.

Roof coverings that depend on paint or other coatings to prolong their life are apt to become neglected, creating a liability of damage or premature loss. Especially is this so in the case of railroad buildings where frequent changes are made among officers and workmen.

Wooden shingle roofs usually have to be repaired with wooden or tin shingles. When such roofs become old they are a fire menace, especially when they are in close proximity to coal-burning locomotives.

Tin roofs require soldering or patching when in need of repairs. Temporary repairs may be made by the use of tested elastic bituminous compounds while leaks of a minor nature can be checked for a time by the application of a heavy coat of paint. Tin roofs should be painted with a good mineral paint about every four years.

There are many brands of composition roofings, commonly termed prepared roofings, which are laid in sheets or from rolls. Some of these will last 10 to 15 years, while some of the cheaper grades depend on an occasional coating of some special preparation in paint form to prolong their life. Such roofs can be patched successfully, this being about the only manner in which repairs can be made.

The last few years have seen the introduction of the asphalt shingles. When laid on suitable inclines to shed water it rarely leaks because there are always two and sometimes three thicknesses of roofing material.

There are all sorts of gravel roofs; many of them have been bought too cheaply. A three-ply roof made of light felt, put together with 60 lb. of pitch and tar, and covered with possibly 100 lb. of gravel, will need repairs inside of three years. A five-ply roof made of 70 lb. of felt and 100 lb. of pitch, properly graveled in will last seven years. The addition of 25 lb. of pitch at the time the roof is built, will make it last from 10 to 15 years. A roof containing about 80 lb.

of felt and 150 to 250 lb. of pitch, depending upon whether the roof deck is of wood or concrete (as recommended in the Barrett specification), will surely outlast its 20-year guarantee, and probably be good for 35 or 40 years.

Standard gravel roofs or makeshift gravel roofs can profitably be recoated at any time before the felt becomes exposed and begins to turn brown. The method is to sweep up all roof gravel with a stiff brush, pour on an ample amount of coal-tar pitch, and then resurface with clean gravel. It is safe to use the old gravel if it is screened, but a considerable amount of new material must be added to the old in order to secure a good job.

If the roof has been neglected until leaks develop, it is necessary to go over it carefully after it is swept up and in all places where cracks or serious rotting of the felt is found, such places should be covered with at least three thicknesses of felt and pitch, leaving margins in successive layers of the repair of at least four inches all around before the recoating is done. Most roof troubles develop angles where the roofs join walls, scuttles, skylights, etc. Two or three layers of solidly-mopped pitch and felt in such places never do any harm, and assist in making a good job.

About the only way to repair clay tile roofs is to replace the broken tile with new material of the same kind. When such roofs are constructed originally a number of the tile should be laid aside for repairs, especially if the material is of an odd design and not readily obtained in the market. The repair of tile roofs requires skilled labor. Large precast cement tile are also coming into use, being applied to steel frames for inclined roofs.

A number of roofs have been laid in recent years with hard shingles made from a composition of asbestos, cement, etc., more nearly resembling slate in size and degree of hardness. In case of failure they must necessarily be replaced with new material of the same kind, if second-hand pieces are not available. These shingles have not been in use long enough to determine their lasting qualities.

Slate roofs are usually repaired by substituting new slate and this can be done readily because standard sizes are always available. A good slate roof having greater than half pitch will last many years without repairs.

The report was signed by M. J. Flynn, (C. & N. W.), chairman; C. A. Lichty, (C. & N. W.); W. F. Meyers, (C. & N. W.).

Discussion

The discussion of this report centered largely about the use of plastic cements for the repair of roofs of various types. Some members told of the use of these cements successfully on metal roofs, while others stated that while the cement had eliminated leakage for 18 months to 2 years, at the end of that time it had been found that the metal itself had been destroyed. The use of high grade built up roofs on slopes of moderate pitch was advocated by several members who reported excellent service from this form of construction, where it was properly installed originally.

Report on Methods and Equipment in Renewing Timber Bridges

A committee of which Mr. Johnson (I. C.) was chairman, submitted an extended report on the organization of gangs and the methods followed in the renewal or repair of piles, caps, stringers and ties singly and also incidental to the general renewal of the entire bridges. This report discussed in detail the various steps in the carrying out of this work.

The discussion centered largely about the advisability of renewing ties on bridges singly or out of face. Referring to structures on which tie plates are not used, E. K. Barrett (F. E. C.) advocated inserting a number of new ties together because of the difficulty of securing an even bearing for the rail when they are applied singly between old rail-cut ties. One member described the practice of turning the ties over to overcome this objection, while another stated that it was his practice to frame each tie to the proper height in the shop before shipment to the bridge, in order that it might then be installed between ties which were rail-cut.

Internal Combustion vs. Steam Engines

A paper of Internal Combustion Versus Steam Engines for Pumping Water, presented by C. A. Lichty, was similar to one which he read before the convention of the International Railway Fuel Association in Chicago in May, and abstracted in the *Railway Age* of June 6.

In the discussion of this paper it was evident that there is a wide difference of opinion regarding the merits of these two forms of pumping equipment. Some members favored steam units because of the less skilled attendance necessary, while others advocated oil engines because of their greater economy at small stations. L. A. Cowsert (C. N. O. & T. P.) stated that it was the present practice of that road to install oil engines whenever making a change in pumping station equipment and that one of the large economies has been found to result from the delivery of fuel oil from the tracks to isolated stations by gravity through pipe lines, instead of hauling coal by wagons, as had formerly been necessary.

Report on Painting Metal Railway Structures

The greatest enemy of steel is rust and to make a job of painting successful the rust must be thoroughly removed. All of the 17 roads replying to a questionnaire, specify scrapers, wire brushes, chisels, and bars for this purpose, and three use the sand blast occasionally. There can be no doubt that the sand blast is by far the most thorough method of cleaning, but the cost is excessive and it is not generally used on that account. Some of the roads specify sledges and bars for the removal of rust, but it would seem that a structure that is so rusty as to require such heroic treatment would be seriously weakened and would indicate faulty methods of inspection.

All are agreed that the first coat of paint should be applied as soon as possible after cleaning, providing the steel is dry, as paint will not adhere to a wet surface. The use of spravers is not advised, 16 of the roads reporting unfavorably while one says it believes it to be as good as brushing but remarks that he has had no experience. The operation of brushing is of vital importance and should receive more attention than it usually does. In painting steel only enough paint should be used to cover and that should be thoroughly brushed, mixing it with whatever rust or other impurities may have been left on the surface and working it into all crevices.

Thirteen of the roads favor red lead in some form for the primer. One favors the addition of white lead in the proportion of one-third white to two-thirds red; another advocates the addition of one per cent of lamp black with the idea of filling voids in the coarser red lead and tending to make the paint denser and more impervious to moisture. A proprietary paint is used by four.

For the succeeding coats the preference is about equally divided between lamp black and graphite, while two roads report the use of brown mineral with satisfactory results.

The method which seems to be giving the greatest satisfaction and to be followed most universally is to prime with red lead, the second coat to consist of a mixture of red lead and lamp black and finish with lamp black or graphite. Only one of the roads reports the use of any other oil than

linseed; in this case soya bean oil receives favorable mention. The addition of about six per cent of turpentine is recommended in nearly all cases to assist in penetration and to give the paint better spreading qualities. This is not to be considered a substitute for linseed oil, but is added to the paint for a specific purpose.

The materials used on water tanks and coaling stations do not differ materially from that used on bridges, except that in a few instances the inside surfaces of water tanks have been painted with hot tar. No satisfactory results have been reported from the use of special coatings on coaling stations, ordinary bridge paint giving as much protection against the fumes of engines as any special preparation that has been tried. No preparation to be used as a paint can give adequate protection to overhead members subject to the direct blast from locomotive smokestacks; all such members are better protected by a cement covering or a suspended slab of asbestos or other indestructible material.

The question of painting galvanized iron brought out a great many formulas for washes to be applied to the iron before it was painted. These washes are supposed to prevent the paint from peeling, but none of them have any very enthusiastic advocates. The most successful method seems to be the weathering of the iron until the zinc coating is removed. If it is necessary to remove the zinc coating from the iron before it can be painted successfully, the zinc may as well be saved and plain iron used instead. The following chemicals are quoted as being used on galvanized iron for the above purposes: sal soda, sal ammoniac, hydrochloric acid, copper chloride, aqua ammonia, copper sulphate, nitric acid, benzine and turpentine.

The report was signed by C. T. Musgrave (O. S. L.), chairman; C. Ellenger (I. C.); E. S. Airmet (O. S. L.); F. Gaunt (O. S. L.); B. D. Rich (S. P.); J. R. Shean (Pac. El.).

Discussion

The discussion of this report centered largely around the necessity of securing mechanics of the proper experience if good results are to be obtained. I. W. Swaney, (Sherwin-Williams Company) presented a discussion of painting practices, in which he made a plea for the standardization of paints and paint specifications, stating that this would cut the cost of manufacture from 25 to 50 cents per gallon.

Report on the Economical Use and Storage of Fuel

To avoid undue deterioration, coal should not be stored to exceed 60 days. The storage supply should be located outside of and at a convenient distance from the pump house, away from other buildings and near an unloading track where one is available so that coal may be handled direct from the cars. To avoid the retention of some portion of the coal in the bin for an indefinite time there should be two openings to remove the coal.

Steam, water and other wastes must be prevented. Pump houses should be built with a view to warmth. To minimize heat losses, boilers, steam pipes and the steam ends of pumps should be insulated where the saving will justify the expense.

Beginning at the grates upon which the fuel bed rests, see that the air spaces are properly proportioned to avoid the loss of combustible material into the ash pit. This will depend on the kind of coal used. Study the fuel with this point in mind. Five per cent is not an unusual loss from this cause.

The amount of grate surface is important, as it determines the rate of combustion. For power purposes in handfired plants do not permit the rate of combustion to fall below 15 lb. of coal per square foot of grate surface per hour, or go above 28 lb. with bituminous coal.

With settings tight to prevent the infiltration of air, heating surface clean, radiation losses reduced by proper covering, piping and steam mains lagged, engine valves tight and properly set, all condensation returned to the feed-water heater a good start will have been made in fuel conservation. However, merely placing the plant in good physical condition will not suffice. Conditions change from day to day, from hour to hour, even from moment to moment. These changes must be interpreted, and the degree of intelligence with which they are interpreted marks the degree of success which will be realized in fuel saving. A good plant poorly operated will show low efficiency, while a poor plant skillfully operated will sometimes show a relatively high efficiency.

Unlike coal, oil, if stored in closed tanks, does not deteriorate when standing nor is it subject to spontaneous combustion; but the greatest care should be given to its storage, as oil and its vapors are very searching and extreme precautions are advisable, though with proper ventilation of the tanks the danger from fire is nil.

Steel tanks for the storage of oil may be secured in all sizes and in accordance with any particular specification, but it is more economical and satisfactory to have sizes and specifications conform to the gage and sizes of sheets commonly carried in stock by the manufacturers, as specifying tanks of special size causes waste through cutting sheets rolled to standard sizes and increases the cost of storage.

Partly or wholly burying oil tanks in the ground is a common practice. However, the ultimate economy is questionable, as the depreciation of the shell from soil corrosion may be rapid, and leaks, unless relatively large, are hard to detect and expensive to repair.

Oil losses by seepage from properly constructed steel and concrete tanks can be considered practically negligible. However, the volume of useful hydrocarbon products lost through evaporation in oil storage is a considerable item, the loss, of course, being greater in the lighter oils than in the heavy oils, although there is a continued stream of the light hydrocarbons escaping from its surface as long as it remains in storage, even with oil of low gravity. There are two general rules to follow to prevent evaporation losses: (1) keep the temperature of the oil in the tank as low as possible, and (2) make the contalners as tight as practicable.

The report was signed by F. M. Case, (C. & N. W.), chairman; C. R. Knowles, (I. C.); E. A. Demars, (O. S. L.); A. D. McCallum, (C. H. & D.).

Discussion

A number of members pointed out losses resulting from the extended storage of fuel. A. W. Harlow (Erie) described the emphasis placed upon economical firing of pumping plants by the officers of that road, as a result of which the jurisdiction of supervisors of locomotive operation has been extended over pumping plants insofar as this phase of the work of the pumper is concerned. The operators of pumping stations are required to fire a shovelful at a time.

Railway Fire Protection Equipment

By C. R. Knowles
Superintendent Water Service, Illinois Central

The five principal fire extinguishing agents in use on railroads are bicarbonate of soda, caustic soda and sulphuric acid, carbon-tetrachloride, dry sand and water.

Bicarbonate of soda is useful only in incipient fires and is of but little value as a fire extinguisher.

Chemical fire extinguishers using soda and acid are usually furnished in the 2½-gal. hand type and in the 40-gal. type mounted on wheels. The hand type is one of the best fire extinguishers known for small incipient fires. As many

of them are located at points where there is no other fire protection it is important that they be kept in perfect order at all times. They should be discharged, cleaned and recharged at least once each year, the date of recharging to be marked on the tag attached to the extinguisher. At least two extra charges should be on hand for each extinguisher.

The care of extinguishers should be assigned to some particular man at each point as a division of responsibility for their condition will lead to neglect. They should be inspected weekly; this inspection should include a careful examination of the nozzle, hose and hose connection and the renewal of defective parts as soon as discovered.

Carbon-tetrachloride is particularly effective on fires in hazardous liquids, other rapidly burning materials, electrical fires and other fires not readily extinguished by water. The extinguisher for using this liquid is usually of the one-quart pump type and, on account of the small size, is of value only in incipient and small fires. The freezing point of carbon-tetrachloride is 25 to 50 degrees below zero, therefore, it is very desirable where low temperatures prevail. These extinguishers should receive the same care as other chemical extinguishers and should be kept full of liquid at all times. A reserve supply of liquid for refilling should also be available.

Sand is useful chiefly in oil fires and should be contained in pails or properly constructed sand boxes with scoops for throwing. The sand should be clean and dry and the supply should be located near a doorway in order that it may be accessible.

Water is, of course, the principal agent used in fighting fire, all other agents being of value chiefly on incipient fires, or in chemical, oil and electrical fires which are usually limited in extent. Therefore, from whatever source water is obtained for fire purposes, the supply should be ample and constant. Second only to an ample supply of water is the importance of adequate facilities, properly constructed and so located as to permit fighting the fire with a minimum of delay.

The fire underwriters have laid down extensive rules and regulations governing the design, location, maintenance and operation of pumps used for fire purposes, which rules are well known. Unfortunately there are but few pumps used exclusively for fire protection on railroads, the average pump being designed and used primarily for general service pressure. Fire protection being incidental, therefore, it is impractical to apply these regulations to all pumps without impairing the service for which they are primarily designed. Where service pumps are also used for fire protection their operation should conform as closely as possible to the rules laid down for fire pumps.

Pipe lines serving fire hydrants and fire connections should be independent of general service where possible, but if a part of the general service system they should be so constructed and arranged that service connections can be cut off and full fire pressure maintained on hydrants and hose connections.

Fire hydrants should be of an accepted type offering the lowest resistance to the flow of water. Ground or outside hydrants should be of the two-way type and should be designed to drain automatically when the valve is closed, to prevent freezing. They should be painted white so they may be located readily at night. They should be inspected frequently to see that they are in proper condition and that they drain properly to prevent freezing. Under no circumstances should fire hydrants be used for other than fire purposes. Hydrant wrenches and spanner wrenches for tightening hose should be located conveniently and in sufficient number to provide at least one for each hydrant.

The number of water barrels and buckets recommended is as follows:

In passenger stations, three pails for buildings of ordinary size, increasing the number by one pail for about each 500 sq. ft. of floor space over the first 2,000 sq. ft.

In freight stations at least one barrel and two pails for buildings of ordinary size, increasing the number in larger buildings by one barrel and two pails for each additional 3,000 sq. ft. of floor space over the first 3,000 sq. ft. so as to make them readily accessible to all parts.

In combined passenger and freight stations, one barrel and two fire pails to be placed in the freight room, increasing the number in larger buildings as indicated for freight stations.

In shop buildings, one barrel and two pails to be distributed for about each 3,000 sq. ft. of floor space.

In warehouses, two pails for a floor space of 1,000 sq. ft. or less, increasing the number by one pail for each additional 500 sq. ft.

Barrels to have a capacity of not less than 50 gal.

When fire barrels and pails are located where there is a liability of the water being frozen in cold weather, it is recommended that calcium chloride or salt be placed in each to retard freezing. The density of the solution required will depend upon existing temperatures.

Fire hose is one of the most important fire-extinguishing agencies, and it should be of the best material and workmanship. It should always be in perfect working order and at all times properly cared for. Fire hose is subjected to a severe class of service, the importance of which makes it essential that the utmost care be given to the quality of the materials and the character of the workmanship employed in its manufacture. By purchasing only the best hose and giving it the small amount of attention suggested, the greatest practicable durability will be assured. Experience has shown that a good cotton rubber-lined hose, properly cared for, will frequently last 10 or 15 years

Discussion

C. W. Wright (L. I.) urged that every employee using any form of fire protection equipment be required to make a report to the proper officer immediately, in order to insure that this equipment is at all times ready for service. The question of the location of water barrels on high bridges was also discussed by G. W. Rear (S. P.) who stated that it had been found on that road that other than railway employees would not venture out to barrels placed on the end of caps on high structures to secure water with which to put out a small fire. For this reason it is the practice of this road to build platforms at the level of the track on which the barrels are placed.

Closing Business

At the closing session Thursday morning the following subjects were selected for consideration by committees during the next year: (1) Filling Bridges with Special Reference to Maintenance of Structures During Filling; (2) Standard Forms for Bridge Inspection; (3) Abuse of Treated Timbers; (4) Repair and Maintenance of Tank Hoops; (5) Maintenance and Repair of Freighthouse Floors; (6) Use of Electricity for Pumping Water; (7) Application of Paint for Spraying; (8) Maintenance of Timber Docks; (9) Reclamation of Bridge, Building and Water Service Materials.

The following officers were selected to serve for the ensuing year:

President, F. E. Weise, chief clerk to chief engineer, C. M. & St. P., Chicago; first vice-president, W. F. Strouse, Baltimore, Md.; second vice-president, C. R. Knowles, superintendent of water service, I. C., Chicago; third vice-president, Arthur Ridgway, assistant chief engineer, D. & R. G., Denver, Colo.; fourth vice-president, J. S. Robinson, division

engineer, C. & N. W., Chicago; secretary-treasurer, C. A. Lichty, inspector, purchasing department, C. & N. W., Chicago; members of executive committee: J. P. Wood, supervisor bridges and buildings, P. M., Saginaw, Mich.; A. B. McVay, supervisor bridges and buildings, L. & N., Evansville, Ind.; J. H. Johnston, superintendent bridges and buildings, G. T., Montreal, Que.; E. T. Howson, Western editor, *Railway Age*, Chicago; C. W. Wright, master carpenter, L. I., Jamaica, N. Y., and G. A. Manthey, assistant superintendent bridges and buildings, D. S. S. & A., Marquette, Mich.

Atlanta, Ga., was selected as the location for the next convention.

On Wednesday afternoon the members made an inspection of the Orange avenue freight terminal of the New York Central and of the ore handling docks of the Pennsylvania lines. Following the adjournment of the convention on Thursday noon, a party visited the plant of the Goodyear Tire & Rubber Company at Akron, Ohio. The annual dinner of the Bridge & Building and the Supply Men's associations was held at the Statler Hotel on Wednesday evening.

Supply Men's Exhibit

The Bridge and Building Supply Men's association held an exhibit in a room adjacent to the convention hall, in which 34 firms presented literature, photographs and models of their equipment. The officers of the association for the past year were: President, P. J. Jacobs, H. W. Johns-Manville Company, Chicago; vice-president, Tom Lehon, the Lehon Company, Chicago; treasurer, C. E. Ward, United States Wind Engine & Pump Company, Batavia, Ill.; secretary, M. J. Trees, Chicago Bridge & Iron Works, Chicago; members executive committee, C. L. Cockrell, Philip Carey Company, Chicago; E. T. Howson, *Railway Age*, Chicago; G. R. McVay, The Barrett Company, Chicago; W. O. Washburn, American Hoist & Derrick Company, St. Paul, Minn.; A. J. Filkins, Paul Dickinson Company, Inc., Chicago.

The following is a list of the firms represented, with the nature of their exhibits and the names of their representatives:

American Hoist & Derrick Company, St. Paul, Minn.; W. O. Washburn and F. J. Johnson.

American Tar Products Company, Chicago; P. J. Griffiths and S. H. Fields.

American Valve and Meter Company, Cincinnati, Ohio; Fenner non-freezable drop spout, Poage style H water column; J. T. McGarry and D. J. Higgins.

Barrett Company, New York City; Holt vent and leader connection; G. R. McVay and A. E. Thompson.

Bird & Co., Chicago; Mr. Caton and Mr. Inwood.

Buda Company, Chicago; Bridge gang motor car; H. C. Beebe and G. E. Bryar.

Chicago Bridge and Iron Works, Chicago; Illuminated photographs; H. C. Brown and F. L. Cook.

Detroit Graphite Company, Chicago; L. D. Mitchell, J. J. Hogan, W. B. Waugh and W. E. Bates.

Devilbiss Manufacturing Company, Toledo, Ohio; W. F. Gradolph and C. D. Ward.

Paul Dickinson Company, Chicago; Arthur J. Filkins.

Dixon (Joseph) Crucible Company, Jersey City, N. J.; Dixon graphite paint; H. A. Nealley and N. C. Cameron.

Duff Manufacturing Company, Pittsburgh, Pa.; E. A. Johnson.

Fairbanks, Morse & Co., Chicago; catalogues; F. M. Condit, H. E. Vogel, C. B. Skelton, B. S. Spaulding, A. A. Taylor, H. E. Vergasen, Stephen Smith, J. C. Flanagan, G. Howard, G. Lang, F. M. Gardner and G. J. Akers.

Heath and Milligan Manufacturing Co., Chicago; G. W. Lindholm and W. H. Pratt.

High Grade Manufacturing Co., Cleveland, Ohio; Gilso cement; S. A. Baber and J. N. Kina.

Ingersoll, Rand & Co., New York City; Pneumatic riveter, drill and bridge repair outfit; J. N. Thorpe, Jr., and George C. Williams.

H. W. Johns-Manville Company, Chicago; Asbestos roofing and pipe covering; C. E. Murphy, W. L. Laurence, J. E. Meek and H. B. Sewell.

The Lehon Company, Chicago; Mule-Hide roofing and shingles; Tom Lehon, D. B. Wright and Chas. V. Eades.

Luther Grinder Manufacturing Company, Milwaukee, Wis.; Tool grinders; C. R. Pfeifer and Bert St. Germain.

Massey Concrete Products Company, Chicago; G. H. Redding and A. E. Humphrey.

Mudge & Co., Chicago; Jean K. Vanatta.

National Water Main Cleaning Co., New York City; Burt B. Hodgman.

Nichols (George P.) & Bros., Chicago; Geo. P. Nichols.

Patent Vulcanite Roofing Company, Chicago; Asphalt shingles and roofing, A. J. Van Page.

Patterson & Sargent Company, Cleveland, Ohio; G. W. Anderson, J. K. Patterson and W. H. McBride.

Philip Carey Company, Chicago; Roof coating and shingles; C. L. Cockrill and F. R. Schueler.

Railway Age, New York City; E. T. Howson, H. H. Marsh and B. J. Wilson.

Railway Review, Chicago; Harold A. Smith and Charles L. Bates.

Sherwin-Williams Company, Cleveland, Ohio; George G. Mowat and E. W. Lutes.

T. W. Snow Construction Company, Chicago; T. W. Snow.

Standard Asphalt Company, Chicago; R. F. Trumbull and E. L. Hedrick.

U. S. Wind Engine and Pump Co., Batavia, Ill.; C. E. Ward.

Upson-Walton Co., Cleveland, Ohio; H. B. McCreary and E. H. Porter.

Volkhardt Company, Inc., Stapleton, N. Y.; Yard and cinder pit hydrant, W. Volkhardt.

The supply men elected the following officers to serve for the ensuing year:

President, Tom Lehon, the Lehon Company, Chicago; vice-president, C. E. Ward, United States Wind Engine & Pump Company, Batavia, Ill.; treasurer, M. J. Trees, Chicago Bridge & Iron Works; secretary-treasurer, G. R. McVay, the Barrett Company, Chicago; members executive committee, E. T. Howson, *Railway Age*, Chicago; Charles Thulin, G. W. Anderson, Patterson & Sargent Company, Cleveland, O.; D. J. Higgins, American Valve & Meter Company, Cincinnati, O.; F. M. Condit, Fairbanks, Morse & Company, Chicago.

September Earnings Show Some Surplus

Director General Hines has announced that detailed statistics which will shortly become available of the operating results for the month of September of practically all Class I railroads and large terminal companies in federal operation will indicate that, after including in September the estimated back pay for shopmen for the five months, May to September, inclusive, the net operating income for the month of September, 1919, was about $78,000,000. On this basis the net gain to the government, for the month of September, after allowing for one-twelfth of the annual rental due the railroad companies whose railroads are covered by these statistics, is $3,000,000, but if there be charged against September only its own part of the shopmen's back pay, the net gain to the government for the month of September is about $19,000,000. If the results of operation for the five months from May to September should be restated so as to apply to each of these months its approximate proportion of this increase in pay for the shopmen, the net gain or net loss for the months in question would be approximately as follows:

	Net Gain	Net Loss
May	.....	$37,642,128
June	.....	26,031,860
July	.....	2,031,547
August	$12,397,112	.....
September	19,000,000	.....

The net gain or loss for these same properties by months of the present calendar year on the basis of the amounts as they stand, and therefore including in the figures for September the increased wages for shopmen for the months from May to September, inclusive, is as follows:

Month	Net gain or loss to the Government after allowing for one-twelfth of the annual rental	
	Net gain	Net loss
January	.....	57,782,557
February	.....	65,430,850
March	.....	64,881,856
April	.....	48,757,056
May	.....	33,642,128
June	.....	22,031,860
July	$1,968,453	.....
August	16,397,112	.....
September (Estimated)	3,000,000	.....
Net loss for nine months		$371,160,742

Principal Provisions of the Esch Railroad Bill

Text of the More Important Sections of the Bill as Passed by the House on November 17

WASHINGTON, D. C.

FOLLOWING IS THE COMPLETE TEXT of some of the more important sections of the Esch bill as it was passed by the House and particularly those which were radically changed, by amendments adopted by the House, from the form in which the bill was reported by the committee on interstate commerce, of which a synopsis was given in Chairman Esch's report published in our issue of October 10, (printed November 26).

Termination of Federal Control

Sec. 200 (a) Federal control shall terminate (1) at the end of the last day of the month in which this Act is passed, if this Act is passed on or before the fifteenth day of the month, or (2) at the end of the last day of the month following the month in which this Act is passed, if this Act is passed after the fifteenth day of the month; and the President shall then relinquish possession and control of all railroads and systems of transportation then under Federal control and cease the use and operation thereof.

(b) Thereafter the President shall not have or exercise any of the powers conferred upon him by the Federal Control Act relating—

(1) To the use or operation of railroads or systems of transportation;

(2) To the control or supervision of the carriers owning or operating them, or of the business or affairs of such carriers;

(3) To their rates, fares, charges, classifications, regulations, or practices;

(4) To the purchase, construction or other acquisition of boats, barges, tugs and other transportation facilities on the inland, canal, or coastwise waterways; or (except in pursuance of contracts or agreements entered into before the termination of Federal control) of terminals, motive power, cars, or equipment, on or in connection with any railroad or system of transportation;

(5) To the utilization or operation of canals;

(6) To the purchase of securities of carriers, except in pursuance of contracts or agreements entered into before the termination of Federal control; or

(7) To the use for any of the purposes above stated (except in pursuance of contracts or agreements entered into before the termination of Federal control, and except as provided in section 202) of the revolving fund created by such Act, or of any of the additions thereto made under such Act, or by the Act entitled "An Act to supply a deficiency in the appropriation for carrying out the Act entitled 'An Act to provide for the operation of transportation systems while under Federal control, for the just compensation of their owners, and for other purposes,' approved March 21, 1918," approved June 30, 1919.

(c) Nothing in this Act shall be construed as affecting or limiting the power of the President in time of war (under section 1 of the Act entitled "An Act making appropriations for the support of the army for the fiscal year ending June 30, 1917, and for other purposes," approved August 29, 1916) to take possession and assume control of any system of transportation and utilize the same.

Government-Owned Boats on Inland Waterways

Sec. 201. On the termination of Federal control, as provided in section 200, all boats, barges, tugs and other transportation facilities, on the inland, canal and coastwise waterways (hereinafter in this section called "transportation facilities") acquired by the United States in pursuance of the fourth paragraph of section 6 of the Federal Control Act (except the transportation facilities constituting parts of railroads or transportation systems over which Federal control was assumed) are transferred to the Secretary of War, who, through the Chief of Engineers, shall utilize or operate such transportation facilities, and assume and carry out all contracts and agreements in relation thereto entered into by or through the President in pursuance of such paragraph prior to the time above fixed for such transfer. All payments under the terms of such contracts shall be made out of moneys available under the provisions of this Act for adjusting, settling, liquidating and winding up matters arising out of or incident to Federal control. Moneys required for such payments shall, from time to time, be transferred to the Secretary of War as required for payment under the terms of such contracts. All other payments after such transfer in connection with the construction, utilization and operation of any such transportation facilities, whether completed or under construction, shall be made by the Secretary of War out of funds now or hereafter made available for that purpose.

The utilization and operation of such transportation facilities shall be subject to the provisions of the Commerce Act as amended by this Act or by subsequent legislation, and to the provisions of the "Shipping Act, 1916," as now or hereafter amended, in the same manner and to the same extent as if such transportation facilities were privately owned and operated; and all such vessels while operated and employed solely as merchant vessels shall be subject to all other laws, regulations and liabilities governing merchant vessels, whether the United States is interested therein as owner, in whole or in part, or holds any mortgage, lien, or interest therein. For the performance of the duties imposed by this section the Secretary of War is authorized to appoint or employ such number of experts, clerks and other employees as may be necessary for service in the District of Columbia or elsewhere, and as may be provided for by Congress.

Settlement of Matters Arising Out of Federal Control

Sec. 202. The President shall, as soon as practicable after the termination of Federal control, adjust, settle, liquidate and wind up all matters, including compensation, and all questions and disputes of whatsoever nature, arising out of or incident to Federal control. For these purposes and for the purpose of making the payments specified in section 201, all unexpended balances in the revolving fund created by the Federal Control Act or of the moneys appropriated by the Act entitled "An Act to supply a deficiency in the appropriation for carrying out the Act entitled 'An Act to provide for the operation of transportation systems while under Federal control, for the just compensation of their owners, and for other purposes,' approved March 21, 1918," approved June 30, 1919, are hereby reappropriated and made available until expended; and all moneys derived from the operation of the carriers or otherwise arising out of Federal control, and all moneys that have been or may be received in payment of the indebtedness of any carrier to the United States arising out of Federal control, shall be and remain available until expended for the aforesaid purposes.

Causes of Action Arising Out of Federal Control

Sec. 204. Actions at law, suits in equity and proceedings in admiralty, based on causes of action arising out of the possession, use, or operation by the President of the railroad or system of transportation of any carrier (under the provisions of the Federal Control Act, or of such Act of August 29, 1916) of such character as prior to Federal control could have been brought against such carrier, may, after the termination of Federal control, be brought against such agent or agency as the President designates to adjust, settle, liquidate and wind up matters arising out of Federal control. Such actions, suits or proceedings may, within the periods of limitation now prescribed by State or Federal statutes but not later than two years from the date of the passage of this Act, be brought in any court which but for Federal control would have had jurisdiction of the cause of action had it arisen against such carrier.

Process may be served upon any agent or officer of the carrier operating such railroad or system of transportation, if such agent or officer is authorized by law to be served with process in proceedings brought against such carrier and if a contract has been made with such carrier by or through the President for the conduct of litigation arising out of operation during Federal control. If no such contract has been made process may be served upon such agents or officers as may be designated by or through the President. The agent designated by the President to adjust, settle, liquidate and wind up matters arising out of Federal control, shall cause to be filed, upon the termination of Federal control, in the office of the clerk of each District Court of the United States, a statement naming all carriers with whom he has contracted for the conduct of litigation arising out of operation during Federal control, and a like statement designating the agents or officers upon whom process may be served in actions, suits and proceedings arising in respect to railroads or systems of transportation with the owner of which no such contract has been made; and such statements shall be supplemented from time to time, if additional contracts are made or other agents appointed.

Actions, suits or proceedings of the character above described pending at the termination of Federal control shall not abate by reason of such termination, but may be prosecuted to final judgment, substituting the agent or agency designated by the President to adjust, settle, liquidate and wind up matters arising out of Federal control.

That the period of Federal control shall not be computed as a part of the periods of limitation in actions against carriers or in claims for reparation to the commission for causes of action arising prior to Federal control.

Refunding of Carriers' Indebtedness to United States

Sec. 205 As soon as practicable after the termination of Federal control the President shall ascertain the amount of the indebtedness of each carrier to the United States, incurred for additions and betterments made during Federal control and properly chargeable to capital account, which may exist at the termination of Federal control; and (2) the amount of the indebtedness of the United States to such carrier arising out of Federal control. The amounts so ascertained shall be set off against each other to the extent permitted under any contract now or hereafter made between such carrier and the United States in respect to the matters of Federal control, or, where no such contract exists, to the extent permitted under paragraph (b) of section 7 of the standard contract between the United States and the carriers relative to deductions from compensation.

(b) Any remaining indebtedness of the carrier to the United States in respect to such additions and betterments shall, at the request of the carrier, be funded into not exceeding ten equal parts, one of such parts to be payable annually, beginning at the expiration of five years after the termination of Federal control, with interest at the rate of 6 per centum per annum from the date of funding, payable semi-annually, subject to the right of such carrier to pay, on any interest-payment day, the whole or any part of any such installment before it is due. Any carrier obtaining the funding of such indebtedness as aforesaid shall give, in the discretion of the President, such security, in such form and upon such terms, as he may prescribe

(c) Any other indebtedness of any such carrier to the United States which may exist after the settlement of accounts between the United States and the carrier shall be evidenced by notes payable on demand, with interest at the rate of 6 per centum per annum, and secured by such collateral security as the President may deem it advisable to require.

(d) With respect to any bonds, notes or other securities acquired under

the provisions of this section or under the provisions of the Federal Control Act, the President shall have the right to make such arrangements for extension of the time of payment or for the exchange of any of them for other securities, or partly for cash and partly for securities, as may be provided for in any agreement entered into by him or as may in his judgment seem desirable.

Existing Rates to Continue in Effect

Sec. 206. All rates, fares and charges, all divisions of joint rates, and all classifications, regulations and practices in anywise changing, affecting or determining any part or the aggregate of rates, fares or charges, or the value of the service rendered, which immediately preceding the termination of Federal control are in effect on the lines of carriers subject to the Commerce Act, shall continue in force and effect until thereafter changed by State or Federal authorities, respectively, or pursuant to authority of law; but this shall not be construed as affecting the rights of any party to a proceeding, involving rates, fares, charges, classifications, regulations or practices, which has been or may be instituted under the Commerce Act or other law.

Guaranty to Railroads After Termination of Federal Control

Sec. 207. (a) When used in this section—

The term "carrier" means a carrier by railroad or partly by railroad and partly by water, (1) whose railroad or system of transpotation is under Federal control at the time Federal control terminates, or which has heretofore engaged as a common carrier in general transportation and competed for traffic with a railroad or railroads of which the President has taken and retained possession, use and control (excepting, however, from such railroads not under Federal control any street or interurban electric railway which has as its principal source of operating revenue urban, suburban, or interurban passenger traffic or sale of power, heat and light, or both) and (2) which, within sixty days after the termination of Federal control as provided in section 200, has filed with the Commission schedules embodying general increases in its rates, fares and charges;

The term "guaranty period" means the first six months after the termination of Federal control; and

The term "test period" means the three years ending June 30, 1917.

(b) The United States hereby guarantees to each carrier that its railway operating income for the guaranty period as a whole shall not be less than the average of its railway operating income for the three corresponding periods of six months each during the test period. If during such corresponding periods in the test period, averaged together, the carrier had no railway operating income, the guaranty shall be the amount by which any deficit in railway operating income for the guaranty period as a whole exceeds the deficit for the three corresponding periods during the test period, averaged together.

(c) For the purposes of this section the railway operating income for the periods during the test period corresponding to the guaranty period shall be computed in the manner provided for in section 1 of the Federal Control Act.

(d) In computing railway operating income for the guaranty period for the purposes of this section—

(1) Debits and credits arising from the accounts, called in the monthly reports to the Commission equipment rents and joint facility rents, shall be included, but debits and credits arising from the operation of such street electric passenger railways, including railways commonly called interurbans, as are not under Federal control at the time of termination thereof, shall be excluded;

(2) Proper adjustments shall be made (a) in case any lines which were, during any portion of the period of Federal control, a part of the railroad or system of transportation of the carrier, and whose railway operating income was included in such income of the carrier for the test period, do not continue to be a part of such railroad or system of transportation during the entire guaranty period, and (b) in case of any lines acquired by, leased to, or consolidated with, the railroad or system of transportation of the carrier at any time since the end of the test period and prior to the expiration of the guaranty period, for which separate operating returns to the Commission are not made in respect to the entire portion of the guaranty period;

(3) There shall not be included in operating expenses, for maintenance of way and structures, or for maintenance of equipment, more than an amount fixed by the Commission. In fixing such amount the Commission shall so far as practicable apply the rule set forth in the proviso in paragraph (a) of section 5 of the "standard contract" between the United States and the carriers (whether or not such contract has been entered into with the carrier whose railway operating income is being computed), except that instead of taking the whole of the test period for the purposes of comparison there shall be taken the periods during the test period corresponding to the guaranty period; and

(4) The Commission shall require the restatement of the operating expenses (other than for maintenance of way and structures, or maintenance of equipment) for the guaranty period, to the extent necessary to correct any abnormal charge to such expenses for such period.

(e) The Commission shall, as soon as practicable after the expiration of the guaranty period, certify to the Secretary of the Treasury the amount of the railway operating income of the several carriers during such period, and the several amounts necessary to make good the guaranty to each. The Secretary of the Treasury is hereby authorized and directed thereupon to draw warrants in favor of each such carrier upon the Treasury of the United States, which shall be paid out of any moneys in the Treasury not otherwise appropriated, for the amount shown in such certificate as necessary to make good the guaranty.

(f) Upon appplication of any carrier to the Commission, asking that during the guaranty period there may be advanced to it from time to time such sums, not in excess of the estimated amount necessary to make good the guaranty, as are necessary to enable it to meet its fixed charges and operating expenses, the Commission may certify to the Secretary of the Treasury the amount of, and times at which, such advances, if any, shall be made. The Secretary of the Treasury, on receipt of such certificate, is authorized and directed to make the advances in the amounts and at the times specified in the certificate, upon the execution by the carrier of a contract, secured in such manner as the Secretary may determine, that upon final determination of the amount of the guaranty provided for by this section such carrier will repay to the United States any amounts which it has received from such advances in excess of the guaranty with interest at the rate of 6 per centum per annum from the time such excess was paid. If any such application is made before the carrier has filed with the Commission schedules embodying general increases in its rates, fares and charges, no advances shall be made under this paragraph unless such carrier enters into a contract, secured in such manner as the Secretary of the Treasury may determine, that if it fails to file such schedules within sixty days after the termination of Federal control it will repay to the United States the amount of such advances, with interest at the rate of 6 per centum per annum. No advances shall be made to any carrier after the expiration of sixty days after the termination of Federal control unless it has previously filed such schedules with the Commission.

(g) The contract of June 21, 1918, between the American Railway Express Company and the Director General of Railroads as amended and continued by agreement dated November 21, 1919, shall remain in full force and effect during the guaranty period so far as the same constitutes a guaranty on the part of the United States to the American Railway Express Company against an operating deficit: *Provided*, That such express company shall within sixty days after the termination of Federal control file with the Commission schedules embodying general increases in its rates, fares and charges.

The Commission shall, as soon as practicable after the expiration of the guaranty period, certify to the Secretary of the Treasury the amount of the operating deficit, if any, of the American Railway Express Company during such period and the amount necessary to make good such guaranty. The Secretary of the Treasury is hereby authorized and directed thereupon to draw warrants in favor of such express company upon the Treasury of the United States, which shall be paid out of any moneys in the Treasury not otherwise appropriated, for the amount shown in such certificate as necessary to make good the guaranty.

New Loans to Railroads

Sec. 208. (a) For the purpose of enabling carriers by railroad subject to the Commerce Act properly to serve the public during the transition period immediately following the termination of Federal control, any such carrier may, at any time after the passage of this Act and before the expiration of two years after the termination of Federal control, make application to the Commission for a loan from the United States, setting forth the amount of the loan and the term for which it is desired, the purpose of the loan and the uses to which it will be applied, the present and prospective ability of the applicant to repay the loan and meet the requirements of its obligations in that regard, the character and value of the security offered, and the extent to which the public convenience and necessity will be served. The application shall be accompanied by statements showing such facts and details as the Commission may require with respect to the physical situation, ownership, capitalization, indebtedness, contract obligations, operation and earning power of the applicant, together with such other facts relating to the propriety and expediency of granting the loan applied for and the ability of the applicant to make good the obligation, as the Commission may deem pertinent to the inquiry.

(b) If the Commission, after such hearing and investigation, with or without notice, as it may direct, finds that the making, in whole or in part, of the proposed loan by the United States is necessary to enable the applicant properly to meet the transportation needs of the people, and that the prospective earning power of the applicant and the character and value of the security offered are such as to furnish reasonable assurance of the applicant's ability to repay the loan within the time fixed therefor, the Commission may certify to the Secretary of the Treasury its findings of fact and its recommendations as to: the amount of the loan which is to be made; the time, not exceeding five years from the making thereof, within which it is to be repaid; the character of the security which is to be offered therefor; and the terms and conditions of the loan.

(c) Upon receipt of such certificate from the Commission, the Secretary of the Treasury, at any time before the expiration of 26 months after the termination of Federal control, is authorized to make a loan, not exceeding the maximum amount recommended in such certificate, out of any moneys in the revolving fund provided for in this section. All such loans shall bear interest at the rate of 6 per centum per annum, payable semi-annually to the Secretary of the Treasury, and to be placed to the credit of the revolving fund provided for in this section. The time, not exceeding five years from the making thereof, within which such loan is to be repaid, the security which is to be taken therefor, which shall be adequate to secure the loan, the terms and conditions of the loan, and the form of the obligation to be entered into, shall be prescribed by the Secretary of the Treasury.

(d) Loans so made shall be preferred liens upon the income and property of the applicant in the same manner and to the same extent that certificates issued by receivers appointed by United States courts are preferred liens upon the income and property that is being administered by the receiver.

(e) The Commission or the Secretary of the Treasury may call upon the Federal Reserve Board for advice and assistance with respect to any such application or loan.

(f) There is hereby appropriated out of any moneys in the Treasury not otherwise appropriated the sum of $250,000,000, which shall be used as a revolving fund for the purpose of making the loans provided for in this section.

Sec. 209. Any carrier securing a loan under the provisions of section 208, or funding under section 205 its indebtedness to the United States, shall not be subject, as regards the evidences of indebtedness given to the United States under either of such sections, to the provisions of section 20a of the Commerce Act added to such Act by section 437 of this Act.

Execution of Powers of President

Sec. 210. All powers and duties conferred or imposed upon the President by the preceding sections of this Act may be executed by him through such agency or agencies as he may determine.

Investigation of Needs of Water Transportation

Sec. 211. It shall be the duty of the Secretary of War, through the Chief of Engineers, with the object of promoting, encouraging, and developing inland waterway transportation facilities in connection with the commerce of the United States, to investigate the appropriate types of boats suitable for different classes of such waterways; to investigate the subject of water terminals, both for inland waterway traffic and for through traffic by water and rail, including the necessary docks, warehouses, apparatus, equipment, and appliances in connection therewith, and also railroad spurs and switches connecting with such terminals, with a view to devising the types most appropriate for different localities, and for the more expeditious and economical transfer or interchange of passengers or property between carriers by water and carriers by rail; to advise with communities, cities, and towns regarding the appropriate location of such terminals, and to cooperate with them in the preparation of plans for suitable terminal facilities; to investigate the existing status of water transportation upon the different inland waterways of the country, with a view to determining whether such waterways are being utilized to the extent of their capacity, and to what extent they are meeting the demands of traffic, and whether the water carriers utilizing such waterways are interchanging traffic with the railroads; and to investigate any other matter that may tend to promote and encourage inland water transportation. It shall also be the province and duty of the Chief of Engineers, under the direction of the Secretary of War, to compile, publish, and supply, from time to time, such useful statistics, data, and information concerning transportation on inland waterways as may be of value to the commercial interests of the country.

The words "inland waterways" used in this section shall be construed to include the Great Lakes.

Disputes Between Carriers and Their Employees

Sec. 300. That it shall be the duty of all carriers subject to this Act and their agents, officers, and employees to exert every reasonable effort and adopt every available and reasonable means to avoid interruption to the operation of a carrier subject to this Act growing out of controversy or dispute over any question of wages, working conditions, or discipline of employees.

Questions affecting wages, working conditions, or discipline or employees on a carrier's line shall be considered, and, if possible, adjusted in conference between representatives of the class or classes of employees affected, or to be affected thereby, and representatives of the carrier or carriers designated or authorized by it to so act. If any such question can not be adjusted in such conferences it shall be referred to the appropriate board of adjustment, hereinafter provided for. If such question can not be decided or adjusted by such board it shall be referred to the Commission on Labor Disputes, herinafter provided for.

Boards are hereby created and established to be known as Railway Board of Adjustment Number One, Railway Board of Adjustment Number Two, and Railway Board of Adjustment Number Three, for the purpose of handling and adjusting disputes that have not otherwise been disposed of, affecting the question of wages, working conditions, discipline, and personal grievances of employees of carriers subject to this Act.

Railway Board of Adjustment Number One, represented by the Brotherhood of Locomotive Engineers, the Brotherhood of Locomotive Firemen and Enginemen, the Order of Railway Conductors, and the Brotherhood of Railroad Trainmen.

Railway Board of Adjustment Number Two, represented by the International Association of Machinists; the International Brotherhood of Boiler Makers, Iron-Ship Builders and Helpers of America; the International Brotherhood of Blacksmiths and Helpers; the Brotherhood of Railway Carmen of America; the Amalgamated Sheet Metal Workers' Alliance, and the International Brotherhood of Electrical Workers.

Railway Board of Adjustment Number Three, represented by the Order of Railway Telegraphers, Switchmen's Union of North America, Brotherhood of Railway Clerks, and the United Brotherhood of Maintenance of Way Employees and Railroad Shop Laborers.

All controversies growing out of questions of wages, the interpretation or application of the provisions of wage schedules, or agreements which are not promptly adjusted by the officials, and the employees on any of the carrier lines subject to the provisions of this Act shall be disposed of in the following manner:

There shall be created within thirty days after the passage of this Act a board to be known as Railway Board of Adjustment Number One, to consist of eight members, four to be selected and compensated by the carriers subject to the provisions of this Act, and one each by the chief executive officer of each of the four organizations of employees hereinbefore named, and to be compensated by such organization.

There shall be created within thirty days after the passage of this Act a board to be known as Railway Board of Adjustment Number Two, to consist of twelve members, six to be selected and compensated by the carriers subject to the provisions of this Act, and one each by the chief executive officer of each of the six organizations of employees hereinbefore named, and to be compensated by such organization.

There shall be created within thirty days after the passage of this Act a board to be known as Railway Board of Adjustment Number Three, to consist of eight members, four to be selected and compensated by the carriers subject to the provisions of this Act, and one each by the chief executive officer of each of the four organizations of employees hereinbefore named, and to be compensated by such organization.

The aforesaid Railway Boards of Adjustment shall meet in the city of Washington within ten days after the selection of their members, and each elect a chairman and vice chairman, who shall be members of the board, and each chairman or vice chairman shall preside at all meetings of their respective boards, and shall be required to vote upon the adoption of all decisions of the board of which they are members.

The boards shall meet regularly at stated times each month and continue in session until all matters before them are considered.

Unless otherwise mutually agreed, all meetings of the boards shall be held in the city of Washington: *Provided,* That each board shall have authority to empower two or more of its members to conduct hearings and pass upon controversies, when properly submitted, at any place designated by the board: *Provided further,* That such subdivision of the board will not be authorized to make final decision. All decisions shall be made and approved by the entire board as hereinbefore provided.

Should a vacancy occur in any board for any cause, such vacancy shall be immediately filled by the same appointive authority which made the original selection.

All authority invested in the committee commonly known as the Commission of Eight to adjust disputes arising out of the application of the so-called eight-hour law is hereby transferred to Railway Board of Adjustment Number One, in the same manner as has heretofore been done by the Commission of Eight. All decisions of a general character heretofore made by the so-called Commission of Eight or by the United States Railroad Administration, affecting the questions of wages, hours of service or conditions of employment, are hereby confirmed and shall apply to all carriers subject to this Act, unless exempted in such eight-hour law. Decisions which have been rendered by the so-called Commission of Eight or the United States Railroad Administration, and which apply to individual carriers subject to the provisions of this Act, shall remain in effect until superseded by mutual agreement between the carrier and the employees, or by the decision of Railway Board of Adjustment Number One, or the Commission on Labor Disputes made in accordance with the provisions of this Act.

All decisions of a general character heretofore made by the United States Railroad Administration affecting the questions of wages, hours of service, or conditions of employment, are hereby confirmed and shall apply to all carrier lines subject to this Act. Decisions which have been rendered by the United States Railroad Administration, and which apply to the individual carriers subject to the provisions of this Act, shall remain in effect until superseded by mutual agreement between the carrier and the employees or by decision of Railway Board of Adjustment Number Two, or Railway Board of Adjustment Number Three, or the proper Commission on Labor Disputes made in accordance with the provisions of this Act.

The respective railway boards of adjustment shall render decisions on all matters in dispute and as provided herein and when properly submitted to the boards.

Questions of wages, hours of service, and conditions of employment, including controversies arising from interpretation of wage agreements, shall be decided by the railway boards of adjustment, when properly presented to them.

Wages, hours of service and conditions of employment, when fixed by the boards or commissions on labor disputes, shall be incorporated in existing agreements on the several carrier lines subject to the provisions of this Act, and should differences arise between the officials and the employees of any of the carriers subject to this Act, as to such incorporation, intent, or application, such questions of difference shall be decided by the respective railway boards of adjustment when properly presented.

Personal grievances or controversies arising under interpretation of wage agreements and all other disputes arising between officials of any carrier subject to this Act and its employees will be handled in their usual manner by general committees of their employees up to and including the chief operating officer of the carrier (or some one officially designated by him), when, if an agreement is not reached, the chairman of the general committee of employees may refer the matter to the chief executive officer of the organization concerned; and if the contention of the employees' committee is approved by such executive officer of the organization, then the chief operating officials of the carrier and the chief executive officer of the organization concerned shall refer the matter, with all supporting papers, to the proper Railway Board of Adjustment, which board shall promptly hear and decide the case, giving due notice to the chief operating officer of the carrier interested and the chief executive officer of the organization concerned of the time set for hearing.

No matter will be considered by the respective Railway Boards of Adjustment unless officially referred to them in the manner herein prescribed.

In hearings before the respective Railway Boards of Adjustment, in matters properly submitted for their consideration, the carrier shall be represented by such person or persons as may be designated by the chief operating officer, and the employees shall be presented by such person or persons as may be designated by the chief executative officer of the organization concerned.

All clerical and office expenses shall be paid by the United States Government. The carrier directly concerned and the organization involved in the hearing will, respectively, assume any expense incurred in presenting a case.

In each case an effort should be made to present a joint concrete statement of facts as to any controversy, but the respective boards are fully authorized to require information in addition to the concrete statement of facts, and may call upon the chief operating officer of the carrier or the chief executive officer of the organization concerned for additional evidence, either oral or written.

All decisions of the respective Railway Boards of Adjustment shall be approved by a majority vote of all members of such board.

After a matter has been considered by a board and in the event a majority vote can not be obtained, then any four members of Railway Board of Adjustment Number One, or any six members of Railway Board of Adjustment Number Two, or any four members of Railway Board of Adjustment Number Three, depending upon the board considering the matter, may elect to refer the matter upon which no decision has been reached to the proper Commission on Labor Disputes for a final decision.

Each Railway Board of Adjustment shall keep a complete and accurate record of all matters submitted for its consideration and of all decisions made by the board.

Each Railway Board of Adjustment shall file a report of all cases decided, including the decision, with the Interstate Commerce Commission,

with the chief operating officer of the carrier affected, and with the chief executive officers of the organizations concerned.

Sec. 301. Within thirty days from the passage of this Act there shall be created and established three commissions, which shall be known and designated as Commission on Labor Disputes Number One, Commission on Labor Disputes Number Two, and Commission on Labor Disputes Number Three, in the following manner:

Commission on Labor Disputes Number One shall consist of eight members, four of whom shall be selected by the carriers subject to the provisions of this Act, and four who shall be the chief executive officers of the organizations of employees, or some person designated by them, hereinbefore mentioned in connection with the creation of Railway Board of Adjustment Number One.

Commission on Labor Disputes Number Two shall consist of twelve members, six of whom shall be selected by the carriers subject to the provisions of this Act, and six who shall be the chief executive officers of the organizations of employees, or some person designated by them, hereinbefore mentioned in connection with the creation of Railway Board of Adjustment Number Two.

Commission on Labor Disputes Number Three shall consist of eight members, four of whom shall be selected by the carrier subject to the provisions of this Act, and four who shall be the chief executive officers of the organizations of employees, or some person designated by them, hereinbefore mentioned in connection with the creation of Railway Board of Adjustment Number Three.

It shall be unlawful for any member of a Railway Board of Adjustment or any member of a Commission on Labor Disputes to be a member at the same time of any other board of commission herein provided for; nor shall he act as a member of any Commission on Labor Disputes in any case in which he took part during its presentation and consideration before any Railway Board of Adjustment herein provided for.

Any controversy growing out of questions of wages, interpretation or application of the provisions of wage schedules or agreements, discipline, or personal grievances of the employees, arising on any carrier line subject to this Act, on which no agreement has been reached by Railway Board of Adjustment Number One, or Railway Board of Adjustment Number Two, or Railway Board of Adjustment Number Three, may be referred to the Commission on Labor Disputes Number One, or Commission on Labor Disputes Number Two, or Commission on Labor Disputes Number Three, respectively for final action.

The Commission on Labor Disputes shall meet in the city of Washington within ten days after the selection of their members and elect a chairman and vice chairman, who shall be members of the commission. The chairman or vice chairman will preside at all meetings of the commission, and both shall be required to vote upon the adoption of all decisions of the commission.

The commissions shall meet at such time as is deemed necessary and continue in session until matters referred to them are disposed of.

Unless otherwise mutually agreed, all meetings of the commissions shall be held in the city of Washington: *Provided,* That the commissions shall have authority to conduct hearings and pass upon controversies, when properly submitted, at any place designated by the commissions.

Should a vacancy occur in either of the commissions from any cause, such vacancy shall immediately be filled by the same appointive authority which made the original selection.

A Commission on Labor Disputes shall render decisions on all matters in dispute as provided herein when properly submitted to such commission.

No matter will be considered by a commission on Labor Disputes unless officially referred to it in the manner herein prescribed.

In hearings before a commission, in matters properly submitted for its consideration, the carrier shall be represented by such person or persons as may be designated by the chief operating officer, and the employee shall be represented by such person or persons as may be designated by the chief executive officer of the organization concerned.

The clerical and office expenses of the commissions will be paid by the United States Government. The carrier directly concerned and the organization involved in the hearing will, respectively, assume any expenses incurred in presenting a case.

Each commission on labor disputes shall keep a complete and correct record of all matters submitted for its consideration and all decisions made by the commission.

A commission will have authority to hear and decide only such cases as are properly referred to it by the railway boards of adjustment. All decisions of a commission on labor disputes shall be approved by a majority vote of all members of the commission.

A report of all cases decided, including the decisions, shall be filed with the Interstate Commerce Commission, with the chief officer of the carrier affected, and with the chief executive officers of the organizations concerned.

Additional boards of adjustment and commissions on labor disputes may be organized from time to time to cover other employees or classes of employees under the provisions of this Act.

For the purpose of making this section effective the members of railway boards of adjustment or commissions on labor disputes, or either of them, shall have the power to administer oaths and affirmations, sign subpœnas, require the attendance and testimony of witnesses and the production of books, papers, contracts, agreements, and documents material to a just determination of any matter under investigation, and may invoke the aid of the United States courts to compel witnesses to attend and testify and to produce such books, papers, contracts, agreements, and documents to the same extent and under the same conditions and penalties as are provided for in the Act to regulate commerce.

Testimony before railway boards of adjustment or commissions on labor disputes shall be given under oath or affirmation when it is deemed necessary by such boards or commissions. Any railway board of adjustment or commission on labor disputes may employ such assistants as may be necessary in carrying on this work. Any railway board of adjustment or commission on labor disputes shall whenever practicable be supplied with suitable quarters in any Federal building located at its place of meeting or at any place to which it may adjourn for its deliberations.

The United States Railroad Administration and the Board of Mediation and Conciliation are hereby authorized to turn over to railway boards of adjustment or to the commissions on labor disputes upon request any properties or documents heretofore filed with them and bearing upon mediation, arbitration, or other adjustments or proceedings held under the provisions of the Act approved June 1, 1898, or the Act approved July 15, 1913, providing for mediation and arbitration, or decisions rendered by the United States Railroad Administration.

The sum of $50,000, or so much thereof as may be necessary, is hereby authorized to be immediately available and continue available until the close of the fiscal year ending June 30, 1920, for the necessary and proper expenses incurred in connection with carrying on the work of railway boards of adjustment and commissions on labor disputes, including rent in the District of Columbia, furniture, office fixtures and supplies, assistants, clerical work, and other necessary expenses to be approved by the chairmen of the railway boards of adjustment and commissions on labor disputes and audited by the proper accounting officer of the Treasury.

Any person, corporation, organization, or association violating any of the provisions of sections 300 and 301 of this Act shall be deemed guilty of a misdemeanor, and for each offense, on conviction, shall pay to the United States a penalty of $500.

Sec. 400. The first five paragraphs of section 1 of the Commerce Act, as such paragraphs appear in section 7 of the Commerce Court Act, are hereby amended to read as follows:

"(1) That the provisions of this Act shall apply to common carriers engaged in—

"(a) The transportation of passengers or property wholly by railroad, or partly by railroad and partly by water when both are used under a common control, management, or arrangement for a continuous carriage or shipment; or

"(b) The transportation of oil or other commodity, except water and except artificial gas, by pipe line, or partly by pipe line and partly by railroad or by water; or

"(c) The transmission of intelligence by wire or wireless;—

from one State or Territory of the United States, or the District of Columbia, to any other State or Territory of the United States, or the District of Columbia, or from one place in a Territory to another place in the same Territory, or from any place in the United States through a foreign country to any other place in the United States, or from or to any place in the United States to or from a foreign country.

"(2) The provisions of this Act shall also apply to such transportation of passengers and property and transmission of intelligence, in so far as such transportation or transmission takes place within the United States, but shall not apply—

"(a) To the transportation of passengers or property, or to the receiving, delivering, storage, or handling of property, wholly within one State and not shipped to or from a foreign country from or to any place in the United States as aforesaid; nor

"(b) To the transmission of intelligence by wire or wireless wholly within one State and not transmitted to or from a foreign country from or to any place in the United States as aforesaid.

"(3) The term 'common carrier' as used in this Act shall include all pipe-line companies; telegraph, telephone, and cable companies operating by wire or wireless; express companies; sleeping-car companies; and all persons, natural or artificial, engaged in such transportation or transmission as aforesaid as common carriers for hire. Wherever the word 'carrier' is used in this Act it shall be held to mean 'common carrier.' The term 'railroad' as used in this Act shall include all bridges, car floats, lighters, and ferries used by or operated in connection with any railroad, and also all the road in use by any common carrier operating a railroad, whether owned or operated under a contract, agreement, or lease, and also all switches, spurs, tracks, terminals, and terminal facilities of every kind used or necessary in the transportation of the persons or property designated herein, including all freight depots, yards, and grounds, used or necessary in the transportation or delivery of any such property. The term 'transportation' as used in this Act shall include locomotives, cars, and other vehicle, vessels and all instrumentalities and facilities of shipment or carriage, irrespective of ownership or of any contract, express or implied, for the use there, and all services in connection with the receipt, delivery, elevation, and transfer in transit, ventilation, refrigeration or icing, storage, and handling of property transported. The term 'transmission' as used in this Act shall include the transmission of intelligence through the application of electrical energy or other use of electricity, whether by means of wire, cable, radio apparatus, or other wire or wireless conductors or appliances, and all instrumentalities and facilities for and services in connection with the receipt, forwarding, and delivery of messages, communications, or other intelligence so transmitted, hereinafter also collectively called messages.

"(4) It shall be the duty of every common carrier subject to this Act engaged in the transportation of passengers or property to provide and furnish such transportation upon reasonable request therefor, and to establish through routes and just and reasonable rates, fares, and charges applicable thereto, and to provide reasonable facilities for operating through routes and to make reasonable rules and regulations with respect to the operation of through routes, and providing for reasonable compensation to those entitled thereto; and in case of joint fares, fares, or charges, to establish just and reasonable divisions thereof as between the carriers subject to this Act participating therein which shall not unduly prefer or prejudice any of such participating carriers.

"(5) All charges made for any service rendered or to be rendered in the transportation of passengers or property or in the transmission of intelligence by wire or wireless as aforesaid, or in connection therewith, shall be just and reasonable, and every unjust and unreasonable charge for such service or any part thereof is prohibited and declared to be unlawful: *Provided,* That messages by wire or wireless subject to the provisions of this Act may be classified into day, night, repeated, unrepeated, letter, commercial, press, Government, and such other classes as are just and reasonable, and different rates may be charged for the different classes of messages: *And provided further,* That nothing in this Act shall be construed to prevent telephone, telegraph, and cable companies from entering into contracts with common carriers for the exchange of services.

"(6) It is hereby made the duty of all common carriers subject to the provisions of this Act to establish, observe, and enforce just and reason-

able classifications of property for transportation, with reference to which rates, tariffs, regulations or practices are or may be made or prescribed, and just and reasonable regulations and practices affecting classifications, rates, or tariffs, the issuance, form, and substance of tickets, receipts, and bills of lading, the manner and method of presenting, marking, packing, and delivering property for transportation, the facilities for transportation, the carrying of personal, sample, and excess baggage, and all other matters relating to or connected with the receiving, handling, transporting, storing, and delivery of property subject to the provisions of this Act which may be necessary or proper to secure the safe and prompt receipt, handling, transportation, and delivery of property subject to the provisions of this Act upon just and reasonable terms, and every unjust and unreasonable classification, regulation, and practice is prohibited and declared to be unlawful.

"(7) No common carrier subject to the provisions of this Act shall, after January 1, 1920, directly or indirectly, issue or give any interstate free ticket, free pass, or free transportation for passengers, except to its officers, agents, and employees, and their families; to its surgeons, physicians, and attorneys at law, who devote the principal part of their time to its service; to ministers of religion, traveling secretaries of railroad Young Men's Christian Associations, inmates of hospitals and charitable and eleemosynary institutions, and persons exclusively engaged in charitable and eleemosynary work; to indigent, destitute, and homeless persons, and to such persons when transported by charitable societies or hospitals, and the necessary agents employed in such transportation; to inmates of the National Homes or State Homes for Disabled Volunteer Soldiers, and of Soldiers' and Sailors' Homes, including those about to enter and those returning home after discharge; to necessary caretakers of live stock, poultry, fish, milk, and fruit, transported by it; to employees on sleeping cars or express cars, moving over its line; to Railway Mail Service employees, post-office inspectors, custom inspectors, and immigration inspectors, traveling in the discharge of their duties; to newsboys on its trains; to baggage transfer agents on duty; to witnesses attending any legal investigation in which it is interested; or to persons injured in wrecks, and physicians, surgeons, and nurses attending such persons, or to the remains of persons killed in wrecks; nor after such date shall any such carrier directly or indirectly give or issue any free frank for or free transmission of intelligence, except to its officers, agents and employees, and their families; or to its surgeons, physicians, and attorneys at law, who devote the principal part of their time to its service: *Provided,* That this provision shall not be construed to prohibit the interchange of passes or franks for the officers, agents, and employees of common carriers, and their families; nor to prohibit any common carrier from carrying passengers free with the object of providing relief in cases of wreck, general epidemic, pestilence, or other calamitous visitation: *Provided, however,* That no such free pass or free transportation shall be given to or asked or received or used by any such person if he be a Member of the Congress of the United States or an officer of the United States who under existing laws is now prohibited from accepting or using free passes or free transportation: *And provided further,* That the term "employee" as used in the paragraph shall include furloughed, pensioned, and superannuated employees, persons who have became disabled or infirm in the service of any such common carrier, and the remains of a person killed in the employment of a carrier, and ex-employees traveling for the purpose of entering the service of any such common carrier; and the term "families" as used in this paragraph shall include the families of those persons named in this proviso, also the families of persons killed, and the widows during widowhood, and minor children during minority of persons who died, while in the service of any such common carrier. Any common carrier violating the provisions of this paragraph shall be deemed guilty of a misdeameanor, and for each offense, on conviction, shall pay to the United States a penalty of not less than $100 nor more than $2,000; and any person, other than the person excepted in this paragraph, who uses any such interstate free ticket, free pass, free frank, or free transportation shall be subject to a like penalty. Jurisdiction of offenses under this paragraph shall be the same as that provided for offenses in an Act entitled 'An Act to further regulate commerce with foreign nations and among the States,' approved February 19, 1903, and any amendment thereof."

SEC. 402. The paragraphs added to section 1 of the Commerce Act by the Act entitled "An Act to amend an Act entitled 'An Act to regulate commerce,' as amended, in respect of car service, and for other purposes," approved May 29, 1917, are hereby amended to read as follows:

"(10) The term 'car service' in this Act shall include the use, control, supply, movement, distribution, exchange, interchange, and return of locomotives, cars, and other vehicles used in the transportation of property, and the supply, movement, and operation of trains, by any carrier by railroad subject to this Act.

"(11) It shall be the duty of every carrier by railroad subject to this Act to furnish safe and adequate car service and to establish, observe, and enforce just and reasonable rules, regulations, and practices with respect to car service; and every unjust and unreasonable rule, regulation, and practice with respect to car service is prohibited and declared to be unlawful.

"(12) It shall also be the duty of every carrier by railroad to make just and reasonable distribution of cars for transportation of coal among the coal mines served by it, whether located upon its line or lines or customarily dependent upon it for car supply. During any period when the supply of cars available for such service does not equal the requirements of such mines it shall be the duty of the carrier to maintain and apply just and reasonable ratings of such mines and to count each and every car furnished to or used by any such mine for transportation of coal against the mine. Failure or refusal so to do shall be unlawful, and in respect of each car not so counted shall be deemed a separate offense, and the carrier, receiver, or operating trustee so failing or refusing shall forfeit to the United States the sum of $100 for each offense, which may be recovered in a civil action brought by the United States.

"(13) The Commission is hereby authorized by general or special orders to require all carriers by railroad subject to this Act, or any of them, to file with it from time to time their rules and regulations with respect to car service, and the Commission may, in its discretion, direct that such rules and regulations shall be incorporated in their schedules showing rates, fares, and charges for transportation, and be subject to any or all of the provisions of this Act relating thereto.

"(14) The Commission may, after hearing, on a complaint or upon its own initiative without complaint, establish reasonable rules, regulations, and practices with respect to car service by carriers by railroad subject to this Act, including the compensation to be paid for the use of any locomotive, car, or other vehicles not owned by the carrier using it, and the penalties or other sanctions for nonobservance of such rules, regulations or practices.

"(15) Whenever the Commission is of opinion that shortage of equipment, congestion of traffic, or other emergency requiring immediate action exists in any section of the country, the Commission shall have, and it is hereby given, authority, either upon complaint or upon its own initiative without complaint, at once, if it so orders, without answer or other formal pleading by the interested carrier or carriers, and with or without notice, hearing, or the making or filing of a report, according as the Commission may determine: (a) to suspend the operation of any or all rules, regulations, or practices then established with respect to car service for such time as may be determined by the Commission; (b) to make such just and reasonable directions with respect to car service without regard to the ownership as between carriers of locomotives, cars, and other vehicles, and to handling, routing, and movement of traffic, during such emergency as in its opinion will best promote the service in the interest of the public and the commerce of the people, upon such terms of compensation as between the carriers for the use of facilities and for handling, routing, or movement of traffic as they may agree upon, or, in the event of their disagreement, as the Commission may after subsequent hearing find to be just and reasonable; (c) to require such joint or common use of terminals as in its opinion will best meet the emergency and serve the public interest, and upon such terms as between the carriers as they may agree upon, or, in the event of their disagreement, as the Commission may after subsequent hearing find to be just and reasonable; and (d) to give directions for preference or priority in transportation, embargoes, or movement of traffic under permits, at such time and for such periods as it may determine, and to modify, change, suspend, or annul them. In time of war or threatened war the President may certify to the Commission that it is essential to the national defense and security that certain traffic shall have preference or priority in transportation, and the Commission shall, under the power herein conferred, direct that such preference or priority be afforded.

"(16) The directions of the Commission as to car service and to the matters referred to in paragraph (15) may be made through and by such agents or agencies as the Commission shall designate and appoint for that purpose. It shall be the duty of all carriers by railroad subject to this Act, and of their officers, agents, and employees, to obey strictly and conform promptly to such orders of directions of the Commission, and in case of failure or refusal on the part of any carrier, receiver, or operating trustee to comply with any such order or direction such carrier, receiver, or trustee shall be liable to a penalty of not less than $100 nor more than $500 for each such offense and $50 for each and every day of the continuance of such offense, which shall accrue to the United States and may be recovered in a civil action brought by the United States: *Provided, however,* That nothing in this Act shall impair or affect the right of the State, in the exercise of its police power, to require just and reasonable freight and passenger service and the fair exchange and distribution of equipment for intrastate business.

"(17) After ninety days after this paragraph takes effect no carrier by railroad subject to this Act shall undertake the extension of its line of railroad, or the construction of a new line of railroad, or shall require or operate any line of railroad, or extension thereof, or shall engage in transportation under this Act over or by means of such additional or extended line of railroad, unless and until there shall first have been obtained from the Commission a certificate that the present or future public convenience and necessity require or will require the construction, or operation, or construction and operation, of such additional or extended line of railroad, and no carrier by railroad subject to this Act shall abandon all or any portion of a line of railroad, or the operation thereof, unless and until there shall first have been obtained from the Commission a certificate that the present or future public convenience and necessity permit of such abandonment.

"(18) The application for and issuance of any such certificate shall be under such rules and regulations as to hearings and other matters as the Commission may from time to time prescribe, and the provisions of this Act shall apply to all such proceedings. Upon receipt of any application for such certificate the Commission shall cause notice thereof to be given to and a copy filed with the railroad commission, or public service or utilities commission, or other appropriate authority, or the governor, of each State in which such additional or extended line of railroad is proposed to be constructed or operated, or all or any portion of a line of railroad, or the operation thereof, is proposed to be abandoned, with the right to be heard as hereinafter provided with respect to the hearing of complaints or the issuance of securities; and said notice shall also be published for three consecutive weeks in some newspaper of general circulation in each county in or through which said line of railroad is constructed or operates.

"(19) The Commission shall have power to issue such certificate as prayed for, or to refuse to issue it, or to issue it for a portion or portions of a line of railroad, or extension thereof, described in the application, or for the partial exercise only of such right or privilege, and may attach to the issuance of the certificate such terms and conditions as in its judgment the public convenience and necessity may require. From and after issuance of such certificate, and not before, the carrier by railroad may, without securing approval other than such certificate, comply with the terms and conditions contained in or attached to the issuance of such certificate and proceed with the construction, operation, or abandonment covered thereby. Any construction, operation, or abandonment contrary to the provisions of paragraph (17), (18) or (19) of this section may be enjoined by any court of competent jurisdiction at the suit of the United States, the Commission, any commission or regulating body of the State or States affected, or any party in interest, and any carrier knowingly violating any of the foregoing provisions shall be guilty of a misdemeanor and upon conviction shall be liable to the penalties provided for violation of this Act.

"(20) The Commission may, after hearing, in a proceeding upon complaint or upon its own initiative without complaint, authorize or require

by order any carrier by railroad subject to this Act, party to such proceeding, to provide it with safe and adequate facilities for performing as a common carrier its car service as that term is used in this Act, and to extend its line or lines: *Provided*, That the Commission shall find that such provision of facilities or extension is reasonably required in the interest of public convenience and necessity and will not impair the ability of the carrier to perform its duty to the public. Any carrier subject to this Act which refuses or neglects to comply with any order of the Commission made in pursuance of this paragraph shall be liable to a penalty of $100 for each day during which such refusal or neglect continues, which shall accrue to the United States and may be recovered in a civil action brought by the United States.

"(21) The authority of the Commission conferred by paragraphs (17) to (20), both inclusive, shall not extend to the construction or abandonment of any line located or to be located wholly within one State or to any street car or electric interurban line."

Sec. 405. The first paragraph of section 3 of the Commerce Act is hereby amended by inserting "(1)" after the section number at the beginning thereof.

The second paragraph of section 3 of the Commerce Act is hereby amended to read as follows:

"(2) All carriers, engaged in the transportation of passengers or property, subject to the provisions of this Act, shall, according to their respective powers, afford all reasonable, proper, and equal facilities for the interchange of traffic between their respective lines, and for the receiving, forwarding, and delivering of passengers or property to and from their several lines and those connecting therewith, and shall not discriminate in their rates, fares, and charges between such connecting lines. The Commission may require the terminals of any such carrier to be open to the traffic of other such carriers upon such just and reasonable terms and conditions, including just compensation to the owners thereof, as the Commission after notice and full hearing, upon complaint or upon its own initiative, may by order prescribe."

Sec. 407. The first paragraph of section 5 of the Commerce Act is hereby amended to read as follows:

"Sec. 5. (1) That, except upon specific approval by order of the Commission as in this section provided, and except as provided in paragraph (15) of section 1 of this Act, it shall be unlawful for any common carrier subject to this Act to enter into any contract, agreement, or combination with any other common carrier or carriers for the pooling of freights of different and competing railroads, or to divide between them the aggregate or net proceeds of the earnings of such railroads, or any portion thereof; and in any case of an agreement for the pooling of freights as aforesaid each day of its continuance shall be deemed a separate offense: *Provided*, That whenever the Commission is of opinion, after hearing upon application of any carriers or carriers, engaged in the transportation of passengers or property, subject to this Act, or upon its own initiative, that the unification, consolidation, or merger by purchase, lease, stock control, or in any other way, similar or dissimilar, of two or more such carriers subject to this Act, or of the ownership or operation of their properties, or of designated portions thereof, or that the pooling of their traffic, earnings or facilities, to the extent indicated by the Commission, will be in the interest of better service to the public, or economy in operation, or otherwise of advantage to the convenience and commerce of the people, the Commission shall have authority by order to approve and authorize such unification, consolidation, merger, or pooling, under such rules and regulations, and for such consideration as between such carriers and upon such terms and conditions, as shall be found by the Commission to be just and reasonable in the premises The power and authority of the Commission to approve and authorize the unification, consolidation or merger of two or more carriers shall extend and apply to the unification, consolidation or merger of four express companies into the American Railway Express Company, a Delaware corporation, if application for such approval and authority is made to the Commission within thirty days after the passage of this amendatory Act; and pending the decision of the Commission such unification, consolidation or merger, shall not be dissolved.

"(2) The Commission may from time to time, for good cause shown, make such supplemental orders in the premises as it may deem necessary or appropriate, and may by any such supplemental order modify or set aside the provisions of any previous order as to the extent of the pooling, or as to the rules, regulations, terms, conditions, or consideration currently moving in respect of any unification or consolidation of operation and not of ownership, or of pooling, so theretofore approved and authorized.

"(3) The carriers affected by any such order shall be and they are hereby relieved from the operation of the 'anti-trust laws,' as designated in section 1 of the Act approved October 15, 1914, entitled 'An Act to supplement existing laws against unlawful restraints and monopolies, and for other purposes,' and of all other restraints or prohibitions by law, in so far as may be necessary to enable them to effect any unification, consolidation, merger or pooling so approved by order under and pursuant to the foregoing provisions of this section."

Sec. 408. The paragraph of section 5 of the Commerce Act, added to such section by section 11 of the Act entitled "An Act to provide for the opening, maintenance, protection and operation of the Panama Canal and the sanitation and government of the Canal Zone," approved August 24, 1912, is hereby amended by inserting "(4)" at the beginning thereof.

The two paragraphs of section 11 of such Act of August 24, 1912, which follow the paragraph added by such section to section 5 of the Commerce Act, are hereby made a part of section 5 of the Commerce Act. The first paragraph so made a part of section 5 of the Commerce Act is hereby amended by inserting "(5)" at the beginning thereof, and the second such paragraph is hereby amended to read as follows:

"(6) If the Commission is of the opinion that any such existing or proposed new specified service by water, other than through the Panama Canal, is being or will be operated in the interest of the public, and is or will be of advantage to the convenience and commerce of the people, and that a discontinuance of the existing service, or a failure to establish the proposed new service, will be substantially injurious to the commerce or localities affected, the Commission may, upon such just and reasonable terms as it may prescribe, by order extend the time during which such existing service by water may continue to be operated, or authorize the establishment and maintenance of the proposed new service, until its further order after hearing: *Provided*, That no new service shall be authorized except in or upon the Great Lakes and their connecting waterways, or on a navigable water (other than through the Panama Canal) where the major portion of the service is upon the high seas or upon Long Island Sound. In every case of such extension or authorization the rates, schedules and practices of such water carrier shall be filed with the Commission and shall be subject to this Act and all amendments thereto in the same manner and to the same extent as is the railroad or other common carrier controlling such water carrier or interested in any manner in its operation."

Sec. 415. Section 13 of the Commerce Act is hereby amended by inserting "(1)" after the section number at the beginning of the first paragraph and "(2)" at the beginning of the second paragraph, and by adding at the end thereof two new paragraphs to read as follows:

"(3) Whenever in any investigation under the provisions of this Act, or in any investigation instituted upon petition of the carrier concerned, which petition is hereby authorized to be filed, there shall be brought in issue any rate, fare, charge, classification, regulation or practice made or imposed by authority of any State, the Commission, before proceeding to hear and dispose of such issue, shall cause such State or States to be notified of the proceeding. The Commission may confer with the authorities of any State having regulatory jurisdiction over the class of persons and corporations subject to this Act with respect to the relationship between rate structures and practices of carriers subject to the jurisdiction of such State bodies and of the Commission; and to that end is authorized and empowered, under rules to be prescribed by it, and which may be modified from time to time, to hold joint hearings with any such State regulating bodies on any matters wherein the Commission is empowered to act and where the rate-making authority of a State is or may be affected by the action taken by the Commission. The Commission is also authorized to avail itself of the co-operation, services, records and facilities of such State authorities in the enforcement of any provision of this Act.

"(4) The Commission shall have authority, after full hearing, to make such findings and orders as may in its judgment tend to remove any undue advantage, preference or prejudice as between persons or localities in intrastate commerce on the one hand and interstate or foreign commerce on the other hand, or any undue burden upon interstate or foreign commerce, which is hereby forbidden and declared to be unlawful, and such findings or orders shall be observed while in effect by the carriers parties to such proceeding affected thereby, the law of any State or the decision or order of any State authority to the contrary notwithstanding."

Sec. 417. The first four paragraphs of section 15 of the Commerce Act are hereby amended to read as follows:

"Sec. 15. (1) That whenever, after full hearing, upon a complaint made as provided in section 13 of this Act, or after full hearing under an order for investigation and hearing made by the Commission on its own initiative, either in extension of any pending complaint or without any complaint whatever, the Commission shall be of opinion that any individual or joint rate, fare or charge whatsoever demanded, charged or collected by any common carrier or carriers subject to this Act for the transportation of persons or property or for the transmission of messages as defined in the first section of this Act, or that any individual or joint classification, regulation or practice whatsoever of such carrier or carriers subject to the provisions of this Act, is or will be unjust or unreasonable or unjustly discriminatory or unduly preferential or prejudicial, or otherwise in violation of any of the provisions of this Act, the Commission is hereby authorized and empowered to determine and prescribe what will be the just and reasonable individual or joint rate, fare or charge, or rates, fares or charges, to be thereafter observed in such case, or the maximum, or minimum, or maximum and minimum, to be charged, and what individual or joint classification, regulation, or practice is or will be just, fair and reasonable, to be thereafter followed, and to make an order that the carrier or carriers shall cease and desist from such violation to the extent to which the Commission finds that the same does or will exist, and shall not thereafter publish, demand or collect any rate, fare or charge for such transportation or transmission other than the rate, fare or charge so prescribed, or in excess of the maximum or less than the minimum so prescribed, as the case may be, and shall adopt the classification and shall conform to and observe the regulation or practice so prescribed.

"(2) Except as otherwise provided in this Act, all orders of the Commission, other than orders for the payment of money, shall take effect within such reasonable time, not less than thirty days, and shall continue in force until its further order, or for a specified period of time, according as shall be prescribed in the order, unless the same shall be suspended or modified or set aside by the Commission, or be suspended or set aside by a court of competent jurisdiction.

"(3) Whenever, after full hearing upon complaint or upon its own initiative, the Commission is of opinion that the divisions of joint rates, fares or charges, applicable to the transportation of passengers or property, are or will be unjust, unreasonable or unduly preferential or prejudicial as between the carriers parties thereto (whether agreed upon by such carriers, or any of them, or otherwise established), the Commission shall by order prescribe the just and reasonable divisions thereof to be received by the several carriers, and in cases where the joint rate, fare or charge was established pursuant to a finding or order of the Commission and the divisions thereof are found by it to have been unjust, unreasonable, or unduly preferential or prejudicial, the Commission may also by order determine what (for the period subsequent to the filing of the complaint or petition or the making of the order of investigation) would have been the just and reasonable divisions thereof to be received by the several carriers, and require adjustment to be made in accordance therewith. The Commission may also, after full hearing upon complaint or upon its own initiative, establish through routes, joint classification, and joint rates, fares or charges, applicable to the transportation of passengers or property, or the maxima, or minima, or maxima and minima, to be charged, and the divisions of such rates, fares or charges as hereinbefore provided, and the terms and conditions under which such through routes shall be operated; and this provision shall apply when one of the carriers is a water line. The Commission shall not, however, establish any through route, classifica-

tion or rate between street electric passenger railways not engaged in the general business of transporting freight in addition to their passenger and express business, and railroads of a different character; nor shall the Commission have the right to establish any route, classification, rate, fare or charge when the transportation is wholly by water, and any transportation by water affected by this Act shall be subject to the laws and regulations applicable to transportation by water. And in establishing such through route the Commission shall not, except as provided in section 3, require any carrier by railroad, without its consent, to embrace in such route substantially less than the entire length, of its railroad and of any intermediate railroad operated in conjunction and under a common management or control therewith, which lies between the termini of such proposed through route, unless such inclusion of lines would make the through route unreasonably long as compared with another practicable through route which could otherwise be established: *Provided*, That in time of shortage of equipment, congestion of traffic, or other emergency declared by the Commission it may (either upon complaint or upon its own initiative without complaint, at once, if it so orders, without answer or other formal pleadings by the interested carrier or carriers, and with or without notice, hearing or the making or filing of a report, according as the Commission may determine) establish temporarily such through routes as in its opinion are necessary or desirable in the public interest.

"(4) Whenever there shall be filed with the Commission any schedule stating a new individual or joint rate, fare or charge, or any new individual or joint classification, or any new individual or joint regulation or practice affecting any rate, fare or charge, the Commission shall have, and it is hereby given, authority, either upon complaint or upon its own initiative without complaint, at once, and if it so orders without answer or other formal pleading by the interested carrier or carriers, but upon reasonable notice, to enter upon a hearing concerning the lawfulness of such rate, fare, charge, classification, regulation or practice; and pending such hearing and the decision thereon the Commission, upon filing with such schedule and delivering to the carrier or carriers affected thereby a statement in writing of its reasons for such suspension, may suspend the operation of such schedule and defer the use of such rate, fare, charge, classification, regulation or practice, but not for a longer period than one hundred and twenty days beyond the time when it would otherwise go into effect; and after full hearing, whether completed before or after the rate, fare, charge, classification, regulation or practice goes into effect, the Commission may make such order with reference thereto as would be proper in a proceeding initiated after it had become effective. If any such hearing can not be concluded within the period of suspension, as above stated, the proposed change of rate, fare, charge, classification, regulation or practice shall go into effect at the end of such period, but, in case of a proposed increased rate or charge for or in respect to the transportation of property, the Commission may by order require the interested carrier or carriers to keep accurate account in detail of all amounts received by reason of such increase, specifying by whom and in whose behalf such amounts are paid, and upon completion of the hearing and decision may by further order require the interested carrier or carriers to refund, with interest, to the persons in whose behalf such amounts were paid such portion of such increased rates or charges as by its decision shall be found not justified. At any hearing involving a rate, fare or charge increased after January 1, 1910, or of a rate, fare or charge sought to be increased after the passage of this Act, the burden of proof to show that the increased rate, fare or charge, or proposed increased rate, fare or charge, is just and reasonable shall be upon the common carrier, and the Commission shall give to the hearing and decision of such questions preference over all other questions pending before it and decide the same as speedily as possible."

Sec. 424. The seventh paragraph of section 16 of the Commerce Act is hereby amended to read as follows:

"(8) Any carrier, any officer, representative, or agent of a carrier, or any receiver, trustee, lessee, or agent of either of them, who knowingly fails or neglects to obey any order made under the provisions of sections 3, 13 or 15 of this Act shall forfeit to the United States the sum of $5,000 for each offense. Every distinct violation shall be a separate offense, and in case of a continuing violation each day shall be deemed a separate offense."

Sec. 437. The Commerce Act is further amended by inserting therein a new section between section 20 and section 21 to be designated section 20a, and to read as follows:

"Sec. 20a. (1) That from and after one hundred and twenty days after this section takes effect it shall be unlawful for any common carrier by railroad (except a street or electric interurban passenger railway not engaged in the general business of transporting freight in addition to its passenger and express business) which is subject to this Act, or any corporation organized for the purpose of engaging in transportation subject to this Act (hereinafter in this section called 'carrier'), to issue any share of capital stock or any bond or other evidence of interest in or indebtedness of the carrier (hereinafter in this section collectively termed 'securities') or to assume any obligation or liability as lessor, lessee, guarantor, indorser, surety or otherwise, in respect of the securities of any other person, natural or artificial, even though permitted by the authority creating the carrier corporation, unless and until, and then only to the extent that, upon application by the carrier, and after investigation by the Commission of the purposes and uses of the proposed issue and the proceeds thereof, or of the proposed assumption of obligation or liability in respect of the securities of any other person, natural or artificial, the Commission by order authorizes such issue or assumption. The Commission shall make such order only if it finds that such issue or assumption: (a) is for some lawful purpose compatible with the public interest, which is necessary or appropriate for or consistent with the proper performance by the carrier of service to the public as a common carrier, and which will not impair its ability to perform that service, and (b) is reasonably necessary and appropriate for such purpose.

"(2) The Commission shall have power by its order to grant or deny the application as made, or to grant it in part and deny it in part, or to grant it with such modifications and upon such terms and conditions as the Commission may deem necessary or appropriate in the premises, and may from time to time, for good cause shown, make such supplemental orders in the premises as it may deem necessary or appropriate, and may by any such supplemental order modify the provisions of any previous order as to the particular purposes, uses, and extent to which, or the conditions under which, any securities so theretofore authorized or the proceeds thereof may be applied, subject always to the requirements of the foregoing paragraph (1).

"(3) Every application for authority shall be made in such form and contain such matters as the Commission may prescribe. Every such application, as also every certificate of notification hereinafter provided for, shall be made under oath, signed and filed on behalf of the carrier by its president, a vice-president, auditor, comptroller or other executive officer having knowledge of the matters therein set forth and duly designated for that purpose by the carrier.

"(4) Whenever any securities set forth and described in any application for authority or certificate of notification as pledged or held unencumbered in the treasury of the carrier shall, subsequent to the filing of such application or certificate, be sold, pledged, repledged, or otherwise disposed of by the carrier, such carrier shall, within ten days after such sale, pledge, repledge or other disposition, file with the Commission a certificate of notification to that effect, setting forth therein all such facts as may be required by the Commission.

"(5) Upon receipt of any such application for authority the Commission shall cause notice thereof to be given to and a copy filed with the railroad commission, or public service or utilities commission, or other appropriate authority of each State in which the applicant carrier operates, or to the governor of such State. The railroad commissions, public service or utilities commissions, or other appropriate State authorities thus notified shall have the right to make before the Commission such representations as they may deem just and proper for preserving and conserving the rights and interests of their people and the States, respectively, involved in such proceeding. The Commission may hold hearings, if it sees fit, to enable it to determine its decision upon the application for authority.

"(6) The jurisdiction conferred upon the Commission by this section shall be exclusive and plenary, and a carrier may issue securities and assume obligations or liabilities in accordance with the provisions of this section without securing approval other than as specified herein.

"(7) Nothing herein shall be construed to imply any guaranty or obligation as to such securities on the part of the United States.

"(8) The foregoing provisions of this section shall not apply to notes to be issued by the carrier maturing not more than two years after the date thereof and aggregating (together with all other then outstanding notes of a maturity of two years or less) not more than 10 per centum of the par value of the securities of the carrier then outstanding. In the case of securities having no par value, the par value for the purposes of this paragraph shall be the fair market value as of the date of issue. Within ten days after the making of such notes the carrier issuing the same shall file with the Commission a certificate of notification, in such form as may from time to time be determined and prescribed by the Commission, setting forth as nearly as may be the same matters as those required in respect of applications for authority to issue other securities.

"(9) The Commission shall require periodical or special reports from each carrier hereafter issuing any securities, including such notes, which shall show, in such detail as the Commission may require, the disposition made of such securities and the application of the proceeds thereof.

"(10) All issues of securities and assumptions of obligation or liability contrary to the provisions of this section or of any order issued thereunder by the Commission shall be void. If any security so made void or any security in respect to which the assumption of obligation or liability is so made void, is acquired by any person for value and in good faith and without notice that the issue or assumption is void, such person may in a suit or action in any court of competent jurisdiction hold jointly and severally liable for the full amount of the damage sustained by him in respect thereof, the carrier which issued the security so made void or assumed the obligation or liability so made void, and its directors, officers, attorneys and other agents, who participated in any way in the authorizing, issuing, hypothecating or selling of the security so made void or in the authorizing of the assumption of the obligation or liability so made void. In case any security so made void was directly acquired from the carrier issuing it, the holder may at his option rescind the transaction and upon the surrender of the security recover the consideration given therefor. Any director, officer, attorney or agent of the carrier who knowingly assents to or concurs in any issue of securities or assumptions of obligation or liability forbidden by this section, or any sale or other disposition of securities contrary to the provisions of the Commission's order or orders in the premises, or any application not authorized by the Commission of the funds derived by the carrier through such sale or other disposition of such securities, shall be guilty of a misdemeanor and upon conviction shall be punished by a fine of not less than $1,000 nor more than $10,000, or by imprisonment for not less than one year nor more than three years, or by both such fine and imprisonment, in the discretion of the court.

"(11) After December 31, 1921, it shall be unlawful for any person to hold the position of officer or director of more than one carrier, unless such holding shall have been authorized by order of the Commission, upon due showing, in form and manner prescribed by the Commission, that neither public nor private interests will be adversely affected thereby. After this section takes effect it shall be unlawful for any officer or director of any carrier to receive for his own benefit, directly or indirectly, any money or thing of value in respect of the negotiation, hypothecation or sale of any securities issued or to be issued by such carrier, or to share in any of the proceeds thereof, or to participate in the making or paying of any dividends of an operating carrier from any funds properly included in capital account. Any violation of these provisions shall be a misdemeanor, and on conviction in any United States court having jurisdiction shall be punished by a fine of not less than $1,000 nor more than $10,000, or by imprisonment for not less than one year nor more than three years, or by both such fine and imprisonment, in the discretion of the court."

Sec. 438. Section 24 of the Commerce Act is hereby amended to read as follows:

"Sec. 24. That the Commission is hereby enlarged so as to consist

of eleven members, with terms of seven years, and each shall receive $17,000 compensation annually. The qualifications of the members and the manner of payment of their salaries shall be as already provided by law. Such enlargement of the Commission shall be accomplished through appointment by the President, by and with the advice and consent of the Senate, of two additional Interstate Commerce Commissioners, one for a term expiring December 31, 1923, and one for a term expiring December 31, 1924. The terms of the present commissioners, or of any successor appointed to fill a vacancy caused by the death or resignation of any of the present commissioners, shall expire as heretofore provided by law. Their successors and the successors of the additional commissioners herein provided for shall be appointed for the full term of seven years, except that any person appointed to fill a vacancy shall be appointed only for the unexpired term of the commissioner whom he shall succeed. Not more than six commissioners shall be appointed from the same political party. Hereafter the salary of the secretary of the Commission shall be $7,500 a year."

Sec. 439. The Commerce Act is hereby further amended by adding at the end thereof two new sections, to read as follows:

"Sec. 25. That the Commission may, after investigation, order any carrier by railroad subject to this Act, within a time specified in the order, to install automatic train-stop or train-control devices, which comply with specifications and requirements prescribed by the Commission, upon the whole or any part of its railroad, such order to be issued and published at least one year before the date specified for its fulfillment: *Provided*, That a carrier shall not be held to be negligent because of its failure to install such devices upon a portion of its railroad not included in the order; and any action arising because of an accident happening upon such portion of its railroad shall be determined without consideration of the use of such devices upon another portion of its railroad. Any common carrier which refuses or neglects to comply with any order of the Commission made under the authority conferred by this section shall be liable to a penalty of $100 for each day that such refusal or neglect continues, which shall accrue to the United States, and may be recovered in a civil action brought by the United States.

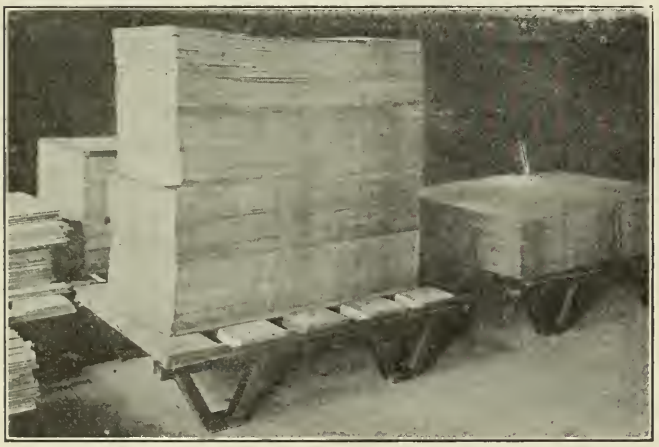
"Sec. 26. That this Act may be cited as the 'Commerce Act, 1887.'"

Trays for Elevating Platform Industrial Trucks

THE LYON METALLIC MANUFACTURING COMPANY, Aurora, Ill., has developed a type of side frame to be used in making up trays or platforms for elevating platform industrial trucks, known as the Lyon steel skid leg.

The skid leg consists of two welded feet which are, in turn, welded to a steel channel. This channel is provided with bolt holes, which are spaced so as to make it convenient to bolt on either a wood or steel top. The legs have rounded corners and a wide bearing surface for preventing damage to floors and resisting lateral thrust.

Additional supplies of platforms may be carried in stock,

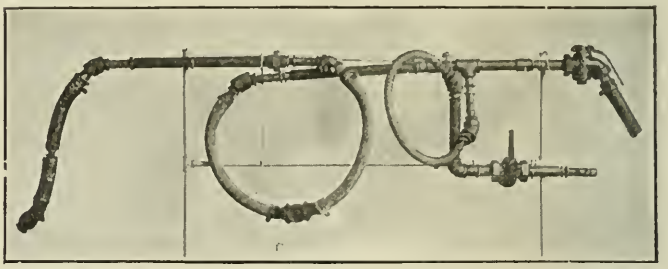


The Load of Tin Plate on the Center Tray Is Greater Than the Lifting Capacity of a Truck, But Was Placed to Show What a Tray May Carry.

knocked down, so that they take up little space and yet may be quickly assembled. The wooden cross pieces may be drilled to fit the skid legs, which are punched to a standard pattern. All that is necessary to have a new platform complete and ready for use is to get out the required number of cross pieces and bolt them to the skid legs. The platforms may be made any width, as width depends only on the length of the cross pieces.

Emergency Connections For Brake Pipes

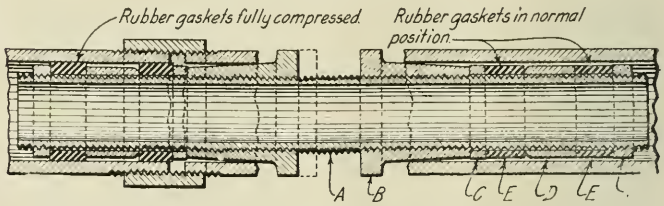
A METHOD OF COUPLING broken pipes which does away with the necessity of cutting threads has been devised by J. L. Boschart and is now being manufactured by the Broschart Threadless Pipe Coupling Company, Trenton, Mo. The object is to facilitate repairs in case of breakage of pipes forming part of the air brake or steam heating system either on locomotives or cars. In actual service as a part of the equipment carried on locomotives and cabooses, the threadless coupling has been found useful in preventing delays and engine failures, eliminating the necessity of switching cars to the rear of the train or



Method of Using the Emergency Connection in Making Temporary Repairs to Broken Brake Pipes

cutting them out with the consequent expense of sending a mechanic to make repairs.

As shown in the illustration the coupling consists of a short section of pipe *A*, which carries two jam nuts *B*, sleeves *C* and *D*, rubber gaskets *E*, and look nuts *F*. In case a break occurs in the train line, the ends are separated about four inches enabling the coupling to be inserted in the pipe. By turning the jam nuts, the rubber gaskets are compressed and forced out against the walls of the pipe making an air tight connection. If the break occurs at the end of a pipe coupling or union, the tapered end of the jam nut is sufficiently long to allow the gasket to extend through into the pipe and make a tight joint. By the use of other fittings



A Pipe Coupling Which Can Be Applied Without Tools

train lines can be connected even though the broken ends cannot be separated and in a similar manner angle cocks can be replaced and other air or steam pipes can be connected or plugged. The coupling can be applied without the use of any tools. It will withstand the standard train-line pressure and will not interfere with either service or emergency applications of the brakes.

Hog Island launched its fiftieth ship on August 23. The vessel was the S. S. Noble.

General News Department

Engineering Council has requested, and the Director of the Census, has ordered that the next census shall include a more detailed classification of engineers so that technical engineers will be listed separately from non-technical engineers (stationary engineers, locomotive enginemen, etc.), enabling anyone to ascertain readily the number of technical men in the United States and in each state. Technical engineers will be sub-divided between civil, mechanical, electrical and mining.

A committee of Engineering Council consisting of 16 engineers from all parts of the United States has for some time been studying the question of the licensing or registering of engineers. At a meeting held in Chicago recently a suggested form of statute was drafted which it is expected will be presented to Engineering Council at its December meeting for approval. The proposed law will then be available for use in the forming of legislation in those states in which there is a demand for the licensing of engineers. Eleven states have already passed such laws, but with widely differing provisions, while 17 have laws regulating the practice of architecture.

As It Looks to a "Literary Feller"

If the idea of the gentleman who suggested that we all work an extra hour a day were put into effect there would be one working man in the country who couldn't do it without actually overworking. The world's greatest gluttons for work are the men who take the trains out on the roads. This is not pure and simple devotion to duty. The pleasant prospect of overtime has a little something to do with it. The official working day on the road is eight hours long. The reason that the trainman gets a salary bigger than that of some of our most industrious governors is because he usually sleeps only eight hours out of 24 and spends every waking hour in building up his pay envelope. With a fair share of overtime an engineer's monthly pay runs up from $250 to $400.

He literally clamors for the chance to work. And as he can't go to work until the caller calls him and as the caller sometimes calls somebody else, he does most of his clamoring in the caller's ears. Sleep, with the road man, is a grudging concession to nature and the Interstate Commerce Commission, both of whom agree that he must have at least eight hours off duty. If he has worked steadily for more than 16 hours he must have 10 hours to himself. Of course, it is his own business whether or not he spends it in sleeping. He usually does because he wants to be in shape for another 16 hours of work as soon as he wakes up. And woe to the caller who calls him an hour too early or an hour too late. By the former contingency he loses sleep and by the latter he loses money.—R. S. Tompkins, in the Baltimore Sun.

Cost of Marine and Shipyard Strikes

The United States Shipping Board estimates that since the first of January, strikes have cost the Shipping Board a total of $37,000,000. Marine and harbor strikes, longshore strikes and shipyard strikes have occurred on the Atlantic, Pacific and Gulf coasts. The estimate does not include results of the coal strike, or losses by foreign or privately operated American vessels; nor indirect losses to the public due to interruption of regular movement of shipping, congestion in ports, spoilage of perishable cargo, etc. The marine strikes in New York harbor tied up 600 boats (16,000 men) for 13 days. In a marine strike in July some 25,000 men were out for about three weeks. A longshoremen's strike in New York in October involved 40,000 to 50,000 men for about thirty days. A further longshore strike occurred at New Orleans in the same month, lasting thirty-one days.

Among the 200 strikes in the shipyards, one of the largest was that in the Northern Pacific district, beginning in January, lasting for fifty days and involving some 40,000 men. In the San Francisco Bay and Southern district in October 35,000 men were out thirty days. A strike in the shipyards in the New York district began in October, lasted about thirty days and involved some 20,000 men.

New Industrial Conference Meets in Washington

The new industrial conference called by President Wilson to make another attempt to work out a plan for improving the relations between employers and employees began its sessions at Washington Monday, December 1, and entered upon a policy of working in non-public sessions, without stenographic record. Secretary of Labor W. B. Wilson was chosen chairman; Herbert Hoover, temporary vice-chairman, and Stanley King, temporary secretary. All of the members invited by the President were present except George T. Slade, who was said to be in Europe.

Elimination of Grade Crossings in Chicago

The question of the elimination of grade crossings in the city of Chicago has again come into notice in figures presented by Cook County Coroner P. M. Hoffman. Coroner Hoffman estimates that $94,972,561 has been spent in Chicago to eliminate grade crossings of railroads during the 27 years this work has been in progress. Approximately 963 grade crossings have been eliminated; yet deaths from grade crossing accidents are again increasing. At the end of the first seven years of track elevation work, deaths resulting from accidents of this nature began to decrease, but in 1916 there was an increase of almost 50 per cent. Since this time there has been some reduction, but the total for each year has remained above the record prior to 1916. At the same time the total number of railroad deaths in Chicago has not fluctuated in the same proportion nor at the same periods. The following compilation, prepared by Coroner Hoffman, illustrates this point:

Year	At grade crossings	Total R. R. deaths	Year	At grade crossings	Total R. R. deaths
1918	79	318	1911	62	334
1917	71	355	1910	68	381
1916	91	335	1909	68	329
1915	65	239	1908	55	270
1914	65	282	1907	84	393
1913	59	360	1906	100	371
1912	52	326			

The city track elevation bureau has prepared statistics concerning the expenditures by various roads for track elevation in Cook County. From the time grade separation work began in Cook County to January 1, 1919, the following expenditures have been made by railroads entering this district, according to the city track elevation bureau:

Road	Expenditures
Atchison, Topeka & Santa Fe	$990,000
Baltimore & Ohio	1,578,284
Baltimore & Ohio Chicago Terminal	5,856,593
Central Terminal	1,913,345
Chicago, Burlington & Quincy	4,263,000
Chicago Junction, yards	1,710,000
Chicago, Milwaukee & St. Paul	10,025,000
Chicago, Rock Island & Pacific	5,466,000
Chicago & Alton	1,133,277
Illinois Western	101,000
Western Indiana Belt	14,596,372
Chicago & North Western	13,900,770
Grand Trunk	732,000
Illinois Central	6,131,050
Indiana Harbor	598,000
Illinois Northern	321,700
New York Central	7,001,500
New York, Chicago & St. Louis	1,428,707
Pan Handle	6,386,836
Fort Wayne	9,156,000
Wabash	267,937
Total	$93,557,561

Alderman G. M. Maypole, chairman of the City Council committee on track elevation, has directed the committee's engineer to make a survey of all railroad grade crossings in the city with the purpose of making further recommendations.

REVENUES AND EXPENSES OF RAILWAYS

NINE MONTHS OF CALENDAR YEAR, 1919

Name of road.	Average mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
Alabama & Vicksburg	141	1,338,412	565,304	2,040,303	387,145	459,674	16,928	837,536	78,820	1,796,916	88.08	243,388	100,251	142,928	—72,827
Alabama Great Southern	312	5,303,899	1,844,177	7,549,960	1,132,250	1,920,840	117,028	3,002,607	166,147	6,392,104	84.66	1,157,857	217,386	939,381	—689,179
Ann Arbor	301	2,450,401	535,718	3,156,624	468,146	533,853	42,676	1,474,495	96,589	2,616,298	82.88	540,327	143,100	396,762	346,068
Arizona Eastern	377	2,122,956	400,142	2,715,835	657,002	443,199	18,757	913,794	73,791	2,138,188	78.73	577,647	146,537	430,713	—591,680
Atchison, Topeka & Santa Fe	8,645	86,854,773	33,332,751	126,797,080	17,145,774	29,586,587	270,007	45,270,649	2,267,076	95,159,339	75.05	31,637,741	5,049,263	26,559,428	—4,326,085
Atlanta & West Point	93	939,815	855,741	2,001,849	244,587	369,773	27,557	759,780	58,099	1,484,933	74.17	516,916	76,506	440,374	—75,693
Atlanta, Birmingham & Atlantic	639	2,760,263	706,201	3,701,458	878,789	1,140,972	64,227	1,130,885	111,019	4,326,597	116.88	—625,138	144,000	—770,527	—496,493
Atlantic City	177	1,078,015	2,390,333	3,629,113	413,990	439,088	15,127	1,692,426	11,773	2,573,249	70.91	1,055,864	108,000	947,864	61,445
Atlantic Coast Line	4,863	29,272,197	14,091,257	46,276,518	6,988,641	10,218,240	539,070	20,634,763	993,497	39,636,280	85.65	6,640,239	1,910,000	4,714,492	—3,912,366
Baltimore & Ohio Chicago Terminal	90	.....	3,052	1,418,799	301,575	410,575	10,285	1,109,692	76,587	1,951,957	137.57	—533,159	249,549	—783,272	83,248
Baltimore & Ohio	5,151	98,165,206	24,756,516	132,609,923	20,179,673	41,761,498	1,432,598	57,743,544	3,384,418	12,543,970	94.58	7,176,953	3,235,000	3,930,604	—6,487,516
Baltimore, Chesapeake & Atlantic	87	759,186	413,408	1,216,507	138,067	367,699	9,312	697,589	31,361	1,244,028	102.26	—27,521	30,150	—57,671	90,419
Bangor & Aroostook	632	2,847,498	687,115	3,721,675	801,810	1,046,802	34,801	1,450,063	111,799	3,498,533	94.00	223,142	189,000	32,232	—288,039
Beaumont, Sour Lake & Western	118	699,012	224,317	968,625	237,077	174,791	17,414	421,020	45,731	896,033	92.50	72,592	24,360	48,120	—291,797
Belt Ry. Co. of Chicago	31	.....	.....	2,722,238	241,470	496,482	3,250	1,612,112	71,761	2,425,076	89.08	297,162	139,425	157,736	185,199
Bessemer & Lake Erie	217	9,360,737	378,273	9,981,922	1,111,963	2,976,850	96,095	3,085,558	173,466	7,439,839	74.54	2,551,083	130,506	2,420,454	—744,254
Bingham & Garfield Ry	37	793,958	18,484	847,188	353,178	361,578	11,720	243,233	38,092	1,027,999	121.34	—180,811	66,644	—247,455	—1,406,707
Birmingham Southern	29	327,509	.....	432,638	36,833	55,485	6,332	209,927	29,479	338,057	78.18	94,582	16,303	77,353	148,248
Boston & Maine	2,258	30,581,068	16,557,654	52,451,127	7,233,366	10,108,289	358,429	27,773,194	1,529,245	47,318,619	90.21	5,132,507	1,608,760	3,522,926	—1,846,073
Buffalo, Rochester & Pitts	589	8,961,485	1,182,285	10,556,712	1,758,022	3,741,685	131,288	5,077,314	295,311	11,023,179	104.42	—466,467	243,000	—710,004	—1,583,847
Buffalo & Susquehanna	296	1,547,083	61,982	1,696,795	384,044	844,726	16,067	576,582	69,742	1,891,161	111.45	—194,366	29,250	—223,616	—294,236
Canadian Pacific Ry. Line in Maine	233	1,444,877	461,662	2,013,442	464,377	459,524	23,390	1,257,483	31,711	2,235,750	111.04	—222,308	99,000	—321,308	—66,603
Charleston & Western Carolina	342	1,650,088	462,449	2,211,722	411,839	423,020	40,263	1,064,749	48,557	1,988,429	89.90	223,494	76,500	146,754	—142,546
Central New England	301	4,422,675	220,387	4,851,775	1,166,626	909,865	24,723	2,207,976	128,447	4,444,258	91.60	407,517	144,517	262,453	—335,851
Central of Georgia	1,918	9,508,889	4,775,737	15,739,993	3,050,317	3,284,510	309,122	6,784,240	529,546	13,964,871	88.73	1,773,122	557,257	1,208,719	—1,836,137
Central of New Jersey	685	24,081,567	6,439,121	32,895,635	3,970,073	8,495,423	219,835	15,485,051	769,089	2,907,019	88.39	3,817,616	1,592,716	2,224,739	—3,633,507
Central Vermont	411	3,091,336	801,063	4,267,451	863,201	1,087,506	68,998	2,615,326	158,572	4,807,949	112.66	—540,498	156,600	—697,264	—458,401
Carolina, Clinchfield & Ohio	282	3,984,237	307,716	4,369,817	683,708	1,096,589	41,644	1,353,055	123,519	3,297,733	75.46	1,072,083	146,700	925,297	178,754
Chesapeake & Ohio	2,503	39,409,486	11,201,015	53,673,732	8,654,958	11,821,625	327,019	20,808,407	999,738	42,898,723	79.92	10,775,009	1,502,040	9,268,569	—2,049,193
Chicago & Alton	1,050	12,804,894	4,803,026	18,691,456	3,160,120	5,160,293	229,127	7,921,118	439,134	16,992,645	90.91	1,698,811	560,180	1,136,972	—1,099,712
Chicago & Eastern Illinois	1,131	13,387,075	3,649,498	18,359,068	2,836,757	6,531,040	194,856	7,802,466	425,006	17,852,952	97.24	506,115	692,592	—189,875	—1,534,143
Chicago & Erie	269	6,151,907	898,149	7,666,216	876,501	1,303,254	95,600	3,866,856	251,596	6,419,037	83.73	1,247,179	266,965	980,122	873,114
Chicago & North Western	8,090	67,195,175	26,354,834	102,112,652	15,526,925	21,054,610	662,426	45,733,401	2,240,660	85,997,691	84.21	16,114,961	4,275,000	11,831,803	2,551,671
Chicago, Burlington & Quincy	9,373	77,283,601	26,579,287	112,204,197	16,792,487	22,416,789	801,101	4,297,757	2,845,309	86,951,199	77.49	25,252,988	4,057,675	21,172,835	3,109,543
Chicago Great Western	1,496	10,406,271	4,568,052	16,108,560	2,693,939	3,610,957	234,491	6,891,556	405,813	13,955,561	86.63	2,152,999	513,289	1,638,145	366,803
Chicago, Indianapolis & Louisville	657	6,046,589	2,139,205	8,979,269	1,060,690	2,253,020	125,785	3,770,529	233,243	7,528,299	83.84	1,450,970	352,572	1,097,170	109,846
Chicago Junction	12	.....	.....	2,697,531	634,749	451,524	920	2,033,766	63,074	3,184,033	118.03	—486,502	24,460	—511,045	—233,481
Chicago, Milwaukee & St. Paul	10 647	77,505,162	22,937,857	110,262,257	17,162,785	30,895,851	812,987	50,151,880	2,832,236	102,269,959	92.75	7,992,297	4,737,841	3,228,990	—2,396,883
Chicago, Peoria & St. Louis	247	919,113	225,328	1,221,496	341,264	590,219	25,496	758,560	78,053	1,793,578	146.83	—572,083	62,666	—634,764	—370,323
Chicago, Rock Island & Gulf	474	2,489,114	778,773	3,470,078	591,996	660,371	62,434	1,534,773	106,068	2,964,153	85.42	505,925	118,393	387,107	—385,378
Chicago, Rock Island & Pacific	7,594	52,265,927	23,490,794	80,405,590	13,268,227	18,126,758	929,134	34,288,499	1,797,487	68,722,875	85.47	11,682,515	3,111,834	8,565,882	904,678
Chicago, St. Paul, Minn. & Omaha	1,749	12,885,853	5,659,807	19,863,311	2,927,696	3,634,305	188,561	9,311,240	542,785	16,729,811	84.22	3,133,501	960,631	2,169,394	101,288
Chicago, Terre Haute & S. E.	374	2,791,458	197,031	3,068,136	495,128	1,366,359	28,282	1,175,867	78,950	3,158,993	102.96	—90,856	130,500	—221,375	—534,211
Cincinnati, Indianapolis & Western	321	1,566,254	483,011	2,256,174	427,805	701,826	46,446	1,191,311	119,708	2,494,753	110.57	—238,579	96,500	—335,088	—286,375
Cincinnati, New Orleans & Texas Pacific	337	8,555,661	2,774,843	11,912,564	1,655,241	3,864,382	202,053	4,769,815	308,208	10,867,908	91.23	1,044,656	343,119	697,744	—1,082,188
Cincinnati Northern	251	1,926,500	173,012	2,156,945	322,055	484,811	19,887	757,391	43,585	1,627,729	75.46	529,216	85,300	443,760	268,597
Cleveland, Cincinnati, Chicago & St. L.	2,395	36,256,163	12,769,953	53,092,126	6,606,109	10,329,747	686,465	21,449,519	981,521	40,473,791	76.23	12,618,336	1,630,000	10,983,441	—1,200,586
Colorado & Southern	1,100	7,247,301	1,900,376	9,683,515	1,592,796	2,239,462	77,172	3,579,286	316,617	7,870,878	81.28	1,812,638	423,600	1,386,029	—570,224
Colorado & Wyoming	41	214,295	10,703	822,935	98,983	153,437	1,291	371,158	34,270	659,139	80.10	163,795	36,000	127,795	—36,399
Cumberland Valley	163	3,310,116	651,098	4,233,709	760,957	953,076	58,153	1,646,439	103,461	3,528,377	83.34	705,333	75,962	629,108	—856,103
Delaware & Hudson	875	21,770,700	2,475,128	25,690,260	3,222,863	7,257,655	178,751	11,304,065	973,225	23,210,115	290.34	2,480,145	540,000	1,932,939	—1,156,735
Delaware, Lackawanna & Western	956	38,133,020	9,333,000	52,975,984	5,504,045	11,198,399	378,160	22,422,578	1,016,846	41,056,754	77.50	11,918,231	2,812,575	9,084,729	—2,429,078
Denver & Rio Grande	2,595	16,991,922	5,135,220	23,543,080	3,704,417	5,788,767	175,891	8,014,043	621,904	18,687,221	79.37	4,855,860	960,000	3,891,610	543,992
Denver & Salt Lake	255	1,692,550	348,610	2,104,578	670,402	797,218	8,496	1,169,287	45,398	2,690,801	127.85	—586,223	81,000	—667,362	—232,509
Detroit & Mackinac	381	836,043	285,482	1,186,829	202,886	329,290	26,576	565,497	90,266	1,213,898	102.28	—27,070	70,358	—97,428	—149,771
Detroit, Toledo & Ironton	456	2,432,599	119,242	2,718,194	802,041	868,208	25,503	1,280,610	115,552	3,091,964	113.75	—373,771	73,371	—447,460	—145,087
Detroit & Toledo Shore Line	61	1,786,547	.....	1,819,223	168,732	173,930	9,328	510,971	36,237	898,609	49.39	920,613	84,296	836,311	310,365
Duluth & Iron Range	292	6,119,251	201,830	6,794,118	751,004	849,686	4,314	1,654,593	128,254	3,390,125	49.89	3,403,993	342,843	3,060,479	—329,933
Duluth, Missabe & Northern	411	14,920,983	401,748	16,469,544	1,390,924	1,227,659	19,455	2,829,515	176,242	5,655,834	34.34	10,813,709	642,219	10,171,490	321,959
Duluth, South Shore & Atlantic	599	2,378,323	915,647	3,516,034	737,121	628,348	50,518	1,662,686	84,046	3,206,746	91.20	309,288	183,003	126,086	—91,950
Duluth, Winnipeg & Pacific	178	1,147,066	217,855	1,412,360	277,332	273,433	22,846	623,954	71,861	1,275,984	90.34	136,375	75,397	60,977	—7,926
East St. Louis Connecting	3	.....	.....	900,350	132,278	214,925	2,530	587,218	30,626	968,057	107.52	—67,708	22,744	—90,452	—38,913
El Paso & Southwestern	1,027	7,211,868	1,600,749	9,292,875	1,517,293	1,870,766	88,633	2,584,465	227,299	6,355,703	68.39	2,937,271	477,810	2,459,004	—1,798,014
Elgin, Joliet & Eastern	828	12,857,146	93	14,976,403	1,358,756	3,748,151	60,569	5,738,591	232,233	11,136,729	74.36	3,839,674	489,020	3,350,731	5,187
Erie	1,989	50,888,755	10,429,659	67,298,016	8,040,880	21,401,487	560,275	32,749,703	1,808,278	64,935,193	96.48	2,362,823	2,320,572	25,111	4,297,555
Florida East Coast	764	4,327,340	2,284,461	7,448,021	1,247,185	1,372,499	70,162	3,346,503	154,695	6,278,277	84.29	1,169,744	347,360	819,810	—792,801
Fonda, Johnstown & Gloversville	88	307,028	595,095	939,784	101,642	80,007	5,720	359,997	45,344	592,710	63.06	347,075	49,100	297,975	—1,830
Ft. Smith & Western	253	307,145	250,512	1,130,837	212,947	275,622	33,213	410,186	57,461	994,332	87.92	136,507	45,000	90,628	30,104
Ft. Worth & Denver City	454	5,212,926	2,500,659	8,029,924	763,361	1,552,581	38,925	2,906,716	223,286	5,511,751	68.64	2,518,174	169,226	2,347,873	1,381,600
Ft. Worth & Rio Grande	235	588,193	473,050	1,135,758	249,311	205,639	10,536	579,306	53,892	1,098,682	96.74	37,074	27,075	9,288	—50,579

Commission and Court News

Interstate Commerce Commission

Commission Requires Additional Traffic Statistics

The Interstate Commerce Commission has issued an order requiring class I and class II carriers, beginning with January 1, 1920, to compile freight traffic statistics monthly, and report them quarterly and annually to the commission showing the number of carloads, the number of tons of 2,000 pounds originating on respondent's line, and the number of tons received from connecting carriers of 69 commodities and l. c. l. merchandise.

As a special study covering waybills included in accounts for the month of April, 1920, but not thereafter until further order, carriers of class I are to compile and report additional data for the 15 following classes of commodities: Wheat, corn, cotton, fruits and vegetables, cattle and calves, hogs, fresh meats, bituminous coal, lumber, timber, box shooks, staves and headings, refined petroleum and its products, sugar, syrup, glucose and molasses, bar and sheet iron, structural iron and iron pipe, cement, automobiles and auto trucks, and fertilizers.

For each of the above classes, there shall be reported for the received tonnage only, except as otherwise provided below, the number of carloads, the number of tons (of 2,000 pounds), the total revenue, the state in which the point waybilled from is situated, and the state of the waybill destination. So far as practicable, the revenue reported by each carrier shall correspond to the state-to-state movement which it reports. On shipments to or from Canada, or Mexico, the revenue reported shall be only the proportion accruing to the respondents within the United States. The state waybilled from and the state waybilled to shall govern on rebilled traffic.

The data is to be compiled from the audited records covering local traffic including shipments rebilled at junctions with other than class I roads), and inbound interline traffic, including traffic moving to other than class I roads, to Canada, to Mexico, and to all other countries, when such traffic is waybilled to the junction points of delivery to other than class I or foreign carriers. When such traffic is waybilled through, class I carriers shall include in their reports traffic delivered on through billing to all other than class I roads. Interline accounts rendered by such carriers will be used to obtain the data. No adjustment of revenues or tonnage will be required on account of transit privileges at intermediate points.

Court News

Actions Against Government Owned Railroad Corporation

The Circuit Court of Appeals, Ninth Circuit, holds that the United States, by its purchase of the property, stock and bonds of the Alaska Northern, under authority of Act of Congress, March 12, 1914, became the owner, not only of the property, but of the corporation and is now its agent for governmental and public purposes; and without its consent the corporation cannot be sued in tort.—Ballaine v. Alaska Northern, 259 Fed. 183. Decided July 7, 1919.

Erroneous Quotation of Interstate Rates

The Arkansas Supreme Court holds, following I. C. v. H. E. Co., 226 U. S. 441, 33 Sup. Ct. 176, that an interstate carrier cannot be mulcted in damages by a shipper for failure to post its freight rates, as fixed by the Interstate Commerce Commission, in its station, or for misquoting the existing rate. The question arose in an action to recover undercharges on an interstate shipment of lumber, where the station agent, having received no notice of an advance in freight from 10½ cents to 13 cents, quoted the old rate to the shipper. Judgment was directed for the railroad.—St. Louis, I. M. & S. v. Wood (Ark.), 207 S. W. 32.

Federal Operation—Repair of Bridges

General Order No. 50 relates to actions at law, etc., and requires suits to be brought against the Director General of Railroads and not otherwise; and the rule shall not apply to proceedings for the recovery of fines, penalties or forfeitures. The rule has no application to a proceeding to compel the performance of a duty required by statute (in this case to repair a bridge over a railroad's tracks). The fact that the Director General has control or management of the affairs of a railroad company does not excuse the railroad from performing any duty owing to the state.—*In re* Morris Ave. Bridge in City of New York, Supreme Court, Special Term, 174 N. Y. Supp. 682.

Stop—Look—Listen Rule

In a crossing accident case the Arkansas Supreme Court, while recognizing that some courts hold that it is the duty of a traveler to stop and look and listen for the approach of a train, says: "We have not laid down the rule so strictly, but have uniformly held that a person who would pass over a railroad track at a crossing or elsewhere must do all that a man of ordinary care would do under similar circumstances to avoid any probable or possible danger from a passing train, and, if need be, stop as well as look and listen. Whether such care requires stopping as well as looking and listening depends upon whether, without it, the danger to be apprehended could be so well ascertained and avoided.—St. L.-S. F. v. Stewart (Ark.), 207 S. W. 440.

United States Supreme Court

Effect of Federal Control—Injuries to Passengers and to Freight

In an action against the Director of Railroads and the Missouri Pacific for an injury to a passenger, the railroad demurred (1) because the complaint did not sustain a sufficient cause of action against it, and (2) because the plaintiff had not a lien on the railroad for the damage alleged. The federal district court for the Western District of Arkansas sustained the demurrer, holding that under the acts of 1916 and 1918, and Presidential Proclamation of 1917, and in view of General Order No. 50, action cannot be maintained against a railroad company for injuries to a passenger resulting from negligence of its employees after the President had assumed control of the railroads, for the act of 1918 did not annul the previous presidential proclamation as to orders of the Director General, and the employees of the railroad being no longer subject to the orders of the railroad company, the maxim respondent superior (let the master answer) does not apply.—Mardis v. Hines, 258 Fed. 945. Decided July 17, 1919.

The federal district court for the District of Colorado holds that under the 1916 and 1918 acts a railroad cannot be made liable for injuries to shipments while the government has taken over the entire operation of the road, though section 10 of the 1918 act subjects the carrier to all laws and liabilities, whether arising under state or federal law, or at common law.—Hatcher v. Atchison, T. & S. F., 258 Fed. 952. Decided June 25, 1919.

The federal district court for the Northern District of Ohio holds that within the Federal Control Act March 21, 1918, section 10, subjecting carriers, while under federal control, to all liabilities as common carriers, except so far as may be inconsistent with the provisions of the act, and permitting actions to be brought and judgments rendered as now provided by law, it would be inconsistent with all the provisions of the act to subject a railroad company to liability for acts and conduct of public agents operating its property under federal control. [Citing Rutherford v. Union Pacific, 254 Fed. 880. The court did not agree with such holdings to the contrary as it had seen. It concluded: "It will not be assumed that the United States will terminate federal control and cover into the United States treasury the residue of the revolving fund and excess income, if any, without providing for debts and liabilities incurred during federal control."—Maubert v. B. & O., 259 Fed. 361. Decided September 3, 1919.

Foreign Railway News

Exports of Car Wheels and Axles in September

The exports of car wheels and axles in September reached a total value of $1,013,440 as compared with a total of $1,302,546 in August. Of the September exports, large shipments were made to Japan, France and British India. The detailed figures as compiled by the Division of Statistics of the Bureau of Foreign and Domestic Commerce are as follows:

Countries	Dollars
France	210,864
Italy	36,663
Canada	11,335
Honduras	1,562
Nicaragua	116
Panama	102
Mexico	4,594
Cuba	26,597
French West Indies	544
Dominican Republic	1,370
Brazil	36,897
Chile	32
Ecuador	3,981
British Guiana	426
Venezuela	41
China	1,003
Japanese China	55,167
British India	123,730
Dutch East Indies	79,761
Japan	409,106
Australia	7,292
Philippine Islands	2,221
British South Africa	36
Total	1,013,440

Exports of Locomotives in September

The exports of locomotives in September totaled 78, of a value of $2,326,339. This total was considerably larger than the totals for July and August, but not as great as in May or June. Of the September total of 78 locomotives, 15 were consigned to Cuba and 14 to Japanese China. The detailed figures as compiled by the Bureau of Foreign and Domestic Commerce are as follows:

Countries	Number.	Dollars.
France	2	75,550
Norway	3	60,450
Canada	5	37,674
Cuba	15	306,755
Argentina	3	94,600
Brazil	6	189,600
Ecuador	1	10,650
China	4	199,000
Japanese China	14	701,800
British India	4	44,160
Straits Settlements	6	170,700
Dutch East Indies	1	4,500
Japan	3	27,900
Russia in Asia	2	90,000
Philippine Islands	1	2,000
Portuguese Africa	8	311,000
Total	78	2,326,339

Avoiding Prussian Railways

The Inter-Allied schemes for the provision of international railway routes which shall so far as possible avoid German and Austrian territory, are causing alarm in commercial circles in Germany. Owing to the Orient express, for instance, which runs to Constantinople and Athens, being arranged to travel in future, via Venice, Trieste and Belgrade, thus avoiding Vienna and Budapest, which were formerly on the route, two celebrated connecting trains, the Hamburg-Berlin-Vienna and the Berlin-Oderberg-Budapest expresses, will find their occupation gone. Similarly, the famous "Nord Express," to Russia and the Far East, which before the war provided a very striking example of the extent to which international communications depended on Germany, will no longer run via Cologne and Berlin, which in turn affects two other connecting trains,, the Frankfort-Berlin and Hamburg-Berlin expresses. The German route to Copenhagen, formerly giving the quickest service to and from London, loses its monopoly of speed, while the route between Switzerland, Cologne and Frankfort has already given way to the Franco-Belgian route via Brussels and Strasbourg. German commercial fears at the result of this isolation in transport matters are shown demonstrated by the fact that one of the reasons for the establishment of the great industrial exhibition at Frankfort, which is to be held twice a year, is the hope of salvaging some of the international traffic. The main station at Frankfort, it should be added, is one of the largest, finest and costliest in the world, and most of the capital expenditure incurred in building it was undertaken because of the pre-war importance of the city as an international traffic centre.

Exports of Railway Track Material in September

The exports of spikes in September amounted to 4,298,046 lbs. valued at $179,197; of rails 58,424 tons valued at $3,403,771 and of switches, frogs, splice bars, etc., to the value of $473,753. Of the shipments of rails and switches, etc., Japan was the largest customer, while in the case of spikes, it was second. The figures in detail as compiled by the Division of Statistics of the Bureau of Foreign and Domestic Commerce, were as follows:

	Spikes		Steel Rails	Switches, frogs, Splice Bars, etc.	
Countries	Pounds	Dollars	Tons	Dollars	Dollars
Belgium	.....	.....	451	31,570	2,125
Denmark	13,440	525	225	18,975	525
France	1,210,120	57,163	2,148	144,322	21,040
Norway	.....	.....	501	25,018	2,340
Sweden	14,433	300	401	22,456	3,440
England	.....	.....	591	35,937	15,830
Scotland	.....	.....	1,094	69,141	1,769
British Honduras	39,204	1,005	277	18,035	723
Canada	67,520	2,651	778	46,920	38,616
Costa Rica	35,600	1,430	184	9,529	15
Guatemala	300	12	.....	.....	3,880
Honduras	179,200	4,064	2,315	118,241	2,193
Nicaragua	.....	.....	.....	.....	494
Panama	39,000	1,755	287	14,372	1,243
Salvador	41,500	1,942	286	14,200	142
Mexico	38,962	2,191	797	14,873	3,035
Miquelon, Langley, etc.	200	17	.....	.....	.....
Newfoundland and Labrador	.....	.....	4	345	.....
Jamaica	19,273	747	40	2,336	3,907
Trinidad and Tobago	.....	.....	12	1,073	.....
Other British West Indies	10,480	418	.....	.....	.....
Cuba	544,396	19,073	6,325	343,203	58,834
French West Indies	15,124	1,072	225	12,000	90
Haiti	10,000	355	.....	.....	70
Dominican Republic	17,300	788	99	5,044	5,317
Argentina	.....	.....	7	655	49
Brazil	110,780	4,106	430	30,084	1,468
Chile	263,000	11,248	607	32,001	67
Colombia	.....	.....	249	14,492	12,430
Ecuador	7,225	298	.....	.....	624
British Guiana	.....	.....	691	36,105	.....
Peru	21,040	804	1,180	92,121	2,505
Uruguay	109,361	4,036	.....	.....	.....
Venezuela	2,264	133	.....	.....	1,060
China	197,073	3,185	11	587	526
Japanese China	159,560	6,743	4,785	238,133	33,460
British India	3,941	93	55	3,206	1,540
Other Brit. East Indies	.....	.....	.....	.....	1,923
Dutch East Indies	144,745	10,114	1,153	91,180	9,377
Hongkong	.....	.....	605	49,610	2,331
Japan	497,365	23,186	24,373	1,408,441	170,494
Russia in Asia	120,400	3,940	.....	.....	5,149
Siam	.....	.....	.....	.....	7,963
Philippine Islands	303,800	11,006	3,785	203,308	33,633
British South Africa	61,500	4,797	3,417	224,251	22,371
French Africa	.....	.....	36	2,007	1,155
Total	4,298,046	179,197	58,424	3,403,771	473,753

England's Railway Rates Advisory Committee

LONDON.

Sir Eric Geddes, Minister of Transport, has appointed F. Gore-Browne, K.C., nominated by the Lord Chancellor as chairman of the Railway Rates Advisory Committee; Lionel A. Martin, representative of trade, nominated by the Board of Trade; W. W. Berry, representative of agriculture, nominated by the Board of Trade; W. J. Davis, representative of labor, nominated by the Minister of Labor; W. A. Jepson, representative of transportation, nominated by the Minister of Transport; W. M. Acworth, additional member for question of immediate increase of rates, nominated by Minister of Transport.

This committee will ultimately have to advise the Minister of Transport on the question of a general revision of the bases of rates and charges on railways. The present classification of freight traffic and the statutory powers for its conveyance were based on conditions prevailing some 30 years ago. When the maximum rates were fixed in 1891 and 1892 the various commodities were divided into eight classes. Rates have been provided for the eight classes on a fairly uniform scale throughout the country, but not more than one-fourth of the total business is carried at those class rates, the remaining three-fourths being carried at what are known as "exceptional" rates, which are lower than the class rates, with the result that a most complex

system of varying rates has been built up. It is also pointed out that there is a great want of elasticity about the present system.

Exports of Freight and Passenger Cars in September

The exports of freight cars in September totaled 1,774, valued at $3,538,002, of which the larger portion were consigned to France. The exports of passenger cars totaled 12, all consigned for Mexico. The detailed figures as compiled by the Division of Statistics of the Bureau of Foreign and Domestic Commerce, are as follows:

Countries	Passenger Number	Passenger Dollars	Freight and Other Number	Freight and Other Dollars
France	..	.....	1,500	3,162,010
Norway	..	.....	30	66,375
Sweden	..	.....	20	43,600
Canada	..	.....	36	27,750
Mexico	12	81,975	4	2,862
Cuba	..	.....	11	10,050
Dominican Republic	..	.....	20	25,175
Peru	..	.....	10	4,180
China	..	.....	8	15,300
Hongkong	..	.....	4	10,200
Russia in Asia	..	.....	100	170,000
Philippine Islands	..	.....	1	500
Total	12	81,975	1,774	3,538,002

The Nationalization of French Railways

LONDON.

The Federation of Railwaymen and, with it, the whole of the socialist party, has risen against the tariff increase announced by the Finance Minister. Both socialists and syndicalists see in nationalization a remedy for the deficit.

One can certainly adduce argument in favor of the working of the railways by the state, says Agence Radio in the Journal des Transports, Paris, but to claim to have found in such a measure the means of solving the financial crisis which is affecting our system, is to set one's face against the most conspicuous facts.

The coefficient of railway working, that is to say, the ratio between the cash receipts and working expenditure only (financial charges, interest and capital redemption of shares and debentures not included) was as follows in 1918:

	Per cent		Per cent
Orleans	85	East	96
Midi	87	North	112
Paris, Lyons & Mediterranean.	90	State (et al.)	120

This means that the state railways exceed even the coefficient of the two railways which operate in the war zone and which were deeply affected by the war.

The only system which may be fairly compared with the State is that of Orleans, the composition, geographical position and traffic of which are almost similar. Now, during the last ten years, the coefficient of working of Orleans fluctuated between 52 per cent and 85 per cent, whereas that of the State varied between 68 per cent and 120 per cent.

The Orleans deficit reaches 241,000,000; if it had worked at the same price as the State, its immediate neighbor, its deficit would have reached over 1,200 millions.

These figures cannot be refuted and they are not, at all events. To represent nationalization, under those conditions, as a means of re-establishing the balance of exploitation without raising the tariffs, means, either to ignore the facts, or to deny the well-tried power of experience.

If it is wished that the State should be the future sole owner of all railway systems of general utility, and at the same time, however, leave the exploitation a certain elasticity, a certain independence, relieve it from the strict forms and rules of public administration, it might be possible to apply to the railways the system of "Régie intéressée (exploitation under the State's supervision) which has been well tried, particularly in connection with the municipal gas supply of Paris.

But one cannot repeat too often that this is a solution for the future, an administrative solution, which does not do away with the deficit incurred in the past and which does not ensure financial equilibrium for the future.

Only a little common sense will suffice to realize that no industry, whatever the system may be (concession, "régie intéressée," or direct management) cannot be compelled to work below the cost price.

Supply Trade News

Sidney Williams, who was for 15 years assistant director of purchases and assistant to the vice-president of the Union Pacific, until the change in organization was made by the United States Railroad Administration, is now vice-president of the United Products Company, exporters, at 66 Broadway, New York.

The Standard Asphalt & Refining Company, Chicago, has made arrangements with the **Insulite Products Company, Inc.,** Railway Exchange Building, Portland, Ore., to handle its products. The Insulite Products Company is a new company which has been organized recently under the management of **F. B. Gilman,** formerly of the F. B. Gilman & Co. Branch offices are to be opened in Spokane, Wash.; Tacoma, Seattle; San Francisco, Cal.; and Los Angeles.

Trade Publications

FORGING.—A series of pamphlets entitled National Forging Machine Talks is being distributed by the National Machinery Company, Tiffin, Ohio. No. 36 describes a method of forming the eyes on brake hangers.

LOCOMOTIVE REPAIR SHOP DESIGN.—The Austin Company, Cleveland, Ohio, has issued an attractive pamphlet containing a reprint of an article published in the August 8, 1919, issue of the *Railway Age*, under the title "The Design of Locomotive Repair Shops," by Gustave E. Lemmerich.

SHOP ACCESSORIES.—Armstrong Brothers Tool Company, Chicago, has recently issued its general catalogue B-17, covering the complete line of tool holders, ratchet drills, lathe dogs, clamps and wrenches which this company manufactures. Among the new products listed are special tool holders for use with Stellite cutters and a safety pulley hanger for mounting split pulleys.

MILLIKEN BUILDINGS.—The Milliken Brothers Manufacturing Company, Inc., New York, has issued catalogue No. 10, illustrating and describing Milliken buildings and steel specialties, including transmission towers, radio towers and pinlock poles. This booklet is supplemented by catalogue No. 11, an erection handbook which is designed as a guide for the erection of buildings.

TWIST DRILLS.—The manufacture of Celfor drills is described in an interesting manner in a booklet, entitled "Putting Mettle Into Metal," issued by the Clark Equipment Company, Buchanan, Mich. The successive operations in the making and testing of drills are illustrated and described. A portion of the book contains views of the company's plant, together with the hospital and recreational facilities provided for the employees.

BLAW FORMS FOR LIGHT WALLS AND FOUNDATIONS.—A 28-page pamphlet, recently issued by the Blaw-Knox Company, Pittsburgh, Pa., as Bulletin No. 203, is devoted to the advantages of this type of form. It is well illustrated, showing to some extent the variety of work for which these forms are adapted, while considerable space is given to describing in detail the method of assembling and applying them to different types of construction.

ERIE SHOVELS.—The Ball Engine Company, Erie, Pa., has issued Bulletin S-36, a large six-page folder, with 12 illustrations, devoted to the use of Erie shovels in handling rock. The illustrations show actual conditions under which these shovels have worked and the classes of material handled. Data on the amount moved, time and cost, etc., are furnished through the medium of letters from owners who are using the Erie shovel in rock work.

TYPICAL GRAPHIC RECORDS.—The Esterline Company, Indianapolis, Ind., has issued a 24-page pamphlet containing a large number of typical charts produced by automatic recording instruments. While intended primarily to illustrate the character of work accomplished by these instruments, many interesting facts

concerning power input and output and load variation, with different classes of industrial equipment, are demonstrated by the charts.

Steel Castings.—Harrison Steel Castings is the title of a profusely illustrated book issued by the Harrison Steel Castings Company and the National Car Coupler Company, Chicago. After a brief account of the origin of steel castings, data concerning the company's plant is given and the successive steps in the manufacture of a steel casting are illustrated and described. The book forms a very interesting non-technical treatise on the manufacture of steel castings.

Blaw Forms for Buildings.—The Blaw-Knox Company, Pittsburgh, Pa., has recently acquired the patents, personnel and equipment of the Uniform Company of Boston and has taken up the manufacture and sale of forms for reinforced concrete building construction developed by the Uniform company. The nature of these forms, and their application to various purposes, is described and illustrated in a 40-page catalogue recently issued by the Blaw-Knox Company.

Malleable Iron.—The American Malleable Castings Association, Cleveland, O., has prepared a short treatise on malleable iron, explaining its structure, uses and treatment, and indicating a few of the principles on which the process of making malleable iron castings is based, as well as some of the results that have been attained. The booklet is illustrated with a number of photographs showing results of various kinds of tests to determine the strength of the material.

Centrifugal Pump Sales Service Data.—A large amount of information on the theory, design and testing of centrifugal pumps, originally sent out in the form of sales letters to its own men, has been compiled by the Goulds Manufacturing Company, Seneca, N. Y., into Bulletin No. 122. There are 18 chapters dealing with methods of use, characteristics, effects of changes, performances, proper installation and operation, etc., with illustrations and a considerable number of data curves.

Standard Locomotives.—The Locomotive Superheater Company, New York, has compiled and published in Bulletin No. 7, general arrangement drawings and details of construction, together with a photograph and general data for each of the 12 types of standard locomotives designed by the United States Railroad Administration. Wheel loading and clearance diagrams for each are also given, making it a convenient reference book for information pertaining to the stadard locomotives.

Cutters.—The Cleveland Milling Machine Company, Cleveland, Ohio, has revised its list of cutters in Catalogue B. This catalogue contains 140 pages, giving standard sizes and prices, and illustrating the line of tools, such as cutters, end mills, collets, hobs, etc., made by this company. Many valuable tables are contained in the catalogue, including tables of cutting speeds, correspondinb diametral and circular pitches, decimal and millimeter equivalents, drill size decimal equivalents, screw threads and spur gear tooth spacing and thickness.

Industrial Management.—L. V. Estes, Incorporated, industrial engineers, Chicago, have published a small booklet entitled Human Relations in Industry, for the purpose of pointing out the underlying principles of personal relations and industrial management that are essential to industrial harmony and maximum production. It contains a statement showing the trend of present conditions and the need for definite action by employers, and outlines in a general way the procedure necessary for putting in effect plans tending toward a betterment of human relations in industry.

Air Hoists and Elevators.—Catalogue No. 149, issued by the Whiting Foundry Equipment Company, Harvey, Ill., is devoted to the description of pneumatic and hydro-pneumatic hoisting equipment. The air hoists include both the vertical and horizontal type, these designs being made in two different styles, the one for ordinary service, the other for use where delicate control is necessary. The accessories described include special valves to stop the hoists at any point on the upward stroke or to maintain the load at any desired height, and also trolleys for use where unusually long hose is required. The compressed air elevators are intended for one-story lifts only and have capacities up to 6,000 lb.

Financial and Construction

Railway Financial News

Boston & Maine.—At an adjourned meeting of stockholders on December 3 the following directors were elected: Norman L. Bassett, Augusta, Me.; Richard Billings, Woodstock, Vt.; Charles W. Bosworth, Springfield, Mass.; Frank P. Carpenter, Manchester, N. H.; Charles Sumner Cook, Portland, Me.; Henry B. Day, Newton, Mass.; James L. Doherty, Springfield, Mass.; Charles P. Hall, Newton, Mass.; Woodward Hudson, Concord, Mass.; Benjamin A. Kimball, Concord, N. H.; George von L. Meyer, Hamilton, Mass.; Walter M. Parker, Manchester, N. H.; Jarvis P. O'Brien, Troy, N. Y.; J. Duncan Upham, Claremont, N. H.; George R. Wallace, Fitchburg, Mass.; Henry E. Warner, Lincoln, Mass.

The new members represent the new first preferred stock given to the leased lines and the old preferred stock.

Samuel Carr, F. C. Dumane and J. M. Prendergast, who have served on the board of many years, desired to be relieved from further service. It is expected that James H. Hustis will resume his position as president as soon as he can settle the matters of the receivership.

Lehigh Valley.—This company has declared the regular quarterly dividend of 1¾ per cent on the common stock, payable to stockholders of record December 13 on or soon after January 3 as the company receives from the government an adequate payment of the rental now due. The regular quarterly dividend of 2½ per cent on the preferred stock was also declared, payable January 3 to stockholders of record December 13. This is same rate as declared on the common stock three and six months ago.

Wichita & Northwestern.—This road has applied to the Kansas Public Utilities Commission for permission to issue $9,000,000 in securities for the purchase of railroad property and for railroad construction. According to the statement filed with the commission, the roads intend to take over the Anthony & Northern, purchase the Iuka branch of the Missouri Pacific and construct a line from Wichita, Kans., to Olcott.

Railway Construction

Atchison, Topeka & Santa Fe.—This road will construct a one-story, steel frame, car repair shop, 50 ft. by 128 ft., at Chicago. The cost is estimated at approximately $10,000.

Chicago Union Station Company.—A contract for the erection of the Harrison street viaduct has been given to the Kelly-Atkinson Construction Company, Chicago, at a figure of $206,000.

Eastland, Wichita Falls & Gulf.—The company has 15 miles of road graded ready for ties and rails, from Mangum, Texas, on the Central branch of the Missouri, Kansas & Texas, through Eastland, to the Eastland and Stephens county line north. Contracts have been let for grading an additional nine miles to Wayland in Stephens county. It is expected that all the track will be laid and the line opened for operation by April, 1920. O. B. Colquit, president, Dallas, Texas.

The Cost of the Great War was $337,946,179,657, according to an estimate made by Ernest L. Bogart, professor of economics at the University of Illinois.

Passenger Traffic in July.—The number of passengers carried one mile in July was 4,535,725,858, an increase of 12.4 per cent over July, 1918, according to the monthly report of the Operating Statistics Section. In the Northwestern region the increase was 23.8 per cent, while in the Ohio-Indiana district and the Southern region there were decreases. For the seven months ending July 31 the number of passengers carried one mile was 25,856,907, an increase of 5.9 per cent.

EDITORIAL

Railway Age

Table of Contents will be found on Page 5 of the Advertising Section

More Funds for the Universities

Universities, colleges, technical schools and other institutions of learning largely dependent on the more or less fixed returns from investments, are feeling seriously the effects of advancing costs of operation and many of them are making appeals to the public to avoid the only other alternate—curtailed scope. These appeals should meet with a generous response. The railroads and industries in general are to a large extent dependent upon the technical schools. It is to the technically trained men that business must look for the perfecting of mechanical devices, scientific investigations, etc. Any loss of efficiency in the schools must surely be followed by a corresponding let down in the efficiency of the various organizations dependent for advancement on the work of the technically trained men in their employ. For these reasons the appeals must not fall on deaf ears. The railroads in particular cannot, from a purely selfish viewpoint, view these calls with indifference. Taken collectively they, perhaps, employ more technically trained men than any other single industry. The engineering, the mechanical, and the electrical departments of the roads must necessarily look to the technical schools as the source of supply in recruiting forces. To these departments the recruiting of high grade technical men is as necessary as securing an adequate appropriation.

Greatest Danger to Private Management

Many of those prominently connected with commerce and industry wish to see propaganda against the Plumb plan carried on with energy as they believe that the agitation for it is a menace, first, to private ownership of railroads, and, second, to private ownership of property of all kinds. But the real danger at present to private ownership and management of railroads is not the Plumb plan. It stands no chance of early adoption, and probably no real chance of adoption at any time. The greatest danger to private ownership and management of railroads comes from those who profess to be, and who really are, in favor of that policy, but who are unwilling to support the demand for the kind of legislation and regulation which are indispensable to the success of private management. Ten years ago Judge C. A. Prouty said, in an address at Yale University: "If we are ever brought face to face with the proposition of government ownership it will not be by the imposition of excessive charges, for we can deal with that situation, but by the impossibility of obtaining adequate facilities. * * * If we are to look in the future as in the past to private capital for the providing of our railroad transportation, it is fundamentally necessary that confidence in the fair treatment of that capital shall be established." The only way in which confidence in the fair treatment of private capital invested in railroads can be established is by Congress in its law-making capacity, and the regulating bodies in their administrative capacity, providing for the railways to be allowed and enabled to earn a return sufficient to enable them to pay approximately the same return upon capital which is paid by other large and equally well managed concerns. A large part of those who say they favor, and really do favor, private management are today either opposing legislation to require that the railways shall be allowed to earn sufficient to enable them adequately to develop their facilities or are giving such legislation either lukewarm or no support. It is high time that those who believe private management will be best for the commerce, the industry, and the people of the United States should clarify their minds upon this subject and begin vigorously to promote action in accordance with their professed principles.

Technical, But Not Too Technical

Discussions of the railroad question such as that at the recent meeting of the Academy of Political Science in New York, are of great value in promoting thought among the general public about the great economic problems involved. It is always a question, however, as to how far it is possible to expect such a discussion to throw new light on a tremendously complicated and technical matter. Men of all shades of opinion participated in the discussion, but for this very reason they did not talk the same language. A man like John E. Oldham, the Boston banker, who has made a life-long study of the railroad problem, would have had to spend days, not hours, in giving his audience a preliminary knowledge of the facts involved, were he to have discussed the subject in the full possibilities of his own technical knowledge. On the other hand, most men called on to discuss such a question before a general audience, feel that a certain amount of old ground must be gone over as a foundation for what new suggestions they have to make. But the going over of old ground in a non-technical way is not without its value, especially to the speaker himself. Trying to put into non-technical words, what he knows and thinks about the situation, tends to clarify the mind of a man, no matter how thoroughly familiar he is with his subject. To have a proposition stated, a fact made concrete, by way of illustration, is a contribution to the solving of a complicated problem. Even if, therefore, no startlingly new suggestions were made at the meeting of the Academy of Political Science, the re-statement in non-technical terms of various phases of the railroad question was of real value.

Signal Lines Crossing Over Railways

Within a few weeks the Bureau of Standards, Washington, D. C., expects to adopt and publish revised rules and regulations of at least a portion of its "National Electrical Code." Of particular interest to the railroads is that portion of the code which relates to signal lines crossing over railways. The term "signal lines" here referred to should not be confused with the facilities applied to railway signal department appliances, but should be considered as that general class of wire lines operating below a certain stated voltage used mainly for some form of communication.

The crossing of wire lines over the tracks of railways has always been a matter of considerable importance and in the past it has been somewhat of a task to get some of the wire owning companies to install crossings provided with ample

strength to withstand the force of the elements and in many cases proper clearances have not been adhered to. As a result, troubles of various kinds have developed, some of which have been of a very serious nature, even to the extent of causing loss of life. Railway despatching and message lines as well as automatic block and other similar signal circuits have been interfered with because crossing wires have dropped, causing dangerous crosses bteween wires. Many cases could be cited to show how important it is for the railroads to insist that wire crossings should have ample strength.

It is not the intention to imply that great progress has not been made in the development of satisfactory wire crossings. The old rule of thumb methods have practically been abandoned for those based strictly on engineering principles. For instance, in 1913 at the annual convention of the Association of Railway Telegraph Superintendents, now the Telegraph and Telephone Division of the American Railroad Association, a specification covering the type of construction for signal line crossings over railways was accepted. This specification was the work of a joint committee on which the Bureau of Standards was represented, and was based largely on engineering principles. Later the American Railway Association adopted it and a large number of roads and wire owning companies accepted it as standard practice. Now the Bureau of Standards is prepared to issue a revised set of rules and regulations, which it believes are superior to its former code and it is quite certain the railroads will welcome the progress which has been made from the standpoint of safety alone.

However, the Telegraph and Telephone division, which held a special three-day session in Chicago on December 3 to 5 inclusive, feels that in some instances the revised code, insofar as signal line crossings are concerned, does not meet exactly with its views; particularly in the case of such wire crossings over spur tracks. For instance, the revised code states that a grade of construction, known as "grade E" and which is equivalent to two-thirds the strength of the type known as "grade D" used for crossings over main lines, shall be used for signal lines crossing over spurs not exceeding two tracks in the same span. It is a well-known fact that there are any number of such spurs, some of which are of considerable length, that are as important as main line tracks which require "grade D" construction.

The revised code also states that signal lines crossing over branch tracks, on which no regular schedule of operation is maintained, shall conform to "grade E" construction. There are also any number of branch lines that may be so classified; but they are considered just as important as main line track which requires "grade D" construction.

The matter of spur and branch tracks here mentioned, which are classed by some as minor tracks but which in reality are important tracks, should receive a great deal of consideration on the part of those who must pass upon the class or grade of construction to be adopted for signal line crossings. The most important factor involved and the one which should receive the greatest consideration, is the hazard to life. A very large part of the deaths and injuries of railroad employees engaged in transportation occur upon these so-called minor tracks. Because of the particular class of these tracks and because their use is for a certain service, employees are obliged to ride upon car sides, ladders and roofs much more frequently and under more hazardous circumstances than those engaged in work upon ordinary yard and main tracks. It would seem advisable, therefore, that extra care should be taken to avoid scant lateral and vertical clearances between electrical conductors, their supports and standard freight cars; and to provide ample strength in the conductors, their attachments and supports at crossings over such tracks.

The Only Way to Make Private Management a Success

THE REASONS WHY it is essential that the Government should provide a system of regulation which will enable the railway companies to raise sufficient new capital have been stated in various forms on many occasions, but they never were better and more concisely stated than by Judge C. A. Prouty, Director of Valuation of the Interstate Commerce Commission and also Director of Accounting of the Railroad Administration. Judge Prouty's summing up of the situation was made in the following words:

"The government might have built and operated its own railways, but instead of doing so it has invited private capital to discharge for it this public function, upon the assurance that such capital shall be allowed to exact a fair compensation for the service. Nothing can be more unjust than to deny to this capital that right.

"Not only does a sense of justice require this; self interest also dictates it. The railroads of this country must, in the immediate future, be very largely extended and improved; additional facilities must be provided to meet the increased demands which will be made. This will require the outlay of vast sums of capital; and this capital must come mainly, not from the earnings of the railroads, from the investing public. We can provide by legislation the sort of cars which a railroad shall use and the rates which it shall impose; we cannot by legislation force one single dollar of private capital into railroad investment against its will.

"Capital will seek investment in this field for exactly the same reason that it will in any other; namely, upon the expectation of making a profit out of the investment. It is not necessary that the return should be large; but it is necessary that it should be certain; that the people who put their money into this form of investment shall feel confident of fair and honest treatment.

"A want of adequate railway facilities would mean industrial paralysis. Unless they are provided when needed, the government will find itself confronted with a demand from all sources—from the merchant, the manufacturer, the farmer—which will force it to meet in some way the necessities of the occasion; and this can only be by either furnishing the capital or providing the railroad itself. If we are ever brought face to face with the proposition of government ownership, it will not be by the imposition of excessive charges, for we can deal with that situation, but by the impossibility of obtaining adequate facilities. The possibility of such an emergency is by no means fanciful. We were upon the brink of it in the fall of 1906, and the winter of 1907, when crops were rotting upon the ground because they could not be carried to market and when people were freezing because coal could not be transported to keep them warm.

"This phase of the matter is too little considered. If this government hopes to continue its present system; if we are to look in the future as in the past to private capital for the providing of our railroad transportation, it is fundamentally necessary that confidence in the fair treatment of that capital shall be established."

The reader who is familiar with existing conditions and with the legislative proposals pending in Congress might very naturaly assume that this statement of fundamental facts and principles was made by Judge Prouty with special reference to the situation which exists at the present time. On the contrary, the paragraphs quoted are from a lecture delivered by him before the senior class of the Sheffield Scientific School of Yale University in 1909, over ten years ago.

The railroad situation was very unsatisfactory at that time, but it was almost perfect compared with that which exists now. The shortage of facilities which existed then was complete adequacy compared with the inadequacy which exists at present. The ratio of total earnings to operating expenses was then small compared with what it is now. The net operating income in relation to the investment on which a

return had to be paid was large compared with what it is now. The rate which had to be paid by the railroads for new capital was comparatively small and railroad credit relatively excellent compared with what they are now.

If it was desirable that the public and the Government should ten years ago heed the statement of principles which Judge Prouty then made and the implied warning which he then gave, how much more important it is that they should heed his warning and act on the principles ennunciated by him at the present time.

Do Not Abandon Any Good Methods

One of the dangers in the transition of the railways from federal to private control is that they may discard some beneficial practices which have been adopted during unified operation by the government, in the general desire of railway officers to free themselves from the numerous unsatisfactory measures which have come into vogue during the last two years. This danger arises primarily from the fact that many men have become so exasperated at the restrictions of one kind or another that have been imposed upon them that they are disposed to be hostile to every measure that has originated under federal control, good or bad. As a matter of fact, unified control has afforded an opportunity for the introduction of many measures long advocated by railway officers, but impossible of attainment under the former law-enforced competitive private operation. To destroy these measures now would only result in permanent loss to the road and in many instances to shippers.

A prominent example of a good measure now in imminent danger of being discarded is the new tie specifications. The Railroad Administration took over the purchase of ties early in 1918. Late in the same year standard specifications were put into effect and uniform inspection inaugurated. These specifications have now been in force on all roads under federal control for over a year, and are therefore generally known. While opposed in some quarters they have been approved by a large majority of the tie producers and railway men as well, yet at a meeting called by the American Railroad Association the Track Committee of the Engineering Section of that organization recommended that the specifications of the Railroad Administration be superseded by those of the American Railway Engineering Association.

The Tie Committee of the American Railroad Association also considered this matter at a two-day session the first week in December. The specifications of the Railroad Administration are not perfect; their most ardent advocate will admit that certain defects have been shown to exist. Yet the fact remains that they are in use today on almost the entire mileage of the country, and their requirements are known alike to producer and purchaser.

The hostility to them really does not arise from the specifications themselves, but from other measures of the Railroad Administration in buying ties under them. That the centralization of the purchase of ties has not proved satisfactory to the producer or railway men is well known; few activities have aroused greater hostility, yet most of the measures giving rise to the opposition by the producers originated prior to the preparation of the specifications. Indeed, much of the opposition which exists to the specifications themselves can be attributed to the hostile frame of mind engendered by these earlier acts.

The uniform specifications have much of good in them. The roads should not permit them to be discarded because of hostility to ill-advised measures. Every method which has been adopted under government control should be considered on its individual merits and should be accepted or rejected as such without reference to other measures.

Letters to the Editor

Automatic Stops and Signals

To the Editor:

The letter describing a certain train control system published in your issue of September 26 on page 620 contains the following statement: "That trains have been stopped (automatically) when the following dangerous conditions prevailed—open switches—block occupied by train—cars fouling the main track—broken rails (on three occasions)." Anyone well informed on automatic steps and railway signaling is well aware that just such results would be obtained by the use of any one of a number of train control systems.

While the writer is in favor of automatic stops and feels sure that their use will prevent a number of a certain class of accidents, is it not a fact that the automatic stop is but an adjunct to the present signal system and its real or primary function is to enforce obedience to proper signal indications as controlled by standard track circuits?

Technical railroad men and other railroad officers who are familiar with the operation of automatic signals clearly understand that properly placed signals would have given stop indications for the above mentioned conditions and that the function of the automatic stop is to correct the engine man should he for any reason be unable to see or fail to obey such signal indications. A. T. C.

Supervision Versus Efficiency

To the Editor:

I note in the article on page 675 on "The Shop Craft Agreement" in your delayed issue of October 3, that you state "One great weakness of American railroads is the lack of adequate supervision."

I could more readily agree with this statement had the word "adequate" read "efficient," as I believe there are few of the larger roads which have not already an adequate corps of supervisors—in fact most of the local officers on those lines will, I think, readily concede that there generally is a superfluity in the number of supervising officers. In my opinion if the present officers could be required to exercise the efficiency for which they are paid, less rather than more supervision would better meet the needs.

I travel almost constantly on the railroad which employs me and I am assigned to do general efficiency work—to be the eyes, so to speak, of the chief operating officer and to remedy locally, when practicable, anything I observe which is not efficient or up to standard. In this capacity I am constantly finding items which the local and other officers concerned should and would discover themsevles were they doing their work with the efficiency that should naturally be expected of them. The laxness of supervision on railroads generally is inexcusably appalling. A man who draws a salary for supervising and fails to do so is, in a sense, obtaining money under false pretenses; if his failure is due to his ignorance he has no right to be a supervisor—and in either event should be removed.

One superintendent said to me not long ago that most of his time was taken up with the various specializers sent out from the general office—each having a list of items pertaining to their department which were not up to standard on his division. I asked him whether he and his subordinate officers concerned were familiar with the standard require-

ments and if so why they did not see they were observed and thereby make these specializers useless. He said these men look only for the things upon which they are specializing and having trained their minds on those particular features could see what the others could not. I know from my own experience this is a gross exaggeration and a mere excuse to cover inefficiency. Their superior officers, having as a rule risen through their superintendent's experience, take much the same viewpoint, and in consequence this lack of efficiency not only is allowed to exist but, being unchecked, is growing with impunity.

As the attitude of the chiefs is reflected all the way down to the ranks, the tendency of officers and foremen is to become complacent, self-satisfied individuals, imperturbed appendages and expensive adjuncts. An Observer.

Inadequate Compensation for Supervision

To the Editor:

The writer was very much interested in an editorial printed in one of the recent delayed copies of the *Age*. It referred to the compensation of railroad supervision.

By way of illustration, I should like to cite the predicament of the shop superintendent on a certain trunk line railroad:

We have about 500 employes, doing a general line of repair work consisting of about everything from wheel-barrows to business cars. Our output monthly consists of about 900 classified, repaired freight cars and an average of about 40 passenger cars. We also do a considerable amount of work for the maintenance of way department, and manufacture forgings, etc., for other smaller shops along the line.

The monthly compensation for the shop superintendent will average a little less than that earned by members of the wreck crew. Is it possible, under this arrangement of compensation, that the management can expect one to put forth his best efforts, especially with the order in effect that supervision may not be engaged by another road under federal control without first getting permission from the Railroad Administration?

Shop Superintendent.

The Train Despatcher and His Opportunities

Council Bluffs, Iowa.

To the Editor:

The probable near approach of normal life in the railroad world—superseding petrified existence as governed from Washington—prompts me to put in a word once more in behalf of the despatcher.

At first thought one might draw the conclusion that a despatcher fills a secluded position; but as a matter of fact the position has to do with one of the broadest fields of railroad work, and it depends on the individuality of the despatcher himself as to what benefit he shall derive from the opportunities offered by his position.

Being assigned to regular hours with a certain routine, he may easily allow himself to do his work in a mechanical way. Too many despatchers labor under the impression that their only duty consists of making provision for the meeting and passing of trains, leaving the other details to the chief despatcher; but the more attention given by the despatcher to the smaller details the better will be his efficiency, and only by efficiency can he prepare himself for more responsible positions.

The despatcher on duty has a better knowledge of general conditions than any other person on the division. He is in position to furnish first-hand information that even the superintendent could not furnish. To display the proper spirit and care in giving information to all concerned, from superintendent to section foreman, is one of the chief opportunities of a train despatcher to gain favor with these men. This is a plain duty to himself.

His duty to familiarize himself with the physical characteristics of his territory offers him a grand opportunity. He should know not only the location of tracks, switches, grades and bridges, but also the location of the principal industries and the things that they require. He can become personally acquainted with the owners of the different industries, thereby broadening and cultivating his own personality. By personal contact with these men he is better qualified to serve his company in its intercourse with them. Some may claim that these are matters to be handled by the superintendent and train masters. True, but the despatcher can do these things in an unobtrusive manner, keeping in mind that he is only a despatcher.

Again, the despatcher should make it a point to become personally acquainted with the yardmasters and assistants at the terminals. Everyone knows that better results are obtained by personal interviews than through any other medium. Such acquaintance will often change the tone of all subsequent correspondence.

In his frequent trips over the road the despatcher should do his very best to become better acquainted with the train and enginemen; learn their dispositions, character and manner of doing their work. Get on the engine and have the enginemen show you the different parts of the machinery; then when an engine failure occurs you have a nearer conception of the trouble. When failures occur which the despatcher does not understand let him keep it in mind and at the first opportunity have some engineman explain it. Enginemen will be glad to do this.

When the trainmen learn that the despatcher possesses clear knowledge of how things are being conducted on the road they have greater confidence in him. Compliment the man on the road as often as possible for good work performed.

The foregoing may be what the newspaper man calls "tame stuff," but commonplaces make up the most of life. The despatcher can increase his efficiency, make his position more secure and live happier by making use of diplomacy and tact and not following a beaten path. We all aspire to better positions. Let us study some of the requirements that are felt by the man higher up. The despatcher, in the discharge of his duty, often has to assume the authority of officers, from the rank of superintendent down. Why, therefore, should he not inject some of their ingenuity into his work?

We cannot succeed by theory alone, but must carry theory into practical execution. Let us try it.

Keep wide awake all the time! Don't let any eight-hour limitation dwarf your interest in your employer's prosperity. Keep your mind on good railroading sixteen hours a day. Is this too much? Well, try it for three days in the week and see how it works. H. S. M.

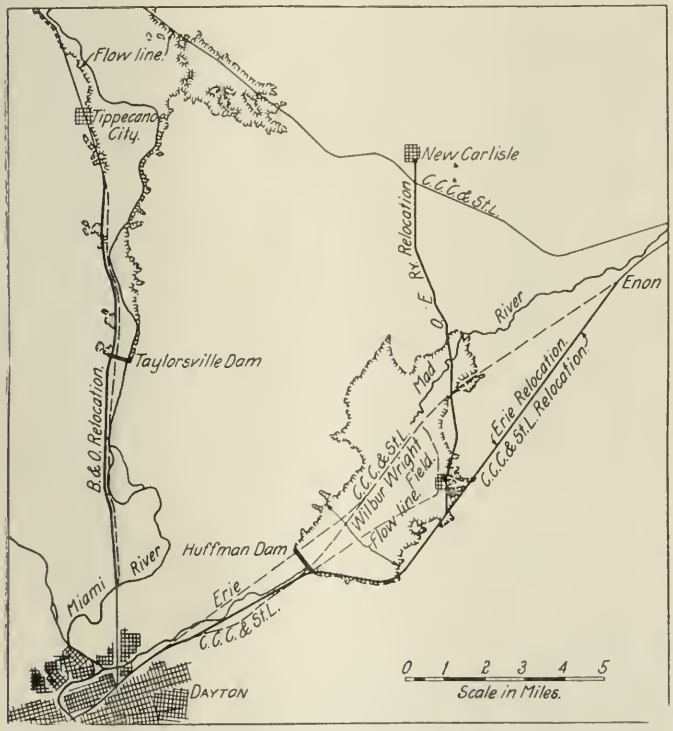
Every westbound train is filled with passengers who admit that they are emigrating to a warmer climate to avoid the inconveniences of cold weather and little coal. It has been a common remark among passenger traffic officers on western roads leading to southern California and other regions of balmy atmosphere, during the past few weeks. Sleeping car berths have been engaged many days in advance, and for weeks every transcontinental train had to have a second section. The traffic originates in the east and north partly, but they say that Iowa and Nebraska have been furnishing more California tourists than any other section.

The Miami Conservancy Relocates Four Railways

Fifty-five Miles of New Track Constructed to Replace Lines Lying Within Flood Basin

It is not often that a railroad is built by the public for a public utility corporation, but this is what actually is taking place near Dayton, Ohio, where the Miami Conservancy District is now completing about 55 miles of track or 40 miles of roadbed at its own expense for the Cleveland, Cincinnati, Chicago & St. Louis, the Erie, the Baltimore & Ohio, and the Ohio Electric. The work is under the joint supervision of engineers representing the Conservancy project and the railroads, the former covering matters contingent upon the District's interest in the cost and the latter with respect to the completion of the work to standards acceptable to the railroads.

This work is a necessary detail of the flood prevention project undertaken by the Miami Conservancy District in the valleys of the Miami and Mad rivers above Dayton. A



Map Showing How the Two Retardation Basins Interfered with the Railroads

great dam is being built at Taylorsville, on the Miami river, and another at Huffman, on the Mad river, to hold back flood waters in great retarding basins behind these dams. Discharge spillways are provided which will release the water in quantities readily handled by the river channels through the lower valleys where much damage was done by the flood of 1913. All land located within the flood limits of the reservoir is, of course, subject to potential inundation, and for this reason has been vacated through purchase by the District. Included in the property thus condemned are the lines of the four railroads mentioned, which must be relocated outside of the flood limits. This work has involved not only the reconstruction of new lines to replace those stretches of track lying within the reservoir areas, but also entails considerable mileages both up and down stream which were required to secure satisfactory approach grades to the higher elevation of the lines to avoid high water.

The expense of the relocations is borne entirely by the Conservancy district and will amount to about $4,000,000, although the railroads, like all other owners of property within the Conservancy district, are assessed "benefits" for the advantages assumed to accrue through decrease of flood hazards. Agreements with the railroads also cover adjustments for the relative values of the new and old lines, from

Steam Shovel at Work in the Huffman Cut

an operating standpoint. Thus, while ruling grades were not changed, it was impossible to provide new lines which were not either longer or shorter than the old ones or which did not contain either a greater or a less amount of curvature. For instance, in the case of the relocation of the Big Four and the Erie, the railroads are entitled to $400,000 extra compensation for 4,000 ft. of increased length and 100 deg. additional curvature. In the case of the Baltimore & Ohio line the case is the reverse, and the railroad will compensate the District for providing a better line than

Double Levees to Protect the Railways

its old one. Recognition has also been given to the increased cost of maintenance in the early years of operating a newly constructed line, and allowance is made to the roads covering such cost during the first six years of use.

The lines affected are the Cincinnati, Hamilton & Dayton line of the Baltimore & Ohio north of Dayton in the valley of the Miami river, and the Cincinnati line of the Erie, the Cleveland-Cincinnati line of the Big Four between

Dayton and Springfield and the Ohio Electric, which occupy the flood plain of the Mad river.

As seen on the map, the old Erie and Big Four lines were located side by side most of the distance from Springfield to Dayton in a location close to the Mad river. Near the middle of the Wilbur Wright Field the two lines separated, the Erie occupying the north side and the Big Four the south side of the stream until a point close to Dayton, where the Erie again joined the Big Four on the south side. The relocation of these roads commences about two miles east of Dayton and extends for a distance of 15.2 miles. These two roads have been operating their single-track lines as joint double track for a number of years and will continue to do so after the relocation has been completed. The old lines of the Ohio Electric lay parallel to the Big Four for a distance of about five miles out of Dayton, and occupied an independent location for the remaining distance.

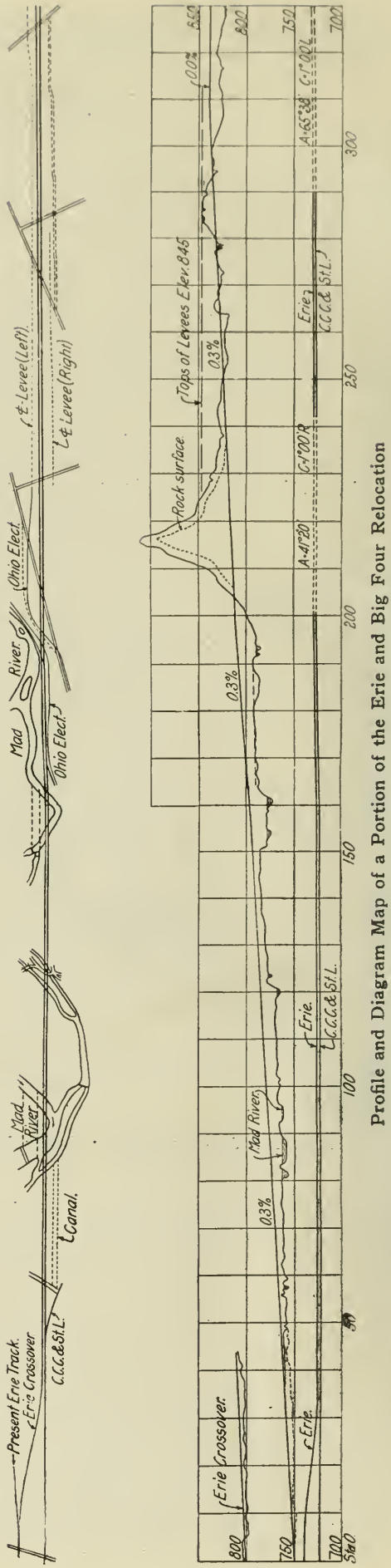
The critical point in the relocation project is the dam site at Huffman, where the required position of the great dam and spillway made it necessary to place the new lines about 400 ft. south of the existing track of the Big Four. This involved two difficulties, the presence of a massive shoulder of rock rising abruptly from the south abutment of the dam and the requirement of a 0.3 per cent approach grade for the railroads from the west. Because of definite restrictions on the location of the foot of this grade within the city of Dayton it was possible to raise the line at the dam site only about 31 ft. above the old grade line and 10 ft. below the crest elevation of the dam, with the result that a rock cut 4800 ft. long and 119 ft. deep (on the upper side) was required. This entailed the excavation of 683,000 cu. yd. of material, most of which was rock. Because of this restriction on the elevation of the grade line a further com-

Twin Three-Arch Bridges for the Big Four and the Erie

plication was encountered at the east end of the cut where the line enters the south fringe of the flood area at an elevation below the maximum flood level. As a consequence, it was necessary to protect the tracks on both sides for a distance of 3500 ft. by the construction of levees to a maximum height of 35 ft. These were located 200 ft. center to center and have the effect of placing the line in an artificial cut.

For drainage of the highlands to the south of the track, culverts were built under the tracks and levees which will serve also to equalize water levels on both sides of the levees during flood periods. These levees are continued to a point where the 0.3 per cent grade ascending eastward raises the line above the flood water level. For the remaining distance the location was determined by requirements of suitable connections with the existing lines. This was accomplished with the use of an 8-mile tangent.

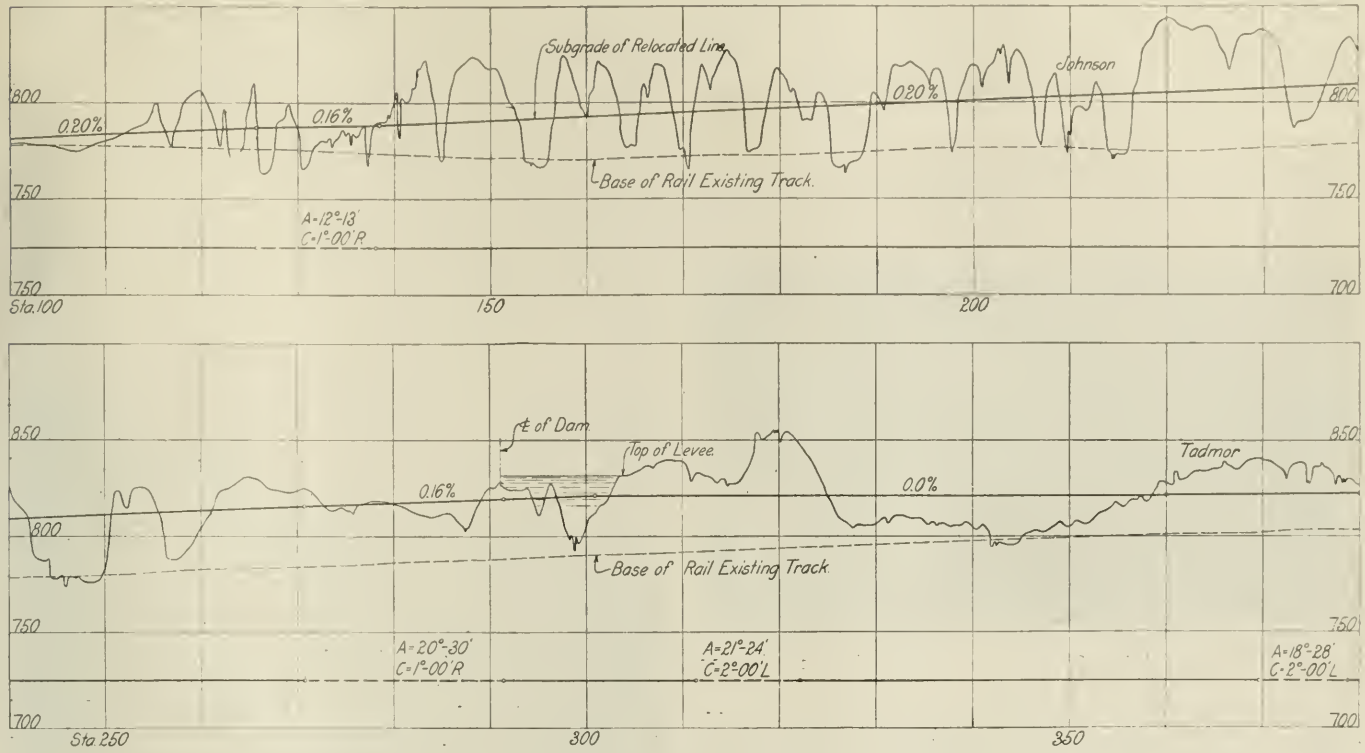
No change was required in the location of the Ohio Electric between Dayton and a point a short distance west of the Huffman cut. After passing underneath the new embankment of the Erie and the Big Four through a skew under-



Profile and Diagram Map of a Portion of the Erie and Big Four Relocation

crossing accommodating both the electric line and the Springfield pike, both the electric road and the highway occupy a shelf in the face of the hill outside of the big railroad cut, while to the east of this the Ohio Electric will be placed in the top of the inner levee protecting the railroad tracks.

The west approach of the railroad relocation is on a tangent approximately midway between the two old locations of the Big Four and the Erie, throwing a considerable portion of it into the Mad river flats. This entailed an extensive channel change of the river, which was excavated by a

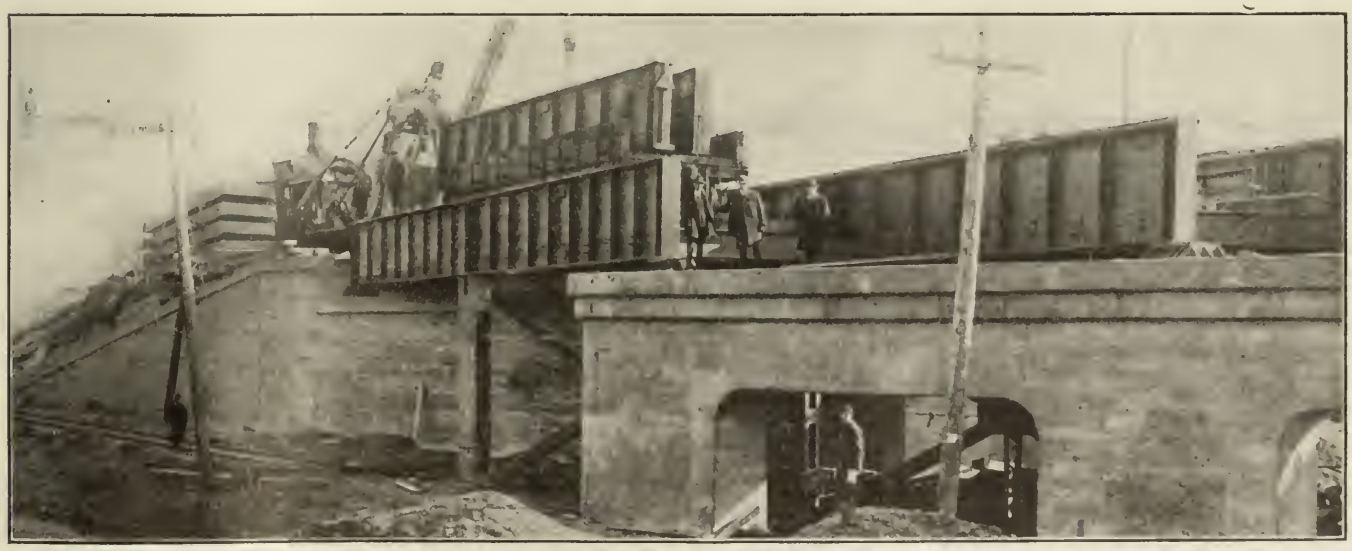


Profile of a Portion of the Baltimore & Ohio Relocation

The tracks of the Erie and the Big Four occupy a single roadbed at 14-ft. centers from the junction point near the city limits of Dayton to the eastern end of the levees, where they spread to 60-ft. centers and occupy separate roadbeds for the remaining distance to the end of the relocation. Single track roadbeds are 20 to 30 ft. wide and double track 34 to 44 ft., with slopes of 1½ to 1 for earth and 1 to 1 for rock. The maximum rate of curvature is 1 deg. and the 0.3 per cent grade is compensated 0.04 per cent on curves. The width of roadbed in the big cut is 70.5 ft.

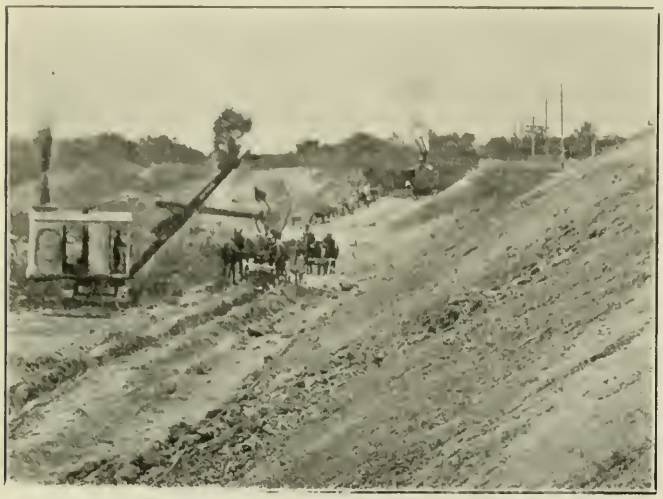
clam shell bucket operated by a portable derrick. The approach is entirely on embankment involving 374,000 cu. yd of filling, which was made largely from material taken from Huffman cut and excavation for the outlet of the conduits at the south end of the dam.

The Huffman cut was by far the most formidable portion of the railway work and controlled the date on which it could be completed. The work was done by the forces of the Walsh Construction Company, Davenport, Iowa, the general contractor for the entire railroad project on the Mad



Skew Undercrossing West of the Huffman Cut

river. The total volume of material removed is 683,000 cu. yd., of which about 80 per cent is rock, which extends to the surface in many places. The upper stratum of material is Brassfield limestone, under which is an Elkhorn shale, underlaid in turn by limestone and clay formations of the Cincinnatian period. This material had to be loosened by blasting, using 40 per cent gelatine in holes drilled both with well drill and steam hammer outfits. These holes were placed from 12 to 18 ft. apart and from 6 to 16 ft. deep. They were usually sprung before shooting and then loaded



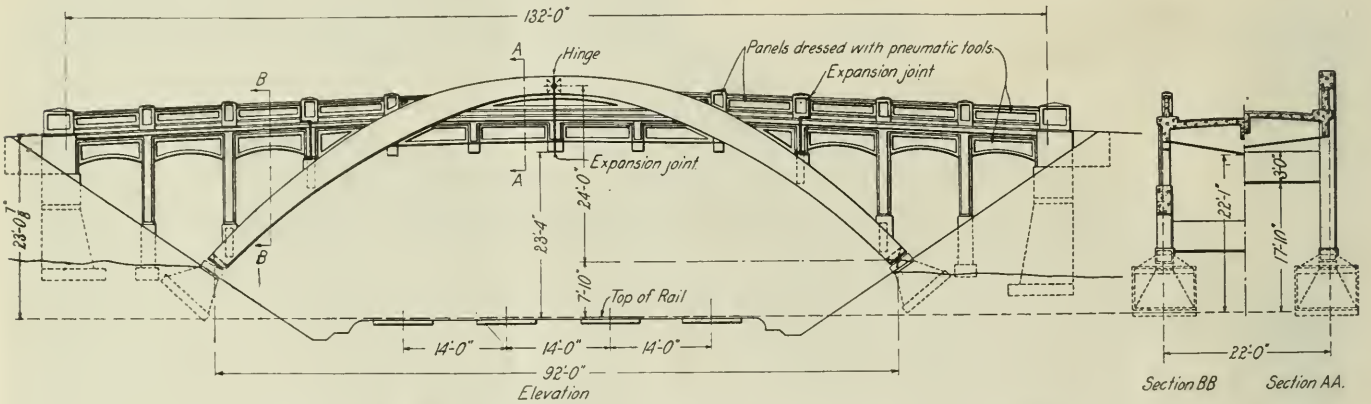
Grading with Revolving Shovels and Horse-Drawn Wagons

with 100 lb. of explosive and shot in groups of about 11 holes at a time. In moving the material from the cut after the excavation had progressed to a point where it was possible to eliminate switch backs in getting the dirt trains down onto the embankment, the loading track was made continuous through the cut, so that the trains could carry the spoil in either direction. This was done so that the material could be used in the levees to the east of the cut as well as in the long approach embankment to the west. The construction equipment consisted of a 70-C Bucyrus steam shovel with three-foot gage cars and locomotives were installed to remove the remaining portion of the material for the construction of embankments at greater distances from the cuts.

The structures on this portion of the work included an underpass for the Ohio Electric and Springfield pike west of the Huffman cut in the form of a 4-span through girder structure on a 25-deg. skew, involving 320 tons of structural steel. Toward the east end of the project where the Big Four and the Erie occupy independent roadbeds, there is a pair of twin three-span arch bridges, shown in one of the photographs. Other structures include a considerable number of concrete culverts of various sizes. Some of these, which pass under the roadway, and two levees are over 300 ft. long. The masonry for the skew under-crossing mentioned above was built by the Walsh Construction Company, but all of the other structures were built by the Conservancy District with its own forces.

The Baltimore & Ohio Work

The Baltimore & Ohio location is of an entirely different nature than that in the Mad river basin. The old track of the railroad occupies a location close to the river and at a relatively small elevation above the normal water level, and continues at this low grade for such a distance upstream that the railroad does not reach an elevation above the flood level of the retarding basin until within the vicinity of Tippecanoe City, some four miles above the site of the Taylorsville dam. The sides of the Miami river valley, which is quite narrow, are much steeper than those of the Mad river, so the relocation of the railroad in this case consisted essentially in shifting it up the hillside for a maximum difference in elevation of about 32 ft. As in the case of the Mad river project, the matter of approach grade was of vital concern. The ruling gradient to be applied in the Baltimore & Ohio work is 0.2 per cent, compensated for curvature. To obtain the desired elevation at the dam with this limiting gradient it was necessary to carry back the foot of the approach nearly 6½ miles, or almost a mile south of the Miami river bridge, which is about a mile out of Dayton. The grade over this bridge was raised 6 ft. in connection with a reconstruction of the structure. North of the dam the new



Elevation of the Highway Arch Over the Baltimore & Ohio at Taylorsville

shovel and three standard-gage trains. This shovel handled as much as 4,000 cu. yd. of rock in a 10-hr. shift, with an average of about 36,000 to 38,000 cu. yd. of material per month.

East of the levees the heavier work consists of four cuts of 35,000, 85,000, 105,000 and 23,000 cu. yd., respectively, which were handled as sub-contracts by the George W. Condon Company of Omaha. The last cut was handled entirely by teams. In the others excavating graders and teams were used within the limits of economy, and then a grade line is virtually level until it reaches the point where it intersects with the old line. To protect the roadbed at the dam, which has a crest about 14 ft. above base of rail level, levees are also being provided on each side of the track for short distances. While the old line was built for the most part on a low bench at the foot of the hillside, the new line, being elevated half way up the slope, traverses a succession of short cuts and fills, producing a very choppy ground line, as shown on the profile.

The line is built for double track, for which the railroad

pays the district the additional cost over single track at all points where the existing line has no second track in the form of a passing track or otherwise. No provision has been made for new passing tracks outside of the double-track roadbed.

The entire project on this road involved the excavation of 850,000 cu. yd. of material, nearly all of which is earth, and it is distributed among a large number of moderate sized cuts. The work was awarded as a general contract to Grant Smith of New York, but was handled directly by H. C. Kahl of Davenport, who sublet portions of the work to Kahl Brothers, the Vang Construction Company, and Condon & Smith. The work was handled according to a variety of methods. From stations 110 to 126 a sub-contractor used an excavating grader and teams. Between sta-

The Baltimore & Ohio Project Was Largely Side Hill Work. Old Line in the Foreground, New Line Above

tions 126 and 154 the material was removed with a 70-C Bucyrus shovel and loaded onto narrow-gage dump cars, while the distance between station 154 and Johnson two revolving Erie shovels were used with teams. North of Johnson two more 70-C shovels were used with narrow-gage cars.

By far the most important structure on this portion of the line is a 92-ft. reinforced concrete arch for a highway overcrossing at Taylorsville, and which connects with the highway on top of the dam. This is a two-ribbed, three-hinged structure of a combination of the open spandrel and suspended floor types. This form of design was selected to accommodate conditions under which the center line of the arch ribs at the crown could be 6 ft. higher than the crown of the roadway. As a result the deck of the structure is suspended from the ribs for a length of 44 ft. at the crown, while the outer portions over the haunches are carried above the ribs on a column-and-girder spandrel construction in connection to two additional spans carried on independent abutments and piers beyond the limits of the arch structure on either side. The ribs are reinforced with built-up structural steel frames, having bolted connections to the hinge castings.

Owing to the irregular nature of the ground line a great many waterway openings were required under the embankment, which were taken care of by concrete culverts and concrete culvert pipes. At four places provision for highway under-crossing and waterways was made by concrete arches varying from 12 to 30 ft. in span.

The railway project has been carried on under the direction of Arthur E. Morgan, chief engineer of the Miami Conservancy District, the railroad work being under the immediate direction of Albert Larsen, division engineer for the District. The interests of the Cleveland, Cincinnati, Chicago & St. Louis and of the Erie were represented by G. P. Smith, consulting engineer of the Cleveland, Cincinnati, Chicago & St. Louis at Cincinnati, while the interests of the Baltimore & Ohio on the Miami river project were represented by E. G. Lane, chief engineer, Baltimore & Ohio lines west at Cincinnati. The work was started in April, 1918, and is to be finished early in 1920.

Railroad Fuel Promptly Paid For

WALKER D. HINES, director general of railroads, on December 6, authorized the following:

"Statements having been given circulation to the effect that the Railroad Administration is delaying payments for coal in order to obtain a lower price, and that as a result mines now producing coal will have to be shut down within 17 hours, I feel that the public should be reassured and informed that there is not the slightest foundation for such statements.

"The coal now being produced falls into two classes, first, the coal actually used by railroads, and second, the coal which is diverted under the orders of the fuel administrator to essential consumers. The coal within the second class, under the plain terms of the fuel administrator's orders which are the same as those in effect during the war is to be paid for by the new consignee, and not by the railroads. Much of this coal is being shipped long distances, because practically no coal is now being produced in the West, and as a result, it takes some time to render bills to the new consignees.

"As to railroad fuel, instructions were issued by the Railroad Administration prior to the present agitation of this subject that it should be paid for promptly, and in addition special arrangements have been put into effect under which operators actually needing money to continue operations may be enabled to obtain money through the railroads. As an evidence that such instructions are being carried out, arrangements have been completed under which the Chesapeake & Ohio has obtained one million dollars from the Railroad Administration to pay operators on that road, and railroads in the Allegheny region have been instructed to pay for coal on a weekly basis.

"To assist further operators to obtain funds, the Federal Reserve Board was requested to rule, and has ruled that the note of a shipper of coal who has coal in the possession of a railroad to be transported, delivered or diverted, and who is to be paid by the consignee or divertee, is a note issued or drawn for a commercial or industrial purpose, within the meaning of Section 13, of the Federal Reserve Act, and is eligible for rediscount by federal reserve banks. The Railroad Administration has arranged that certificates shall be given by the agents of the Railroad Administration to a shipper on the loading of coal so that it may be established that a note is of that character and to make it desirable paper for rediscount, by federal reserve banks.

"The Railroad Administration is not delaying any payments on account of any dispute as to price. The only questions at issue as to price involve some wholesalers, as to whom the intent of one of the Fuel Administrator's orders has not been entirely clear, and as to some coal sold under contracts made prior to October 30 and shipped after November 13. Neither of these questions involve serious problems.

"The public should demand that the Railroad Administration will not permit any coal operator to close down because coal delivered to railroads for their own use has not been

paid for and, therefore, the statements mentioned are causing undue alarm.

"It should also be understood that these statements emanate from the same source which, soon after the present strike began, protested against the fixing of the government maximum prices on coal and regarding which the attorney general stated in a letter that your proposition amounts in effect to a declaration that coal dealers should be permitted to take advantage of these abnormal conditions, and have their prices based entirely upon the law of supply and demand, which is only another way of saying that they should be permitted to charge the public whatever they please."

In response to Senate Resolution 243 directing a report to the Senate of the arrangements that have been made or will be made for the prompt payment of coal diverted in transit from the original consignee, Director General Hines on December 6 sent to the Vice President a statement in part as follows:

"The Railroad Administration has been acting as the agency of the Fuel Administration in distributing coal to those users entitled thereto under the priorities described by the Fuel Administration and in performing this difficult work has been particularly solicitous to facilitate the promptest payment for coal by the users thereof to which the same might be diverted. Arrangements have been made to make sure that such users pay for the coal and pay for it promptly, and imperative instructions have been issued and reiterated that coal taken for railroad use should be promptly paid for. In addition, the Railroad Administration has cooperated with the Federal Reserve Board in adopting methods to facilitate the borrowing of money by the operators upon coal in transit. Further than this the Railroad Administration has requested the coal operators to give specific information as to any mines actually in difficulty on account of inability to collect their coal bills with sufficient promptness, and in the only instances which have accordingly been reported to the Railroad Administration it has made arrangements to purchase for railroad use enough coal and made immediate payment therefor to furnish the operators affected sufficient funds to meet their immediate needs.

"On November 3, 1919, the Central Coal Committee which the director general of railroads appointed at Washington to supervise the distribution of coal telegraphed all regional directors as follows:

The question which is being raised and which is deserving of immediate consideration is the prompt payment for coal confiscated by the railroads for fuel purposes. The point is made that mines which continue to operate will have difficulty in meeting their pay roll if payment for such coal is withheld for any considerable length of time.

The matter is, therefore, brought to your attention with suggestion that arrangements be made with all your roads for the promptest possible payment of coal that is confiscated for railroad use.

"On November 3 and 4 after representation by the National Coal Association and the Pocahontas Coal Operators' Association that coal operators were apprehensive about securing payment promptly for diverted coal, and in some instances that the operators might not receive such payment with sufficient promptness to enable them to meet their payrolls and other production expenses, the Central Coal Committee suggested that the operators in each district should interest themselves in this matter in their district, and arrange so that operators whose mines were working should be able to secure the needed financial assistance by borrowing money from banks against outstanding coal. It was suggested by the National Coal Association that payment for diverted coal would be facilitated if the railroad showed on the coal waybills the selling price of the coal when advised of this by the shippers, and on November 6, instructions were given all regional directors to see that this was done.

"On November 20, after being advised by the representative of the National Coal Association that apparently some operators did not know of the arrangement permitting the price of coal to be shown on coal waybills, instructions were therefore sent to regional directors by the Central Coal Committee to have agents advise shippers in writing of this arrangement. On November 26 instructions were sent to the regional directors that as far as practicable they should dispose of the oldest coal on hand first when making diversions or deliveries.

"On November 28 the Central Coal Committee, on being advised that some operators were claiming to be financially embarrassed, and this arrangement was desirable to assist them in securing their money, telegraphed the regional directors as follows:

To avoid financial embarrassment to shippers of diverted coal and consequent restriction of production, regional coal committees and federal managers should be instructed to insure prompt payment of bills by final consignees by making delivery of coal conditional on such payment if necessary. Arrangement should also be made that shippers are immediately advised of consignees to whom their coal is diverted. Every effort should also be made to pay for railway fuel with utmost promptness. This repeats previous instruction and is sent you to emphasize the importance of giving the subject special consideration.

"On being informed that banks in coal field districts were being drained of funds through loans to coal operators, conferences were held with representatives of the coal operators and later with the Federal Reserve Board to see what arrangements could be made to relieve the situation. As a result of this, the arrangements covered by the inclosed press notice of Dec. 3 were made and representatives of banks and operators agreed that this would be of material assistance.

"Again on December 3, telegraphic instructions were sent to all regional directors to put into effect at once the arrangements for issuing such form of receipt for coal shipments.

"Further on the same day the following telegraphic instructions were sent all regional directors:

See my telegram November 28 advising that prompt payment for diverted as well as contract coal was necessary to avoid financial embarrassment of shippers and consequent restriction of production. Also that every effort should be made to pay for railway fuel with utmost promptness. Our information is that operators are not receiving remittances promptly and instructions should be given by you to have all bills prepared, vouchered and paid immediately on receipt. This is of utmost importance.

"At various times since this matter was brought up, representatives of the coal operators have been requested to furnish information as to specific instances where there was a possibility the mines would be unable to obtain funds to meet payroll and other operating expenses, and no such specific instances were reported to the Central Coal Committee prior to December 4, when they were advised that two operators located on the line of the Chesapeake & Ohio Railroad were in such strained circumstances that a shut-down might possibly occur. Arrangements were made with the Chesapeake & Ohio Railroad to purchase for railroad use and pay for immediately sufficient coal now being produced by these operators to furnish them sufficient funds to meet their immediate needs. In addition to written and telegraphic instructions sent to regional directors, the question of prompt payment for railroad coal and prompt notice to shippers of diverting of commercial coal has been made the subject of frequent telephone conversations with interested railroad officers.

"The Central Coal Committee has arranged to secure daily reports of the number of cars of diverted coal and information as to whether or not shippers have been notified so that delinquencies can be corrected.

"As may be seen from the foregoing the Central Coal Committee and all representatives of the director general of railroads have appreciated the necessity and desirability of prompt payment for coal diverted and every effort has been made and will be made to secure such prompt payment."

The Future of Canada's Transportation Problem*

Development of Present Situation Should Show Relative Merits of Government and Private Ownership

THE PRESENT RAILROAD SITUATION in Canada and the events which brought it about have been discussed in previous articles. The question that naturally follows is, what will be the effect of this unique situation upon future railway history? The Dominion government is now operating approximately 13,200 miles or about 34 per cent of Canada's total mileage under the jurisdiction of the Canadian National Railways Company. In addition, the government is operating under the form of a receivership, with the Hon. J. D. Reid, Minister of Railways, as the receiver, the Grand Trunk Pacific which without doubt will become an integral part of the Canadian National system. The Dominion government, furthermore, is negotiating for the perpetual lease of the Grand Trunk and, because of its value to the Canadian National project, it is safe to assume that the Grand Trunk will also become a part of the Canadian National system. Assuming that the Canadian National Railways will ultimately include the Prince Edward Island, the Intercolonial, the National Transcontinental, the Canadian Northern, the Grand Trunk Pacific and the Grand Trunk, making a total mileage of 20,000 miles, what will be the effect of this merger?

We have, or will have in the near future, two great Canadian transcontinental systems, one owned and operated by the government, the other owned and operated by a private corporation. The parts comprising the former have been in more or less constant financial difficulty, whereas the latter has been financially successful, and has been earning a substantial return for its shareholders. The service given the public by the units of the former when compared with the service given by the latter is deficient. But it is only just now that the government lines are being welded into a single system.

What will happen to this system will depend on two things, the policy of the government and the education of the public. However, neither of these forces can produce an immediate effect. Regardless of whether this peculiar situation of a great government owned line in direct competition with a great privately owned line is desirable or not, it will certainly afford an opportunity to all students of railway affairs to view the relative merits of government ownership and operation and private ownership and operation.

Political Influences

Government ownership, it is often argued, cannot be divorced from politics. The Canadian National Railways typify government ownership. The logical conclusion, therefore, is that the Canadian National Railways cannot be divorced from politics. Certainly it is true that there has been political interference with government management in almost every democratic country where it has been tried. But the case of the Canadian National, the advocates of the nationalization program in Canada say, is different. It is true that House Bill 70, which incorporates the Canadian National Railways Company, has several clauses which are openly directed against political interference in the operation of the government system. The principal clauses of this nature are contained in Sections 14 and 15, which place the operation of the system under the control of the Board of Railway Commissioners which acts in a capacity similar to the Interstate Commerce Commission, and give the public the right to sue the Canadian National in any court of competent jurisdiction as well as the right of appeal to a higher court.

However, this does not necessarily mean that there will be no political interference in the affairs of the Canadian National. There are too many ways in which political interference can achieve its purpose aside from those against which certain clauses of the incorporating bill are directed for one to believe that the provisions of this bill entirely destroy the probability of this interference.

It is claimed that the executive and operating staff of the Canadian National Railways is now free from political influence. Apparently this is true. At the same time it must be remembered that there is not now a political party in power in Canada. The present government is a coalition Union government established by the Liberal and Conservative parties in order to remove politics from the conduct of the war. The present government is strongly intrenched, but it is essentially a product of the war, and there is a general feeling that the return to party lines should be made as soon after peace is signed as may be practicable. Both the Liberal and the Conservative parties have been seriously disorganized by the establishment of the present government and the result is a mixed situation which may bring a third party into existence. It is hardly probable that the same relations between the Dominion government and the Canadian National Railways will continue after this resumption of party activities.

Taking the two possible outcomes of the political situation in Canada, let us see what each will mean to the railway nationalization program. A return to the old party lines and the consequent fall of the present government, will probably mean a consideration of the advantages and disadvantages of the nationalization program. The result may be that the two parties will not agree upon its merits and that the question of nationalization will become a political issue. The fate of the natioalization program and consequently of the Canadian National Railways will then depend upon the party in power. In any consideration of the espousing of the nationalization program by either one of these two parties, it should be remembered that representation in the Canadian Parliament is based upon a membership of 65 from Quebec and the remainder proportionally according to population. This gives the growing west a heavy representation. If the policies of the old parties remain substantially the same as they were before the war, it is probable that the nationalization scheme will be supported by the Liberals, who practically control the west, and opposed by the Conservatives, whose strength is in the east. It is then that Parliamentary representation will count.

On the other hand, if the Union government is perpetuated much will depend upon the attitude taken toward the question by Prime Minister Borden, whose opinion as yet has not been publicly announced. It is significant that statements have been made by men prominently associated with the government advocating an extensive nationalization program. In this connection the Minister of Finance in addressing Parliament on May 15, 1916, said: "I believe relief (from the present situation) will probably involve the taking over by this government of one or more of the existing railway systems and may involve later on the nationalization of all the railway systems of Canada."

Railway nationalization to the extent to which it has progressed in Canada is due to the acts of the present Union government and it is but natural to suppose that if this

*Third and last of a series of articles on the railway problem of the Dominion of Canada. The first of this series appeared in the *Railway Age* of November 7, and the second in the issue of November 14.

government becomes the nucleus of a party, it will not reverse its previous acts.

All of the assumptions just made indicate that the question of nationalization will be one for political consideration in the future. This seems to be inevitable. The railroad financial transactions in which the government will have to engage make it inevitable that nationalization shall come in for a large amount of parliamentary and political discussion, and it appears certain that there will be clear cut differences of opinion. Here a point made by A. H. Smith, a member of the Commission of Inquiry appointed by the government in 1916 to investigate the conditions of Canada's transportation system and to present a solution of the problem, naturally is recalled. Mr. Smith, in dissenting from the report made by Sir H. L. Drayton and W. M. Acworth, based his dissent partly upon the impossibility of one Parliament binding succeeding Parliaments to a permanent policy in regard to railways. With all the conditions in mind it is impossible to believe that the Canadian National Railways will always be free from political interference.

The only real question which arises in this connection is the probable extent of the political interference. Those who are opposed to the nationalization program maintain that this interference will inevitably be extensive and cite the experiences of Canada with her government-owned roads during the past 50 years. On the other hand, those who favor the nationalization program claim that the past incidents in Canada's railway history do not necessarily indicate what government management will be in future.

Education of the Public

One of the most surprising features of the present situation in Canada is the apparent apathy of the public regarding the steps so far taken by the government along the road of nationalization and its tendency to travel further in the same direction. Even the passage of House Bill 70, incorporating the Canadian National Railways Company and granting almost unlimited power to that organization, besides making adequate provisions for the complete nationalization of all Canada's railways, caused comparatively little comment. This doubtless is due to the serious financial difficulties into which some of the railways had fallen. The seeming inevitableness of the action so far taken has dulled the sense of Canadians to the dangers ahead. Whatever the cause, the public has been apathetic regarding this tendency and only recently has begun to be awakened. But the fact that Canadians are now beginning to awaken means that they will be in a receptive mood to be educated as to the advantages and disadvantages of a policy to which they have already subscribed in part.

The public may be educated as the public of the United States has been educated regarding certain railway policies. The nationalization program will be a matter of political discussion; it may resolve itself into a clear cut national issue. Both sides of the case will then be adequately presented to the people as they have been in the United States and it will not be long before Canadian newspapers and periodicals will be as replete with arguments pro and con as are the newspapers and periodicals of the United States. This is not a matter of today but rather of the future, and by that time there will be brought home to every Canadian who pays taxes or who has occasion to use the railroads in any manner pleasant or unpleasant experiences with government or privately owned lines and he will have formed definite preliminary conclusions as to the respective merits of the two systems. It is in the future, then, that the public will begin asking what this nationalization policy has cost and whether the services rendered and the results achieved by government management are or are not in the public interest.

In contra-distinction to this assumption it is stated by advocates of the nationalization program that the people of Canada do not care particularly about the railway problem, for the cost to the government of nationalized railroads does not directly affect the masses. In support of this argument it is cited that there are but two taxes in Canada, income and municipal, and that these taxes do not affect the majority of the people. If enormous deficits are incurred in the operation of the Canadian National Railways, the public will have to pay them, directly or indirectly, and the cost will appear in taxes in such a manner that every person in the Dominion of Canada will definitely feel the extra burden.

The Canadian national debt, as a result of the war, is now estimated at $1,950,000,000, or $220 per capita. The burden of this enormous debt will call for rigid economy for years to come. With this debt and with probable reductions in the government revenues, it is rather hard to see how large deficits incurred in the operation of nationalized railways will fail seriously to affect every Canadian.

Influence on Development Work

Another of the arguments for government ownership and operation of railways is that as a result of it extensive work for the development of the country's resources will be carried on. Yet in Canada itself is an example of the development work which can be carried on by a privately owned and operated line, for there are few who deny the Canadian Pacific credit for the opening up of the Canadian northwest, and it would be difficult to point out any railway which has done less effective development work than has the Intercolonial under government management.

The Canadian Pacific has spent for development purposes $45,000,000 on 34,000,000 acres, or $1.34 an acre, while the Dominion government has spent roughly $10,000,000 on 84,000,000 acres or $0.13 an acre. Surely these figures tell a story of the power of privately-owned railroads to carry on such work.

The development of new territories depends upon capital, not government capital, but primarily private capital, for it is private initiative based upon the investment of private capital that makes for success in new fields. With government ownership of railways in the undeveloped territories of Canada it seems probable that there will not be the same amount of enterprise and capital invested as would be the case were the territory served by privately owned and operated lines. With the bringing of the nationalization question to the light of political discussion and appraisal, the people of Canada will begin to measure the quality and quantity of the development work which has been done or will be done by the Canadian National Railways as compared with the results achieved by the privately owned and operated Canadian Pacific. Fortunately there will be no duplication of lines by the two systems, for authorization for new construction will be based solely upon the relative merits of the claims for such work presented to the Railway board instead of to the Minister of Railways as has been the practice in the past.

Service to Be Rendered the Public

There is another factor that will enter into the education of the public which will have even more effect than the cost of government ownership or the extent of development work; that is, the relative quality of the service rendered the public by the government-owned transcontinental and the privately owned transcontinental. The service renderd to the public will be a definite matter regarding which a great many Canadians will form their own opinion. On the Canadian Pacific an efficient and loyal operating and executive staff has been developed and one has but to travel over a portion of its lines to appreciate the excellence of the passenger service rendered. In regard to freight service the Canadian Pacific has gone even farther to provide assistance to every industry and person that has occasion to deal with it. It is with this service

that the Canadian National Railways will have to compete. Under government ownership there almost always has been a notable lack of interest and initiative on the part of employees. The indifference of all classes of government employees is proverbial. The Canadian National employee is a government employee, and it remains to be seen whether he will or will not use the traditional "government stroke."

Service to the public is dependent largely upon the physical condition of the railway rendering it. The units comprising the Canadian National Railways have been in serious financial difficulties for many years. Such a state of affairs is hardly likely to be conducive to the maintenance of a property to high standards. In viewing the physical conditions of these separate units at the time of their amalgamation into one system, one can gain a rough idea of the present physical status of the government-owned transcontinental line. Beginning in the east and following this chain of roads across the country one will find that the Intercolonial might be said to be in mediocre condition. Its maintenance expenditures have not equalled those of the Canadian Pacific which traverses in part the same territory. Compared, then, with the physical condition of the Canadian Pacific in the east the Intercolonial cannot be said to be its equal, although in recent years there has been a serious effort to better the physical condition of the Intercolonial.

Moving westward, one will find that the National Transcontinental, being of recent construction, may be said to be in fair condition. This fact, however, is due to the newness of the road rather than to an effort toward maintaining it to certain standards. Being a new road it will take large expenditures to place it in shape to compete with corresponding portions of the Canadian Pacific. Furthermore, the National Transcontinental is badly lacking in equipment, although this is a condition which will be remedied to a certain extent by its inclusion in the government-owned system. The physical condition of the Canadian Northern is bad. A large proportion of the mileage was built to low standards, due primarily to the policy adopted by Messrs. MacKenzie and Mann to construct lines on these low standards and later as the traffic and consequent revenues increased to gradually improve them. Coupled with this is the fact that the equipment is poor and insufficient although this, as with the National Transcontinental, will be compensated for to a certain extent by its inclusion in the government-owned system. In the arbitration to determine the price to be paid by the government for the Mackenzie-Mann holdings an estimate of $110,000,000 was made by officers of that road as being necessary to place it in good condition. The cost of materials and labor since that time has risen and it is probable at the present time that $150,000,000 would have to be expended on the Canadian Northern alone to put it on a sound operating basis.

In regard to the Grand Trunk, its physical condition in 1916 at the time of the Drayton-Acworth report was such that an officer of the company in testifying as to its condition stated that "If we had $25,000,000 now it would put us in fine shape." Howard G. Kelley, president of the Grand Trunk Railway Company, in testifying before the commission of Inquiry at the same time, estimated that deferred expenditures on the Grand Trunk totaled $21,181,345, of which $8,943,971 was chargeable to the rebuilding and reinforcing of freight car equipment and $11,761,598 to deferred renewals in the maintenance of way department. Since that time these conditions have not been greatly improved and because of the higher costs of material and labor these estimates will have to be augmented greatly.

The Grand Trunk Pacific, like the National Transcontinental, being practically a new road may also be said to be in only fair shape and will require more than the ordinary capital expenditures to maintain it to the normal standard of efficiency. On the other hand, the lines of the Canadian Pacific paralleling these units of the Canadian National Railways have been maintained at an exceptionally high standard and because of these efforts in the past the road can be maintained at the same standard of efficiency at a cost far less than is the case with the Canadian National.

It is possible, then, to deduce from these rough estimates of the physical condition of the roads comprising the Canadian National Railways that in comparing the service likely to be rendered by the two systems, the Canadian National is not in a position at the present time to compete successfully with the Canadian Pacific on the basis of the relative condition of the two lines. In fact, enormous expenditures will have to be made by the government in order to place its lines in a position to compete effectively with the Canadian Pacific.

Of the other factors influencing the matter of service to the public, it might be said for the Canadian National Railways that by this consolidation the mileage between certain points in Canada will be reduced. Furthermore, the Canadian National will have certain advantages in grades, especially from Toronto, Montreal and Quebec to Winnipeg and Vancouver. However, it is rather hard to determine the advantage which this superiority in mileage and grades over the Canadian Pacific will give to the Canadian National system.

Attitude of Labor

There is still another factor to be considered in relation to the eduation of the public, namely, the attitude assumed by labor. As yet Canadian labor organizations have taken no definite stand in regard to this nationalization program. However, with the wage increases awarded railway workers it is probable that the same condition will prevail as now prevails in the United States, namely, that labor, because of these wage increases, will be reluctant to countenance any deviation from the application of the nationalization program. This, however, is merely a surmise and it is also possible that labor in Canada after hearing the nationalization program discussed as a political issue, will realize its defects as well as its advantages.

Relation of Situation to Canadian Pacific

We have outlined so far in this article the factors which will to the largest extent influence future railway developments in Canada. The consideration which remains is what effect all these conditions will have on the remaining privately owned line, the Canadian Pacific? To some the situation, however it may develop, means eventual confiscation of one of the most successful railway operations in the world. This assumption is based on several considerations, the principal one of which is the expressed attitude of the people of Canada toward the right of railways to earn interest on the capital invested in them and the fact that rates on a government transcontinental line can legally be reduced without limit. Throughout the history of the Intercolonial one can find members of Parliament and publicists stating, in defense of the continued deficits incurred on this road, that a government-owned railway, merely because of its ownership, should not be operated with a view to realizing interest on the capital invested. This belief has extended throughout Canada, and it may at any time cause a demand that the Canadian National Railways, being owned by the government, be operated in such a manner as to realize only their operating expenses, leaving the interest on the capital invested to be assumed by the taxpayer. Certainly the Canadian National Railways as a government enterprise have a certain right to reduce their rates ostensibly for the benefit of the people. If this is done to any considerable extent the Canadian Pacific will be forced into the hands of the government.

However easy it may be to put into effect radical reductions in rates it will be found that there are many factors which mitigate against such action on the part of the Canadian National Railways. The action taken in bringing the Canadian Northern and other roads under the jurisdiction of the

Canadian National and amalga[illegible] roads into one system was taken because of t[illegible] the part of the government to end a steadil[illegible] upon the public treasury. It ca[illegible] ra[illegible] would only serve to increase th[illegible] n it must be recalled that Canada's nati[illegible] greatly increased as a result of the war, and that the burden of this increased debt must be borne by taxpayers for many years to come. With these factors in mind it is hard to conceive how the Canadian National can afford to reduce its rates materially even for the purpose of development.

Another viewpoint taken by those who are studying the present situation is the direct opposite of this belief in the eventual confiscation of the Canadian Pacific. They think it is the purpose and intent of the government to avoid any action which will tend to force the Canadian Pacific into the nationalization scheme. It is their belief that the government, in adopting this policy, is doing so with a view of awakening and maintaining keen competition between the two transcontinental lines and in this manner nullifying some of the bad features of government ownership, especially indifference and lack of initiatives on the part of employees.

Sir Thomas White, the Minister of Finance, in reporting the last year's budget to the House of Commons, said, "Insofar as railroad rates and such are concerned, the railway rates in Canada, although recently raised, are certainly not more than sufficient to make a carrying return on the value of the properties used for transportation. Indeed, having regard to railway investments, railway returns, owing to the very great increases in the cost of operation, may well be described as low. In view of this it is impossible to expect a reduction in railway rates to be ordered by the Railway Commission. As a rate making proposition reductions at the present time are impossible."

If we are to accept the optimistic views of this latter class of railway students the situation will resolve itself into the development of the Canadian National Railways as a business enterprise rather than as a political project and the natural development of the Canadian Pacific.

Opportunity Afforded by This Situation

There has been outlined in this series of articles the present situation, the development which led up to this situation and the probable effect upon Canada's future railway history. Whatever the solution of this present and future problem may be, whether it be complete nationalization of all of Canada's railways or a reversion to private ownership, one thing is certain, and that is, that for a period of years, students of railway history will have in Canada an opportunity of noting a direct comparison of the respective results of government operation and private operation.

The Canadian National Railways will, whatever the future brings, run in direct competition with the Canadian Pacific long enough at least for conclusions to be drawn as to the merits of the two methods of conducting transportation. There is no doubt that advocates of government operation and private operation alike will look towards Canada for an answer to the problem, and this answer Canada will be prepared to give before many years have passed. Even at the present time the Canadian Pacific has accepted this challenge to private management and is bending all energies toward improving its service, awakening its employees to their new responsibilities and instilling in the minds of the public the excellence of the service rendered on its lines. Indicative of this movement is the establishment of the Trans-Canada Limited with 92-hour service between coasts.

Should government operation, as compared with private operation, prove unsatisfactory to the public, it is not inconceivable the result might be to cause all the lines in Canada to be turned over to private management. It will be noted that the officers of the Canadian National Railways are in the main the old officers of the Canadian Northern system. These men were the able lieutenants of Messrs Mackenzie and Mann. Why may not Messrs. Mackenzie and Mann, after the nationalization program has failed to vindicate the claims made for it, if it does, come before Parliament with an offer to take over this transcontinental system and operate it as a private enterprise in competition with the Canadian Pacific?

Messrs. Mackenzie and Mann in all of their business enterprises have shown themselves to be exceptionally shrewd, enterprising business men.

Orders of Regional Directors

PERMIT SYSTEM FOR CONTROLLING GRAIN SHIPMENTS.—Supplement 4 to Circular 247 of the Southwestern regional director states that, effective October 25, all grain shipments destined to Chicago, St. Louis, Mo., East St. Louis, Ill., Kansas City, Mo., Omaha, Neb., Council Bluffs, Iowa, St. Joseph, Mo., Fort Worth, Tex., and Milwaukee, Wis., will require individual permits. Rules are also promulgated in the order for the application for such permits and the form to be used.

Purchase of Material for Use After 1919.—Order 247 of the Southwestern regional director states that it is important that the director general should not be obligated for any material or supplies delivered to railroads after the termination of federal control. It is equally important that the delivery of material and supplies necessary for the operation of the railroads should not be seriously interfered with by the termination of federal control. A statement showing all of the outstanding unfilled orders or contracts, the delivery of which will not be completed by December 31, 1919, with the terms and prices of purchase, should be presented to the corporate officers of the railroads in order that the corporate officers may determine to what extent they desire to assume the obligations of the director general after the termination of federal control; and they should be requested to render a decision in writing as to which, if any, of the outstanding orders, they desire to assume. Upon receipt of this information the general purchasing agent should be instructed to immediately cancel the undelivered portion of any such orders which the railroad company has signified its unwillingness to accept and at the same time the shippers should be notified that the railroad company has assumed the obligation to pay for such material as is shipped after the termination of federal control. As soon as the railroad companies have signified their decision with respect to outstanding unfilled orders and contracts, they should be requested to authorize the federal manager or the general purchasing agent, as federal purchasing officer, in writing, to place orders for account of the railroad company for such material and supplies as may be necessary to insure the continuous operation of the railroad or designate a representative authorized to approve, on behalf of the railroad company, all orders for material and supplies which it is necessary to place after December 1, 1919, and the delivery of which will not be completed by December 31, 1919, and to obligate the railroad company to pay for such portion of the material as shall be undelivered on that date. No orders for material or supplies of any nature should be placed after December 1, without approval of the corporate officer so designated except in cases of emergency where the material is required for immediate use and where it will be delivered prior to December 31, 1919. All orders and contracts for the purchase of material should continue to carry the clause relating to their termination with respect to the director general, and in addition thereto all orders or contracts made subsequent to December 1, 1919, must have printed or stamped on their face the agreement of the railroad company to assume the obligation to pay for such portion of the material as remains undelivered at the termination of federal control.

Work of the Fuel Conservation Section

By Securing Co-operation and Without Issuing Orders, a Startling Saving Was Effected

By Eugene McAuliffe
Manager, Fuel Conservation Section, United States Railroad Administration

A study of the railroad fuel situation made by the Railroad Administration early in 1918 developed a marked tendency toward increased consumption per unit of service rendered; this investigation also brought out the fact that the railroads receiving fuel coal from certain localities were being supplied with material of a quality far below that delivered in pre-war times. This situation not only added greatly to the fuel bill, but in addition very seriously interfered with the movement of heavy freight and passenger trains, with resultant general delay to traffic and marked increases in general operating costs directly chargeable to fuel conditions, were developed. It therefore seemed advisable to attempt at the very beginning the broadest possible campaign for the conservation of railway fuel, this program predicated on not only greater effort on the part of officials and men responsible for the use of coal and fuel oil, but in addition thereto the necessity for greater effort and care in the mining, loading and preparation of the fuel sent out from the mines was strongly emphasized.

That this important work might be taken up and carried to a conclusion along definitely determined lines, the Fuel Conservation Section of the Division of Transportation (now the Division of Operation), United States Railroad Administration, was created on May 1, 1918, and a manager, with offices in Washington and St. Louis, was appointed. The work assigned to the Fuel Conservation Section was that of "giving attention to the conservation of fuel on all railroads, with special reference to its preparation and proper use," as well as to "investigate and make recommendations in connection with the transportation of fuel and the handling of same at fueling stations."

Immediately after the creation of the section and before circular announcement of its existence could be made, the work of organizing for cleaner fuel and its more economical use was well under way, and the co-operation of the United States Fuel Administration was sought toward the prompt preparation of a program, which would bring quick results.

A Whirlwind Campaign

The International Railway Fuel Association, whose membership is almost wholly made up of railway operating officials and coal producers, was decided upon as representing the most forceful and direct instrumentality that could be employed toward securing the preliminary concerted effort sought, and on May 23 and 24, 1918, this association, setting aside its usual technical convention program substituted therefor a whirlwind campaign for better fuel and greater economy in its use. This meeting, covering two days, packed one of the largest Chicago theatres, taking the form of a great revival, and there men prominent in the mine labor world, together with men high in railroad labor councils, joined forces with railway operating and motive power officials, coal operators, fuel engineers, and others, specialists in their respective lines, urging not only the maximum possible production of coal, but that such coal that was loaded, be loaded as clean as it was possible to prepare it, contributing in this way the first essential element necessary to fuel economy. These appeals were supplemented by eloquently urgent requests that every man connected with the transportation, handling and consumption of fuel coal and oil, exert the maximum effort toward securing the best possible service from it.

The stirring addresses delivered at this convention were printed and mailed to every miner's home, to every mine office, railroad employers' lodge room, machine shop and roundhouse in the United States, with the result that the echo of the May, 1918, appeal for clean fuel and fuel economy reached every mine official in charge of coal properties, every mine employee engaged in the production of coal, and every railway official and employee in any way connected with the handling and use of same. Next to the several drives made by the Treasury Department in connection with the financing of the war budget, and the work of the Food Administration, the fuel economy drive of May, 1918, was, perhaps, the greatest general concerted effort made toward strengthening the hands of the Administration in the conduct of the war.

Simultaneous with the work done at the Chicago convention, men experienced in the handling of fuel, locomotives, and stationery plants were called to service in the several regions, and the office of assistant manager of the Fuel Conservation Section, with headquarters in New York City, was established to take charge of the work in the Eastern regional district, in which territory the maximum amount of fuel trouble had developed; the measure of freight and passenger traffic handled in the Eastern region was also heavier than that handled in any one of the remaining six regions.

To cover the Allegheny, Pocahontas, Southern, Northwestern, Central Western and Southwestern regions, the office of regional fuel supervisor was created in each region, and the necessary assistants and office force were provided for each region. A survey of the fuel inspection forces of the several railroads was quickly made and arrangements consummated with the United States Fuel Administration, whereby each field inspector was furnished a credential authorizing him to act in behalf of and for the Fuel Administration, as well as the Railroad Administration, in the matter of securing the proper preparation of fuel coal, the Fuel Administration withholding equipment from certain mines and shutting down others which refused to establish the standard of preparation commonly maintained in their immediate fields.

Strengthening Field Inspection Forces

More recently the work of co-ordinating the efforts of the individual railroad fuel inspectors, to the end that fuel found to be of inadequate preparation or quality and declined by one road, would not be accepted by another, thereby standardizing inspection methods, has been worked out, and with the extraordinary increase in the price paid for fuel f. o. b. cars at mines compared with that paid in the pre-war period, plus the additional expense incident to hauling same, greater discrimination in the purchase and acceptance of coal has been strongly urged on those responsible for the fuel supply.

This strengthening of the field inspection forces was immediately reflected in the shape of reduced motive power failures, decreased operating expense, and a decrease in the unit consumption of fuel. In the meantime, the assistant manager in the Eastern region and the fuel supervisors in the other six regions, with their assistants, undertook the

work of calling together on each railroad all officials who were in any way connected with the transportation and use of railway fuel, again urging the greatest possible measure of co-operation, including the better maintenance of, and the proper rating of locomotives, the elimination of terminal and intermediate station delays; supplemented by such simple direct supervision and education of the many new employees whose entrance into railroad service was made necessary by the movement of the great volume of troops, munitions and other war business, as well as those employed to take the place of the thousands of experienced men who had left railway service to enter the combat force. The patriotic assistance of the heads of the several railway brotherhoods, as well as that of the mine workers, was also solicited, these appeals meeting with a wholesome and hearty response.

How Co-Operation Was Secured

In connection with the work of directing the more economic consumption of fuel on locomotives and in miscellaneous fuel consuming plants, a definite line of procedure was laid down, this program including a complete abstinence from anything that savored of bureaucratic methods, and from the date of the inception of the Fuel Conservation Section to this time, not a single positive order has been issued by any representative of the section to any official or employee engaged in the operation of the railroads under government control. On the other hand, every suggestion involving novel and untried methods toward fuel conservation was denied support, the fundamental principle underlying the work of the section being that of securing the adoption on the part of every official and employee of the best of the several methods proven and commonly in use on the several railroads, which, in substance, meant nothing less than more vigorous effort along the lines, and in the manner the individual roads had previously laid down as representing the best line of conduct.

The full support of all operating officials has been given to the work of saving fuel as a result of the simple, concise presentations made by the section, many federal and general managers now leading the work on their respective lines. In connection with the field methods employed in improving the quality of the coal loaded at the several mines, no unreasonable demand has at any time been made on either the coal operator or the mine employees, and a full recognition of the limitations that attach to the mining of coal has invariably been accorded the mining industry; nor has any demand whatever been made toward the transfer of fuel purchases from the mines or localities established during the pre-war period as the logical and proper source of fuel supply for the several railroads. To this broad recognition of the acknowledged skill of both coal mine and railway officials and employees, is due to the extraordinary measure of co-operation accorded the section, and no claim for credit can be made by the section with respect to the results obtained, except that which is due the working staff of the section who have, in every instance considered themselves, not only as responsible to the Railroad Administration, but to the operating heads of the several roads located in their respective regional districts.

Supplementing the general work above referred to, the campaign toward fuel economy was conducted and exemplified through divisional meetings of officials and employees, at which time specific results of progress made were presented through the medium of comparative divisional and system fuel statistics, studies made of fuel used on individual locomotives, the savings obtained at individual power plants, etc. Fuel conservation committees were organized on many roads, employees as well as officials making up the personnel, all of which have done splendid work. Road tests were conducted from time to time, and the more serious operating and maintenance disabilities affecting fuel consumption were located and brought to the attention of officials and employees in a brief, concise way, with suggestions for such remedial measures as could be employed without heavy capital or labor expenditures.

These investigations and studies, including the losses due to air ingress and steam leaks in locomotive front ends and front end apparatus, with consequent reductions in the size of exhaust nozzles entailing back pressure losses, which in turn lead to fuel wastes and decreases in tractive power; losses sustained by the inadequate maintenance of superheater equipment and the adequate maintenance of grates and ash pans; losses due to the improper adjustment of locomotive front ends, and those incident to the operation of locomotives suffering distorted and defective valve motion, were all clearly brought out and remedies were suggested through several circulars setting out the results of the specific tests referred to above which were made by the Fuel Conservation Section in connection with motive power officials.

A special circular covering the maintenance and operation of stationary plants was also prepared for the use of men in charge of, and handling same and a circular covering approved methods of storing coal, to the end that storage losses be reduced to the minimum, was prepared and placed in the hands of officials in charge of this work, and a further special circular on the maintenance and operation of locomotive stokers was recently published for the use of roundhouse and locomotive men.

Careful investigation of the fuel losses sustained by inadequate air brake maintenance developed that an annual loss of over 6,000,000 tons of coal was being suffered from leakage of air in brake pipes and connections under freight cars. The section therefore arranged for a study of the best method of preventing these losses, which was made by a volunteer committee from the Air Brake Association. Specific recommendations were prepared directing the attention of yard repairmen and freight train employees to the serious fuel loss susatined from excessive air line leaks, as well as the methods which should be employed to overcome same. In this manner the campaign for fuel conservation was carried directly into the car repair department, the yard masters' offices, and to the men in the freight train cabooses. In no instance was the influence of the maintenace of way men lost sight of.

Fuel Consumption Statistics

A growing amount of fuel oil is used in certain sections of the country for locomotive and miscellaneous fuel purposes, and special attention has been given to the more economical consumption of fuel of this character, the majority of the items adversely affecting the consumption of fuel coal equally affecting the use of fuel oil. Through its Washington office the section early arranged for the assembling and compilation of such statistics of fuel consumption as would, when published, not only show the operating officers of each road just what was being accomplished on their individual lines and in their respective regions, but, in addition, these statements set out the results obtained on all roads under government control, thereby enabling each federal manager to judge the results obtained on the particular road under his direction when compared with those obtained on other lines whose grade conditions, volume of traffic, etc., made such reasonably comparable.

These statements, distributed monthly with a quarterly and annual cumulative statement, represent the most complete fuel performance presentation ever published. During the year 1917 the pounds of fuel used per 1,000 gross freight ton miles and per passenger train car mile, when compared with the 1916 performance, showed an increase approximating five per cent, and by the middle of the year 1918 this

increase in consumption had grown to a point approximating eight per cent over the 1916 performance, but in July, 1918, the effect of the personal inspiration received by railway officials at the big Chicago meeting, and the results obtained from the sending out of some 2,200,000 copies of the appeals made at that meeting, began to show in the fuel performance, until at the end of the year 1918 the losses sustained during the first half of the calendar year, in part due to extremely rigorous winter weather, were caught up, and a saving totaling $19,231,000 stood as a credit to the efforts toward fuel economy made by railway officials and employees.

Tremendous Saving

During the year 1919 the program determined upon at the inception of the work has been maintained throughout and the stride toward lower unit fuel consumption which began with the May, 1918, Chicago meeting has been quickened. An estimate of the total saving which will be made in 1919, when compared with the previous year, based on the progress made in the first nine calendar months of the year, indicate the following results:

Class of Service	Consumption Tons	Saving Tons	Saving Value
Freight	72,098,000	5,993,000	$20,687,000
Passenger	29,615,000	2,524,000	8,714,000
Switch	20,310,000	986,000	3,409,000
Miscellaneous	16,643,000	1,395,000	4,803,000
Total	138,666,000	10,898,000	$37,613,000
Saving in reduced haul on users' rails at 75 cents per ton			8,176,000
Total savings			$45,789,000

The fuel bill of the Railroad Administration for the year 1919, exclusive of any increase in mine price that may be occasioned by changes in the miners' wage scale taking effect in November and December, 1919, will approximate (including an allowance of 75 cents per ton for company haul) a total of $665,000,000. Unless checked by a decreased unit consumption it will in a few years reach the billion dollar mark. The 1919 fuel (fuel oil reduced to the basis of coal) would, if put into standard capacity coal cars, make a train 26,261 miles long, a distance materially exceeding the circumference of the earth. The fuel saving of this year would make a train of 2,064 miles long, extending if coupled up solid from New York to Chicago by way of the Pennsylvania, thence back to New York by way of the New York Central and doubling back on the New York Central to Albany. The value of the fuel saved would buy 763 modern heavy type locomotives or 15,263 modern freight cars.

Measured in area of coal land exhausted it represents a territory approximating 2,178 acres in extent. Thus far our comparisons have been of the major variety, but the real results have been accomplished by using *one less scoop full of fuel one and a half billion times.* The Fuel Conservation Section has contributed toward the dissemination of certain fundamental principles, among which can be mentioned the success that will always result from concerted effort, the effort which individually examined seems small, but when totaled assumes splendid proportions. That the influence of the work done in 1918 and 1919 will continue there can be no doubt, as many of the suggestions made were of a character that will insure their permanence. The Fuel Conservation Section has fulfilled the expectations of its creators; it has fully justified the outlay involved to maintain the organization, a sum equivalent to approximately three-tenths of one per cent of the value of the *fuel saved* in 1919.

Operation of Panama Canal.—During the fiscal year ended June 30, 1919, the ordinary expenses for the operation and maintenance of the Panama Canal, including those of civil government and sanitation, amounted to $6,121,194, as compared with $5,920,342 in 1918 and $6,788,047 for 1917.—*"Nauticus."*

National Industrial Traffic League Convention

The election of officers and the reports of special committees, especially the committee appointed to report on the Cummins bill as the legislative solution of the railway problem, were the high lights of the annual meeting of the National Industrial Traffic League held at Chicago on November 12 and 13. A significant feature of the convention was the interest displayed by those present in the solution of the present railroad problem as compared with their interest in subjects confined wholly to the different phases of shipping and transportation.

Legislative Recommendations

C. E. Childe, chairman of the legislative committee of the league and also chairman of the special committee appointed to report on the Cummins bill presented the reports for both committees of which he is chairman. Among the recommendations made by Chairman Childe in reporting for the legislative committee are the following:

"On the question of cancellation of war tax on transportation charges, the committee recommends that the league oppose the cancellation of such tax at this time and the committee's recommendation was upheld by the members at the Milwaukee meeting.

"There are now pending in Congress several bills designed to suppress bribery and other corrupt practices in interstate and foreign commerce, namely, House bill No. 263 by Mr. Sims; Senate bill No. 54 by Mr. Fletcher, and Senate bill No. 1024 by Mr. Cummins. Bills are now in the hands of the Interstate Commerce committees of the House and Senate and will be acted upon after the general railroad legislation is disposed of. The purpose of all three of the bills above mentioned is to forbid the giving of any gratuity or thing of value as an inducement, bribe or reward to influence the actions of any employee or agent in relation to the affairs or business of any employer or principal engaged in or affecting interstate commerce, and further forbidding the receiving of such gratuity by any such employee or agent. The American Bar Association has endorsed the general principles of these bills at its meeting in Boston in September, 1919, without recommending any one in particular in preference to another. The principal interest of the league members in these bills lies in the fact that they would suppress the giving of bribes or inducements to railroad employees to influence the handling of cars or shipments, and would make it unlawful for railroad employees to accept bribes from shippers. Your committee recommends that the League strongly endorse the general principle of this legislation to the end that the soliciting of bribes by railroad employees and giving of such bribes by shippers may be effectually done away with and that the interstate commerce committees of Congress be notified accordingly.

The report of the special committee appointed to analyze the Cummins bill as the legislative solution of the railroad problem, did not go into exhaustive explanation of the details of the bill but confined its analysis to certain objectionable features. Recommendations were prepared by the committee to eliminate these features of the bill and the report as presented to the convention was summarized as follows:

"Your committee believes and recommends to the membership that since the Esch-Pomerene bill includes in the main the good features of the Cummins bill and omits its bad features, the Esch-Pomerene bill should be advocated by shippers as a basis of railroad legislation to be passed by Congress, rather than the Cummins bill."

In arriving at this conclusion the committee presented an analysis of the objectionable features contained in each section of the Cummins bill and the reasons for its recommendations in each case. In presenting the report Chairman Childe stated that the references to the Esch bill were to the bill before it was revised in committee and pointed out the differences in the House bill before and after this revision. After

some discussion it was voted that the executive committee of the League be instructed to report to the members by circular its conclusions as to the Cummins bill and the revised Esch bill and that recommendations be made to senators and representatives not only by the executive committee, but by individual members of the League.

Other Committee Reports

Among the other reports presented and accepted by the convention were those of the special committee on minimum class rates, the committee on car demurrage and storage, the express committee, the bill of lading committee, the classification committee, the special committee on coke and coal claim rules, the membership committee, the special committee on through export bills of lading, the committee on inland waterways, the demurrage committee, a sub-committee of the demurrage committee to consider storage rules and the committee on freight claims. In connection with the discussions following the report of the last committee, Max Thelen, director of the Division of Public Service, United States Railroad Administration, who was present, stated that the 887,197 loss and damage claims unpaid on March 1, had been reduced to 486,492 on September 1; the 363,476 loss and damage claims unpaid over four months old, on April 1, had been reduced to 193,042 on September 1, and the overcharge claims unpaid and 90 days old had been reduced from 72,215, on January 31, to 14,721 on September 30.

Resolutions Adopted

Among the resolutions adopted by the convention were the following:

A resolution, offered on the instruction of the executive committee, endorsing Commissioner E. E. Clark for reappointment on the Interstate Commerce Commission.

A resolution, submitted by the legislative committee at the direction of the executive committee, declaring that the Railroad Administration was not abiding by the terms of Reparation Circular No. 7, issued by the director of the Division of Traffic, United States Railroad Administration, and protesting against having to submit proof other than that charges were unjust and unreasonable.

A resolution offered on the recommendation of the export and import committee expressing opposition to the Greene bill (H. R. 8873), which was characterized as an attempt to modify the present mortgage law.

Election of Officers

The election of officers for the coming year necessitated the re-arranging of the usual election plan because of the peculiar situation arising through the re-election last year of President G. M. Freer. The custom has been to advance the vice-president to the presidency each year, but W. H. Chandler, vice-president last year, was not advanced to that position at the end of President Freer's first term as president. The re-election of the latter and the election of R. D. Sangster as vice-president at that time presented the problem of how the League could advance its vice-president in the usual manner and at the same time allow Mr. Chandler to serve the customary term as president. As a result of this situation a representative nominating committee was appointed to bring in a list of two candidates for every office to be filled. Mr. Chandler and Mr. Sangster were both nominated for the presidency and the election was held on the last day of the convention. As a result of this election the following officers were elected: President, W. H. Chandler; vice-president, C. E. Childe; treasurer, O. F. Bell; honorary vice-president, New England territory, C. B. Baldwin; Trunk Line territory, W. J. L. Banham, George P. Wilson, G. F. A. territory; F. H. Baer, G. L. Cory, D. O. Moore, F. E. Williamson; Western territory, P. W. Coyle, Seth Mann; Southwestern territory, U. S. Pawkett; Southern territory, J. S. Davant; Southeastern territory, W. W. Ingalls, Jr

Address of Max Thelen

The convention was concluded on the afternoon of November 13, and the members attended the annual dinner of the Traffic Club of Chicago in the evening. Max Thelen, director of the Division of Public Service, was the principal speaker at the banquet. Mr. Thelen asserted that, had there been a normal amount of freight traffic during the first six months of 1919, the government would have broken even, or nearly so, from its operation of the railroads this year at the rates now in effect. He predicted that the freight business for the first six months of 1920 would be much heavier than the abnormally low business during the first half of 1919.

"Bearing in mind this increased traffic, which we have every reason to expect," said Mr. Thelen, "it is clear to me that if the government continued to operate the railroads in 1920 it would be unnecessary to make any increase in rates or fares."

Referring to the bad-order freight car situation Mr. Thelen announced that the total number had been reduced from 228,549 on August 16, to 146,702 on November 1. However, the Railroad Administration will not relax its efforts to still further reduce the percentage of bad order cars as long as there is any reasonable grounds for believing that the situation can be improved, Mr. Thelen said.

Referring to the freight business as a whole during the month of October, the Railroad Administration transported a larger amount of freight than during any other corresponding period in the nation's history.

"During the week ending October 25, the Administration transported coal estimated by the Geological Survey to have amounted to 13,118,000 tons, the largest amount transported during any week in the history of the country," said Mr. Thelen. "During the week ending October 4 the Administration transported 7,869 loaded revenue cars more than during the same week in 1918; during the week ending October 11, increased loads were only 2,293, but during the week ending October 18, there were transported 42,125 loaded cars in excess of the number transported during the corresponding week in 1918, and during the week ending October 25, the increase amounted to 67,222 cars. Finally during the week ending November 1, the last week for which figures are available, there were transported 80,400 loaded freight cars in excess of the number transported during the same week of 1918. For the month of October, as a whole, there were transported, in 1919, 200,000 more loaded cars of freight than in 1918. I also invite your attention to the fact that the car shortage was considerably less in 1918."

Mr. Thelen stated that he was in favor of the return of the roads to private ownership at the earliest practicable date, giving as his reasons that it is absolutely essential to construct at the earliest possible date a large amount of new equipment —freight, passenger, baggage, and express—to meet the deficiencies in construction during the last three or four years and to assist in taking care of the tremendous volume of business which will undoubtedly be offered for transportation in 1920.

In concluding his address, Mr. Thelen urged that the public make a careful survey of the results accomplished by the Administration and insist that whatever of value has been made effective during federal operation should be retained under private operation. Among these were the pooling of equipment, the unification of terminals, the retention of consolidated ticket offices, the retention by the carriers of the right to disregard routing instructions wherever necessary to relieve congestion, the permit system, the elimination to a large extent of competitive train service and the retention of the traffic committees which have recently been appointed by Director General Hines.

Problems Involved in Return of Railroads

Mere Relinquishment Not Sufficient. Legislation Must Provide for Adequate Development. Some Lessons Learned

By Brice Clagett
Assistant to Director General of Railroads

SOONER OR LATER—probably on January 1—government control of the railroads of the United States will terminate and the roads will go back to the management of their private owners. And simultaneously, if past expressions of sentiment mean anything, the American people will heave a sigh of relief. "Get the government out of the realm of private business," the people have said, and so the government is getting out, at least is getting out of the direct, day-by-day management of the railroads. Unless the Congress shall extend the period of government control, we are going to have private operation again and naturally we ought to know as accurately as possible what the change will mean.

The really big lesson which must be learned, if we are to obtain satisfactory railroad service, is that something more must be done to remedy conditions than merely turning the carriers back to private control under the same form of legislation in existence prior to government operations. The idea has grown up that once the railroads go back to private management all the ills will disappear. That trouble started when the opponents of government ownership over-played their hand. They set out to prove that the government could not successfully run the railroads and they ended by convincing almost everyone that everything that has gone wrong with the railroads during the last two years has been due to government control.

Problem Before Congress

Congress just now is wrestling with the problem of whether government control is to be continued, or just what kind of private control we are to have. On the outcome of the action of Congress will depend in large measure whether the railroads are to give satisfactory service or whether the troubles existing before the war are to be repeated. But, meanwhile, it may be possible to learn something of what has been disclosed by government operation—something of what the change back to private control promises the public.

So far as the general public is concerned, its interest in the railroads is that satisfactory service, both passenger and freight, be rendered as cheaply as possible. The traveler and the shipper, and through the shipper the ultimate consumer, want trains run on time, want courtesy, want cheap rates, want safe service. None of these things can be secured unless the railroads are able to get the money to make the necessary additions and betterments, buy the badly needed equipment, put the roads on a financial basis they have not had since long before the war; they cannot be solved unless the railroad companies treat labor fairly and take advantage of the lessons learned during government control.

The sooner the idea is dispelled that all the railroad difficulties of the last two years have been due to government operation, the quicker will the railroads get on their feet again. One does not have to be an advocate or believer in permanent government ownership or control to honestly believe that. Already there are beginning to be signs that the real facts are being understood.

Before government operation began we believed we had private control, and in a sense we had—but only in a sense. The income of the railroads—the rates—were controlled by national and state governmental bodies. The service—the operations—were being more and more controlled through national and state hours-of-service laws, safety appliance laws, various regulations and statutes. The government controlled, but did not take the responsibility.

However much the blame may have rested on the few railroad owners who betrayed their trust and prostrated great properties, the fact remained that long before government operation began the public generally had begun to appreciate that something had to happen or railroad troubles were ahead.

The War Task of the Railroads

Then came the war, and after the war had lasted something more than six months the troubles became so manifest that the government stepped in and took over the operation of the railroads. What would have happened had the government stayed out it is impossible accurately to say. It is sufficient to remember that compelling demands for increased wages were pending, many of the railroads were facing bankruptcy, conflicting government priority orders and lack of unification among the railroads were throwing traffic into confusion, and there was not sufficient equipment to handle normal business, let alone the vast war needs. Time after time have I asked some of the biggest railroad men of the country what would have happened had the government not taken over control of the railroads. The answers have been varying, but in one respect they have been uniform: the railroads could not have carried the load had they been continued under the old laws and regulations and diversified control.

Government control accomplished one thing if it accomplished nothing else. Under it the railroads handled the war business without faltering. Forget for the moment the inconveniences which you suffered or read about; forget the wage increases so widely advertised; forget the lack of individual attention; forget the government railroad deficit. Remember that primarily the railroads were placed under government control to help win the war, and see how they measured up to that standard.

This is neither the time nor the place to go into details on the accomplishments of government control. But the country perhaps should remember always that its railroads, operated by trained railroad men temporarily under direction of the government moved 13,446,859 soldiers and sailors and marines from January, 1918, to November 1, 1919. If there has been a serious complaint about how the troop movements on America's railroads were handled I have not heard of it. From home to camp and cantonment and from cantonment to port, sometimes across the entire continent, then back from port to camp and lastly on reduced fare discharge certificates home again, virtually every man who enlisted or was drafted into the army or navy of the United States was moved one or more times on an American railroad in comfort and in safety, adequately fed, delivered on time.

Perhaps the picture may be more vivid if it is remembered that 213,749 railroad coaches and Pullmans were used in

* Abstract of an article published in the Philadelphia Public Ledger of November 16, 1919.

these troop movements, that 18,400 special trains were operated and that the movement was equivalent to transporting one passenger 5,917,658,719 miles.

An then the other branch of the war work of the American railroads—the movement of war supplies. There has been no complaint about this. The country was not told, could not be told, how in the spring of 1918 the allied ambassadors at Washington, backed by telegrams from their premiers, told the director general of railroads that the Allies would lose the war if a certain amount of foodstuffs was not moved to the Atlantic seaboard in a certain number of days. Empty freight cars were rushed to the West—an expensive movement—and rushed back again in long trains, loaded, and before the time was up the allied ambassadors had to call a halt because they did not have ships enough to load the foodstuffs piling in on them.

In brief, it has never been denied, and I think never will be denied, that at least so far as handling war business is concerned—the business they were taken over to handle—the American railroads under government operation performed their job in true American fashion. And in saying that I mean much more credit to the officers and men out on the road than to the few who happened to be in Washington directly representing the government. I mention it not to uphold government control of railroads, not to praise any man or group of men, but entirely because I earnestly believe that, unless what government control of railroads did accomplish and failed to accomplish is clearly understood and the record made, there will be no satisfactory settlement of the problem now before Congress and the people.

To learn what the change back to private operation involves, suppose we see what the chief complaints against government operation have been and then examine them to discover whether they can be cured merely by a change from government to private operation, or whether we have got to have more than the old private operation we had before the war.

Charges Against Government Management

Broadly, these are the charges against the railroads under government control as I have recognized them in the newspapers, in debates in Congress, in resolutions of trade bodies, and in conversation from one end of the country to the other:

First. The government-controlled railroads have lost money and have incurred a deficit to be paid by the taxpayers. (This deficit I have seen stated at anywhere from $500,000,000 to $5,000,000,000.)

Second. Rates have been too high.

Third. Wages of railroad employees have been increased too much.

Fourth. The railroad properties have been run down.

Fifth. The service, both passenger and freight, has deteriorated, and employees have been less polite than under private control.

So that there may be no misunderstanding of the facts, let it be said immediately that after paying operating expenses and paying to the railroad corporations rental of approximately $940,000,000 a year or approximately $1,880,000,000 for the two years of government control, the net loss to the government on account of operating expenses will be about $236,000,000 for 1918 and $250,000,000 for 1919, or a total of $486,000,000 for the two years.

Put the operating loss for the two years down at $486,000,000 and the figure will be as near as it is possible to estimate until government control is actually wound up.

What are the compensations for that loss? The primary compensation has been that the railroads were kept in a position to adequately perform the war business of the nation at a time when failure to carry on that business would seriously have endangered the outcome of the war. One minor result was that a large proportion of the soldiers and sailors in the United States, in many cases distant from their homes, were able to visit their families on reduced fare furlough certificates.

Rates Kept Down

One other major compensation was that railroad rates were kept down and, therefore, a restraining hand held on the cost of living—which in all truth needed a restraining hand. Another result was that railroads were enabled to keep their employees at a time when shipyards and other war industries were paying extremely high wages to attract skilled men. Without a decided increase in rates undoubtedly it would have been impossible for the railroads under private control to have granted any such wage increases as were allowed by the railroads under government control.

The big losses came in the spring of 1918 and the spring of 1919. In the spring of 1918 rates were the same as they had been under private control, although under war conditions prices were constantly mounting. In the spring of 1919, the spring following the signing of the armistice, business had fallen off alarmingly. At the present time, and since July, with unusually heavy business, the government is making money out of the railroads; making money, but not enough to compensate for that lost in the early months of the year.

From articles appearing sometimes in newspapers it is apparent that there is some misunderstanding as to how much freight and passenger rates have been increased under government control. The fact is that, considering the country as a whole, passenger rates have been increased approximately 25 per cent and freight rates have also been increased approximately 25 per cent. When it is remembered that the cost of practically everything entering into railroad operation has been increased more than 25 per cent, it is evident that this increase in rates has not been extravagant. While the charge to the public for railroad transportation has increased 25 per cent, it is evident that the charge for practically everything else in the country has been increased in the same period decidedly more than 25 per cent.

Increase in Wages

As to the charge that railroad wages have been increased too much, here again it is necessary to get at the actual facts, and I think that I cannot do better than to quote from a recent address which has not been published to any extent, made by Mr. Walker D. Hines, the director general of railroads:

"You have heard a great deal about extreme cases of increases in pay to the railroad employees. In that, as in so many other things, it is the extreme cases that are dwelt upon, whereas in a matter of this sort, we must look at the general situation. The general situation is that the average increase in rates of pay which has been made for railroad employees throughout the United States has been about 50 per cent over the rates of pay which were in effect in December, 1917. I have yet to learn of any important industry which has shown a more conservative average of increase in pay in the same time, in view of the war conditions which made increases in pay both proper and necessary, and while this increase in the rate of pay has been about 50 per cent, the increase in the earnings per individual has been less than that, because the number of hours the individual employee works is less than the number of hours he was working in December, 1917, under the war pressure then prevailing and under the longer hours which were then established.

"I think it is a mental habit that all of us have got into—on account of my peculiar situation I suppose I have escaped it—to assume the government's treatment of the labor question is bad because the government did it, and then

assume that the government control is bad because it treated the labor movement like it did. I think I have seen a great many comments running around in a circle that way.

Covenant to Be Fulfilled

As to the claim that the railroad properties have been run down under federal control, it should be remembered that the contract which has been made with a large proportion of the railroad corporations and which is based upon the federal control act, provides that the properties shall be turned back in the same condition as they were when they were taken over, and contains the covenant that if it desires the government can satisfy this provision by spending on each property the same amount as was spent on the average in the test period, taking into consideration the changed prices for labor and materials. The government, of course, will fulfill this covenant.

On some railroads it has already been fulfilled; on others, adjustments in money may be necessary. On some railroads the way and structures are in better condition today than they were prior to government control, whereas the equipment is not in such good condition, and on other railroad properties the contrary is true. The process of carefully checking up on each property has been in progress for months past, and the figures plainly show that, taking the country as a whole, the government should be able easily to satisfy its contract obligation and return the railroads of the country to their owners in substantially the same condition as when they were taken over.

The next serious charge against government control has been that, under it, service has deteriorated, and that employees have been less polite and attentive. To take up that charge we should divide government control into two parts; first, the part during the war and immediately thereafter, and second, the period after the soldiers got home and the country began to do peacetime business again, say since July 1, 1919.

Early Deterioration Admitted

During the first period railroad service, meaning the everyday service to the individual civilian passenger and shipper, did deteriorate. There is no use trying to disguise the fact, nor is there any object in doing so, and we must face facts if we are to know what is to happen after government control is over. After watching the situation closely, month after month, reading innumerable letters, going through newspaper editorials from every state and town, traveling on the railroads in all parts of the country, I firmly believe that the deterioration in service during the war and immediately thereafter was due, in a small degree, to government control, and to a much larger degree to the war and consequences of the war.

The part that was due to government control did not result from anything the government or any one representing the government did, that could have been avoided, as I see it. One reason was the lack of the competitive spirit. The other was the drawing in of solicitors and traffic representatives. As a result of the latter, many shippers who had previously been given special attention no longer received it. The part that was due solely to the war was involved in the loss to the army of many skilled employees, to the use for strictly war purposes of equipment, which otherwise could have been used for civilian and business purposes, to the necessity of putting civilian and business needs always behind war needs.

But when preparing for what is to come after government control the comparisons should be made not with the period 18 months ago, when the war was at its height, or with the period in the spring when business was just getting over the effects of the war, but with the last few months, when peace had been more fully restored.

The fact is that the difficulties as to service which exist now are difficulties which will be very slightly influenced merely by turning the railroads back to private control. Some of those difficulties are more apt to be increased than diminished. Leaving aside the personal attention which can be given by traffic solicitors and which undoubtedly will be increased under private control, the railroad plant of the country has been functioning with unusual facility for the last few months. Competition, to a certain extent, already has been restored even under government operation. Both within and between regions, railroads are trying to get more trains on time, and as a result, during September 88 per cent of all the passenger trains of the country were either on time or made their runs in as good as, or better than, schedule time. Before the coal strike the railroads of the country were doing a heavier business than was ever done before. The bad order car situation on November 1 was down below 6 per cent. There were more than 1,800 locomotives in repair and in storage awaiting use. And in the last week before the coal strike, meeting the emergency presented, the railroads hauled more bituminous coal than ever before, 13,200,000 tons.

From the above do not think I believe that the railroads of the country have given perfect service during the last few months. I do not. I realize, of course, that for a time there was a shortage of cars to move coal, and that there is still a shortage of cars for the movement of grain and some other commodities. I appreciate there are other difficulties. But these are difficulties of the railroads rather than difficulties of government operation.

The railroads need equipment, they need all sorts of additions and betterments, they need to spend from $750,000,000 to $1,000,000,000 in the year 1920, they need to make extensions into new territory. But those are needs of the railroads whether under government or private operation. Turning the railroads back to their owners will not get those things unless there goes with the turning back legislation which will permit the owners to get the money to do those things; unless there goes with the turning back legislation which will perpetuate some of the consolidations, some of the unifications, some of the saving which has grown up during government control and which should be added to under private control rather than wiped away; unless there goes with the turning back real constructive legislation, rather than makeshift legislation and the thought that the return to private operation will cure all the ills.

Need for Improvements

During the last year of private control in 1917 and during the two years of government control there have not been the needed additions and betterments and the needed equipment.

The railroads during the last year of private control did not have sufficient money to make these improvements, and during the war they were not made, first, because of the shortage of materials and labor; second, because of the lack of needed appropriations; and third, because in the closing months of federal control it was impossible for the government to make plans when its tenure of control was limited.

Virtually all of these reasons would have applied to the railroads had they been under private control during the entire period of the war, but this does not change the fact that now that the war is over and the railroads are about to go back to private control some steps must be taken to put the railroads on such a basis that they will be enabled to make the necessary additions and betterments and buy needed equipment, so that a really adequate public service may be given not only in the year 1920 but in years to come.

The fact is that if the railroads are to give adequate public service after government control they must adopt many

of the plans which have been worked out during government control. They will want to retain many of the consolidated ticket offices and consolidated terminals; they will want to continue the elimination of many circuitous routes previously employed; they will want to continue the pooling of repair shops; it is to be hoped that they will want to continue the permit system for the loading of grain and certain other commodities which prevents the use of railroad equipment for warehouse purposes; many will want to continue the utilization of universal mileage books; to a degree at least, they will want to push forward the standardization of equipment; certainly many will want to continue the maintenance of common time-tables between important points; they will want to continue the promotion of standard operating statistics to bring out the various elements of railroad efficiency. They will want to continue and possibly further develop the control over equipment, particularly over freight cars, so that the entire nation may get the benefit of the equipment in existence; they will want to go on with a score or more of developments which had either not been developed under private control or had been prevented by laws and regulations or over-developed competition.

Through co-operation between the Railroad Administration and the American Railroad Association during the last few months many of the improvements developed under government control seem certain to be continued, whatever legislation is adopted; but what is really needed for the service of the public is the development of really adequate legislation which will permit the making of needed improvements and the purchasing of the necessary equipment, and which will put the entire railroad plant at the service of the entire country. Unless these things are obtained the mere passing back to private control almost certainly will prove a snare and delusion.

War Blamed for Losses

To sum up, therefore, the large proportion of the money lost by the government in operating the railroads has been due to the war and to readjustments following the war and, the situation having changed, this condition will neither be bettered or made worse by the return of the railroads to private control. There may be some economies in operation brought about, but this will be largely offset by losing the economies of unified control; the rates control; the physical condition of the properties will not be bettered under private control unless the railroads are placed in position to secure money; the service, both passenger and freight, may be bettered under private control as far as individual attention is concerned, but can hardly be bettered as far as the aggregate service to the public is concerned; certainly it will not be bettered or even kept as good unless the railroad companies retain many of the unifications, consolidations, etc., which have been built up under government operation.

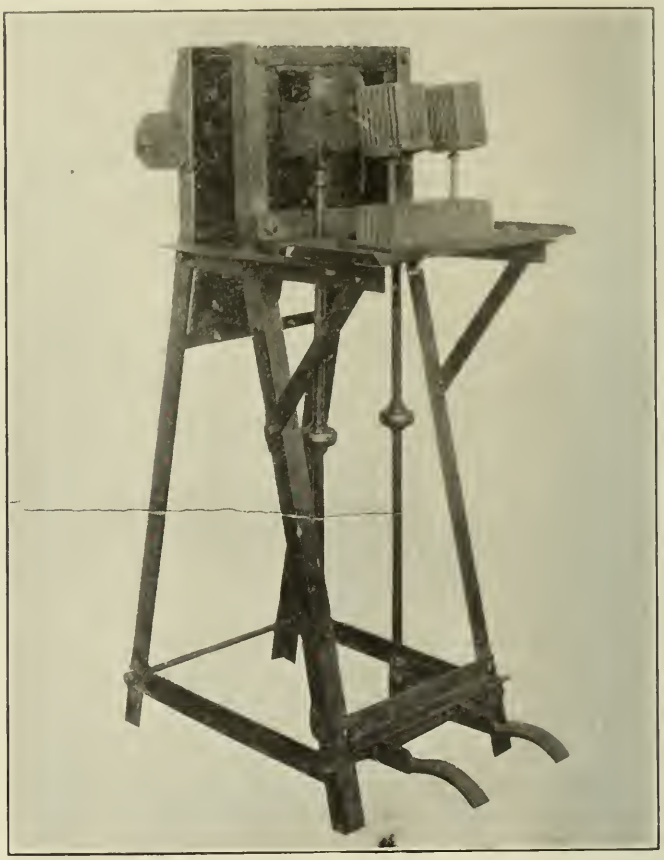
Whether the Congress decides upon returning the railroads back to their owners under virtually the same legislation in existence prior to government control; whether government ownership is adopted; whether federal control is continued for a year or more or whether really radical legislation reconstructing the existing railroad companies is put into effect will be determined during the present session of the Congress.

All of the proposals mentioned have received strong support. It is to the highest degree important that the public decide as promptly as possible which of these proposals will give after January 1 the most adequate railroad service to the country.

THE PRODUCTION OF PETROLEUM in the United States in October, 1919, amounted to approximately 33,319,000 barrels (barrels of 42 gallons), as compared with 33,667,000 barrels in September, 1919, and 31,255,000 barrels in October, 1918.

An Electric Rivet Heater

IN AN EFFORT to reduce the waste and losses experienced in present methods of heating rivets, as well as to provide a portable machine which may be used in localities where electric power is available and where fire, gases and smoke cannot be tolerated, the General Electric Company, Schenectady, N. Y., has designed an electric rivet heater which includes a transformer rated at 15 kw. mounted on angle iron legs which may be fitted with wheels. At the front of the transformer two copper bars are fitted with heavy air-cooled electrode blocks of cast copper and under these is another copper block which acts as a support and electrical connection for two rivets in series. When the rivets are placed on the block and the electrodes are allowed to drop on the heads of the rivets the circuit is closed and the heating begins. The two electrodes may be raised independently by two-foot pedals and a primary top switch mounted on the back legs of the machine compensates for the different diameters and lengths of the rivets. Higher efficiency owing to the localizing of the heat energy, better regulation of heat, elimination of smoke and gases and the losses due to uneven heating and consequent failure to upset in the hole, thereby causing a leaky rivet hole, are some of the more important advantages claimed for the machines.



Front View of the Rivet Heater

SAFETY-FIRST WITH TEETH IN IT.—At Altoona, Pa., on the fifth of December, five employees of the Pennsylvania Railroad were arrested by railroad police officers and arraigned before a magistrate who fined them each $1—merely the amount of costs in the case—for walking on the tracks. These employes of the road, taking a short cut from their work to their homes, crossed the yards at the eastern end, in violation of a well-known rule. The magistrate reprimanded the men for thus needlessly exposing themselves to being struck by trains.

Annual Meeting of the National Safety Council

Discussion of Industrial Relations Occupies Important Place in Convention Sessions

LABOR UNREST AND COLLECTIVE bargaining for a time usurped safety's place in the sessions of the Eighth Annual Congress of the National Safety Council held at the Hotel Statler, Cleveland, Ohio, October 1 to 4 inclusive. Organized primarily to promote safety among workmen in industries, the National Safety Council has been forced to widen the scope of its activities and enter the broader field of industrial relations because of the labor developments during the past year. For this reason the discussion of labor problems occupied a prominent part in the proceedings of the general sessions of the congress and in many of the sectional meetings. Both sides of the present economic struggle between employee and employer were presented to the delegates, the result being an open and entirely frank discussion of the fundamental causes of this unrest and of the principles of real democracy in labor.

The steam railroad section led all other sectional meetings both in point of attendance and in the interest displayed by those present. The largest available meeting room was assigned to this section for its meetings of which there were three; nevertheless, at each of these meetings the room was overcrowded and many railroad safety men were forced to remain outside.

The congress was opened on Wednesday morning October 1, by the annual meeting of members at which the chairman, David Van Schaack, president of the National Safety Council, presided. Thereafter four general sessions were held, two of which were devoted almost exclusively to the presentation and discussion of papers on industrial relations. The sectional meetings, of which there were 32, were divided into 19 groups.

The first general session devoted to the general subject of employees' representation was featured by three addresses, those of Cyrus McCormick, Jr., works manager of the International Harvester Company, Chicago, who spoke on "Co-operation and Industrial Progress"; Mathew Woll, vice-president of the American Federation of Labor, who spoke on "Employees' Representation from the Standpoint of Organized Labor," and W. M. Leiserson, impartial chairman of the Labor Adjustment Board for the clothing industry of Rochester, N. Y., who spoke on "Labor Management and Collective Bargaining."

The first session of the Steam Railroad Section, presided over by R. C. Richards, chairman of the Central Safety Committee, Chicago & North Western, Chicago, was featured by the address of A. F. Duffy, manager of the Safety Section, United States Railroad Administration, who said, in part:

R. C. Richards, President National Safety Council

A. F. Duffy on Work of Safety Section

Safety is basic in any business where physical hazard is involved, for if you will look about you, I venture you will perceive that the best railroad is the safest railroad and the most efficiently and satisfactorily operated from the standpoint of the people, the government, the owners of the property, and last but very important, the men who work on that railroad and who have it in their hands to make it a successful organization or a mediocre enterprise.

I have been a practical railroad man during all of my working life, and I predict, without qualification, that when once the railroad men of this country thoroughly understand what safety work we are endeavoring to do, why it is necessary, and what are the possibilities they will take hold of this subject in such a manner as to accomplish results which will startle the railroad fraternity.

Safety on railroads has been advanced many years by virtue of the recognition which has been given it by the United States Railroad Administration, and I believe its permanency is already assured; it has demonstrated its capabilities and is now at the crucial time when a realization of its fullest possibilities is all but at hand.

I give it as my unbiased opinion that railroads—like many other industrial organizations—have not, up to a comparatively recent time, given due consideration to the human factor in industry by recognizing the fact that men and women are infinitely more important than machines, structures, or appliances of any description. When we contrast the degree of care which is exercised in the purpose, use, and maintenance of locomotives with the employment, service, and training of the average employee of the average railroad we are disappointed to learn the inequality which exists as between the machine, which can be replaced with money, and the life, which is absolutely irreplaceable, and which, when once gone, can never be brought back.

Some of us are disposed to be altogether too conservative and reactionary in the activities we employ in conducting this work, and sometimes we are apt to underestimate the value which comes from the financial expenditure required to carry it on. I do not subscribe to the theory that within

intelligent and reasonable limitations it is possible to become overzealous or to overdo in a matter of this kind. We must, from the very nature of the work, consistently and continuously develop new plans and methods for creating and sustaining the interest of railroad employees, and of all persons subject, directly or indirectly, to the hazard of railroad operation. It is just as good business, if we must for the moment regard the matter from a monetary standpoint, to expend money for safety activities as it is to make investments for approved devices which will conserve fuel, increase car loading, improve efficiency, or reduce maintenance cost. It is a great deal more important, and, as a rule, will pay materially larger returns.

In deliberating these matters, however, I urge you not to lose sight of the fact that the aim and purpose of the work of the Safety Section is not to save money, but always has been and always will be to conserve human life and limb. If any saving of money is made by reason of a reduction in casualties surely that result is not subject to criticism, for in order to save money we must first avoid the casualties themselves.

The recognition of the human element, then, is the most important factor in railroad service, and its training and education in safety is the foundation upon which are built the aims and purposes of the Safety Section. And, since the whole scheme of things revolves around the safety committee organizations it is to this phase of our work that the greatest attention must be given. There is no more honorable position today on a railroad than that of safety committeeman. His is a real service to mankind, and he can be proud of that service, if he is doing all that may reasonably be expected of him. If he is not measuring up to his responsibilities it is probably because he has not been properly instructed and trained in his work. Our safety committee meetings must be so regulated that the members thereof will be not merely interested in their work, but enthusiastic about it. To this end it is essential that safety officers or their assistants attend committee meetings frequently in order to insure their proper functioning and to sustain the interest which is so necessary on the part of safety committeemen.

A fact which is of prime importance in the relation of safety to railroad operation, is that when experienced men are taken out of the service because of casualties the employment of new or inexperienced men in their stead not infrequently causes additional casualties to occur, because of the lack of familiarity with the work in hand; and always such a situation decreases efficiency and output, and otherwise costs money and causes hardships. This fact emphasizes too the real necessity for constructive thought and action in relation to the safety education, and training of the new man in the service, and of the employee who is promoted or changed from his customary occupation to one with which he may not be familiar.

Another of the aims and purposes of the Safety Section is to secure liberal publicity of the work we are doing and the necessity for it; of the altogether too large number of railroad men who are killed and injured every year in the business of operating the railroads of this country; of the appalling number of people who are killed and injured each year while wrongfully trespassing on railroad premises, and of the alarmingly increasing number of people who meet death and injury while passing over highway crossings.

Concretely, this publicity in the case of employees should be in the form of bulletins, posters, pamphlets, casualty statements, and such other data and information as may be deemed advisable. We must never lose sight of the fact that safety is fundamentally a work of the employees who do the physical tasks incident to railroad operation. They are almost entirely responsible for the accomplishments heretofore made in this great movement and will be the strength and power for good which will come in the future.

The railroad men of America have responded nobly to the activities of the Safety Section of the United States Railroad Administration. But if we expect them to continue in their interest and enthusiasm it will not suffice simply to beseech them to stop deaths and injuries. It will be necessary to keep them constantly informed as to the number of casualties which occur, what causes them, and whot may be done to prevent a repetition of similar casualties. The data, so far as is practicable, should be prepared in some competitive form so that rivalry will be created between the various units of the railroad.

In the case of trespassing and highway-crossing accidents, it has seemed to me for some time that we have not applied ourselves to this vital question with deserved attention. We are too prone to take for granted that nothing can be done to check these evils. Consistent publicity, posters, and the medium of public and parochial schools, automobile clubs, and commercial associations, village, city, county, and state officials represent available avenues of approach in this matter.

It is but natural that certain developments during the past year should stand out preëminently as auguring well for the future of safety. One of these developments is the truly remarkable interest which has been manifested in safety by railroad men, as evidenced by the endorsements of the work of the Safety Section in the national conventions of the Brotherhood of Locomotive Firemen and Enginemen; Brotherhood of Railroad Trainmen; Switchmen's Union of North America; Order of Railway Conductors; Order of Railroad Telegraphers; Order of Railroad Station Agents; Brotherhood of Railway Clerks, Freight Handlers, and Station and Express Employees; Brotherhood of Maintenance of Way Employees; with a total membership of 1,182,000 railroad men and women.

Another development of significance is the universal approval of the safety committee organization and the entire plan for conducting this work as promulgated by the Safety Section. It is encouraging thus to observe as we go along that we are on the right track, and because we are right we are bound to achieve the goal of all safety men, whereby the lives and limbs of men, women, and children will be saved from railroad casualties, so far as it is humanly possible so to do.

M. A. Dow, general safety agent, New York Central, New York City, addressed the meeting on the "Value and Necessity of Safety Agents" and R. H. Doolittle, supervisor of safety, Colorado Southern, Denver, Colo., spoke on the co-operation of employees and officers in safety work on railroads.

A Big Improvement

The second session of the Steam Railroad Section was addressed by W. G. Lee, president of the Brotherhood of Railway Trainmen; T. H. Carrow, supervisor of safety, Pennsylvania Railroad, Philadelphia, Pa., and Robert Scott superintendent of insurance and Safety, Atlantic Coast Line, Wilmington, N. C.

Mr. Lee said in part:

No class of people can be more vitally interested in the progress of the safety movement than the trainmen. It is wholly due to the progress of the safety first idea that accidents and subsequent expenditure of money for death and disability claims has been lessened during the past year.

Additional promotion of care and safety propaganda and use of new safety appliances can lessen this loss in life and efficiency to a still more appreciable degree.

Approximately $4,000,000 was paid out in 1918 for death and disability claims in the railroad industry. So far in 1919 this figure has fallen below the three million

mark. This is due entirely to the safety movement, in my opinion.

Let's talk safety, plan safety, and above all, practice safety.

Study the Human Factor

Mr. Carrow presented a general outline of the salient features of safety committee work and methods of treating and disposing of suggestions and recommendations made to eliminate unsafe practices and conditions.

Mr. Scott said in part:

Safeguarding and education represent the essential elements of any safety organization, which naturally requires efficient planning, direction and supervision.

I have observed a tendency on the part of safety committeemen to confine their attention to the obvious mechanical and structural conditions, which should have been remedied by the foremen or supervisors, instead of studying the broader and more productive field of dangerous practices. In other words, there is always a tendency to superficial inspection which is difficult to overcome.

After selecting as head of the organization a man who has an abiding faith in the necessity for the work, it is apparent that next in importance is to place upon the committees only such men as are believed would prove loyal to the cause and can grasp the real meaning of safety, i. e., that it deals with human nature and human relations more than with structural or mechanical conditions. It is believed that if safety committeemen are of the type mentioned in the foregoing paragraph, they will create an atmosphere of intolerance, of careless and reckless habits in the territory in which they work. Not only will they be active aids to the safety department, but they will serve in various ways as the connecting link between the management and the rank and file men—between staff and labor. These are the men who will come to the assistance of the management in time of stress; who will come forward with information beyond the officials' vision, and who, in countless ways, will promote the unity of the entire organization.

The general safety committees should be composed of general and division officers, chosen in such a manner that the different departments of service shall be represented on that committee. The chief operating officer usually acts as chairman. It is desirable that this committee shall have general supervision of the safety organization.

A division safety committee, composed of division officers, with the superintendent as chairman, and one or more representatives of each of the different classes of service, should be formed and can be of much assistance to the general committee provided it has the proper conception of its functions, and will with intelligence and zeal seek to perform these functions.

At all shops employing more than several hundred men a safety committee composed of the principal officers of the shop, with the ranking officer as chairman, and one or more representatives of each of the different classes of service, should be formed. If the shop is under the jurisdiction of the division superintendent, the committee should report to the division safety committee, otherwise to the general safety committee. Too much care cannot be exercised in the selection of men to serve upon shop committees because of the necessity for having intelligent and enthusiastic committeemen who will take it upon themselves to instruct and advise new employees or older ones who are not inclined to follow safe methods in the performance of their work.

At each large terminal a safety committee should be formed, compose d of the officers in charge, with the superintendent or ranking officer as chairman and one or more representatives of each of the different classes of service. If the terminal is under the jurisdiction of the division superintendent, the committee should report to the division safety committee, otherwise to the general safety committee.

Where conditions require, local committees may be organized in yards, roundhouses, smaller shops, large freight houses, etc.

No accident prevention work can be successfully carried on without the hearty support of executive and supervising officers. As the first and essential step, then, in inaugurating a safety educational movement, should be a clear, unequivocal statement by the management as to where it stands.

To properly maintain interest in safety among the officers it is necessary that the man in charge of the work of accident prevention must be possessed of a compelling personality and that he will with diplomacy, tact, and perseverance keep the subject of safety ever before these officers, and present to them such interesting facts as will not only command attention but will actually cause them to become and remain deeply interested in it.

After having aroused the interest of employees, a more difficult problem arises as to how this interest can be held. I am convinced this cannot be done by following any one scheme, but can only be successfully accomplished by the employment of a combination of methods.

Among the things that have been used with the greatest success is the motion picture car, accompanied by a lecturer, on account of the benefit that accrues from placing the importance of safety before employees and their families, also in enlisting their interest and support in accident prevention. Carelessness has slain, crippled, and blinded more men, has made more widows and orphans, has left on the face of this earth more hands outstretched for charity than all the great wars or other calamities that have befallen mankind. Let us fight it with all the intelligence we are capable of developing and with the full strength of our manhood to the end that the world will be a better place for our having lived in it.

At the third session of The Steam Railroad Section, G. L. La Fountaine, general safety supervisor of the Great Northern at St. Paul, Minn., presented a paper on the "Importance of Proper Inspection of Tools Used in Shops and by Maintenance of Way Gangs" and J. L. Walsh, superintendent of safety of the Missouri, Kansas & Texas of Texas at Dallas, Tex., spoke on motor and hand car accidents. In addition a discussion was held on the causes and remedies for accidents in train service.

Mr. La Fountaine said in part:

For the purpose of formulating a definite plan of inspection, all hand tools used in shops and engine houses may be roughly divided into two classes—those which are circuated in general use and those which are regularly assigned to individual workmen.

In connection with the first class, I would suggest that every shop or engine house employing any considerable number of workmen maintain a tool room in which all hand tools of general use be assembled at the close of the day's work. A competent man should be placed in charge of this room with the care and inspection of those tools as his sole duty; he should maintain his stock in a good, serviceable condition at all times, and any tools worn to any appreciable degree, such as a chisel with a burred or mushroomed head or a wrench with rounded jaws, the further use of which invites one of these minor accidents, should be repaired or replaced at once. It should be impressed upon this man that the primary purpose of his being employed is in the interest of accident prevention, and that the responsibility for any accident resulting from the use of a worn or defective tool which left the tool room in that condition must lie directly with him.

In respect to those tools regularly assigned to shop employees, we encountered our greatest difficulties. These tools are kept in private lockers, and in a great many cases are subject to no other inspection but that of the employee him-

self. You will find as a rule, although he is known to be a conscientious and thoroughly dependable workman, that his tools have been gathered during a long period of selection and he regards them with not a little pride resenting inspection which may question their further serviceability. We must have frequent inspections. Since the majority of workmen cannot be relied upon to inspect their own tools, that duty must devolve upon the shop foreman.

To my mind, the foreman can make the most effective inspection of tools while they are in actual use because of the opportunity this affords him tactfully to demonstrate and explain the elements of danger in the imperfection, thereby teaching the employe by example, as well as precept, which will leave a lasting and favorable impression.

The inspection by the foreman might well be supplemented by a competent safety committee, such as now exists in practically all well-organized shops. Imbued with the proper spirit, the members of the committee can make frequent inspections of their fellow-worker's tools with their own daily experiences as a guide.

The importance of keeping the tools used by the maintenance of way gangs in good, serviceable condition is just as essential as that of every other department upon the railroad, and what I have said in connection with the method of inspecting tools assigned to individual workmen in the shops, will serve equally well with the maintenance of way gangs. The foreman of the gang should inspect the tools daily and know that they are in first class condition before permitting the employees to use them, and should be held strictly responsible for all accidents resulting directly from the use of worn or defective tools.

This inspection by the foreman should be especially severe during those seasons of the year when "new" men are added to his gang. Many of these men are absolutely inexperienced in the use of tools of any kind, and defective tools in their hands are a cause of far greater concern than such tools would be if their use were confined to experienced men.

Not only is such inspection an absolute necessity in the interest of safety, but they all should contribute much toward economy and efficiency. A well conducted method of tool inspection serves a double purpose: safety and efficiency, the two great factors of modern industry, which go hand in hand. If a tool is to do the work it was originally designed to do, it must be kept in its original entirety. The more it lapses from that state, the less efficient and more dangerous it becomes.

Motor and Hand Car Accidents

Mr. Walsh said, in part:

When efforts are made to reduce the number of hand and motor car accidents, the first consideration is usually given to the rate of speed at which cars are operated. When accidents occur, the speed of the car is not usually the primary cause of the accident. While division inspection cars might be operated safely at 20 or 25 miles per hour between stations on straight track, I think the general rule for section and B & B cars should provide a maximum speed of 15 miles per hour between stations and a maximum of 10 miles per hour over road crossings, over frogs and switches, in cuts, on curves, and during foggy weather.

Railroads adopting the motor car as standard for the maintenance of way department, and others having occasion to use them, should organize a motor car department, in charge of experts to keep the cars in repair, to make frequent inspections and adjustments from time to time, and to educate the employees using the car in its proper maintenance and safe operation. The expense of such a department should be offset by less delays and greater efficiency in cars in use.

On some railroads it has been the practice in the past to allow foremen to purchase their own motor car or gasoline engine with their personal funds, and in the latter case, a foreman usually fits the engine to a dismantled hand or push car, and creates a home-made motor car. This practice I think should be prohibited, as it is wrong in principle to require the employees to purchase their cars, and it leads to bad practices on the part of the foremen in many cases.

In addition hand and push cars are not constructed sufficiently strong to stand up well in service under the strain and pounding to which they are subjected when equipped with gasoline engines. These home-made motor cars in many cases are not properly equipped with the necessary safety devices, such as seats, guard or hand rails on the front of the car, toe boards, and proper hand brakes.

Cars I think should be of the direct-connected type, two-cylinder engine with its few parts to get out of order and adjustment. If possible to attach a speed governor restricting the speed to a maximum of 15 miles per hour to these cars, one that cannot be easily disconnected or tampered with, one that is simple and will not cause engine trouble, I would suggest that all cars for general use be so equipped. There should be a curved hand rail or guard extending to the floor on front of car, and also a toe board to prevent tools and material from bouncing off and derailing it. The wheels should not be more than 16 in. in height, and the floor of the car should be extended flush with the outer edge of the wheels to prevent men getting their feet under the wheels in attempting to board the car from the side. Last but not least, each car should be fitted with a positive acting, effective hand brake.

The surest method of keeping hand and motor car accidents to a minimum after adopting a practical, properly-equipped car as standard, best suited for the purpose intended, is I think, to promulgate a practical set of rules covering their inspection, maintenance, and operation, and see that they are strictly complied with.

Election of Officers

R. C. Richards, chairman of the Steam Railroad Section for the past year, was elected president of the National Safety Council to succeed David Van Schaack, and Fred Meyers superintendent of safety at the Wabash, St. Louis, Mo., was elected chairman of the Railroad Section succeeding Mr. Richards. Robert Scott, superintendent of insurance and safety of the Atlantic Coast Lines at Wilmington, N. C., was elected vice-chairman and H. M. Mayo, superintendent of safety of the Southern Pacific, Tex., was elected secretary of the Steam Railroad Section. Mr. Richards is the first railroadman to be elected president of the National Safety Council. A. F. Duffy, manager of the Safety Section of the United States Railroad Administration, was elected a member of the board of directors and Isaiah Hale, safety superintendent of the Atchison, Topeka & Santa Fe, Topeka, Kan., and R. C. Richards, chairman of the Central Safety Committee, Chicago & North Western at Chicago, were re-elected directors.

An exhibit of safety devices was held at Gray's Armory in connection with the convention and under the joint auspices of the National Safety Council and the Safety Institute of America. Among those who exhibited were the following:

American Abrasive Metals Co., New York City.
Benjamin Electric Manufacturing Co., Chicago.
The Buda Company, Chicago.
Central Electric Co., Chicago.
James B. Clow & Sons, Chicago.
General Electric Co., Schenectady, N. Y.
Norton Company, Worcester, Mass.
Pneumatic Safety Tool Co., Boston, Mass.
John A. Roebling's Sons Co., Cleveland, Ohio.
Safety Nut & Bolt Co., Cleveland, Ohio.
The Trumbull Electric Mfg. Co., New York City.
West Disinfectant Company, New York City.
Westinghouse Electric & Mfg. Co., E. Pittsburgh, Penn.
Steam Railroad Section, National Safety Council.
National Safety Council, Chicago.

Report on the Senate Committee's Railroad Bill

Chairman Cummins Discusses Need for Improvement in System of Transportation Regulation

Chairman A. B. Cummins of the Senate Committee on Interstate Commerce, on November 10 submitted a report on the railroad reorganization bill, of which the following is an abstract:

The first thought which the committee desires to impress upon the Senate is the importance of an early consideration of the measure and the establishment of a reasonably permanent status for our systems of transportation. The health, commerce, peace, prosperity, and growth of the United States are absolutely dependent upon adequate and constantly increasing facilities for transportation. Everybody understands that the existing condition is a temporary one; and, as we draw near the end of government operation the demoralizing influences multiply. The conceded return of these properties to their owners, within a short time, necessarily destroys or at least seriously impairs the morale of the operating force and it becomes less and less efficient. A still greater difficulty lies in the fact that no plans can be made for future improvements in the way of additions and betterments, to meet the growing demands of an expanding commerce. Naturally and properly, the Railroad Administration is disinclined to make expenditures of this character involving the execution of a program which, to be effectual, must be consistent and continuous, and the railroad companies are manifestly incapable of either making or carrying out provisions for the enlargement of their facilities for transportation. The result is a practical suspension of work in this direction. There is no practical way in which the period of partial paralysis can be avoided or prevented; but it is obvious, even to the most casual observer, that the period should be shortened by the most diligent attention on the part of Congress.

The bill repeals the act of March 21, 1918, commonly known as the federal control act; continuing it only in so far as is required to close up all matters growing out of federal control. The act takes effect at midnight on the last day of the month in which it becomes a law, and at that time the transfer of the properties in the possession of the government is to occur. All rights and remedies, both of and against the government, are preserved. Without commenting in detail upon what these rights are, it may be said that it will be many years before all the matters growing out of federal control will be adjusted, for the disputes already developed are numerous enough to occupy the attention of the courts for a decade. All that this report will attempt to do, in that respect, is to present an estimate of the uncontroverted condition as it will probably be on the 1st of January, 1920. The estimate has been prepared and furnished to the committee by the financial department of the Railroad Administration; but, as Mr. Sherley, who compiled it, very well indicates, it is only an estimate, for many things may happen before the end of the year to affect it.

To understand fully the financial statement, it is necessary to refer to the federal control act under which the director general of railroads has been operating about 230,000 miles of our 260,000 miles of railways. Whether the President took possession of all the railways at the beginning of the year 1918, is a subject of controversy. It is sufficient to say that the act of March 21, 1918, authorized the President to relinquish at any time prior to July 1, 1918, "control of all or any part of any railroad or system of transportation." About July 1, the President exercised this power and relinquished a large number of the shorter lines, retaining, as already suggested, something like 230,000 miles which had been from the first day of January, 1918, and still are being operated by the director general of railroads.

The federal control act empowered the President to agree with each carrier, whose property was taken over, for the payment of a maximum compensation equivalent to its average annual railway operating income for the three years ending June 30, 1917. Upon this basis the aggregate annual compensation for the use of the railways passing into the hands of the government and retained until the present time is, in round numbers, $900,000,000. At various times the President has entered into contracts with the several railway companies, adopting his maximum authority as the "standard return." With respect to the exact number of contracts so made, the committee is not advised, but it has information to the effect that while in the main the larger systems are under contract there are yet quite two-thirds of the whole number of carriers whose property is being operated by the government which have not signed what is known as the "standard contract." These companies may or may not sign in the future; and, if they do not, each of them will be entitled to recover from the government the just compensation which the law may award. With regard to those carriers, very many in number, which claim that their properties were taken over on January 1, 1918, but which were formally relinquished prior to July 1, 1918, they may or may not be entitled to compensation; and they are mentioned only to say that they are not included in the statement of the existing financial relations between the government and the transportation systems. The director general has made contracts with some of these carriers, but the committee assumes such contracts have not been made under the authority to agree upon compensation but are merely traffic agreements of the general character that one common carrier may lawfully make with another.

The Government's Loss

According to the estimate of the Railroad Administration, the net operating income of the systems in the hands of the government for the two years 1918 and 1919, will be $551,777,459 less than the compensation to which the carriers are entitled, computed as provided in the law and as prescribed in the standard contract; that is to say, when all accounts have been adjusted and paid the government will have lost that amount in its two years of operation. It is the opinion of the committee, without reflecting in any wise upon the Railroad Administration, that in the end the loss will be found to be much greater than the estimate submitted; but, however that may be, it must ultimately be paid from the Treasury of the United States.

As is well known, Congress has appropriated, in all, $1,250,000,000 for the use of the Railroad Administration. This sum, so far as the committee is advised, has been expended, or will be expended, for the purposes and under the conditions prescribed in the federal control act.

Assuming that the government's loss for the two years will be, in round numbers, $600,000,000, it is obvious that if the railways could pay on December 31 all that they owe the government, $650,000,000 of the appropriation would be returned to the Treasury; but that will not be the situation, for it is entirely impossible for the railways to repay out of income the sums which have been advanced by the government for additions and betterments—expenditures which are ordinarily charged to capital account. It will be-

come necessary for the government to pay the railways a large part of the compensation in order that the carriers may pay the interest upon their bonds and other fixed charges and make such distribution in the way of dividends as will prevent undue hardship among their stockholders. If the government retains about $400,000,000 and applies that sum upon the amount due from the railways on account of additions and betterments, the government would still carry about $525,000,000 of the additions and betterments. If, however, it shall carry for future payment all expenditures during the two years for additions and betterments, it must fund nearly $950,000,000 on that account alone. If it is also to carry the amount of cash in the hands of carriers on January 1, 1918, taken over by the government, and the balances in the hands of agents, the amount to be funded would be increased $383,000,000; making a total substantially of $1,300,000,000.

The bill before the Senate pursues a middle course with respect to funding the indebtedness due from the carriers to the government which is thought to be just both to the public and the railways. Nearly three weeks ago the committee asked the Railroad Administration to furnish a statement applying the provisions of the bill to the settlement of accounts and showing just what the result would be; but, up to this time, the statement has not been received.

October 22 the Railroad Administration, through the director of the Division of Finance, sent to the chairman of the committee a letter which presents the basis of the general conclusions above stated. It is in part as follows:

"I beg to give you below a statement showing, on the basis of the best estimate that we can make at this time, an approximation of the amount that would be needed to defray operating deficit, the amount that the Railroad Administration will have temporarily tied up in various assets and the additional amount that will be required in order to aid in the liquidation of the affairs of the Railroad Administration.

The figures are necessarily tentative because the latest balance sheet is for June 30, 1919, and necessarily the most careful estimates can not possibly disclose the precise facts as they would develop during the last six months.

"The figures given are upon the assumption that disposition will be made in accordance with the terms of the standard contract. The other possible disposition suggested in amendments proposed to provide for funding a certain amount of the indebtedness of the railroads would naturally present the matter in a different aspect.

"In order to enable settlements with the railroad companies at December 31, 1919, it will necessitate the payment to them of approximately $326,541,893, arrived at as per the following table:

Accounts with the corporations immediately payable at December 31, 1919.

Due the Government:		
Demand loans		$53,078,186
Short term notes		75,553,167
Open account balances due Government	$220,053,510	
Less amount not now collectible	66,028,228	
		154,025,282
For additions and betterments, other than allocated equipment, financed from income		370,381,494
Allocated equipment financed under general equipment plan		200,000,000
For additions and betterments financed through open account due company		45,100,132
Total immediately payable to Government		$898,138,261
Due the corporations:		
Balance due on compensation		$855,395,851
Depreciation and retirements		304,179,281
Open account balances due corporations		65,105,022
Total immediately payable to corporations		$1,224,680,154
Amount needed to be appropriated to enable the Railroad Administration to immediately pay to the corporations the net amount due them		$326,541,893

"When the Railroad Administration shall have made settlement with the railroad companies in accordance with the foregoing the situation will be as follows: The Railroad Administration will have expended and there will, in consequence, have been correspondingly consumed or tied up—

1. Amount necessary to defray operating deficit, the difference between the standard rental payable to the railroad companies and the estimated net operating income for the 24 months ended December 31, 1919	$551,777,459
2. Amount of cash working capital necessary to leave temporarily with the corporations until the returns from the operation of their properties after Federal control become available	357,943,276
3. Amount of open account due Government by the corporations, representing payments by Government of corporate liabilities which the corporations can not repay at this time	66,028,228
4. Amount of additions and betterments' expenditures including equipment, made to the railroad companies' properties during 1918 and 1919, which must be carried by the Railroad Administration for the time being	518,075,309
5. Improvements on inland waterways	14,341,885
6. Loans during 1918 and 1919 to railroad companies not immediately repayable	48,375,735
7. Boston & Maine reorganization	20,000,000
Total	$1,576,541,893

"Appropriations heretofore made and applicable, to the foregoing aggregate $1,250,000,000, so that to discharge its obligations as they exist at December 31, 1919, on the basis of the standard contract, the Railroad Administration will need an additional appropriation, it is estimated at this time, of $326,541,893.

"Concerning the proposal to fund the indebtedness of the railroad companies to the Railroad Administration, it will be noted that a settlement under the contract contemplates that there will have been retained in settlement with the companies, on account of additions and betterments to their properties, the sum of $415,481,626 and that it is contemplated that even with that deduction from the compensation that the government, nevertheless, will be carrying $518,075,309 of additions and betterments which the companies are not able to repay at this time, so that if the whole amount of the indebtedness for additions and betterments should be funded the above appropriation would have to be increased by the amount of $415,481,626 and the government would then be required to fund for additions and betterments the sum of $933,556,935.

"Regarding the proposal of the corporations that the amount of the working capital taken over should also be funded, it is to be observed that at the beginning of federal control the amount of cash in the hands of the treasurers, so taken over by the Railroad Administration, aggregated $239,190,605. In addition, the balances in the hands of agents and conductors aggregated $143,899,424.

"If the proposal looks to the furnishing of these amounts in addition to amounts sufficient to pay off the liabilities of the Railroad Administration, that amount would have to be added to the requirements shown above. However, the fact is that the Railroad Administration used such cash and agents' and conductors' balances in liquidating the liabilities of the corporations in the earlier months of federal control and it is to be assumed that a like process will take place at the end of federal control.

"If, therefore, the Railroad Administration leaves in the hands of the corporations a sufficient amount of working assets to liquidate its liabilities, not all of which must be paid simultaneously with the end of federal control but which will be liquidated doubtless spreading over a period of from 30 to 90 days (it is true that a considerable part of such liabilities must be met in the first 15 days following the return of the roads to private control and a sufficient amount of cash or other quick assets should be left with the corporations to protect them) it would be ample protection to the corporations in point of working capital and would practically duplicate the situation as it developed when federal control intervened.

"As stated above, the Railroad Administration used the cash assets of the corporations, generally, for the payment of the corporations' liabilities. To the extent that there is a balance in the hands of the Railroad Administration, resulting from such trasactions, the statement showing the account with the companies on page 2 of this letter, contemplates that such amount will be paid over to the companies except to the extent that any such amounts may be properly

applied to the repayment of the indebtedness of the companies to the Railroad Administration.

"To the extent that such process resulted in the Railroad Administration paying corporate liabilities in excess of assets, the account on page 2 of this letter contemplates, moreover, the collection thereof from the corporations only in cases where it is practical for such corporations to make payment thereof from balances of compensation due them.

"On this theory, the foregoing indicates that the government will be required to carry, for the time being, balances due from the corporations on open account aggregating $66,000,000.

"With reference to the amount shown above for working capital temporarily tied up, it should be observed that a considerable part of the assets of the Railroad Administration are represented by items other than cash. For example: traffic balances, accounts receivable and various unadjusted items, both debit and credit, that are necessarily incident to a business of such magnitude and which can not finally be cleared up short of several months. The amount shown represents the balance between such unsettled assets and unsettled liabilities—the net being the figure which is shown as the amount which the government will temporarily have tied up as working capital.

"If for any cause the plan for a general equipment trust should not be carried out, there will be needed a sum greater than has been set up. How much, it is now impossible to foretell. The general equipment trust plan contemplates a repayment to the government of at least $200,000,000 which figure has been used in the foregoing statements. In the absence of a general equipment trust plan, some moneys could be immediately secured through equipment trusts of individual carriers. Perhaps something like $100,000,000 could be obtained in this regard. So that the figure given above, $326,541,893, might need to be increased by $100,000,000.

"I think it is desirable that I again emphasize the fact that this statement, though made from a somewhat detailed examination of accounts with the respective carriers, of necessity can not be considered as final. The need to forecast events more than two months away of itself introduces elements unstable enough to make conclusions necessarily tentative only.

"In addition, there are various matters that will only reach adjustment and a status sufficient to enable them to be stated in financial terms after presentation and determination of claims respectively by the government and the railroads touching many items incident to federal control. So that in particular the item set out under the designation of 'Amount necessary to defray operating deficit, etc., must be considered as subject to considerable change because of the subsequent bringing into it of debits and credits which can not now be even approximated. I am sure that you will appreciate these facts and I emphasize them simply that a cursory statement of the figures therein submitted may not lead others to erroneous conclusions."

The Policy Established by the Bill for Future Control and Regulation

Having made clear, as it is hoped, the terms upon which the railways are to be returned to their owners for private operation under public control and regulation, the committee advances to these parts of the bill which create the permanent system for such control and regulation. In considering this phase of the subject, it should be constantly borne in mind that if our policy is to be private operation of the instrumentalities of transportation there must be a large and constant inflow of capital. As commerce increases in volume, the facilities of transportation must increase; and, without reckoning the funds which must be secured to discharge maturing obligations already in existence, it will be conceded by everybody that immense sums will be required from year to year for new construction, additional equipment, and necessary improvement. The capital thus demanded must be drawn from those who have money to invest, and, of course, it must be voluntarily contributed. If the people who have money will not invest it in the transportation enterprise, private ownership and operation under public control must necessarily fail. It is apparent, therefore, that any legislation which may be proposed upon the hypothesis of private ownership and operation must tender to the future investor reasonable security for the investment he is asked to make and reasonable assurance of such yearly return upon his money as will induce him to enter the field. The better the security and the more certain the return, the less will be the rate required to attract the investment.

It is here that our present system of regulation has failed. Taking the railways as they are, with their widely varying conditions, both of construction and environment, it is wholly impossible for the Interstate Commerce Commission, no matter how wise and faithful its members may be, to prescribe schedules of charges for transportation that will be, at the same time, just to the public and that will maintain the railways which must continue to function if the people of the country are to be provided with adequate transportation. In a given competitive area the rates which will furnish one company a grossly excessive income will lead another into bankruptcy. The writer of this report is firmly convinced that when the government assumed the operation of the railways they were, taken as a whole, earning all they should be permitted to earn; but, in the inevitable distribution of these earnings among the various railway companies, the railways which carried 30 per cent of the traffic were earning so little that they could not, by any economy or good management, sustain themselves. Nevertheless, it is unthinkable that these highways of commerce shall be abandoned, and some system must be devised not only for their continuance but for their betterment and growth. Government ownership would solve the problem, but it is the judgment of the committee that government operation is attended with so many disadvantages—notably in the increased cost of operation—that this plan must be discarded. There is but one other solution. It is consolidation, and here two policies at once present themselves. The first, complete consolidation into one ownership; second, consolidation into comparatively few competitive systems. The first has some advantages over the second, but it has some disadvantages, and the disadvantages outweigh, in the opinion of the committee, the advantages.

The superior efficiency of several systems need not be enumerated at length, but there is one consideration to which attention should be called: Competition, not in rates or charges but in service, will do more to strengthen and make public regulation successful than any other element which can be introduced into the business of transportation. Honorable rivalry among men is the most powerful stimulus known to human effort. For this reason, largely, the committee, recognizing the necessity for consolidation, determined in favor of the gradual unification of the railways into not less than 20 or more than 35 systems; not regional or zone sytems but systems that will preserve substantially existing channels of commerce and full competition in service. In the grouping of the railways into these systems, another vital rule is to be observed; namely, that they are to be so divided that the operating incomes of the several consolidated companies will bear substantially the same relation to the value of their respective properties held for and used in transportation.

The procedure for bringing about the proposed consolidation may now be considered. The bill creates a transportation board, with large duties and powers, which will be more fully explained hereafter. Section 9 declares the policy of consolidation; prescribing that, as soon as practicable and in the manner provided for in the act, the railways of the continental United States shall be divided in ownership and for operation into not less than 20 or more than 35 separate and distinct systems; each of said systems

to be owned and operated by a distinct corporation organized or reorganized under the act. Section 9 concludes:

In the aforesaid division of the said railways into such systems, competition shall be preserved as fully as possible, and wherever practicable the existing routes and channels of trade and commerce shall be maintained. The several systems shall be so arranged that the cost of transportation as between competitive systems and as related to the value of the properties through which the service is rendered shall be the same, so far as practicable, so that these systems can employ uniform rates in the movement of competitive traffic and under efficient management earn substantially the same rate of return upon the value of the railway properties involved in the comparison.

Especial attention is directed to the sentence last quoted, for it expresses the object to be attained; and until it is attained rate regulation can not be fully equitable to both the public and the carriers.

Immediately upon its organization, the transportation board is to prepare and adopt a tentative plan for consolidation. The plan is to be submitted to a public hearing, at which it is assumed that all persons interested will appear. After the hearings are concluded, a final plan is to be adopted and submitted to the Interstate Commerce Commission for its approval. This arrangement will make known to the whole country the consolidations which must eventually occur. Section 12 presents the authority for the reorganization of existing railway corporations, and all consolidations must be either through a reorganized railway corporation or one originally organized under the terms of the act. It is to be noted, also, that if a partial and voluntary consolidation is carried into effect it must be in harmony with and in furtherance of the complete plan established by the board. Sections 21 and 22 provide for the original incorporation of railway companies; and, concerning this part of the bill, it need only be remarked that any such corporation must be organized "for a specific and defined purpose, namely, the ownership, maintenance, and operation of one of the railway systems or for the construction, ownership, maintenance, and operation of new lines or systems into which the railways of the United States are to be divided by the aforesaid board."

For the period of seven years after the act becomes a law, voluntary consolidations are authorized, under the strictest supervision by either the board or the commission. The distinctive feature of the voluntary as well as the involuntary consolidations is that the capitalization is not to exceed the actual value of the property held for or used in the transportation service. When the Interstate Commerce Commission finishes the valuation in which it is engaged and when those values, as they are judicially determined and only those values, pass into the capitalization of the newly organized or reorganized corporations under this act, that serious obstacle in the way of effective regulation will have disappeared.

At the end of seven years the compulsory consolidation begins. It is carried out as provided in section 13. If, during the seven years, voluntary consolidation has accomplished the purpose, this section, of course, will not be operative; but, during the voluntary period, its presence in the law will be a compelling force which, in the judgment of the committee, will stimulate the present railway companies to carry forward the declared policy of Congress.

The full advantages of the proposed policy of consolidation can not be secured for 10 or 12 years. The railways must be returned to their owners at once. This situation makes it necessary to provide a plan for immediate relief that will tend, at least, to overcome the difficulties confronting us and render private operation possible.

A Review of The Plan

In this regard the bill attempts to accomplish three results: First: By prescribing a basis of return upon the value of the railway property, to give such assurance to investors as will incline them to look with favor upon railway securities; that is to say, by making a moderate return reasonably certain to establish credit for the carriers.

Second. In making the return fairly certain to secure for the public a lower capital charge than would otherwise be necessary.

Third. In requiring some carriers, which under any given body of rates will earn more than a fair return, to pay the excess to the government and in so using this excess that transportation facilities or credit can be furnished to the weaker carriers and thus help to maintain the general system of transportation.

To bring about these results, section 4 requires the Interstate Commerce Commission immediately to divide the country into rate districts, having in view the similarity or dissimilarity of transportation and traffic conditions therein and to institute hearings to determine the adequacy of the rates in any such district from the revenue standpoint and considered as a whole. The rule to be applied in passing upon such issues is announced in section 6, wherein it is stated that the rates shall be so adjusted "as nearly as may be so that the railway carriers as a whole allocated to each district and subject to this act shall earn an aggregate annual net railway operating income equal, as nearly as may be, to 5½ per centum upon the aggregate value, as determined in accordance with the provisions hereof, of the railway property of such carriers in the district held for and used in the service of transportation." To this basis the commission is authorized to add, in its discretion, one-half of 1 per cent upon this value as a current contribution to improvements, betterments, or equipment unproductive in character, but which are customarily charged to capital account. This part of the revenue, however, if raised at all, is, in the future, not to be capitalized by any carrier whose net railway operating income for the year is more than the basis adopted; namely, 5½ per cent.

The basis thus established has been the subject of much criticism. On the one hand, it is asserted by the carriers that it is too low and will not enable them to obtain the money which they must have in order to develop their properties and provide further transportation facilities which the country demands. On the other hand, it is asserted, with equal emphasis, by some advocates representing the shippers, that the basis is too high and will give the carriers a greater revenue than they need or ought to have. There were differences of opinion in the committee with respect to the matter, and it is but fair to say that the basis presented is a compromise of these differences. It is believed, however, that both sides of the controversy somewhat exaggerate the facts, or, rather, fail to take into consideration all the facts which influence the subject. In reaching a conclusion, it ought to be borne in mind that the property to which the basis is to be applied is railway property only; that is, the property which renders the service of transportation. All outside investments by railway companies are excluded. Further, in valuing these properties the commission is to be guided by the rules of the law and is not bound by either capitalization or by what is commonly known in the accounting system of the commission as "property investment accounts."

Those who insist so earnestly that the basis will provide insufficient revenue generally ignore the fact that at the present time there are outstanding more than eleven billions of railway bonds which bear an average interest of about 4½ per cent, and on that part of the value of the property the carriers will save 1 per cent. It must also be remembered that the 5½ per cent basis for a rate district will not give to each carrier in that district 5½ per cent upon the value of its property. To some carriers the return will be much higher and to others correspondingly lower. To illustrate: In the test period for ascertaining compensation under the

act of March 21, 1918, the average net annual operating income of the class I railways was 5.2 per cent upon the aggregate property investment account. There are, however, wide differences when the individual carriers are considered. Under this average, the New York Central System earned 6.09; the Pennsylvania Co., 6.25; the Pennsylvania Railroad, 5.36; the Delaware & Lackawanna, 7.54; the Erie, 3.56; the Baltimore & Ohio, 4.67; the Chicago, Burlington & Quincy, 7.02; the Chicago & North Western, 6.13; the Missouri Pacific, 4.43; the Union Pacific, 6.72; the Southern Pacific, 4.99; the Northern Pacific, 6.27; the Great Northern, 6.70; Atchison, Topeka & Santa Fe, 6.16; Chicago, Milwaukee & St. Paul, 4.71; Chicago, Rock Island & Pacific, 4.72; Chicago Great Western, 1.77; Chicago & Alton, 2.64; Western Pacific, 2.28; Colorado Southern, 3.04; Missouri, Kansas & Texas, 2.81; Texas Pacific, 3.76; Wabash, 2.91; Western Maryland, 2.58; New York, New Haven & Hartford, 5.96; Boston & Maine, 4.80; Cincinnati, Hamilton & Dayton, 1.95; Atlantic Coast Line, 5.76; Seaboard Air Line, 3.68; Southern Railway, 4.12; Louisville & Nashville, 6.32; Illinois Central, 5.48.

The basis adopted by the committee is three-tenths of 1 per cent higher than the basis of the test period; and, assuming, though not conceding, that the value of the property is equal to the aggregate of the property investment accounts, it will yield for all the railways a net operating income of $54,000,000 in excess of the income of the test period.

There were two considerations which led the majority of the committee to believe that this increase is not only warranted but necessary:

First. The railways are being returned to their owners when everything is unsettled and abnormal; when there is suspicion and distrust everywhere. Just what rate of return will enable the carriers to finance themselves under such conditions can not, with certainty, be determined. It was, therefore, felt that some increase over the pre-war period is justifiable.

Second. As compared with all kinds of commodities, money is much less valuable than it was a few years ago, and it would seem to be only fair that the returns from railway investments should be reasonably advanced.

The committee, however, recognized that the present situation may be temporary, and that in the course of time the country may be restored to something like its former circumstances, and it provided for this very probable change in the last paragraph of section 6, as follows:

> That in the year 1925 and in every fifth year thereafter the commission shall determine what, under the conditions then existing, constitutes a fair return upon the value of such railway property, and it may increase or decrease the 5½ per centum basis herein prescribed, or the basis for the determination of excess income.

These are the reasons, in chief and in brief, which convinced the committee that the 5½ per cent basis for computing the annual operating income of the carriers is fair and just, both to the public and the railway corporations.

It is obvious that if the law gives to the carriers the assurance of income heretofore mentioned there should be a maximum beyond which an individual carrier shall not be permitted to retain for its own use all it may receive under a given body of rates. Referring to the illustrations already given, it is seen that with uniform rates, and they must be uniform in competitive territories, one carrier will receive an operating income of 2 per cent, another 4 per cent, another 6 per cent, another 8 per cent, and others still more. The bill fixes a standard of excess income and requires the carriers which receive an excess income (which will hereafter be explained in detail) to pay the excess to the transportation board for uses that have been mentioned and which will be more fully stated in a subsequent paragraph of this report.

Upon this requirement there has been a long-continued and earnest controversy before the committee. It has been contended by eminent lawyers that the provision is unconstitutional in that it takes property without compensation. It has been urged by equally eminent lawyers, and probably more of them, that it is not only constitutional but absolutely necessary if private ownership and operation are to be continued. It would unduly prolong this report to enter upon a review of the authorities or an argument which would embrace all the considerations which are material to the question. It is sufficient to say that a large majority of the members of the committee entertain no doubt with respect to the authority of Congress in establishing this policy. Heretofore the regulation of transportation has been regarded merely as a restriction imposed upon particular carriers. For the first time it is proposed to look upon transportation as a subject of national concern and from a national standpoint. It is the duty of the government so to exercise its power of regulating commerce among the states and with foreign nations that all parts of a common country shall enjoy adequate transportation facilities at the lowest cost consistent with fairness to the capital invested and to the men who manage and operate these facilities. The commerce of one community, in these days, is deeply involved in the commerce of every community in the land. All the railways we have, or substantially all, must be maintained; and, from time to time, they must be enlarged and additional facilities must be provided.

If the lawyers who insist that taking excess income is unconstitutional are right in their premises, their conclusion would be unassailable. They assume that all the earnings of a given railway under a prescribed body of rates become the absolute property of the carrier which receives them. This is not true under the system which the bill creates; and, therefore, the conclusion is unsound. If there were but one railway in the country, it would be entirely possible for the regulating commission to fix rates for it under which it could not earn more than 6 or 7 per cent upon the value of its property, but we have a thousand railways; and rates for transportation must be fixed with reference to all of them and to the needs of the people to whom all of them render their service. These conditions make it utterly impossible to fix rates which are reasonable for one carrier, considered apart from all the remainder. It is, therefore, in the competence of Congress to declare that the income which any particular carrier receives beyond a fair return upon the value of its property, it receives as a trustee for the public and not as its own absolute property. If this analysis of the power of regulation is not sustained, then the authority granted in the Constitution is a mere delusion.

With reference to excess income, the bill provides that any carrier receiving a net railway-operating income in any year of more than 6 per cent upon the value of its property, one-half of the excess between 6 and 7 per cent is to be placed in a company reserve fund, and the remaining one-half is to be paid to the transportation board. Of any excess above 7 per cent, one-fourth is to be placed in the company reserve fund, and the remaining three-fourths is to be paid to the board. When the reserve fund equals 5 per cent of the value of the railway property and is maintained at that amount, one-third of the excess above 6 per cent is to be at the disposition of the carrier for any proper purpose, and two-thirds is to be paid to the board.

The company reserve fund may be drawn upon by the carrier whenever its annual net railway operating income falls below 6 per cent of the value of its property. The reserve fund is, of course, the absolute property of the carrier; and the purpose in requiring it to be created and maintained is to give stability to the credit of the carrier and enable it to render more efficiently the public service in which it is engaged.

The sums which are to be paid to the transportation board

are to be placed in a general railroad contingent fund, which is to be used by the board, together with all its accretions, "in furtherance of the public interest in railway transportation," "in avoiding congestions, interruptions, or hindrances to the railway service of the United States," or "in furthering the public service rendered by them (carriers), either by way of purchase, lease, or rental of transportation equipment and facilities to be used by such carriers whenever the public interest may require, or by way of loans to such carriers, upon such fair and reasonable terms and conditions, in either case, as the board may prescribe."

The Transportation Board

Section 7 creates a new public authority for the regulation of commerce. Its title is "Transportation Board." It is to be composed of five members, until the consolidation heretofore mentioned is complete and, thereafter, of three members.

The first duty of the board is to prepare and, after hearing, adopt the plan of consolidation. Its general powers with respect to transportation are stated in the latter part of section 10, and these include certain functions now exercised by the Interstate Commerce Commission, among which may be mentioned the following: (*a*) The administration of the car service act; (*b*) of the safety appliance acts; (*c*) of the hours of service act; (*d*) of the locomotive boiler inspection act; and others of like character. It is also charged with a series of important duties relating to water transportation, mainly by way of investigation but leading to most important results. The committee hopes that this part of the bill will be carefully examined, for it is the first real recognition of the coordination of water and land transportation which must eventually be accomplished.

Section 11 confers further powers upon the board. These powers are new to our system of regulation but are considered by the committee as essential. They look toward unification in operation where conditions demand either a diversion of traffic or a common use of facilities.

In section 24 the board is also given control over the issuance of railway securities. It is deemed unnecessary to enlarge upon this subject, because it has been so often before Congress that we are all familiar with it in a general way. The car service act, which is to be administered by the board, is greatly enlarged; and, as now proposed to be amended, will be found in section 34. The thirteenth paragraph of section 6 of the act to regulate commerce is amended in important particulars, and the administration of that paragraph is given to the board.

Section 45, an entirely new regulation, which is intended to increase our export and coastwise trade by making it easier for the interior shipper to avail himself of the ocean routes, is to be administered by the board.

Having thus indicated the chief duties and powers of the transportation board under the bill, it may be helpful to state some of the reasons which led the committee to the conclusion that it is wise to create this additional tribunal in our regulatory system instead of committing to the Interstate Commerce Commission all the new duties and leaving with it all its present duties.

Every member of the Senate knows that the Interstate Commerce Commission is the most overworked body of men in the government; its members are able and industrious, and they labor continuously from the beginning to the end of the year. Nevertheless, they can not keep pace with the demands already made upon them, and, oftentimes, justice delayed is justice denied. The bill the committee has presented increases tremendously the work which some body of men must do if its provisions are promptly carried into effect. It was apparent to the committee that it must adopt one of two alternatives: It must either recommend a very considerable enlargement of the commission, with such division into sections as would permit independent action; or it must recommend the creation of a distinct body. It chose the latter alternative. In determining the division of work, power, and responsibility as between the two bodies, the committee has traced a clear, obvious line. It has not been able, always, to observe the exact distinction; but, in the main, it has succeeded in doing so.

The bill leaves with the Interstate Commerce Commission the quasi-judicial powers; that is to say, everything pertaining to rates and rate-making will be as heretofore, in the hands of the commission. The valuation of railway property, under the act of 1913, remains with the commission. The accounting or reporting system is to be conducted by the commission as inseparable from rate making. There are many other and most important duties to be performed by the commission, so many, indeed, that the committee has some doubt whether it will be able to do its work promptly. These, however, need not be specified, as a reading of the bill and a familiarity with the existing law will disclose them. The transportation board is given, chiefly, the powers which are more nearly and directly connected with the physical operation of the railways and the issuance of securities, power over the things tending for safety, both to employees and the public. It is believed that the division of powers and duties has been so adjusted that opportunity for conflict or discord is practically excluded. It may be here remarked that one of the most vital powers given to the board relates to the settlement or adjudication of disputes between railway employers and employees; but this part of the bill deserves separate consideration and to that subject the committee now invites your attention.

Labor Provisions

It is not necessary to enter upon the details of the establishment of the tribunals created for the adjudication of demands, disputes and controversies which may arise from time to time between railway corporations and railway employees. These provisions will be found in sections 25, 26, 27, and 28 of the bill. It is sufficient to say that there are to be appointed three regional boards of adjustment and a committee of wages and working conditions. These four tribunals, made up in each instance of an equal number of men nominated by railway crafts and railway corporations, have original jurisdiction of all complaints, demands, disputes, and controversies between employers and employees which are not adjusted or settled between the parties themselves. In the event of the failure of these boards of adjustment or the committee of wages and working conditions to reach a decision, the transportation board has final authority; and, indeed, all decisions of these boards or the committee must be approved by the transportation board. It is intended in these sections to bring into existence governmental tribunals so composed that, in so far as mortal man can do justice, there will be complete, impartial justice done to both railway corporations and railway employees and to the public as well.

Hitherto, the government has not undertaken to adjudge the disputes which have so disturbed the field of transportation and which promise to be still more serious in the future than they have been in the past. All that legislation has done up to this time has been to authorize mediation and conciliation and to present an opportunity for voluntary arbitration. After the most careful consideration, it is the judgment of the committee that the time has come to make another advance in the settlement of disputes likely to end in the suspension or restraint of transportation. This forward step must be clearly understood in order to be justly considered. In a controversy between railway workers and railways managers with respect to wages and working conditions and which could only be settled by agreement between the disputants, the right to strike, that is, a concerted cessation of work, seems inevitable; for it is the

only weapon which the workers could effectually employ. A proposal to prohibit an agreement among workers to quit their employment at a given time without substituting some other instrumentality for securing justice would not receive at the hands of Congress a moment's consideration. In making the strike unlawful, it is obvious that there must be something given to the workers in exchange for it. The thing substituted for the strike should be more certain in attaining justice and should do what the strike can not do; namely, protect the great masses of the people who are not directly involved in the controversy. The committee has substituted for the strike the justice which will be administered by the tribunals created in the bill for adjudging disputes which may hereafter arise.

From the public standpoint and in the interest of the people generally, it has become perfectly clear that, in transportation, at least, both the strike and the lockout must cease. This country has been so developed, its population is so situated, its commerce so crystallized that regularity and continuity in transportation have become absolutely indispensable to the lives and health of the people and the existence of our industrial and commercial welfare. A general suspension in the movement of traffic for a fortnight would starve or freeze, or both, a very large number of men, women, and children; and, if it were continued a month or two months, it would practically destroy half our population. Our business affairs would be so disordered that the loss would be greater than in any conceivable war in which we might engage. It is just as much the function of the government in these circumstances to see to it that transportation is adequate, continuous, and regular as it is to maintain order, punish crime and render justice in any other field of human activity. It is clear, therefore, that the government must settle the controversies between railway managers and railway employees which, if left to be fought out between the parties themselves, will lead to the consequences just described. There is but one way in which this can be done: The government must undertake to declare, in any such case, what is justice, what is fair and right, between the parties to the dispute, and then there must be no concerted rebellion or conspiracy among those whose rights have been adjudged for the purpose of coercing either of the parties to the dispute into another and different settlement.

The railway unions are especially opposed to these provisions of the bill, and the committee addresses a word directly to them. In the step the committee has taken there is no hostility to unionized labor; no opposition to collective bargaining. Indeed, the unions and collective bargaining are necessary parts of the plan suggested in the bill. The unions can be more effective in securing justice under the proposed arrangement than they ever have been through the strike, for after all, even the most zealous of the union leaders must admit that their efforts through the strike, from their own standpoint, have substantially failed. The existing complaints with respect to wages and working conditions must be sufficient evidence to these leaders that they have not been able to attain their objects in the old way. Why not, then, exchange the instrumentality which they are now insisting upon and which can be tolerated no longer in a free country, for a better one; namely the justice of an impartial governmental adjudication? The committee is aware that the union leaders feel that they can not hope for justice from the government, but in the opinion of the committee this distrust has no foundation and ought to give way to confidence and hope. If we can not organize tribunals which will do justice to employees, employers, and to the public in a business which so vitally affects the welfare of the nation, then the government is a complete failure and free institutions must be abandoned as an unsuccessful experiment. The committee believes that, when the heat of the immediate conflict over this legislation has subsided, a great majority of the railway workers will hail the substitution of intelligent and impartial tribunals, which will render justice to them, for the right to enter into an agreement or combination to destroy transportation as a deliverance; and as a better way to secure what rightly belongs to them than the methods which they have heretofore employed.

The committee has now reviewed those parts of the bill which propose legislation along lines distinct from those which have been already attempted. There are, in the bill, many amendments of the act to regulate commerce remedying defects which have been disclosed in the administration of the present law; but it is believed that these corrections need not be specifically enumerated in this report. When the bill is presented in debate, all these matters will be carefully explained.

It is but fair to say that this report has not been considered by the committee. It is the work of the chairman, and he alone must be held responsible for it.

Ripley Becomes Chairman and Storey President of the Sante Fe

EDWARD P. RIPLEY, president of the Atchison, Topeka & Santa Fe Railway Company, has been elected chairman of the Board of Directors, effective January 1, 1920. He will be succeeded as president by William B. Storey, Jr., federal manager of the Atchison, Topeka & Santa Fe; the Panhandle & Santa Fe; the Rio Grande, El Paso & Santa Fe; the Kansas Southwestern; the Grand Canyon; the Atchison Union Depot & Railroad and the Pueblo Union Depot & Railroad. Prior to government control of the railroads Mr. Storey was vice-president in charge of construction and operation, with headquarters at Chicago,

Edward P. Ripley

William B. Storey, Jr.

Ill., and his election to the presidency follows the policy of the Santa Fe in filling higher positions from its own staff.

Mr. Ripley has been president of the Atchison, Topeka & San Fe Railway Company since the reorganization of the road went into effect on January 1, 1896. Mr. Storey has been vice-president in charge of construction and operation of the Santa Fe System for the past nine years, excepting during his service as federal manager.

For the *Railway Age* at this time to publish a long sketch of Mr. Ripley's railroad career would be a work of supererogation. For many years his career has been followed with keen interest by railway men of all ranks throughout the country. On October 30, 1915, three hundred men, who included the leading railway and business men of the United

States, attended a dinner in Chicago to do him honor on his seventieth birthday. In the issue of the *Railway Age* for November 5, 1915, were published the addresses made on that occasion, which thoroughly reviewed and appraised Mr. Ripley's work.

If he had continued to be president of the Santa Fe until January 1, 1920, he would have filled that office for 24 years, and his record throughout that period has been one of constantly increasing reputation and achievement. When he became president of the Santa Fe it had just emerged from bankruptcy. At the time of his retirement from the presidency the road is universally recognized as one of the best physically, and soundest financially, in the world, besides having a reputation for rendering service of the highest order. Nobody will question that to Mr. Ripley's foresight and ability the creation of the Santa Fe System of today is chiefly due. While he is retiring from the presidency of the company he is taking the chairmanship and this means that when the railway is returned to private control he will continue to play a very important part in its management, although of course Mr. Storey will become its executive head.

Mr. Ripley was born at Dorchester, Mass., on October 30, 1845, and entered railway service in 1868 as contracting agent for the Star Union Line, with headquarters at Boston, Mass. On October 1, 1870, he entered the service of the Chicago, Burlington & Quincy as a clerk in the office of the general eastern agent, with offices at Boston. From 1872 to 1875 he was New England agent for the same road with the same headquarters, and from 1875 to 1878 he was general eastern agent, and on June 15 of the latter year was appointed general freight agent. In 1887 he was promoted to traffic manager and in 1888 to general manager of the same road. In August, 1890, he was elected third vice-president of the Chicago, Milwaukee & St. Paul, which position he held until his election to the presidency of the Santa Fe. Under Mr. Ripley's administration the system's mileage has increased from a total of 6,435 miles to 10,732 miles.

When Mr. Ripley was elected to the presidency, among his first undertakings was the sale and abandonment of some lines not considered desirable, which had been owned and operated by the old railroad company. In accordance with the widely entertained theory of over-construction, Mr. Ripley engineered the sale of the interests owned by the Santa Fe in the St. Louis & San Francisco Railroad Company; the sale to David R. Francis and John Scullin, of St. Louis, Mo., of the St. Louis, Kansas City & Colorado Railway, a line extending west of St. Louis to Union, Mo., and the exchange of the Sonora Railway for the Mojave division of the Southern Pacific. One of the earliest moves made by Mr. Ripley was to call on the chief engineer of the system, the late James Dun, to report on the shortest practicable line between Chicago and Los Angeles, Cal. Under Mr. Dun's survey the line has since been constructed.

Mr. Storey was born at San Francisco, Cal., on November 17, 1857, and graduated from the University of California in 1881. Prior to his graduation from college, Mr. Storey in 1877 served as an axman on the Southern Pacific for one year. After completing his college course he re-entered railway service in 1881 as a rodman on the Southern Pacific and was later levelman, transitman and assistant engineer. From 1893 to 1895, he was assistant engineer with the United States Hydraulic Mining Commission. In the latter year he was appointed chief engineer and general superintendent of the San Francisco & San Joaquin Valley, in which position he remained until 1900, when he was appointed chief engineer of the Santa Fe System as above noted.

Mr. Storey, as federal manager of the railway, has been its chief executive officer since government control was adopted. He has long been regarded as Mr. Ripley's logical successor. He happily combines the technical training and experience of the engineer with the experience and outlook of the operating officer and executive. His election as president makes practically certain that there will be no radical change in the organization of the Santa Fe, of which he has been an important part, and the Santa Fe organization has long been recognized as one of the best in the railroad world.

88.4 Per Cent of Trains on Time

An average of 88.4 per cent of all passenger trains on Class 1 roads under federal control made on-time runs during October, or, if late at initial terminals on account of waiting for connecting trains, made as good as schedule time or better, according to a statement issued by the Railroad Administration. This is a slight improvement over the figure for September, 88.1 per cent, and for August, 87.3 per cent.

Of the trains which left their initial terminals on time, and which arrived at their destination on time, the percentage was 84.2, as compared with 84.3 per cent in September and 83 per cent in August.

The Pocahontas region, with 8,923 passenger trains, put 8,262, or 92.6 per cent, over the road in as good as schedule time or better, while at the larger regions the Allegheny region operated 70,882 of its 77,480 trains, or 91.5 per cent, in as good as schedule time or better.

Suburban trains are not included in the compilation.

Following are the figures showing the passenger train performance in the various regions, as compared with September and August:

Region	Month	No. of roads	Total Trains Operated	Trains which arrived on schedule time: Number	Trains which arrived on schedule time: % of total trains	Trains which arrived on Schedule time or which if late made run in schedule time or less: Number	Trains which arrived on Schedule time or which if late made run in schedule time or less: % of total trains
Eastern	October	43	93,979	82,076	87.3	84,878	90.3
	September	43	95,972	80,985	84.4	83,598	87.1
	August	43	98,081	82,071	83.7	85,989	87.7
Allegheny	October	15	77,480	68,286	88.1	70,882	91.5
	September	15	77,523	68,745	88.7	70,700	91.2
	August	15	80,261	70,756	88.1	72,912	90.8
Pocahontas	October	3	8,923	7,897	88.5	8,262	92.6
	September	15	7,648	6,460	84.5	6,920	90.5
	August	3	3,970	2,949	74.3	3,073	77.4
Southern	October	33	49,945	43,440	87.0	45,222	90.5
	September	33	48,604	43,018	88.4	44,765	91.9
	August	33	49,683	42,224	85.0	44,668	89.9
Northwestern	October	15	26,274	21,288	81.0	22,286	84.8
	September	3	25,372	20,431	80.5	21,399	84.3
	August	15	25,960	19,939	76.8	21,064	81.1
Central Western	October	24	43,091	33,224	77.1	36,207	84.0
	September	24	42,312	32,412	76.6	35,485	83.9
	August	24	42,474	32,390	76.3	35,272	83.0
Southwestern	October	23	20,806	13,772	66.2	15,724	75.6
	September	23	20,010	15,459	77.3	16,792	83.9
	August	23	20,289	15,855	78.1	16,992	83.8
Average for all Regions	October	156	320,498	269,983	84.2	283,461	88.4
	September	156	317,441	267,510	84.3	279,659	88.1
	August	156	320,718	266,184	83.0	279,970	87.3

General News Department

Philadelphia has followed New York in the adoption of an ordnance providing for changing clocks, for the purpose of daylight saving, beginning the last Sunday in March, 1920, and continuing seven months, as was done this year.

F. Lavis, consulting engineer of the American International Corporation, has been re-appointed special lecturer on railway engineering, at Sheffield Scientific School, Yale University, and will resume his course of lectures which had been interrupted during the war.

Alumni of the University of Minnesota, St. Paul, Minn., have revived a movement for the removal of the Northern Pacific tracks from the university's campus. It has been planned, tentatively, to run the tracks underground to make way for new buildings which will eventually be erected. The Minnesota Alumni Weekly, a publication of the university's alumni, is carrying on the campaign for the removal of the tracks altogether, asserting that the cost of doing so will not be as great as would be the amount involved in the sinking of the tracks, aside from possible damage to the buildings under which they would run.

St. Louis Municipal Bridge

C. B. Fox, corporate director, and Baxter Brown, engineer of the Alton & Southern, have been requested to appear before the St. Louis (Mo.) Aldermanic Ways and Means Committee for the purpose of obtaining a definite statement whether they will agree to use the St. Louis Municipal Bridge across the Mississippi River. This action is the result of a proposed municipal bond issue of $1,750,000 to be expended on the bridge and which is now pending in the Aldermanic Committee. According to P. W. Coyle, traffic commissioner of the St. Louis Chamber of Commerce, officers of the Alton & Southern have promised to make use of the bridge provided an additional railroad approach and terminals are built at the west end of the structure. The Alton & Southern crosses most of the trunk railroads in East St. Louis, Ill., and the eastern bridge approach is connected with its lines. The aldermanic committee desires definite information concerning what use will be made of the bridge before approving the bond issues. Representatives of the Chamber of Commerce and the Manufacturers' Association have appealed to the committee for added funds for the proposed new bridge approach, which would run south along the Mississippi river front and connect with a proposed municipal road leading into the River des Peres Valley. It is proposed to establish an industrial district in this valley similar to that in the northwest part of the city.

Wages and Earning Power

[Letter in the Louisville (Ky.) Times, signed "A Conductor's Wife."]

I have been much interested in your editorials, as I am an L. & N. conductor's wife, and would just like to give you my side of the story. Now, I am not at all in favor of unions, although my husband is an O. R. C. man.

We have a family of six and my husband draws from $85 to $100 every two weeks, and I can live comfortably on that salary. What I mean is the way a poor, laboring man's family ought to live, not to try to belong to the "400" society. Railroad people get the swell head. They cannot get along on that salary. Then there is the man who plays poker and shoots craps all night in cabooses, especially around pay days. . . . Now this class needs more salary. Then again you take most railroad men—they are men raised in small towns and surrounding country along the line of road upon which they work and very few country boys have what I would call an education. Then what can you expect? I am not educated myself, which I guess you can see from my letter, but I would have loved to have gone to high school, but happened to be a poor man's daughter and was raised to be a good, hard-working woman, which I hope has done me just as much good. . . . My husband admits he is satisfied with his salary and I think he ought to be, for it is more than he ever made in his life, and with the education he had he could not begin to make that money anywhere else, and so it is with the rest of those country boys who shoved a plow from sunrise till dark for $1 a day. Now, with the salary they make, they want to be the president of the railroads and are trying to get Walter D. Hines' place. I would love to give my name, but you know it would never do, but I sure do love to read your editorials.

Here's luck to you and I hope there shall be no strike. If there is I think I'll take a captain's place and run a train, for I understand it better than some of these pumpkin rollers

Government Drops Oil Land Suits

The Attorney General has announced that the government will not appeal from the adverse decisions in the cases brought by the United States against the Southern Pacific and others to set aside patents to lands in California on the ground that the lands were known to contain oil when the patents were procured. The principal case was commenced in 1912. All of the cases were consolidated for trial, and the trial court found squarely against the contention of the government on the facts. The Elk Hills case recently decided by the Supreme Court in favor of the government involved facts which differed widely from those presented in these cases.

Coal Production

The rate of bituminous coal production on the working days of the fourth week of the strike (November 23-29) was 48.3 per cent of normal, according to the weekly report of the United States Geological Survey. During the first week it had been 29.6 per cent of normal; during the second 33.3, and during the third, 44.5 per cent. Because of the Thanksgiving holiday, however, the actual output was a little greater than that of the preceding week. The total production is estimated at 5,429,000 net tons, an increase of 53,000 tons, or one per cent over the week before. The output on Thanksgiving Day itself was 560,000 tons. On the five full-time days it averaged 974,000 tons. The average production per working day during the four weeks ended October 25, which may be regarded as normal, was 2,015,000 tons.

The Central Interstate Wage Conference was in session in Washington during the first four days of the week, adjourning *sine die* on Thanksgiving Day. Production increased on Monday and Tuesday, as men returned to work in the Cumberland-Piedmont, Fairmont, and other fields of the Appalachian region. No break in the strike occurred elsewhere. Production on Friday was the second highest in the week, but Saturday showed the usual week-end drop.

The total output during the month of November was 18,815,000 tons. The littleness of this tonnage—by far the smallest in any month of recent years—is conspicuous in contrast with the production of October, which revised reports now place at 56,270,000 tons, the largest in the history of the country.

The output of anthracite fell off nearly 300,000 tons during the week of November 29, but the decrease appears to be entirely due to the Thanksgiving holiday. Compared with the corresponding week last year, the production showed an increase of 185,000 tons, or 12 per cent. The total output since the beginning of the coal year now amounts to 61,555,000 tons, or about 5½ million tons less than during the corresponding period of 1918. At the present rate of production, however, the anthracite mines are rapidly catching up with their performance of last year.

REVENUES AND EXPENSES OF RAILWAYS

NINE MONTHS OF CALENDAR YEAR, 1919—CONTINUED

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses						Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
					Maintenance of										
		Freight.	Passenger.	Total (inc. misc.)	Way and structures.	Equipment.	Traffic.	Transportation.	General.	Total.					
Galveston, Harrisburg & San Antonio..	1,381	10,742,610	4,144,957	15,623,046	2,349,199	3,572,103	157,572	5,902,410	480,395	12,583,980	80.55	3,039,067	476,033	2,558,570	—1,931,330
Galveston Wharf Co.	13	.....	.....	624,777	238,679	6,662	168	241,008	13,595	592,714	94.86	32,063	112,500	—80,437	—263,581
Georgia	328	2,790,206	1,351,672	4,453,953	473,565	753,796	73,197	2,152,193	151,118	3,605,380	58.49	848,573	54,550	793,968	—803,296
Georgia, Southern & Florida	402	2,047,628	857,366	3,177,879	536,504	753,523	55,275	500,417	95,672	2,948,713	92.78	229,166	124,641	103,903	—50,254
Georgia & Florida	348	501,511	182,317	726,899	262,634	180,878	17,101	461,238	50,157	972,008	133.71	—245,109	37,319	—283,709	—250,909
Grand Rapids & Indiana	569	3,915,725	1,645,925	6,021,948	801,789	1,336,563	93,984	2,854,989	214,710	5,329,729	88.51	692,225	234,404	459,776	112,753
Grand Trunk Western Lines	1,001	12,260,126	2,727,759	16,317,276	2,077,647	2,928,047	154,226	7,323,811	426,163	12,948,188	79.35	3,369,088	452,570	2,912,762	2,992,348
Great Northern	8,233	55,712,758	14,646,422	77,235,006	13,862,697	14,060,985	509,950	31,876,405	1,372,879	62,681,104	81.15	14,553,902	4,120,444	10,427,273	4,859,852
Gulf & Ship Island	307	1,251,782	413,212	1,797,920	471,049	429,926	35,668	746,536	82,256	1,768,761	98.37	29,159	96,692	—66,126	—455,676
Gulf, Colorado & Santa Fe	1,935	10,121,979	3,939,353	14,876,900	3,259,770	2,751,846	141,968	6,434,320	438,453	12,982,455	87.26	1,894,446	640,509	1,248,542	—1,555,600
Grand Trunk L. in New England	172	1,840,080	360,159	2,621,311	861,196	384,589	26,520	1,641,159	109,920	3,356,759	128.05	—735,448	112,500	—847,948	—412,729
Gulf, Mobile & Northern	428	1,482,161	405,484	1,991,173	420,818	486,683	51,036	935,919	90,435	1,977,615	99.31	13,557	100,805	—87,635	—283,369
Hocking Valley	350	7,150,529	891,772	8,582,986	967,972	2,785,550	53,699	2,896,403	187,069	6,886,822	80.24	1,696,163	412,282	1,279,717	—343,804
Houston & Texas Central	847	4,285,758	1,891,983	6,561,319	1,280,067	1,242,291	61,604	2,759,356	176,781	5,518,775	84.11	1,042,543	310,389	729,074	—917,758
Houston, East & West Texas	190	1,236,274	409,939	1,724,336	310,956	212,416	8,765	792,098	37,790	1,362,025	78.98	362,312	56,738	304,564	—45,631
Illinois Central	4,791	55,367,324	17,997,470	78,895,768	14,019,997	21,585,871	691,238	32,688,221	2,006,067	71,375,939	90.46	7,579,828	3,712,427	3,845,781	—6,483,620
Indiana Harbor Belt	116	.....	.....	4,802,943	839,421	934,267	15,612	3,118,535	153,112	5,060,948	105.37	—258,005	89,897	—347,912	207,781
International & Great Northern	1,159	7,261,539	2,462,105	10,377,560	2,438,347	2,803,586	118,585	5,251,689	373,632	11,045,919	106.44	—668,360	256,999	—926,357	—2,074,887
Kanawha & Michigan	176	2,592,320	507,908	3,204,565	472,548	1,193,033	21,731	1,177,754	116,401	2,981,479	93.03	223,085	164,883	58,198	—966,629
Kansas City, Mexico & Orient	272	783,690	159,353	989,121	394,151	372,784	12,851	557,257	67,392	1,404,436	141.98	—415,315	56,300	—471,770	—309,725
Kansas City, Mexico & Orient of Texas.	465	644,440	135,238	826,918	301,836	368,094	13,593	575,400	69,666	1,328,590	160.66	—501,672	44,906	—546,653	—317,319
Kansas City Southern	774	8,286,590	1,795,818	10,897,290	1,771,163	2,462,652	151,811	4,432,916	361,095	9,165,136	84.10	1,732,154	583,636	1,143,758	—1,443,050
Kansas City Terminal	27	.....	.....	1,010,412	161,765	218,993	.....	424,653	12,045	827,999	81.94	182,412	212,016	—29,681	1,265
Lake Erie & Western	902	6,192,038	600,131	7,115,940	1,247,964	2,060,364	107,961	3,148,626	212,963	6,773,373	95.18	342,567	301,406	38,951	—510,429
Lehigh & Hudson River	96	1,843,900	36,453	1,947,440	239,522	432,679	13,524	811,180	52,280	1,549,186	79.54	398,254	48,966	349,269	120,647
Lehigh & New England	231	2,621,744	14,213	2,769,778	410,197	606,449	24,673	981,528	87,897	2,109,157	76.14	660,620	72,571	588,050	—229,307
Lehigh Valley	1,435	37,752,856	5,240,505	47,169,811	7,039,266	12,837,960	378,798	21,514,439	962,799	42,895,441	90.93	4,274,369	1,428,600	2,844,259	—1,656,979
Long Island	398	4,506,730	12,743,535	19,048,549	2,438,067	3,079,091	114,108	8,906,005	430,976	15,094,182	79.24	3,954,368	827,405	3,123,819	—1,432,909
Louisiana & Arkansas	302	1,136,239	342,531	1,533,754	450,906	369,803	30,009	683,596	55,717	1,590,032	103.66	—56,278	101,913	—158,301	—249,695
Louisiana Ry. & Nav. Co.	349	2,120,940	326,788	2,583,090	712,437	488,205	35,112	1,173,306	69,993	2,479,052	95.97	104,038	130,000	—26,136	—339,850
Louisiana Western	207	1,858,906	998,362	2,988,170	458,719	566,995	36,378	857,077	96,727	2,034,902	68.09	953,268	82,338	870,736	—529,473
Louisville & Nashville	5,013	55,912,909	18,598,739	78,592,993	12,233,772	20,676,891	1,051,268	32,569,420	1,699,656	68,512,471	87.17	10,080,522	2,304,926	7,767,802	—6,957,969
Louisville, Henderson & St. Louis	199	1,480,607	589,051	2,165,590	449,236	295,930	51,432	828,933	68,298	1,693,827	78.22	471,763	36,000	435,052	—118,361
Maine Central	1,216	8,146,570	3,775,689	12,852,475	2,302,380	2,986,777	110,578	7,242,756	323,526	13,000,067	101.14	—147,591	681,609	—828,500	—605,399
Maryland, Delaware & Virginia	82	617,180	382,502	1,024,240	81,457	259,405	5,827	655,665	19,071	1,021,426	99.72	2,814	15,919	—13,125	6,436
Michigan Central	1,861	37,220,328	14,838,044	56,918,226	7,344,531	11,115,303	589,017	21,057,806	992,589	41,746,260	73.34	15,171,966	1,825,000	13,342,212	3,209,196
Mineral Range	101	547,332	3,503	574,484	109,614	194,087	3,738	315,554	8,782	632,374	110.07	—57,890	32,000	—89,890	—69,973
Minneapolis & St. Louis	1,646	7,157,037	2,082,442	9,962,243	1,728,839	2,399,365	93,868	4,701,903	266,478	9,184,189	94.75	508,053	455,103	49,011	107,749
Minn., St. Paul & Sault Ste. Marie	4,243	22,560,294	6,154,153	30,679,836	4,694,333	6,219,596	219,568	12,792,330	686,797	24,772,278	80.74	5,907,558	1,808,941	4,096,864	2,677,154
Miss. Central	164	448,570	253,223	739,536	188,998	278,416	11,168	310,535	52,712	841,829	113.83	—102,293	28,875	—131,374	—379,868
Missouri & North Arkansas	365	704,079	371,896	1,145,087	550,876	341,318	18,510	567,968	80,703	1,558,412	136.09	—413,325	57,110	—471,715	—517,223
Missouri, Kansas & Texas	1,713	17,693,931	6,039,008	25,092,592	4,570,678	7,022,129	254,096	8,558,346	700,747	21,209,323	84.52	3,883,268	834,721	3,046,244	559,471
Missouri, Kansas & Texas of Texas	1,796	10,990,274	5,877,781	18,117,970	3,781,382	3,315,469	202,758	9,166,784	670,669	17,288,446	95.42	829,524	469,303	385,242	181,216
Missouri, Oklahoma & Gulf	332	797,231	164,122	1,020,707	492,517	440,165	16,882	613,438	63,011	1,628,105	159.51	—607,398	76,538	—684,852	—389,926
Missouri Pacific	7,172	47,640,663	15,352,217	67,483,924	13,421,904	15,290,256	754,952	28,337,549	1,850,107	59,962,969	88.85	7,520,956	2,398,114	5,098,368	—5,530,398
Montour	54	.....	915,321	970,403	269,748	531,579	11,382	251,988	58,458	1,124,836	115.91	—154,433	20,784	—175,223	—227,074
Mobile & Ohio	996	8,840,219	1,651,017	11,130,330	1,910,599	3,655,599	213,473	5,349,057	368,769	11,504,133	103.36	—373,802	458,022	—832,800	—982,152
Monongahela	108	2,413,280	184,512	2,620,815	543,085	336,989	8,857	810,738	63,538	1,763,208	67.27	857,607	45,000	812,587	122,435
Monongahela Connecting	6	.....	.....	1,316,710	220,136	473,621	4,657	662,929	63,217	1,424,559	108.19	—107,849	18,438	—126,288	—384,794
Morgan's Louisiana & Texas R. R.	400	3,678,765	1,557,748	5,565,811	969,649	1,212,330	72,089	2,321,763	179,661	4,773,219	85.76	792,592	274,716	516,627	—1,300,066
Nashville, Chattanooga & St. Louis	1,247	9,459,577	4,042,321	14,426,089	2,562,448	3,671,691	306,250	6,420,970	392,408	13,433,833	93.12	992,256	450,000	539,503	—2,179,195
Nevada Northern	168	961,827	88,713	1,105,634	191,198	189,652	8,385	319,260	38,257	747,814	67.63	357,821	177,484	180,336	—686,895
New Orleans & N. E.	398	3,059,405	1,132,503	4,781,506	856,629	1,022,570	70,698	2,233,051	134,588	4,364,249	91.26	417,256	255,213	161,290	—672,967
New Orleans Great Northern	284	1,251,548	399,461	1,722,600	343,065	381,885	21,536	728,926	78,440	1,557,467	90.41	165,133	85,861	76,334	—318,366
New Orleans, Texas & Mexico	191	1,017,917	335,060	1,431,109	358,835	347,958	25,153	488,022	54,608	1,294,576	90.45	136,532	90,000	46,328	—264,161
New York Central	6,075	138,075,322	64,574,461	229,010,770	29,752,046	48,994,882	2,031,012	94,547,703	5,667,587	184,386,865	80.51	44,623,906	8,407,319	36,204,716	5,954,666
New York, Chicago & St. Louis	574	15,656,034	1,553,372	17,707,487	2,205,779	3,268,180	230,667	7,260,379	474,135	13,472,188	76.08	4,235,299	465,006	3,769,531	961,920
New York, New Haven & Hartford	1,965	34,749,059	33,303,292	76,728,381	10,326,493	15,630,360	415,335	37,468,384	2,385,305	67,553,475	88.04	9,174,905	2,536,000	6,623,853	4,626,776
New York, Ontario & Western	569	4,748,812	2,334,819	8,391,820	1,261,320	1,930,676	76,649	3,653,628	204,535	7,126,809	84.92	1,265,010	236,800	1,028,241	—29,443
New York, Philadelphia & Norfolk	121	4,607,997	1,076,303	6,098,830	486,376	1,511,666	78,806	2,823,109	101,493	5,169,852	84.76	928,979	154,343	774,598	—55,000
New York, Susquehanna & Western	135	1,993,099	517,953	2,870,714	299,528	492,075	19,742	1,770,519	72,349	2,654,337	92.46	216,378	288,966	—73,302	—207,093
Newburgh & South Shore	7	.....	.....	1,047,815	176,737	263,553	.....	540,954	34,766	1,016,009	96.96	31,805	64,014	—32,209	—160,406
Norfolk Southern	906	3,036,172	1,360,914	4,687,081	991,645	918,274	68,452	2,390,551	187,217	4,560,073	97.29	127,007	163,850	—37,341	—306,270
Norfolk & Western	2,088	45,164,709	8,355,426	56,023,042	7,496,213	16,390,941	322,923	20,482,817	952,207	45,796,325	81.74	10,226,717	2,340,000	7,885,383	—4,462,529
Northern Pacific	6,581	52,047,654	15,209,072	72,543,473	12,702,244	12,618,071	541,046	27,478,904	1,662,697	55,764,490	76.87	16,778,983	5,518,550	11,244,731	—2,653,074
Northern Ala.	112	696,327	119,896	842,420	192,072	50,956	11,973	523,737	16,343	794,922	94.35	47,498	30,900	16,590	—248,210
Northwestern Pacific	527	2,463,644	1,847,107	4,789,378	903,788	626,454	46,363	2,059,936	115,240	3,767,481	78.66	1,021,896	208,583	811,948	—481,867
Oregon Short Line	2,347	20,663,985	5,283,693	27,667,468	4,607,073	4,764,538	149,143	8,190,176	826,573	19,068,061	68.91	8,599,408	1,481,583	7,115,808	—612,201
Ore., Wash. & Nav. Co.	2,070	14,112,824	5,079,608	20,779,092	3,749,597	3,185,101	256,754	8,178,565	853,187	16,453,431	79.18	4,325,662	1,024,358	3,299,015	—607,388
Panh. & Santa Fe	772	3,330,533	885,568	4,420,152	871,098	1,530,654	35,554	2,034,789	132,695	4,592,512	103.89	—172,360	158,850	—332,255	—802,707

REVENUES AND EXPENSES OF RAILWAYS

NINE MONTHS OF CALENDAR YEAR, 1919—CONTINUED

Name of road.	Average mileage operated during period.	Operating revenues: Freight	Passenger.	Total (Inc. misc.)	Operating expenses: Maintenance of—Way and structures.	Maintenance of—Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
Penn R. R. West	1,754	56,366,001	15,895,029	78,583,585	10,905,590	21,001,572	674,246	33,868,881	1,694,701	68,218,737	86.81	10,364,848	2,776,973	7,585,284	3,873,096
Penn. R. R. East	5,367	179,609,457	79,701,418	282,854,125	40,451,267	79,951,992	2,364,145	123,049,275	6,573,862	257,435,911	91.01	25,418,214	8,124,188	17,278,035	—2,385,541
Perkiomen	41	707,245	77,417	813,884	51,078	38,809	195	327,110	3,025	420,402	51.65	393,482	16,200	377,282	55,863
Peoria & Pekin Union	19	248,157	33,605	867,067	157,496	362,828	7,151	671,724	47,863	1,247,062	143.82	—379,994	85,500	—465,494	—287,027
Pere Marquette	2,232	18,902,920	4,585,087	25,427,031	2,699,792	5,016,887	252,968	10,427,416	626,800	19,114,876	75.17	6,312,155	486,166	5,823,746	3,002,056
Phila. & Reading	1,127	42,868,243	7,917,261	53,764,312	5,706,172	14,122,409	336,299	25,935,431	1,211,014	47,512,787	88.37	6,251,525	1,289,053	4,962,367	—6,221,822
Pitts. & L. Erie	224	17,687,850	1,961,899	21,308,436	3,511,835	6,249,661	129,376	7,485,436	394,199	17,781,497	83.44	3,526,939	672,500	2,854,205	—4,565,185
Pitts. & W. Va	63	803,007	87,803	1,005,820	474,150	375,595	11,598	480,398	50,663	1,463,996	145.55	—458,176	104,963	—563,270	—476,692
Phila., Bethlehem & N. E.	71	.....	.....	610,504	69,650	109,869	3,084	394,991	9,761	587,356	96.21	23,149	11,643	11,506	—146,146
Pitts. & Shawmut	103	813,354	37,716	862,302	297,475	351,484	14,470	319,444	27,422	1,010,295	117.16	—147,992	8,755	—156,748	—212,376
Pitts., Cinc., Chicago & St. L.	2,383	45,947,851	16,666,577	68,989,660	9,113,333	20,879,857	785,896	30,527,415	1,575,608	63,524,165	92.07	5,465,501	2,153,649	3,309,503	—1,410,579
Pitts., Shawmut & Northern	204	752,598	54,357	834,212	222,576	441,035	8,806	346,553	66,122	1,085,129	130.07	—250,916	16,624	—267,559	102,257
Port Reading	21	1,190,603	.....	1,902,527	160,026	121,517	146	908,437	10,851	1,200,976	63.13	701,552	81,000	620,552	131,629
Rich., Fed. & Pot	81	2,848,624	2,578,322	5,927,596	473,610	792,019	39,228	1,929,019	117,938	3,446,854	58.14	2,480,742	114,229	2,366,435	217,601
Quincy, Omaha & K. City	258	527,474	231,378	812,554	315,700	146,012	2,087	421,045	11,875	894,070	110.03	—81,516	27,384	—108,964	34,619
Rutland	415	1,871,823	1,035,052	3,529,313	597,289	865,147	59,968	1,657,602	102,798	3,290,064	93.22	239,249	172,698	66,487	—84,669
St. J. & Grand Island	258	1,664,374	388,753	2,170,767	435,270	337,688	17,150	1,154,019	106,211	2,058,023	94.81	112,744	88,433	24,213	—8,880
St. L., Brownsville & Mex.	548	2,535,487	1,209,545	3,968,998	714,778	655,852	49,888	1,149,537	141,783	2,711,838	58.32	1,257,160	90,000	1,166,473	277,494
St. L., Merchants Bridge Term.	9	.....	5,474	2,186,665	496,015	368,880	6,681	1,596,654	54,293	2,522,523	115.35	—335,858	72,000	—407,867	—521,331
St. L.-San Francisco	4,761	37,295,018	16,533,163	56,701,301	8,823,559	11,249,619	476,059	21,530,845	1,574,641	43,514,042	76.74	13,187,259	2,049,118	11,118,052	2,586,507
St. L.-San Francisco & Texas	134	904,587	153,550	1,126,561	190,856	195,302	14,916	596,044	55,090	1,061,208	94.20	65,354	13,898	51,274	—120,891
St. Louis Southwestern	939	7,625,982	1,614,103	9,640,490	1,597,522	2,150,492	149,892	2,993,780	366,554	7,311,472	75.84	2,329,018	380,569	1,946,288	—1,150,193
St. Louis Southwestern of Texas	814	3,372,759	1,122,057	4,793,213	1,220,099	1,632,114	75,164	2,480,501	210,468	5,608,941	117.01	—813,729	189,000	—1,004,068	—902,088
San Antonio & Aransas Pass	736	2,095,705	916,630	3,212,015	914,907	959,336	54,901	1,765,809	151,365	3,843,209	119.65	—631,194	135,000	—767,522	—442,460
Seaboard Air Line	3,563	18,012,331	9,647,180	30,298,801	4,579,093	6,475,683	548,247	14,424,756	965,385	27,332,464	89.87	3,066,337	1,215,006	1,847,236	—2,039,848
St. L. Transfer	6	.....	.....	808,989	106,501	105,636	1,722	371,815	19,634	605,308	74.82	203,680	1,030	202,650	57,686
South Buffalo	11	324,008	.....	778,000	47,072	144,324	3,191	466,158	15,898	676,642	86.97	101,359	33,000	68,359	—168,590
Southern	6,982	58,090,915	28,071,454	93,426,289	17,565,573	20,035,977	1,109,508	40,558,670	2,396,240	82,377,318	88.17	11,048,971	2,937,397	8,057,543	—16,166,328
Southern Ry. in Mississippi	278	743,097	428,119	1,256,929	332,281	177,248	21,014	693,633	37,190	1,261,365	100.35	—4,435	81,000	—85,905	—70,941
Southern Pacific	7,049	81,019,157	31,748,914	121,754,836	19,212,702	24,080,721	1,058,642	46,167,300	2,136,710	95,020,986	78.05	26,733,849	5,759,978	20,950,023	—3,996,984
Spokane, Portland & Seattle	538	3,641,485	1,382,177	5,400,327	881,275	761,750	52,586	1,819,070	177,422	3,713,261	68.75	1,687,067	532,800	1,153,848	—817,655
Southern Steamship Lines	.....	6,986,980	438,559	7,825,960	88,966	2,029,410	111,986	5,965,354	227,568	8,423,284	107.63	—597,324	93,575	—690,910	—866,710
Spokane	156	638,201	150,070	811,260	156,771	72,793	15,325	271,388	39,418	553,702	68.25	257,558	40,030	217,528	—8,267
Staten Island Rapid Transit	23	772,385	728,041	1,714,896	232,609	237,343	8,819	893,925	81,580	1,454,276	84.80	260,621	121,000	139,576	43,041
Tennessee Central	293	1,337,693	438,680	1,879,923	686,251	463,744	26,065	904,133	58,806	2,138,219	113.73	—258,296	46,040	—304,538	—565,042
Terminal R. R. Ass'n of St. Louis	36	.....	31,730	2,832,569	656,616	495,234	7,177	1,257,004	48,926	2,446,129	88.12	336,441	244,705	91,583	—179,143
Texarkana & Ft. Smith	87	819,635	155,666	1,071,325	175,018	176,516	9,845	476,693	28,724	861,285	80.39	210,040	59,592	150,371	34,700
Texas & New Orleans	469	3,871,172	1,528,035	5,895,235	1,048,282	1,619,734	41,770	2,118,413	128,230	5,207,213	88.32	638,022	192,201	491,944	—487,672
Texas & Pacific	1,946	17,156,356	7,410,674	25,891,044	3,676,824	5,486,060	226,822	11,532,357	640,458	21,771,511	84.08	4,119,533	809,823	3,305,191	356,302
Toledo & Ohio Central	433	5,883,642	597,202	6,850,660	1,143,787	2,052,137	57,702	2,873,826	150,356	6,301,029	91.97	549,631	289,382	260,185	—150,549
Toledo, Peoria & Western	247	701,159	441,308	1,203,479	238,844	346,941	18,649	626,352	49,640	1,277,287	106.13	—73,808	76,500	—150,308	—59,983
Toledo, St. L. & Western	454	5,168,137	375,829	5,822,413	1,101,658	1,261,216	52,199	2,426,365	105,412	4,944,508	84.92	877,904	234,000	643,800	—382,868
Trinity & Brazos Valley	368	725,044	187,365	958,803	369,239	401,336	16,121	537,036	65,866	1,389,596	144.93	—430,793	51,339	—482,234	—134,820
Ulster & Delaware	128	492,636	231,098	891,807	141,555	170,456	12,315	598,089	42,719	969,530	108.71	—77,723	43,200	—120,975	—90,241
Union R. R. of Penn.	40	.....	.....	5,840,101	693,918	1,607,787	2,327	3,130,797	67,665	5,501,438	94.20	338,663	66,277	272,386	—94,186
Union Pacific	3,614	58,168,839	16,690,486	80,746,408	11,074,520	14,702,678	410,882	22,710,213	2,103,530	52,831,399	65.42	27,915,009	2,191,011	25,717,587	879,142
Vicks., Sheve. & Pacific	171	1,532,279	697,079	2,408,424	405,678	526,912	29,430	882,479	78,651	1,945,084	80.76	463,340	102,070	360,901	84,462
Virginian Ry.	522	7,270,896	534,631	8,628,253	1,387,662	1,874,720	42,316	3,121,857	148,260	6,571,526	76.16	2,056,727	314,200	1,742,458	—325,098
Wabash	2,503	24,875,261	7,571,746	34,727,202	5,640,702	6,701,822	486,150	17,786,160	1,024,206	31,844,150	91.69	2,883,053	976,776	1,902,138	—2,621,896
Washington Southern	35	1,150,194	1,807,265	3,532,585	307,502	369,452	21,715	1,061,540	49,214	1,857,421	52.58	1,675,165	58,742	1,616,386	394,137
West Jersey & Seashore	361	2,635,500	6,250,160	9,497,455	1,764,967	1,829,801	74,745	4,428,855	190,700	8,335,980	87.77	1,161,475	424,398	736,565	—56,605
Wichita Falls & N. W.	328	1,147,673	374,531	1,593,145	461,778	224,043	11,162	855,329	61,176	1,613,489	101.26	—20,344	85,360	—106,362	184,955
Western Md.	701	9,154,177	817,987	10,889,628	2,023,149	3,550,190	158,059	4,256,683	402,250	10,498,563	96.40	391,066	388,800	2,265	306,071
Western Pacific	1,041	7,643,882	1,358,740	9,365,243	2,061,461	1,650,032	110,293	2,944,476	220,251	7,154,568	76.39	2,210,675	421,633	1,788,225	—652,703
Western Ry. of Ala.	133	1,016,854	726,858	1,888,537	231,875	381,195	27,307	703,614	56,144	1,431,962	75.82	449,576	67,500	382,074	—89,377
Wheeling & L. Erie	511	8,092,289	493,633	9,518,616	1,920,333	2,216,659	54,312	3,743,672	224,658	8,183,495	85.97	1,335,121	507,125	826,938	—531,814
Yazoo & Miss.	1,381	13,351,726	3,896,027	18,000,645	2,896,878	3,929,795	140,330	6,519,418	431,546	13,753,312	76.40	4,247,333	539,632	3,705,368	354,616
Minn. & International	194	529,367	224,093	799,871	203,061	147,191	4,531	422,535	31,043	808,361	101.06	—8,490	43,119	—51,623	—48,555
Lake Erie & Isppeming	34	730,869	2,104	823,343	174,803	157,834	1,816	165,925	22,797	523,175	63.54	300,168	30,954	269,215	—346,517
Copper Range	141	582,962	111,325	748,172	233,697	166,036	15,143	329,201	25,303	769,579	102.83	—21,206	56,431	—77,638	—155,881
Erie, Lebanon & Nor.	76	613,216	68,786	810,079	169,310	173,284	12,044	464,523	8,193	827,354	102.13	—17,275	39,058	—56,333	—55,873
Green Bay Western	252	668,584	149,323	872,035	195,041	222,785	10,097	376,210	17,346	821,426	94.19	50,609	39,512	11,097	—41,805
Los Angeles & Salt Lake	1,168	8,610,246	3,159,712	12,503,473	1,908,632	2,657,301	165,047	4,190,603	272,998	9,530,699	76.22	2,972,773	615,746	2,335,541	270,171
Midland Valley	388	2,042,177	730,819	2,877,453	627,640	524,361	27,052	1,066,884	112,770	2,360,708	82.04	516,745	62,060	453,287	—181,343
Utah	98	854,391	4,935	865,318	119,411	189,973	1,880	176,631	18,901	506,797	58.56	358,521	33,690	324,831	—181,492

Commission and Court News

Personnel of Commissions

Walter M. O'Loughlin, senior railway signal engineer in charge of the field party of the Central District, Bureau of Valuation, of the Interstate Commerce Commission, with headquarters at Chicago, has been promoted to have charge of the signal branch of the same office with the same headquarters. Mr. O'Loughlin was born at Terre Haute, Ind., in 1885. He graduated from Rose Polytechnic Institute, Terre Haute, in 1907, and in the same year entered railway service with the Pennsylvania Lines as a special signal apprentice. He remained in this position until 1909 when he was appointed a draftsman in the Chicago office of the Chicago, Rock Island & Pacific. From 1909 until 1913 he was successively draftsman, engineering draftsman and signal supervisor. As signal supervisor his headquarters were at Lincoln, Neb., and later at Chicago. In 1913 he was appointed signal supervisor in charge of maintenance and construction on the eastern district of the Northern Pacific with headquarters at St. Paul, Minn., which position he held until 1915, when he was appointed senior railway signal engineer in charge of the field party of the Central District, Bureau of Valuation, of the Interstate Commerce Commission. As senior railway signal engineer in charge of the signal branch of the Central District, Mr. O'Loughlin assumes part of the duties of Joseph Beaumont, whose resignation was announced in the delayed October 17 number of the *Railway Age* issued on November 29.

W. M. O'Loughlin

Alexander C. Jenkins, telegraph and telephone engineer for the Bureau of Valuation, Interstate Commerce Commission, supervising field and office forces on telegraph and telephone inventory, with office at Chicago, Ill., has been promoted to senior telegraph and telephone engineer of the Central District of the Bureau, in charge of the field and office forces on telegraph and telephone inventory, with the same headquarters. Mr. Jenkins assumes part of the duties of Joseph Beaumont, whose resignation was announced in the delayed October 17 number of the *Railway Age*, issued on November 29. Mr. Jenkins was born at Alamosa, Iowa, in 1874, and was graduated from Iowa State College, Ames, Iowa, in 1902. The same year he entered telephone service with M. H. Harter, engineer and contractor, in the construction of electric light plants and independent telephone plants in Iowa and South Dakota. In 1903 he became connected with the engineering department of the Bell Telephone Company, with headquarters at Pittsburgh, Pa., having to do with the design of aerial and underground telephone plants, electrical interference of high tension lines with telephone lines and studies determining office locations, conduits, cable- and pole-line extensions. In 1907 he was promoted to assistant to the plant superintendent in which capacity he served until 1910. In the latter year he was promoted to district construction superintendent of the same company, with headquarters at Kansas City, Mo. From 1912 until 1914, he was plant supervisor at Newcastle, Pa. In September, 1914, he was appointed telegraph and telephone engineer, as above, which position he held until his recent promotion.

A. C. Jenkins

J. S. Worley, member of the Engineering Board of the Bureau of Valuation of the Interstate Commerce Commission in charge of valuation work in the western district with headquarters at Kansas City, Mo., has resigned, effective January 1, 1920, to engage in other service.

State Commissions

The contention of the Southern Pacific Company that it should be considered in the same category as the ordinary householder to whom the East Bay Water Company, Oakland, Cal., is under obligation to provide service at any time and for brief periods, was not sustained by the Railroad Commission of California in a recent decision. The Commission granted the East Bay Water Company authority to remove certain pipe lines and facilities supplying water to the Southern Pacific at its Oakland Pier roundhouse, yard, freight office and wharves. Under the authority granted by the Commission the water company is empowered to substitute smaller pipes unless the railroad agrees to pay certain amounts monthly in addition to the established rates for water.

Court News

Decisions Under Employers' Liability Act

The Illinois Appellate Court holds that where a switching crew after delivering a cut of cars, concededly a task involving interstate commerce, returned to the yardmaster's quarters for the purpose of obtaining orders for future work, the crew while awaiting such orders was not engaged in interstate commerce, and an injury sustained during the time of waiting by one of them was not within the act.—Bishop v. Chicago Junction Ry. Co., 212 Ill. App. 333.

The New York Appellate Division holds that a railroad employee who was fatally burned while cleaning a car homeward bound on an interstate trip while it was standing in the railroad's yard awaiting delivery to another carrier, was at the time engaged in "interstate commerce," and was not entitled to recover under the Workmen's Compensation Act.—Kinsella v. N. Y. C., 186 App. Div. 856, 175 N. Y. Supp. 363.

Federal Employers' Liability Decisions

The Supreme Court of Illinois holds that a janitor in shops in which slight repairs were made upon certain trains, both in interstate and intrastate commerce, and who was injured by a splinter when breaking kindling, was not engaged in interstate commerce.—Heed (receiver of C. & E. I. v. Industrial Commission, (Ill.) 122 N. E. 801.

The Oklahoma Supreme Court holds that an employee injured while engaged in transporting in a motor-driven car workmen from their residences to the roundhouse of the company, where they were to make running repairs on cars and engines used in both interstate and intrastate commerce, was not engaged in interstate commerce.—St. Louis I. M. & S. v. True (Okla.) 176 Pac. 758.

The Kansas Supreme Court holds that a station agent who was injured by attempting to start a fire in the stove by the use of kerosene was not engaged in interstate commerce; it cannot be said that his work at the time had a real and substantial connection with interstate commerce.—Benson v. Bush, (Kan.) 178 Pac. 747.

Foreign Railway News

Bolivia Plans Railroad

Press despatches from La Paz, Bolivia, report that announcement has been made that the Minister of Public Works has named a commission to survey a route for the proposed railroad to run from the city of Puno, in Peru, around the eastern end of Lake Titicaca to Cuaqui, the Bolivian port on Lake Titicaca.

The construction of this line would obviate the necessity of transshipment by the Lake Titicaca Steamship Company of goods bound from Mollendo to La Paz, on the Southern Railroad of Peru. This transshipment is expensive, for it necessitates two extra handlings, and it is believed that if this could be done away with by a railroad around the lake the resultant decrease in expenditures would make possible a lowering of the rates from Mollendo to La Paz. Such a decrease in rates is greatly needed, for at the present time the revenues of the Southern Railroad are suffering severely from the competition of the shorter Arica-La Paz Railroad.

New Express Locomotives for Holland

London.

An extract from De Ingenieur by the Technical Review gives the description of the latest and most powerful locomotives supplied to the Dutch Central Railway just before the war by J. A. Maffer of Munich.

Four of the engines are fitted with ordinary superheaters placed in the smokebox, and the four with Schmidt's fire-tube superheaters. The locomotives are similar in other respects and of the following general dimensions:

	Engine Nos. 71-74	Engine Nos. 75-78
Number of cylinders	4	4
Diameter of cylinders	15¾ in.	15¾ in.
Length of stroke	25½ in.	25¼ in.
Diameter of coupled wheels	6 ft. 2 in.	6 ft. 2 in.
Diameter of boiler	5 ft. 3 in.	5 ft. 3 in.
Height of boiler above rail level	9 ft. 8 in.	9 ft. 8 in.
Grate surface	37 sq. ft.	37 sq. ft.
Diameter of boiler tubes	1¾ to 2 in.	1¾ to 2 in.
Number of tubes	285	169
Number of flue tubes	.....	24
Diameter of flue tubes	.....	5 in. to 5¼ in.
Length between tube plates	13 ft. 9 in.	13 ft. 10 in.
Heating surface, firebox	.....	168 sq. ft.
Heating tube surface, sq. ft	1,890	1,555
Heating smokebox superheater	296	.....
Heating firetube superheater, sq. ft.	.....	500
Total heating surface	2,360	2,230
Steam pressure in lb. per sq. in	.....	174 lb.
Tractive force in lb	20,300	20,300
Weight of locomotive when working	69.5 tons	70 tons
Adhesive weight of engine	48 tons	48 tons
Weight of tender in working order	48.3 tons	49.1 tons
Water capacity	4,620 gallons	4,620 gallons
Coal capacity	5 tons	5 tons

The locomotives are provided with spare boilers arranged in such a manner that the working boiler can be removed and a spare fitted in its place while the old boiler is overhauled. Owing to scarcity of copper all spare boilers are constructed with fireboxes of steel instead of copper.

The locomotives are, in addition, provided with Knorr cylindrical feed water heaters having a heating capacity of 146 sq. ft. and a capacity of 55 gallons of water per minute. They are fixed on plate supports between the boiler and engine frame. frame.

Chilean Railroads

Santiago-Valparaiso via Casablanca.—The engineers who have been surveying from Valparaiso to Santiago via Casablanca are in Santiago, arranging the results of their field work. It is calculated that July next will see this survey completed if the necessary funds are forthcoming.

Arica-La Paz.—An increase of $214,387 gold has been agreed upon in the extraordinary subsidy conceded to the Arica-La Paz Railway by the Law No. 3319 of September, 1917; and the one hundred covered 25-ton cars and the three Mallet locomotives bought in North America are declared free from import duty.

General Improvements.—A bill is being laid before Congress asking for authority to use 15,000,000 pesos of the funds set apart for the purchase of ships for the navy, in carrying out the urgent improvements necessary for the service of the railway department; the money to be returned to the naval funds out of the loan of 160,000,000 pesos which probably will be arranged for November. Some reports say the probable financiers are English firms, other reports say a group of United States bankers are taking it up.

Hump Shunting in Rhineland

London.

An article published in the North Eastern Railway Magazine describes the methods employed in shunting and marshalling trains in Rhineland.

The heaviest gradient of the hump is about 1 in 8 from the summit to a distance of about 150 ft., from which point to the middle of the yard there is a slightly falling gradient. Similarly from the other end of the yard a sister hump performs the same office, the total distance between each hump being about 2,700 ft. On a normal day an average car (loaded or empty) is found to travel half the distance quite comfortably, and a strong opposing wind is found not to hold the car appreciably. On every hump there are two shunting tracks, on one of which a light engine is standing ready to run down and pick up a wrongly shunted car and reshunt it off its own hump, thus avoiding any delay to the main shunt. There are two signal cabins, one at the foot and one at the summit of the hump. The signal cabin at the foot of the hump is fitted with an electric frame. When the switches are turned, a bell rings in the cabin and as soon as the switch is closed, it ceases ringing. If the switch is not properly closed the bell keeps up a continuous ringing, giving the signalman time to switch the car to another track and advise the cabin on top of the hump that the points are defective.

During daylight the signalman sets his switches according to the large chalk numbers on the buffers of the cars, which he can see as the cars come over the hump. At night he obtains this information from the shunter's cabin on the hump through a telephonic megaphone fixed above the electric frame, which he can hear or speak into from any part of his cabin. The lamp indicators of the points have a lever number affixed for the information of the signal fitters in their work. It is also arranged that a "dolly" indicates by the arrow on one side that the turn-out is open, otherwise a vertical line shows the points are set for a straight run through.

As German cars are not constructed with side brakes, an effective method has been devised for stopping the cars in the use of the shoes. The shoe is placed on the rail about four to five car lengths from the train in dry weather and twice that distance when the rails are greasy. With an experienced "shoeman" the cars drop on to their train very gently.

The German shunting poles are an iron fork very similar to a hoe with two prongs. One prong is placed in the link of the coupling and the shunter levers the other prong against the hook.

All classes of traffic pass over the hump, from ordinary cars to special vehicles such as are required for heavy machinery, etc. The engine shunting the train operates at about 3 m. p. h. and it is proved that there is a considerable saving of coal and oil compared with other forms of shunting. The cars leave the top of the hump about two or three car-lengths apart, except in the case of special vehicles, when more space is allowed. During busy shunting periods there is usually one "shoeman" to every two tracks, and one to every three when the shunting is less. Cars are shunted according to the stops of the train, viz., those for first stopping place and exchange being placed next to the engine and so on.

A rule of the German yard is that not more than three loaded or five empty cars may travel together unaccompanied by a brakeman to their line. In one case a train composed of 40 cars requiring 24 shunts was dealt with in ten minutes on dry rails. The German estimate is 15 minutes for every train of approximately 50 cars.

Equipment and Supplies

Locomotives Shipped in August

The Railroad Administration has compiled the following statement of locomotives shipped for the period August 1 to August 31, inclusive:

For period August 1 to August 2

Works.	Road	No.	Type
American	Vgn.	3	USRA Mallet
		3	
Baldwin	AT&SF	2	Santa Fe
	PLW	2	USRA S. F.
	T&P	2	USRA Mik.
	A&V	3	Santa Fe
	A&V	1	Mikado
	B&O	1	USRA Pac.
	PLW	1	Mallet
		12	

For week August 3 to August 9

Works	Road	No.	Type
American	NC&StL	4	USRA Mt.
	Vgn.	1	USRA Mal.
		5	
Baldwin	PLW	4	Santa Fe
	AT&SF	6	Santa Fe
	PLW	7	USRA S. F.
	T&P	4	USRA Mik.
	C&O	1	USRA Mal.
	P&R	1	Mallet
	N&W	1	Mallet
		24	

For week August 10 to 16

Works	Road	No.	Type
American	NC&StL	1	USRA Mt.
	Vgn.	1	USRA Mal.
	ACL	3	USRA Pac.
		5	
Baldwin	T&P	2	USRA Mik.
	PLW	3	Santa Fe
	PLW	7	USRA S. F.
	AT&SF	3	Santa Fe
	C&O	2	USRA Mal.
	P&R	1	Mallet
	SAL	1	USRA S. F.
	SP	1	Santa Fe
		20	

For week August 17 to August 23

Works	Road	No.	Type
American	ACL	6	USRA Pac.
		6	
Baldwin	SAL	6	USRA S. F.
	PLW	2	Santa Fe
	AT&SF	2	Santa Fe
	C&O	1	USRA Mal.
	PLW	4	USRA S. F
	T&P	1	USRA Mik.
	N&W	1	Mallet
		17	

For period August 24 to August 31

Works	Road	No.	Type
American	Vgn.	1	USRA Mal.
	ACL	8	USRA Pac.
		9	
Baldwin	IHB	16	USRA Mik.
	P&R	1	Mallet
	Pa.Lines	2	Santa Fe
	SAL	3	USRA S. F.
	C&O	1	USRA Mal.
	Pa.Lines	1	USRA S. F.
	Pa.Lines	1	Mallet
	N&W	1	USRA Mal.
	W&LE	1	USRA Mal.
		11	
	Grand total	128	

In addition to the above, the American Locomotive Company completed 119 foreign and shipped 18 miscellaneous domestic locomotives, and the Baldwin Locomotive Works completed 54 foreign and shipped 14 miscellaneous domestic locomotives.

Supply Trade News

The heat treatment department of the **Quigley Furnace Specialties Company**, 26 Cortlandt street, New York, has been placed under the management of **H. H. Harris**, who has a wide experience in the heat treating field and comes to the Quigley company well equipped with information and practical experience in this important department.

Trade Publications

CHAIN DRIVES.—"A Chain of Evidence" is the title of a 20-page illustrated booklet published by the Morse Chain Company, Ithaca, N. Y., describing the construction of Morse silent chains, a distinguishing feature of which is the "rocker joint," consisting of a rolling or rocking bearing in each joint, which permits a rolling friction in place of the sliding fricton common to other types of jonts. Among a number of illustrations of large power drives contained in the booklet is one showing the largest chain drive in the world—of 5,000 hp. for hydro-electric purposes.

STEEL CONVERTER FOR SMALL FOUNDRIES.—The Whiting Foundry Equipment Company, Harvey, Ill., has issued catalogue No. 150, describing the Whiting side-blow steel converter. This device is adapted for the production of steel castings in limited quantities and is particularly applicable in connection with apparatus for making grey-iron castings. The catalogue describes the construction of the converter and explains its operation in the manufacture of steel. A layout of a combined grey-iron and steel foundry installed in a railroad shop is also described and illustrated.

SUPERHEATERS.—Two circulars dealing with the maintenance and operation of superheaters are being distributed by the Locomotive Superheater Company, New York. Bulletin No. 6 is entitled "The Most from Superheating," and contains a reprint of the committee report of the Traveling Engineers' Association on superheater locomotive performance. Bulletin No. 8 contains instructions for properly maintaining and operating superheaters. It deals with such matters as lubrication and drifting, flue cleaning, handling units during repairs, etc. Another bulletin, No. 5, describes the company's model "496" pyrometer equipment for locomotive service.

PORTABLE WELDING OUTFITS.—Three types of trucks for transporting portable oxy-acetylene and oxy-hydrogen welding and cutting equipment manufactured by the Davis-Bournonville Company, Jersey City, N. J., are described and illustrated in an eight-page pamphlet. One of these is a cabinet truck which provides permanent mountings for the regulators and gages within a steel locker, which also affords space for the torches, hose, accessories and supplies. The other two are open trucks, one having large wheels especially fitted for traversing rough ground and the other having small wheels, designed for use on floors, pavements and level ground.

CELFOR DRILLS.—Putting Mettle Into Metal is the title given by the Clark Equipment Company, Buchanan, Mich., to a booklet describing the making of Celfor drills and precision tools and telling of various innnovations which the company has put into effect for the benefit of employees, which tend to give them a keener interest in their work and promote harmony between employer and employees. The booklet contains numerous illustrations, one colored two-page illustration showing a general view of the plant and grounds which have been made into an attractive park. Other illustrations show a theatre which is operated by the company without profit and is used by the employees for a great variety of activities; a hospital which is conducted by a hospital association formed among member employees, and several homes which are typical of a large number built by the company and sold to employees at actual cost on their own terms.

EDITORIAL

Railway Age

EDITORIAL

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Usefulness of the Wedge

The young man who aspires to promotion must constitute himself a wedge, so as to be ready to let somebody force him into the first available opening where there will be an appointment to assume larger responsibilities. This bit of wisdom is brought to mind on reading the letter from H. S. M., published in our issue of November 21. The train despatcher, on occasion, should not hesitate to "butt in" where, if a narrow view were to be taken, only the trainmaster, or some one higher up, could rightfully act. This is true, for example, in cultivating friendly relations with shippers at outlying sidings; or customers who do not see the station very often. Despatchers (and others) do well to do a lot of thinking outside their own immediate field, even if it is but rarely that such thoughts can be put in practice. We all know of clerks who have got ahead by doing some job for the "old man" without being told to do it; taking the boss's own work out of his hands, as it were. Never encroach on a superior's exclusive territory; never meddle; but don't be too fearful of being accused (wrongfully) of doing something of that kind! The thin end of a wedge resembles a knife, but it does not cut.

Paying the Bill for the Steel Strike

It has often been said that increased production must be the chief factor in bringing down the cost of living. Decreased production has proven itself many times the main cause of a rise in prices, a concrete example, and one that is of considerable interest to the railroads, being at present time afforded by the steel industry. Before the steel strike in the latter part of September, 1919, the steel market had practically recovered from the effects of war-time production and was getting on a firm and steady peace basis. During the period of about two and a half months between the beginning of the strike and the first of December prices advanced nearly 20 per cent on rails and other steel products this being almost entirely due to the shortened supply resulting from decreased production. Now, to fill the cup to overflowing, there has come the coal shortage with its resulting curtailment of important and much needed production of iron and steel products. The industry is much farther down in the list of essentials, and as a result is far more affected by the rulings of the Fuel Administration, than during the heatless days of 1918. With such a serious situation confronting them, the steel companies have practically suspended operation of their sales departments, but business continues to come in from all directions and is piling up at an alarming rate. It need hardly be said that the output lost through the steel strike and the coal shortage has caused a deficiency which cannot for a long time be made up. With the demand continuing heavy, as in all probability it will, the result must be increased prices to the consumer, unless prices are held down by artificial means. The amount of the advances will largely depend upon what the large interests in the steel industry can do to check the upward swing, which if it went too far would prove a serious detriment not only to the railroads, but to the country generally. It is, of course, to be regretted that a few labor leaders could bring about such a state of affairs with little or no justification for their actions, and without even the thorough understanding and voluntary support of working men themselves. Nothing of any importance has been gained, and much has been lost, the public paying as usual through the higher prices made unavoidable.

Brooklyn and Belmont

The fatal train wreck at Belmont, N. Y., October 19, reported in our monthly record of derailments, printed in this issue, gives prominence to some lessons as striking as those of the Brooklyn collision, reported in the September record—striking, that is, in their simplicity. They are so obvious that we all know them. The remedies for the errors which caused this wreck can be agreed upon in a minute, when we are ready; but the habit of shutting the eyes to the future—or of trusting to luck—has become so easy that grave problems are deferred indefinitely. Fundamental principles of safe train operation are constantly neglected, and for no other definable reason, apparently, than that one of the characteristics of a great corporation is the spread-out character of its functions and the perfect facility with which responsibility can *always* be shifted from one bureau to another.

One of the fundamentals is that enginemen's eyes, physical and mental, are not infallible. The most experienced and conscientious runners have been running past switch targets, on straight lines, in clear weather, without seeing them, for the last 60 years; and probably they are doing not much better today than they were 60 years ago, for the fault is a deep-seated characteristic of the mind, not entirely curable by human wit. This makes it fundamental that for safe running at high speed the runner's eyes must be given a second chance—at least. This is done by providing a distant signal —what used to be called an advance signal—one to give advance information. The use of signals set from 1,000 ft. to 4,000 ft., in the rear of danger points—switches—has prevented innumerable errors from mental laxness or infirmity, and in that sense has saved innumerable lives.

The New York Central placed distant signals at all facing switches on the main line between Albany and Buffalo away back in 1875-80, when most railroad men in this country knew (and thought) very little about scientific signaling except what they had learned from a Saxby & Farmer model at the Centennial exhibition in Philadelphia. Yet here, in the twentieth century, on a main line between two of the chief cities of the State of New York, trains are run at a mile a minute without a distant signal. One way to meet such a situation—assuming that automatic signals with track circuits are out of the question because of the low income from the traffic of the line—would be to impose a very low speed limit on all trains. (The low speeds then in vogue serve largely to explain why more people were not killed on the railroads 60 years ago). But the only sure means of imposing such a limit today would be automatic governors such as we read of as having been used on the automobiles of our army in France; an expedient which as yet has not been thought of in railroad service.

Another fundamental *fact*, developed by experience, is that

a fireman cannot be depended on to monitor his engineman—even when, as in this case, the result of his inattention will be the loss of his own and the engineman's lives. The only way to insure the vocal calling of signals across the cab at numerous designated places would be to have the oral function supplemented by the operation of some apparatus which should make a permanent record of each instance; and that would not be easy.

It is fundamental that a satisfactory force of reliable men for the delicate responsibilities of track foremen such as is needed on any road running fast trains, cannot be assured except by systematic training, long continued; yet, as everybody knows, the most of our training in that line is unsystematic and far from ideally satisfactory.

These are obvious fundamentals, too little disputed to need demonstration. It is also undisputed that in the operating department most of our railroads are under-officered; or, in more scientific phrase, do not have the right quantity (and quality) of supervision.

The Boston & Maine Re-Organization Complete

On December 1 James H. Hustis was discharged as receiver of the Boston & Maine, and it is understood that Woodward Hudson, who is now president, will soon resign and Mr. Hustis will be elected president.

The Boston & Maine was re-organized under federal supervision and during federal operation of the property. It is the only road that has had its financial affairs re-organized during the two years of government operation of the railroads. The re-organization of the Boston & Maine necessitated the relinquishing of presumably valid legal rights on the part of the holders of stock of six of the eight leased lines—the Fitchburg, the Boston & Lowell, the Connecticut River, the Concord & Montreal, the Lowell & Andover, the Manchester & Lawrence, and the Kennebunk & Kennebunkport. Before the Boston & Maine receivership, of the total 4,370 miles operated but 1,374 were owned and the remainder was leased. The re-organization provides for the direct ownership by the Boston & Maine of 3,315 miles out of the total 4,370 miles operated. Owners of the stock of the leased lines, on which stock the Boston & Maine had guaranteed dividends at varying rates as rental, agreed under the re-organization plan to accept new preferred stock of the Boston & Maine, dollar for dollar for their holdings of leased line stock. Dividends on this new preferred stock, however, are to be 20 per cent less for the first five years than the dividends on the old leased lines stock. The re-organization is to be retroactive to cover the entire year 1919.

The fact that the re-organization took place under federal supervision was probably of help to the re-organization committee in bringing pressure to bear on the holders of leased lines stock, to force them to accept a reduction for five years in their income. The re-organization presents many points of interest. In 1910, the Boston & Maine common stock sold at 152, and as late as 1913 the preferred stock sold at 133. The re-organization of the system did not scale down the outstanding debt or stock, but did reduce the interest and guaranteed dividends, and provided for funding unfunded debt. The total unfunded debt before re-organization was $88,317,000 and in addition there was $19,879,000 unfunded debt. The re-organized company has no unfunded debt and $103,167,000 funded debt. The interest charges and guaranteed dividends before re-organization amounted to $8,056,000 and now amount to $4,407,000 interest and $2,036,000 dividends on the new first preferred stock. It is hardly likely that under government operation in 1919 the property will have earned the full dividend on the preferred stock in addition to interest charges, but the interest charges will have been shown as safely earned, and the increase in freight rates of 25 per cent on business within New England which the Interstate Commerce Commission has already approved of, but which has not as yet gone into effect, will add nearly $8,000,000 to the earnings in 1920.

There were many causes contributory to the Boston & Maine receivership. The Massachusetts law permitted the sale of stock only at approximately the market price. Thus when Boston & Maine stock was selling at 130, and new financing had to be done, stock could be offered to stockholders at about 130. Naturally there was no incentive to absorb any considerable new offering of stock, and financing, therefore, could not be done through the sale of stock, notwithstanding the fact that the stock was selling above par. The refunding of a floating debt has now been done, although the prospects of a company like the Boston & Maine doing further financing through the sale of stock depends on the general railroad legislation which is adopted by Congress. Leased line dividends as a fixed charge were a burden on the old company which has now been done away with.

The management of the Boston & Maine prior to the election of Mr. Hustis as president, was sound rather than progressive, and was made more difficult by the relations between the New York, New Haven & Hartford, and the Morgan-Mellen attempt to control the Boston & Maine with the resulting lack of confidence both among officers and employees, and on the part of the general public.

The new company will start operation with a management which has actually been in charge of the property both under receivership and during the period of government control. Long steps have already been taken to bring the details of up-keep, replacement, operating methods, etc., up to modern standards, and the confidence and loyalty of employees and officers and the public has been gained by Mr. Hustis, both during the receivership and in the trying period when he was acting as district director of the New England roads. With a favorable general railroad situation, the Boston & Maine has for the first time in very many years a chance to become a first-class railroad property.

Government Operation Under Mr. Hines

In a recent discussion of railroad legislation Senator Morris of Nebraska said that those who favored government ownership would be fundamentally opposed to the kind of government control that we have had during the last two years. Senator Cummins of Iowa replied that while he did not think the organization under which the railways have been operated has been ideal, because it has had too much arbitrary power, he believed it has been more competent to operate the railroads than one such as probably would exist under government ownership. He paid especial tribute to Director General Hines, who he believed had operated the railways as economically as was practicable.

Nobody who really knows anything about the railroad business will question that Senator Cummins was right in the position he took. There have been many things to criticize in the way in which government control has been exercized; but the Railroad Administration has never varied from the policy originally adopted by Mr. McAdoo of keeping trained railroad men in almost all the important positions on the railroads; and these men have almost without exception rendered it as energetic and able service as they ever rendered the companies. They "stayed with the ship" largely because the country was at war, however; and it can-

not be assumed that they would all, or most of them, stay if a policy of permanent government ownership were adopted.

Senator Cummins' complimentary references to the character of the services which have been rendered by Mr. Hines were particularly deserved. Mr. Hines became and has served as director general under especially unfavorable conditions. The war was over when he became director general, and therefore the spirit which the war had infused into railway officers, employees and patrons was on the wane. The freight traffic and earnings of the railways were rapidly declining. Labor, in spite of these facts, was beginning to ask again for large advances in wages, and to threaten to tie up the railroads if they were not granted. The Railroad Administration was in sore need of funds to meet its obligations to the railroad companies and to carry out an improvement program, and yet about two months after Mr. Hines became director general the railroad appropriation bill was defeated by a filibuster, and subsequently, when Mr. Hines asked for a larger appropriation than he had sought at first, Congress gave him only part of what he asked for.

In May President Wilson announced that the railways would be returned to private operation, and before and since then some of the ablest men in the Railroad Administration have left it to return to the corporations with which they were formerly connected. To cap the climax, just as the railroads had begun to handle a large freight traffic again and to earn enough monthly to pay the government's guarantees to the companies, the coal strike came, with its inevitably very bad effects upon railroad expenses and earnings. In spite of these and other difficulties, the Railroad Administration has come through the year much better than seemed at all probable when Mr. Hines became director general. It has succeeded in avoiding a general railroad strike while at the same time refusing to grant employees the large increases in wages which they demanded. It has bridged over the financial chasm which yawned beneath it when the railroad appropriation bill failed. It has restored operating efficiency to something near normal and has rendered about as good service as was practicable with the facilities available. It has kept the deficit smaller than seemed possible six months ago.

While all the railway officers who served the government deserve credit for the way in which the railways have been operated in 1919, the chief credit belongs to Mr. Hines. He has made mistakes, and has received criticism from many sources, but we believe that most persons competent to judge will agree that in handling the situation he has shown rare courage, fairness, resourcefulness and ability. It is difficult to conceive how, in the circumstances, he could have done better in most respects than he has.

Senator Cummins is entirely right in saying that under government control the railways have been better managed than they would be under government ownership. The very autocratic power possessed by the director general which he regards as objectionable has been one of the principal reasons why they have been as well managed as they have been. If the director general had not had autocratic power he would have been subjected to more political interference. If there had been serious political interference it is inconceivable that men such as Mr. Hines and the other important railroad men in the Railroad Administration would have stayed in it. If they had not stayed the efficiency of railroad operation, instead of having increased as it has since Mr. Hines took charge, would have decreased. Those who say that the results of government control are no measure of the results which would be secured under government ownership and operation are right. The results under permanent government ownership and operation undoubtedly would be very much worse.

Letters to the Editor

Politeness and Intelligence Combined

New York City.

To the Editor:

In discussing the Dunkirk collision (issue of October 31) you refer to the ideal trainmaster and the joys and sorrows connected with his difficult task. We all sympathize with him, for his problems every day are as puzzling as the puzzles to which you refer as afflicting the investigator of collisions—who at least has a little rest between collisions.

But whatever may be the obstacles to becoming an ideal trainmaster, the traveling public demands that such obstacles be overcome, for it is the trainmaster that keeps trains running; without him and his principal aide, the chief despatcher, the wheels would stop. I wish to cite an illustrative incident. A certain New York paper says: "Most of those who got off the 5 o'clock train yesterday at M—— emerged from a car whose door was opened by a passenger. There was no trainman at hand, and when the trainman's attention was called to the fact that there was nobody to open the door he said, "Go ahead and report it. We can't be everywhere at once. . . ."

That brakeman gave a reply which was all right in substance but all wrong in style. According to the letter and spirit of the instructions which are usually given to passenger trainmen on the best roads, this man should have said, "I regret that you have been inconvenienced, but I have no authority to improve the situation, and if you are seriously aggrieved I shall have to refer you to the passenger traffic manager. He, no doubt, will adjust the matter to your satisfaction; at least he has done so on all previous occasions of this kind, so far as I can recall. The trouble, you see, is that we are shorthanded. To this train of eight cars only two trainmen are assigned, and as one of these must remain at the rear end to flag or to be prepared to flag (our block signal system, costing $3,000 a mile, being slightly unreliable at times), I alone am left to attend to the vestibule doors of four or five cars. Usually I get around so as to open them all before we reach the station platforms, but today I am delayed because one of the doors stuck and caused me a lot of trouble. I assure you that we are doing about as well as you have a right to expect. You (through the cheap character of the men you send to the legislature) have forced the railroads to spend millions of dollars too much in hiring men to man their freight trains, and now you see they are spending millions too little on passenger train crews."

Now, in all seriousness, is not that about the course of reasoning which the brakeman is expected to employ? If employees who come in contact with passengers are to be really polite in their conduct habitually, and without straining or worrying, they must do their own thinking, and if they think these things they are pretty likely to express some of them. One of the trainmaster's big tasks is to educate the brakeman (and conductors and ticket sellers as well) to put the best foot forward; to "speak a good word for the company," even when to do so he must put a prodigious pressure on his feelings in order to avoid exposing the unpleasant things which he thinks about his employer. How can this be done? Readers of the *Railway Age* would like to hear from any trainmaster who has succeeded in educating his brakemen to carry out his best theories in this matter.

This letter may seem like a pretty stiff attack on the train-

master, but it is not; it is intended mainly for his superiors. Will you not call on a dozen or so of your friends among the superintendents to explain why they do not strengthen their trainmasters? They do not educate, do not encourage, do not fully pay the better men among their trainmasters, and they are not severe enough in getting rid of the poorer ones. These superintendents are in duty bound to defend themselves, if any defense is possible. Some superintendents need a lot more boldness when they face the general manager. It is the duty of superintendents—all of them combined—to force him to make such appropriations as are necessary to elevate the character of the trainmasters generally.

In his immediate staff the general manager aims to employ men in whom politeness and intelligence are combined; in the train service he falls very far below 100 per cent in this respect; and yet he tells the public that 100 per cent is what he is aiming at. This is a feature of his work in which many a general manager has the reputation of being a very poor marksman. J. E. J.

A Woman Stockholder on Railroad Legislation

DENVER, COL.

TO THE EDITOR:

As a small holder of railway securities, I am very greatly perturbed by the recent action of the House of Representatives in cutting out from the proposed railway bill, as reported by its committee, that provision establishing a definite formula for the guidance of the Interstate Commerce Commission in fixing a basis for rates.

According to my understanding, the House bill as now amended would leave the whole matter of railway rates and revenue to the discretion of the Interstate Commerce Commission, and that without any definite expression from Congress itself as to what such rates should be.

There are thousands of women (in one of my companies there are 11,000 women stockholders) who, like myself, are small holders of railway securities, either left to them, or bought by them for cash, at different times as a permanent investment. It seems to me that Congress having resumed the responsibility of regulating the railways, should also assume that of outlining a definite policy for the guidance of the Interstate Commerce Commission.

In this regard, I feel that the Cummins bill is far more satisfactory than even the House bill as reported by its committee and that when the matter is taken up as I suppose it will be by a conference committee of both houses, I hope that Section 6 of the Cummins bill will be accepted.

While it seems to me that even the Cummins bill has dealt niggardly with the situation, it will surely be better to have a definite law based on Section 6 of the present Cummins bill, than to leave the whole matter in the indefinite shape in which it has been heretofore.

As I understand it, Section 6 recommends a minimum return of 6 per cent. to investors. This I think is fair. Unless this can be brought about, so as to relieve our terrible uncertainty, I know that many will be compelled to dispose of their holdings.

As strongly as I can, I wish to urge in the interests of small investors, like myself, that Congress recognize and assume the responsibility resting upon it, of giving to its agent, the Interstate Commerce Commission, definite instructions regarding the future treatment of the railroads. Unless Congress itself is willing to determine and announce such a policy, I shall feel strongly inclined to dispose of my railway holdings even at a loss, due to present low prices and invest in some other enterprise that has not yet been brought under the definite control of Congress.

Regarding any of the other features in either of the bills now before Congress, I do not express an opinion, because I do not feel that I am sufficiently acquainted with the subject to justify me in doing so. I am, however, deeply interested in the solvency of our American railroads, and it seems to me, that this is a matter wholly dependent upon an adequate basis of rates and depending entirely upon either the action of Congress itself or its agent, the Interstate Commerce Commission. (MRS.) ANNA C. TOLMAN.

Information About Profit Sharing

No. 1 Madison Avenue,
NEW YORK CITY.

TO THE EDITOR:

"Profit Sharing by American Employers," the report of an investigation of profit sharing between employer and employee, which was published by the National Civic Federation in 1916, is greatly in demand and is to be reissued with certain amplifications. To make it as comprehensive as possible, information is desired from all employers concerning the six different plans, namely: 1, percentage of profits; 2, special distributions; 3, stock ownership plans; 4, exceptional plans; 5, abandoned plans; 6, proposed plans. Any concern which uses any form of profit sharing is requested to give date of installation; and, if not in force when discontinued, and why; average number of employees at this time and how many participate in the plan; state of feeling toward the plan by those for whose benefit it was intended; whether the plan has been the means of modifying the tendency toward labor troubles; whether limited to heads of departments; and whether an unqualified success, or if not, where it has failed. Information marked confidential will be so treated. GEORGE W. PERKINS.

Chairman Profit Sharing Department, National Civic Federation.

The Trans-Andine Railway Operating Under Difficulties

The Canadian Pacific Builds Refrigerator Cars

Equipped with Tank Bunkers, Meat Racks and Ventilators; Steel Underframe Construction, 41 ft. Long

THE CANADIAN PACIFIC has recently built at its Angus shops, Montreal, an order of steel underframe refrigerator cars, which embody a number of interesting features, both in the underframe and body construction as well as in the refrigerating equipment.

These cars are 41 ft. long, and have an average tare weight of 59,000 lb. to 60,000 lb. They are carried on 40-ton trucks, which gives them a load limit capacity, including ice, of 72,000 lb. to 73,000 lb. They are designed for satisfactory service when handling any of the several different commodities which require transportation in insulated cars because of the need of protection from heat or frost, and also for other miscellaneous freight which may properly be loaded in refrigerator cars when they are not required for the transportation of perishables.

As packing house products are regularly handled in Canada by railroad owned refrigerators, these cars are equipped with galvanized iron tank bunkers which permits the use of salt as required to obtain the proper degree of temperature. To prevent the exchange of air through the hatch openings at any time and especially when the hatches are opened for re-icing, the tanks fit well around the ceiling. Regulation meat racks are included as part of the roof and ceiling construction.

For berry and fruit traffic it is necessary to provide a means of ventilation. This has been taken care of by providing openings in the fronts of the ice tanks near the top, so that when the hatch covers and plugs are opened, air will circulate freely into and through the car. The ventilator openings are fitted with malleable iron frames and close fitting plate slides which are secured in a closed position at all times except when the cars are operating under ventilation.

The use of ice or ice and salt when operating under ventilation, is optional, thus providing a wide range of regulation which may be varied to suit the seasons, conditions of the load, and the distance to be moved. Fruit fresh from the field is a very difficult commodity to transport, as the field heat and heat generated by the ripening process produces a condition that is difficult to handle. However, the brine tank ventilator car when equipped with suitable floor racks arranged so that free circulation will take place around the ice and out under the racks, is particularly suited to this traffic, as the use of salt on the initial icing lowers the temperature of the car rapidly, absorbing the field heat and checking the process of ripening. For fruit shipments it is well to apply temporary slats along the sides of the car to provide space for circulation at the sides as well as underneath. All other perishables may easily be transported safely in these cars, provided reasonable care is used in loading so that the air within the car may circulate freely.

Steel Underframe Refrigerator Car with Brine Tanks and Ventilators, for the Canadian Pacific

Whenever the lading requires protection from frost, charcoal heaters are placed in the corner ice tanks, two or more per car as required.

The Refrigerating Equipment

Permanent floor racks made of 1¾-in. by 3¾-in. fir are installed in sections, five sections on each side of the car. They are secured with hinges, similar to those used on side doors, to the lining base plank and when propped up against the car sides, the racks are entirely clear of the floor, thus

permitting the floor to be thoroughly and easily cleaned and swept out through the side door openings. The racks are made of relatively heavy material to insure durability, especially when the car is loaded with miscellaneous merchandise freight.

The ice bunkers consist of four rectangular galvanized iron tanks at each end of the car; the tank bottoms are ⅛-in. pressed steel, galvanized after pressing, and the sides are 10-gage galvanized iron. Substantial lugs are riveted near the top. These lugs bear against the underside of the hatch frame and prevent the tanks from jumping when the cars are being switched. The tank supports consist of angle irons which are arranged so that the front supporting angle may be removed without disturbing any tank. After the removal of this angle one or more tanks may be removed and reapplied without disturbing the others.

The drip pan under the tank is sloped from the rear end towards the front of the tank, so as to be as nearly self-clearing as possible. The front edge of the drip pan is made of ⅛-in. pressed steel plate, galvanized. This arrangement avoids, to a considerable degree, the obstruction of free circulation of air down around the tanks and out under the floor racks.

Only the center tanks at the ladder corners are equipped with a drain valve. The remaining three tanks at each end of the car are coupled to this tank by hose connections located two feet above the tank bottom. The drain valve is connected to a pipe extending directly through the car floor.

Insulated bulkheads are provided in front of the ice bunkers. These bulkheads are hinged at one side of the car so that they may easily be swung open for inspection, cleaning or repairing the tanks. These bulkheads have an extension at the bottom with horizontal slats to prevent small crates or boxes from sliding under the bulkhead.

The ice hatches are of U. S. R. A. design, modified only as absolutely necessary to suit conditions.

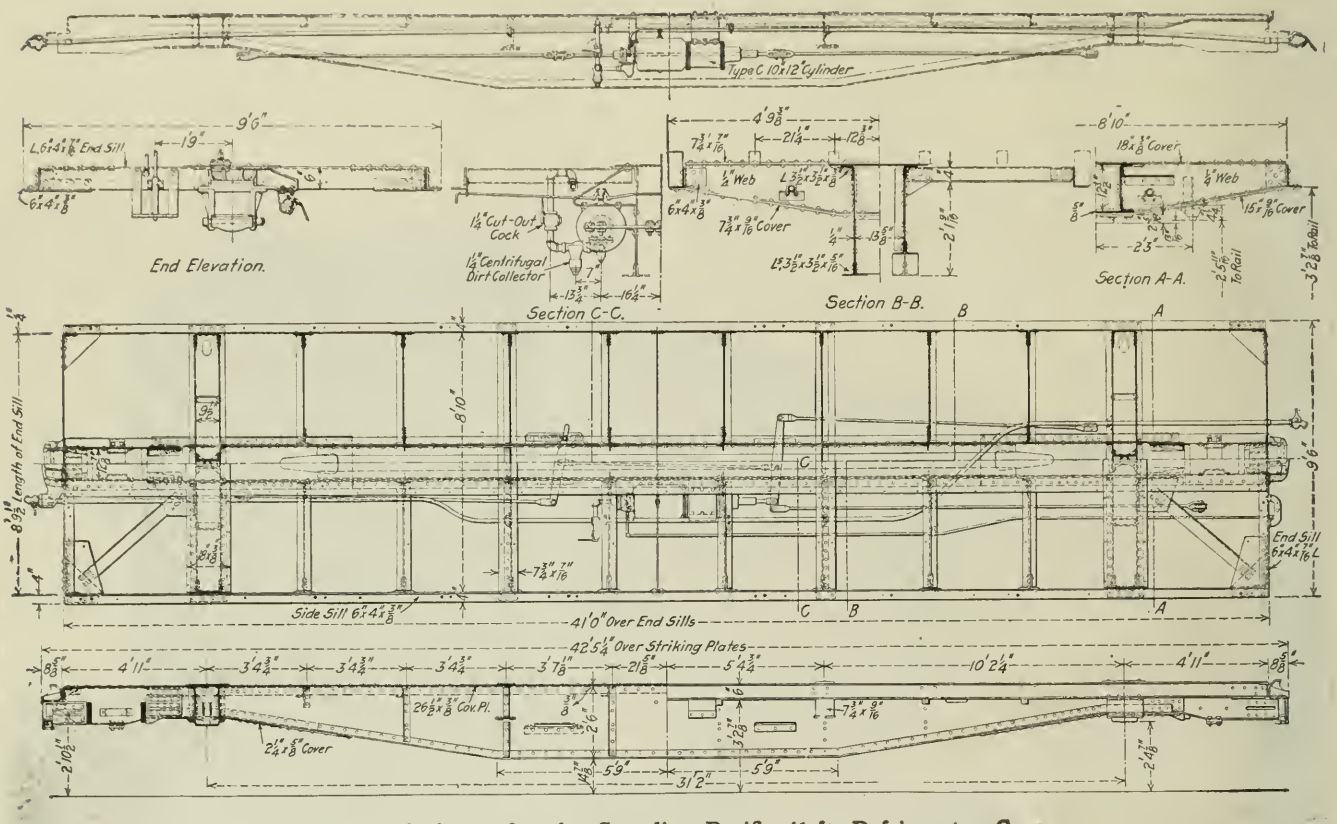
Insulation

The floor insulation consists of one layer of 90-lb. waterproof insulation paper applied in one piece from side to side and end to end of the car, thereby covering the entire underframe and sub-floor. On top of this are placed the floor stringers. The center stringers rest on and are bolted to the edge of the center sill cover plate, while the intermediate stringers rest on and are bolted to the bolsters, crossbars and floor beams. Between the stringers four layers of ½-in. insulation are applied in strips, continuous from end to end of the car. Each layer consists of hair or fibre felt between two courses of 90-lb. waterproof insulation paper. The four layers are applied in two courses of double layers with nailing strips and ⅜-in. tongued and grooved boards between.

The floor consists of two courses of tongued and grooved boards, the under course ⅝ in. thick, over which is spread a heavy coating of felt, waterproof asphalt, and over this one layer of two-ply asphaltum roofing paper. The top course boards are 1⅛ in. thick.

The side and end walls are insulated with three layers of ½-in. insulating material, each layer stitched between two layers of 90-lb. waterproof insulation paper. Side and end wall insulation extends continuously from floor to ceiling and from the door opening to the end of the car, across the end and to the door post opposite the starting point. One layer of the insulation is applied on the outside of the superstructure frame, overlapping and fastened to the sills and plates. Two courses are applied on the inside of the framing, against the ⅜-in. tongued and grooved sheathing. The outside sheathing consists of standard 13/16-in. tongued and grooved car sheathing and the inside lining is 13/16-in. tongued and grooved basswood or spruce. The total thickness through the side walls is 6½ in.

The roof insulation consists of six layers of ½-in. insulating material, each layer stitched betwen two courses of 90-lb. waterproof insulation paper. The insulation is applied in



Steel Underframe for the Canadian Pacific 41-ft. Refrigerator Cars

one piece between the carlines from side plate to side plate. It is applied in three double layers, each double layer supported on ⅜-in. tongued and grooved boards.

On the top side of the ceiling boards one layer of 90-lb. waterproof insulation paper is applied in one piece from side to side and end to end of the car.

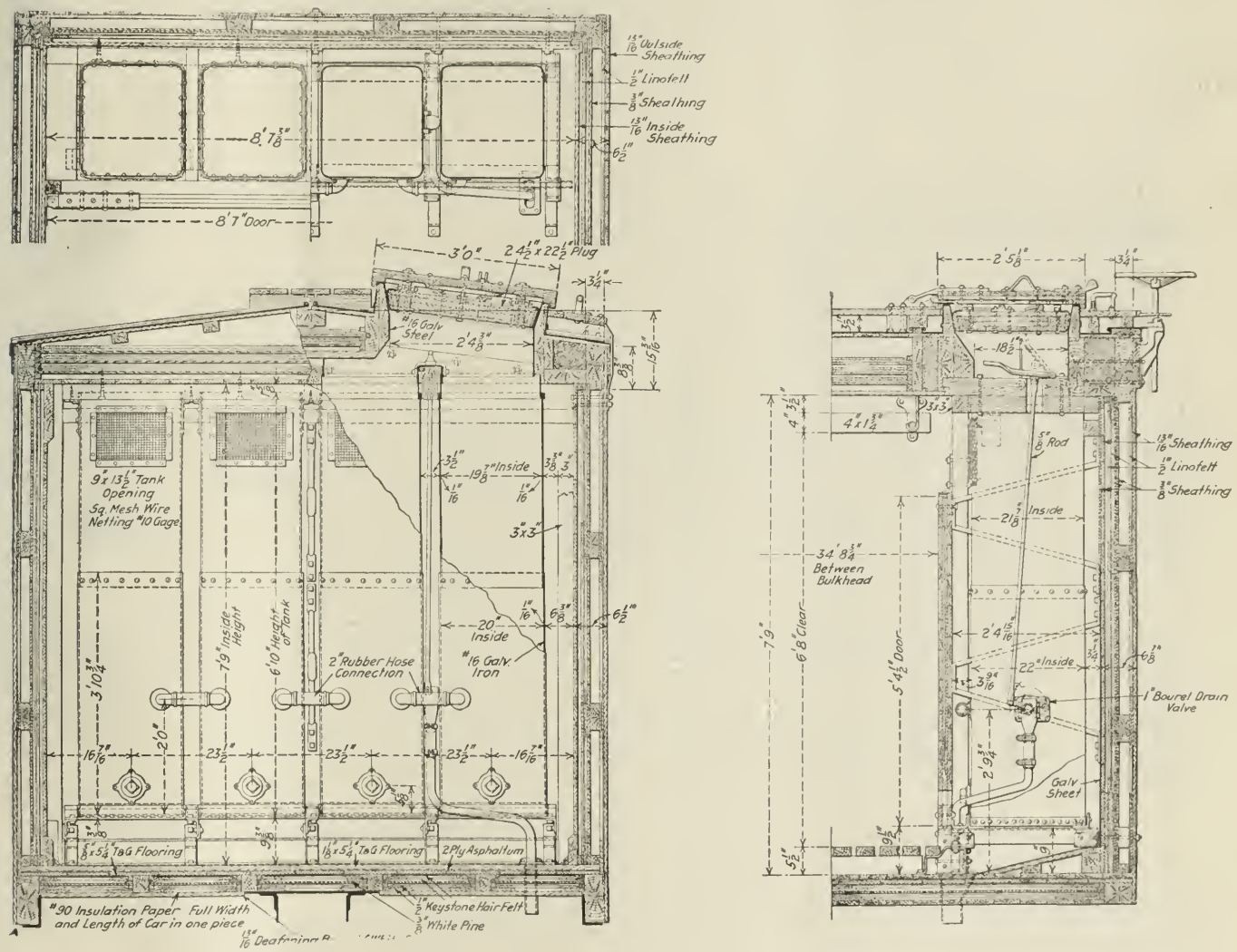
Superstructure Frame

The principal framing members of the car body are fir, excepting end sills, end posts and end braces, which are of oak or maple. All of the posts and braces are set in cast iron pockets with the exception of the end post and braces, which are set in special cast steel pockets each having a high flange on the outside to prevent the lower ends of the posts and braces from springing over the top of the casting. Each

that the roof frame may be assembled on the shop floor and then placed on edge, while the ceiling boards are applied. This enables the builders to work at all times to the best possible advantage, with the result that good work is rapildy done.

The roof is galvanized iron, type XLA, flexible, applied over a single course of boards and one layer of two-ply asphaltum roof paper. As already noted, the spacing of the carlines is governed by the spacing of the meat rack supports and on account of the roof insulation the roof mullions and running board saddles are spaced to coincide with the carline centers; this provides a solid construction for nailing the mullions.

The roof sheet pivot saddles are secured by carriage bolts applied through a special washer nailed on the underside of



Arrangement of the Brine Tanks and Body Construction Details of the C. P. R. Refrigerator Cars

casting is bolted directly through the steel end sill flange with two ⅝-in. bolts. This is to prevent the pocket from tipping out and also to avoid trouble caused by dowels splitting the wood end sill.

Diagonal brace rods are employed at each side frame panel to reduce racking to a minimum.

The spacing of the carlines coincides with the spacing of the meat rack cross supports and the supporting bolts pass through the carlines, thus avoiding longitudinal blocking which is undesirable, particularly on account of interference with insulation. At alternate carlines ¾-in. cross tie rods are applied.

The framing and insulation of this car are so arranged

the ridge pole; this washer when applied is L-shaped and is secured by two nails. After the carriage bolt has been applied the projecting end of the washer is bent back under the bolt head so as to prevent the bolt from dropping down. The hole in the washer is square to suit the shank in the bolt head.

The side doors are equipped with W. H. Miner fasteners. The threshold plates are of pressed steel with a shallow shoulder at the inside edge for the stripping on the lower inside edge of the door to close against. The open door fastener consists of a link and bolt arrangement that cannot become unfastened accidentally.

Side door thresholds and all metal work on the interior of

the cars are heavily galvanized by the most reliable known process.

The Underframe

The underframe is of the center carrying type. The center sills are 30 in. deep at the center portion, composed of web plates ¼-in. thick, a ⅜-in. by 26½-in. top cover plate continuous in one piece from end to end of the car, top flange angles of 3½-in. by 3½-in. by ⅜-in. section, and 3½-in. by 5/16-in. bottom flange angles. The center sill bottom cover is of ⅝-in. by 21½-in. plate.

The bolsters are of the box girder type, composed of ¼-in. pressed steel diaphragms, with a ⅜-in. top cover plate, 18 in. wide, and a 9/16-in. bottom cover plate, 15 in. wide. The crossbearers are of single web girder construction, consisting of ¼-in. pressed steel diaphragms, with a 7/16-in. by 7¾-in. top cover and a 9/16-in. by 7¾-in. bottom cover. The floor beams are 4-in., 8.2-lb. Z-bars and the side sills are 6-in. by 4-in. by ⅜-in. angles. The end sill angles are of 6-in. by 4-in. by 7/16-in. section.

The draft arms are of ⅜-in. pressed steel. The rear draft lugs are secured to the draft arm and center sill splice, and are also riveted to the center sill bottom cover. The front draft lugs are designed to receive a cast steel coupler striking plate and cast steel carry iron; the latter is secured by a 1⅜-in. bolt passing through the lower front corners of the draft lugs. The cast steel striking plate has an extension arm for the angle cock bracket, so arranged that the bracket may be located correctly for either 9¼-in. or 12-in. coupler heads.

The cars are equipped with friction draft gear, cast steel yokes and 5-in. by 1⅛-in. coupler yoke keys.

Trucks

The cars are equipped with C.P.R. standard 40-ton arch bar type trucks, having Simplex bolsters designed to support the center pin in the truck bolster. The truck columns are of the Harigan pinless brake hanger bracket type. Side bearings are the roller type located 27-in. from the center of the car.

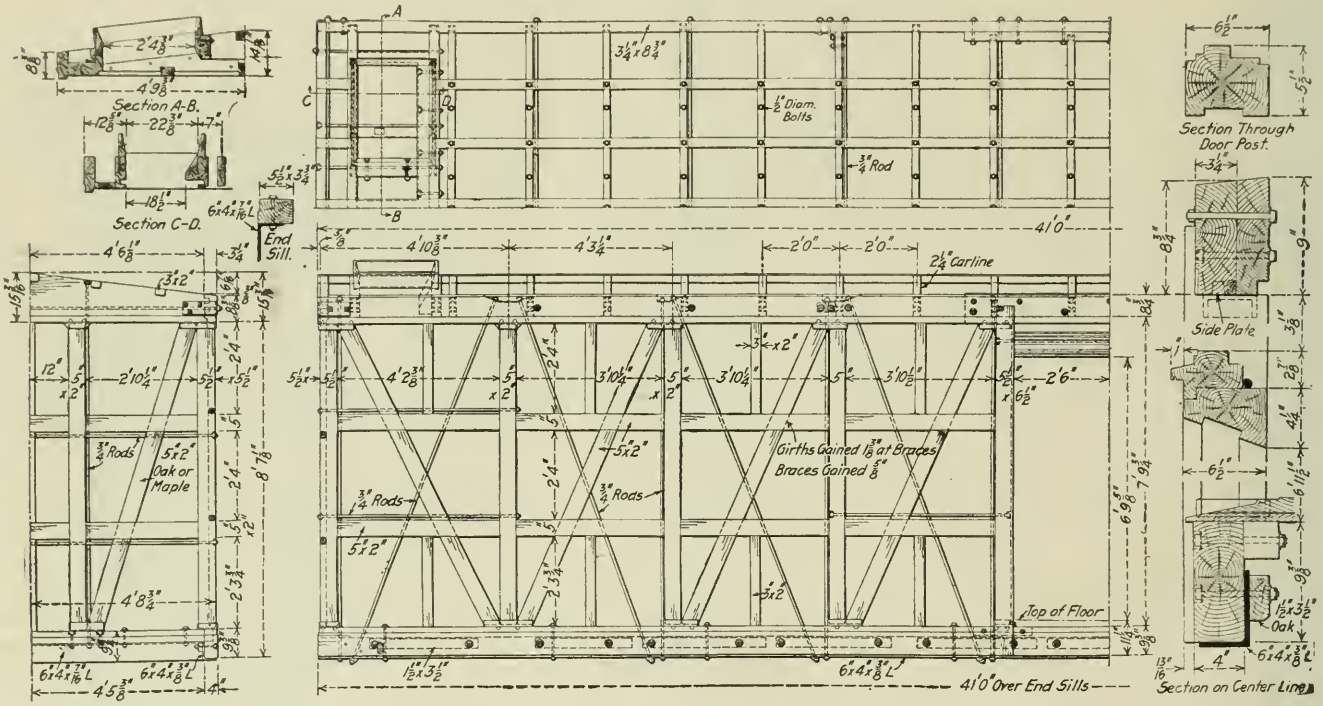
Adjustment of brake piston travel is provided for on the floating lever fulcrum, making it unnecessary to change the adjustment on the trucks after they have been correctly adjusted when the car is built, except that variations in the dimensions of brake beams and rods applied in renewals may require the truck levers to be readjusted.

The brake mast is 1¼-in. square and is fitted with a snow and ice proof ratchet and dog.

Freight Traffic Movement and Car Performance in August

THE NET TON MILES of revenue and non-revenue freight handled during the month of August decreased 10.8 per cent as compared with August, 1918, according to the monthly report of the Operating Statistics Section. The net ton miles per mile of road per day were 5,075 miles, as compared with 5,691 in August of last year. Train mileage decreased 11.2 per cent and car miles decreased 6.7 per cent, while the percentage of loaded to total car miles increased 4 per cent, from 67.7 to 74. The net ton miles per train mile increased from 737 to 740, but the net ton miles per loaded car mile decreased from 30.4 to 28. The car miles per car day decreased from 25.9 to 24.2. The net ton miles per car day decreased 11 per cent. The percentage of unserviceable freight cars was 9.2, as compared with 7 in August, 1918, and as compared with 8.7 in July of this year. The total number of serviceable cars shows a decrease from 2,292,372 to 2,241,609, while the number of unserviceable cars was approximately 226,000, as compared with 171,000 in August, 1918.

For the eight months of the calendar year ended August 31 the net ton miles show a decrease of 13½ per cent and the net ton miles per car day of 13.1 per cent. The net ton miles per train mile show an increase from 670 to 685 and the net ton miles per loaded car mile show a decrease from 28.9 to 27.8. The car miles per car day for this period average 22.2, as compared with 24.4 in the corresponding period of 1918.



Superstructure Frame of the Canadian Pacific Refrigerator Cars

Steam Railroad Statistics to December 31, 1918

Summaries of Reports of Class 1 Corporations and of Federal Operations as Compiled by I. C. C.

THE INTERSTATE COMMERCE COMMISSION has issued tables giving summary of the annual reports of Class 1 steam roads for the calendar year 1918, prepared for use in the Preliminary Abstract of Statistics of Common Carriers, the appearance of which has been greatly delayed due to unusual delay on the part of carriers in filing their annual reports for 1918.

The summary covers only Class 1 roads, excluding switching and terminal companies, and is in three parts:

1. Summary of the reports of the Class 1 corporations, whose property was operated by the United States Railroad Administration.

2. Summary of the reports of federal operations, Class 1 roads.

SUMMARY NO. 1.—GENERAL BALANCE SHEET, INCOME ACCOUNT, PROFIT AND LOSS ACCOUNT, OPERATING REVENUES, OPERATING EXPENSES, AND MILEAGE; FROM THE CORPORATE REPORTS OF CLASS I ROADS, THE PROPERTY OF WHICH WAS OPERATED BY THE UNITED STATES RAILROAD ADMINISTRATION FOR THE YEAR ENDED DECEMBER 31, 1918

No.	Item	Total all districts	Eastern district, Corporate	Southern district, Corporate	Western district, Corporate
	ROAD				
1.	Average number of miles of road operated, 1918	.....	.....	.....	.....
2.	Average number of miles of road operated, 1917	227,403.62	55,961.05	43,025.76	128,416.81
3.	Number of miles of road owned on December 31, 1918	178,047.84	35,807.61	35,308.24	106,931.99
4.	Number of miles of road owned on December 31, 1917	177,754.99	35,733.97	35,069.73	106,951.29
	GENERAL BALANCE SHEET				
5.	Investment in road and equipment	$14,697,277,741	$5,118,721,139	$2,548,001,522	$7,030,555,080
6.	Improvements on leased railway property	269,966,452	220,461,734	35,687,985	13,816,733
7.	Investments in affiliated companies	3,761,463,367	1,506,019,698	401,352,380	1,854,091,289
8.	Other investments	975,925,019	468,717,734	92,289,488	414,917,797
9.	Cash	95,483,332	33,596,004	10,543,616	51,343,712
10.	Material and supplies	5,558,129	3,871,834	*7	1,686,302
11.	Other current assets	762,629,299	295,129,524	127,632,019	339,867,756
12.	Deferred assets { U. S. or Company	1,608,478,374	748,597,448	260,939,362	598,941,564
	{ Other	128,737,477	50,537,532	29,414,856	48,785,089
13.	Unadjusted debits	250,007,961	66,534,996	31,870,879	151,602,086
14.	Total	22,555,527,151	8,512,187,643	3,537,732,100	10,505,607,408
15.	Total stock	7,124,019,210	2,612,313,620	1,029,636,400	3,482,069,190
16.	Governmental grants	350,414	120,742	128,897	100,775
17.	Total long-term debt	9,166,838,894	3,243,082,759	1,522,161,689	4,401,594,446
18.	Current liabilities	1,018,101,900	533,349,877	124,225,492	360,526,531
19.	Deferred liabilities { U. S. or Company	1,347,434,012	579,793,155	222,692,276	544,948,581
	{ Other	122,787,696	57,462,724	19,129,165	46,195,807
20.	Accrued depreciation	743,825,228	306,145,457	154,519,229	283,160,542
21.	Other unadjusted credits	391,355,448	159,011,290	61,157,356	171,186,802
22.	Additions to property through income and surplus	810,991,075	477,424,787	95,388,452	238,177,836
23.	Funded debt retired through income and surplus	50,026,068	19,523,475	291,109	30,211,484
24.	Sinking fund reserves	65,599,237	20,932,809	2,869,335	41,797,093
25.	Miscellaneous fund reserves	47,711,734	38,809,397	99,461	8,802,876
26.	Appropriated surplus not specifically invested	114,577,864	8,064,318	3,746,373	102,767,173
27.	Profit and loss—credit balance	1,551,908,371	456,153,233	301,686,866	794,068,272
	INCOME ACCOUNT FOR THE YEAR				
28.	Railway operating revenues	746,784	166,989	377,193	202,602
29.	Railway operating expenses	9,986,779	3,287,149	951,153	5,748,477
30.	Net revenue from railway operations	*9,239,995	*3,120,160	*573,960	*5,545,875
31.	Railway tax accruals	37,341,921	12,992,833	6,528,959	17,820,129
32.	Uncollectible railway revenues	3,028	2,821	6	201
33.	Railway operating income	*46,584,944	*16,115,814	*7,102,925	*23,366,205
34.	Revenues from miscellaneous operations	60,482,011	39,924,517	.....	20,557,494
35.	Expenses of miscellaneous operations	50,243,480	34,303,018	.....	15,940,462
36.	Net revenue from miscellaneous operations	10,238,531	5,621,499	.....	4,617,032
37.	Taxes on miscellaneous operating property	2,247,988	1,998,662	.....	249,326
38.	Miscellaneous operating income	7,990,543	3,622,837	.....	4,367,706
39.	Total operating income	*38,594,401	*12,492,977	*7,102,925	*18,998,499
40.	Hire of freight cars—credit balance	228,290	.....	227,858	432
41.	Rent from locomotives	.....	.....	.....	.....
42.	Rent from other equipment	6,420	.....	6,420	.....
43.	Joint facility rent income	.....	.....	.....	.....
44.	Income from lease of road	890,632,748	356,183,468	137,509,993	396,939,287
45.	Miscellaneous rent income	11,163,492	6,178,482	1,368,271	3,616,739
46.	Miscellaneous non-operating physical property	3,521,241	1,622,053	606,203	1,292,985
47.	Separately operated properties—profit	2,201,074	1,871,140	.....	329,934
48.	Dividend income	91,229,249	37,444,601	8,237,382	45,547,266
49.	Income from funded securities	46,417,477	6,963,279	7,561,235	31,892,963
50.	Income from unfunded securities and accounts	19,433,754	12,268,209	2,127,856	5,037,689
50½.	Miscellaneous income	15,977,891	2,947,031	2,785,347	10,245,513
51.	All other non-operating income	5,463,493	4,610,817	172,526	680,150
52.	Total non-operating income	1,086,275,129	430,089,080	160,603,091	495,582,958
53.	Gross income	1,047,680,728	417,596,103	153,500,166	476,584,459
54.	Hire of freight cars—debit balance	814,052	806,639	.....	7,413
55.	Rent for locomotives	208,455	208,455	.....	.....
56.	Rent for other equipment	107,966	98,311	9,655	.....
57.	Joint facility rents	8,421	8,423	*2	.....
58.	Rent for leased roads	126,637,099	73,166,107	7,887,567	45,583,425
59.	Miscellaneous rents	5,137,891	3,477,824	339,530	1,320,537
60.	Miscellaneous tax accruals	2,528,045	1,348,335	56,834	1,122,876
61.	Separately operated properties—loss	3,328,820	2,923,869	6,820	399,131
62.	Interest on funded debt	392,261,972	139,118,561	70,499,142	182,644,269
63.	Interest on unfunded debt	28,846,922	18,126,940	1,548,404	9,171,578
63½.	Miscellaneous income charges	84,453,837	36,821,684	8,331,569	39,300,584
64.	All other income deductions	3,811,396	1,846,330	413,408	1,551,658
65.	Total deductions from gross income	648,144,876	277,950,478	89,092,927	281,101,471
66.	Net income	399,535,852	139,645,625	64,407,239	195,482,988
67.	Income applied to sinking and other reserve funds	8,735,897	5,582,988	428,863	2,724,046
68.	Dividend appropriations of income	212,347,007	71,400,296	6,130,866	134,815,845
69.	Income appropriated for investment in physical property	27,437,682	9,113,229	819,997	17,504,456
70.	Stock discount extinguished through income	.....	.....	.....	.....
71.	Miscellaneous appropriations of income	486,019	386,894	85,631	13,494
72.	Total appropriations of income	249,006,605	86,483,407	7,465,357	155,057,841
73.	Income balance transferred to profit and loss	150,529,247	53,162,218	56,941,882	40,425,147

*Represents deficit, loss, or other reverse item.

No.	Item	Total all districts	Eastern district, Corporate	Southern district, Corporate	Western district, Corporate
	PROFIT AND LOSS ACCOUNT				
1.	Credit balance transferred from income	$152,292,646	$54,925,617	$56,941,882	$40,425,147
2.	Profit on road and equipment sold	764,423	226,828	156,931	380,664
3.	Delayed income credits	2,511,660	222,096	1,049,863	1,239,701
4.	Unrefundable overcharges	793,316	253,481	21,404	518,431
5.	Donations	1,140,366	264,097	306,442	569,827
6.	Miscellaneous credits	37,246,956	8,924,570	16,876,570	11,445,816
7.	Total credits during year	194,749,367	64,816,689	75,353,092	54,579,586
8.	Surplus applied to sinking and other reserve funds	2,053,889	1,678,599	169,415	205,875
9.	Dividend appropriations of surplus	61,090,543	24,823,532	31,944,462	4,322,549
10.	Surplus appropriated for investment in physical property	14,000,486	883,657	10,084,007	3,032,822
11.	Stock discount extinguished through surplus	.....	.....	.....	.....
12.	Debt discount extinguished through surplus	4,310,837	1,073,830	994,707	2,242,300
13.	Miscellaneous appropriations of surplus	1,142,120	290,290	851,830	.....
14.	Loss on retired road and equipment	6,704,083	1,513,788	337,122	4,853,173
15.	Delayed income debits	7,220,302	5,231,411	1,851,099	137,792
16.	Miscellaneous debits	44,060,905	15,248,457	15,375,357	13,437,091
17.	Total debits during year	140,583,165	50,743,564	61,607,999	28,231,602
18.	Net increase during year	54,166,202	14,073,125	13,745,093	26,347,984
19.	Balance at beginning of year	1,497,742,170	442,080,108	287,941,774	767,720,288
20.	Balance at close of year	1,551,908,372	456,153,233	301,686,867	794,068,272
	RAILWAY OPERATING REVENUES				
21.	Freight	*50,276	*50,345	*1	70
22.	Passenger	598,017	223,256	374,926	*165
23.	Excess baggage	2,142	*1	2,143	.....
24.	Sleeping car	.....	.....	.....	.....
25.	Parlor and chair car	*5	*5	.....	.....
26.	Mail	154	154	.....	.....
27.	Express	202,263	*381	.....	202,644
28.	Other passenger-train	.....	.....	.....	.....
29.	Milk	76	.....	76	.....
30.	Switching	*4,855	*4,855	.....	.....
31.	All other rail-line revenue	.....	.....	.....	.....
32.	Total rail-line transportation revenue	747,516	167,823	377,144	202,549
33.	Total water-line transportation revenue	.....	.....	.....	.....
34.	Total incidental operating revenue	*1,082	*1,184	49	53
35.	Joint facility—Cr.	352	352	.....	.....
36.	Joint facility—Dr.	1	1	.....	.....
37.	Total railway operating revenues	746,785	166,990	377,193	202,602
	RAILWAY OPERATING EXPENSES				
38.	Total maintenance of way and structures	203,679	123,148	1,028	79,503
39.	Total maintenance of equipment	2,323,398	74,487	20,665	2,228,246
40.	Total traffic	93,156	124	8,113	84,919
41.	Total transportation—rail line	313,076	269,639	40,415	3,022
42.	Total transportation—water line	.....	.....	.....	.....
43.	Total miscellaneous operations	1,465	1,163	.....	302
44.	Total general expenses	7,052,109	2,818,692	880,932	3,352,485
45.	Transportation for investment—Cr.	103	103	.....	.....
46.	Grand total railway operating expenses	9,986,780	3,287,150	951,153	5,748,477

*Represents deficit, loss or other reverse item.

3. Summary of the reports of Class 1 roads not under federal control.

The income from lease of road received by the corporations under federal control is shown as $890,632,748. This includes the rental from the United States government so far as accrued by the corporations on their books.

The profit and loss credit balance of the Class 1 corporations, including those not under federal control, at the close of the year 1918 was $1,536,805,230, as compared with a corresponding amount of $1,473,359,933 shown in the Preliminary Abstract for 1917.

The dividends declared from income and surplus in 1918 by these Class 1 corporations amounted to $275,375,300 as against $321,055,780 for 1917. The net income of Class 1 corporations amounted to $398,659,958 as against $589,044,923 in 1917.

SUMMARY NO. 2.—GENERAL BALANCE SHEET, INCOME ACCOUNT, PROFIT AND LOSS ACCOUNT, OPERATING REVENUES, OPERATING EXPENSES, MILEAGE, EQUIPMENT AND CERTAIN STATISTICS OF RAIL-LINE OPERATIONS; FROM REPORTS OF OPERATIONS OF CLASS I ROADS BY THE UNITED STATES RAILROAD ADMINISTRATION, FOR THE YEAR ENDED DECEMBER 31, 1918

No.	Item	Totals, all districts	Eastern district, Federal	Southern district, Federal	Western district, Federal
	ROAD				
1.	Average number of miles of road operated, 1918	230,422.19	58,639.30	43,124.30	128,658.59
	GENERAL BALANCE SHEET				
7.	Investments in affiliated companies	$1,388,816	$5,515	$140,900	$1,242,401
8.	Other investments	27,354,578	4,466,819	6,860,615	16,027,144
9.	Cash	207,100,510	99,132,105	32,953,790	75,014,615
10.	Material and supplies	621,712,766	273,890,851	95,688,738	252,133,177
11.	Other current assets	640,029,821	298,930,292	119,911,316	221,188,213
12.	Deferred assets { U. S. or company	1,370,840,494	607,286,690	245,146,095	518,407,709
	{ Other	47,986,982	15,544,762	5,769,070	26,673,150
13.	Unadjusted debits	450,587,482	181,338,864	65,503,607	203,745,011
14.	Total	3,367,001,449	1,480,595,898	571,974,131	1,314,431,420
17.	Total long-term debt	1,635,445	519,526	.....	1,115,919
18.	Current liabilities	735,014,739	338,297,184	118,215,970	278,501,585
19.	Deferred liabilities { U. S. or company	1,389,112,852	661,354,383	223,696,305	503,562,164
	{ Other	44,414,811	10,210,464	8,815,706	25,388,641
20.	Accrued depreciation	109,491,009	48,044,204	23,039,547	38,407,258
21.	Other unadjusted credits	331,407,779	182,516,832	45,183,104	103,707,843
22.	Additions to property through income and surplus	70	.....	70	.....
27.	Profit and loss—credit balance	755,924,744	239,153,305	153,023,429	363,748,010
	INCOME ACCOUNT FOR THE YEAR				
28.	Railway operating revenues	4,850,991,013	2,201,716,136	784,431,573	1,864,843,304
29.	Railway operating expenses	3,948,132,199	1,883,841,833	609,124,537	1,455,165,829
30.	Net revenue from railway operations	902,858,814	317,874,303	175,307,036	409,677,475
31.	Railway tax accruals	183,798,845	72,726,127	27,669,099	83,403,619
32.	Uncollectible railway revenues	601,662	174,778	126,778	300,106
33.	Railway operating income	718,458,307	244,973,398	147,511,159	325,973,750
34.	Revenues from miscellaneous operations	1,111,209	.....	722,345	388,864
35.	Expenses of miscellaneous operations	1,105,331	.....	716,467	388,864
36.	Net revenue from miscellaneous operations	5,878	.....	5,878	.....
37.	Taxes on miscellaneous operating property	3,593	.....	3,593	.....
38.	Miscellaneous operating income	2,285	.....	2,285	.....
39.	Total operating income	718,460,592	244,973,398	147,513,444	325,973,750

		Totals, all districts	Eastern district, Federal	Southern district, Federal	Western district, Federal
40.	Hire of freight cars—credit balance	18,281,832	5,383,069	4,815,173	8,083,590
41.	Rent from locomotives	14,034,135	5,020,936	3,229,838	5,783,361
42.	Rent from other equipment	14,162,870	5,736,310	1,444,439	6,982,121
43.	Joint facility rent income	24,764,778	11,458,428	3,324,006	9,982,344
45.	Miscellaneous rent income	8,606	2,656	3,161	2,789
46.	Miscellaneous non-operating physical property	52,363	657	48,472	3,234
47.	Separately operated properties—profit	21,748	.....	2,614	19,134
49.	Income from funded securities	119,862	*1,460	78,009	43,313
50.	Income from unfunded securities and accounts	8,954,769	5,405,024	1,387,962	2,161,783
50½.	Miscellaneous income	93,954,358	40,037,046	10,118,631	43,798,681
51.	All other non-operating income	45,093	.....	.....	45,093
52.	Total non-operating income	174,406,414	73,042,665	24,452,305	76,905,443
53.	Gross income	892,861,006	318,016,064	171,965,749	402,879,193
54.	Hire of freight cars—debit balance	35,791,216	27,010,695	2,953,364	5,827,157
55.	Rent for locomotives	14,901,558	8,083,701	3,526,607	3,291,250
56.	Rent for other equipment	11,062,880	6,746,652	1,536,518	2,779,710
57.	Joint facility rents	45,391,048	21,269,387	5,622,201	18,499,460
58.	Rent for leased roads	75	75	.....	.....
59.	Miscellaneous rents	131,549	104,649	693	26,207
60.	Miscellaneous tax accruals	.....	.....	.....	.....
61.	Separately operated properties—loss	53,256	53,256	.....	.....
62.	Interest on funded debt	6,722	921	10	5,791
63.	Interest on unfunded debt	476,779	242,800	92,991	140,988
63½.	Miscellaneous income charges	15,330,682	1,515,207	3,430,977	10,384,498
64.	All other income deductions	.....	.....	.....	.....
65.	Total deductions from gross income	123,145,765	65,027,343	17,163,361	40,955,061
66.	Net income	769,715,241	252,988,721	154,802,388	361,924,132
73.	Income balance transferred to profit and loss	769,715,241	252,988,721	154,802,388	361,924,132

*Represents deficit, loss, or other item.

Profit and Loss Account

1.	Credit balance transferred from income	$768,806,493	$252,079,973	$154,802,388	361,924,132
2.	Profit on road and equipment sold	177,419	94,579	7,027	75,813
3.	Delayed income credits	.....	.....	.....	.....
4.	Unrefundable overcharges	768,037	262,289	45,350	460,398
5.	Donations	5,950	3,358	1,066	1,526
6.	Miscellaneous credits	2,286,911	532,879	264,486	1,489,546
7.	Total credits during year	772,044,810	252,973,076	155,120,317	363,951,415
8.	Surplus applied to sinking and other reserve funds	.....	.....	.....	.....
9.	Dividend appropriations of surplus	.....	.....	.....	.....
10.	Surplus appropriated for investment in physical property	70	.....	70	.....
11.	Stock discount extinguished through surplus	.....	.....	.....	.....
12.	Debt discount extinguished through surplus	.....	.....	.....	.....
13.	Miscellaneous appropriations of surplus	.....	.....	.....	.....
14.	Loss on retired road and equipment	875,366	643,059	37,216	195,091
15.	Delayed income debits	692	217	.....	475
16.	Miscellaneous debits	15,243,938	13,176,497	2,059,602	7,839
17.	Total debits during year	16,120,066	13,819,773	2,096,888	203,405
18.	Net increase during year	755,924,744	239,153,305	153,023,429	363,748,010
19.	Balance at beginning of year	.....	.....	.....	.....
20.	Balance at close of year	755,924,744	239,153,305	153,023,429	363,748,010

Railway Operating Revenues

21.	Freight	3,417,672,172	1,549,592,398	544,591,634	1,323,488,140
22.	Passenger	1,027,014,626	444,718,356	188,557,241	393,739,029
23.	Excess baggage	5,910,514	2,015,079	954,660	2,940,775
24.	Sleeping car	2,329,728	.....	123,294	2,206,434
25.	Parlor and chair car	941,011	242,534	163,082	535,395
26.	Mail	53,341,605	20,544,224	8,578,352	24,219,029
27.	Express	125,710,500	61,631,380	16,630,118	47,449,002
28.	Other passenger-train	7,846,683	2,703,509	1,065,828	4,077,346
29.	Milk	19,157,627	14,585,253	817,792	3,754,582
30.	Switching	43,844,039	23,252,971	5,100,788	15,490,280
31.	All other rail-line revenue	9,990,570	7,175,297	955,106	1,860,167
32.	Total rail-line transportation revenue	4,713,759,075	2,126,461,001	767,537,895	1,819,760,179
33.	Total water-line transportation revenue	14,999,845	5,283,929	.....	9,715,916
34.	Total incidental operating revenue	117,720,434	67,745,636	15,676,990	34,297,808
35.	Joint facility—Cr	6,000,520	3,134,303	1,487,939	1,378,278
36.	Joint facility—Dr	1,488,860	908,732	271,251	308,877
37.	Total railway operating revenues	4,850,991,014	2,201,716,137	784,431,573	1,864,843,304

Railway Operating Expenses

38.	Total maintenance of way and structures	644,606,618	283,038,839	99,159,818	262,407,961
39.	Total maintenance of equipment	1,094,825,873	531,810,501	175,351,777	387,663,595
40.	Total traffic	48,263,234	20,777,136	9,136,525	18,349,573
41.	Total transportation—rail line	2,007,862,605	977,531,536	303,725,857	724,605,212
42.	Total transportation—water line	9,929,740	3,369,819	.....	6,559,921
43.	Total miscellaneous operations	38,618,897	18,790,345	3,811,675	16,016,877
44.	Total general expenses	110,064,096	49,290,850	16,824,021	43,949,225
45.	Transportation for investment—Cr	6,038,863	767,193	885,136	4,386,534
46.	Grand total railway operating expenses	3,948,132,200	1,883,841,833	609,124,537	1,455,165,830
47.	Operating ratio (ratio of op. exps. to op. revs.)—per cent	81.39	85.56	77.65	78.03

Road Operated at Close of Year

48.	Miles of road	230,299.25	58,622.68	42,864.59	128,811.98
49.	Miles of second main track	30,472.67	16,860.41	4,033.91	9,578.35
50.	Miles of third main track	2,816.28	2,500.33	42.42	273.53
51.	Miles of fourth main track	2,000.07	1,791.71	29.20	179.16
52.	Miles of all other main tracks	229.76	46.44	159.59	23.73
53.	Miles of yard track and sidings, etc	102,080.90	41,704.45	16,336.96	44,039.49
54.	Total miles of road operated (all tracks)	367,898.93	121,526.02	63,466.67	182,906.24

Freight Traffic (Tonnage Originating on Road)

55.	Total products of agriculture	116,713,747	29,051,534	16,153,805	71,508,408
56.	Total products of animals	35,806,611	11,653,396	3,412,650	20,740,565
57.	Total products of mines	712,259,938	379,307,905	135,391,864	197,560,169
58.	Total products of forests	97,658,170	19,993,139	30,934,825	46,730,206
59.	Total manufactures	181,676,957	113,888,987	24,494,234	43,293,736
60.	Miscellaneous commodities (carload rates)	46,683,541	31,476,018	7,625,594	7,581,929
61.	L. C. L. goods not distributed above	53,580,396	28,052,375	8,411,869	17,116,152
62.	Grand total, all commodities	1,244,379,360	613,423,354	226,424,841	404,531,165

Statistics of Rail Line Operations

Train-miles

63.	Freight—ordinary	599,258,043	241,623,547	118,766,581	238,862,915
64.	Freight—light	12,976,642	6,283,438	1,995,571	4,697,633
65.	Passenger	526,320,026	214,655,652	91,522,765	220,141,609
66.	Mixed	28,553,638	4,214,677	4,914,006	19,424,955
67.	Special	1,449,779	775,443	127,581	546,755
68.	Total transportation service	1,168,558,128	467,557,757	217,326,504	483,673,867
69.	Work service	43,912,850	22,843,966	7,192,343	13,876,541

No.	Item	Totals, all districts	Eastern district, Federal	Southern district, Federal	Western district, Federal
	Locomotive-miles				
1.	Freight—principal	616,810,600	251,261,053	121,081,625	244,467,922
2.	Freight—helper	54,372,810	32,135,455	10,198,338	12,038,217
3.	Freight—light	36,379,216	19,719,302	3,590,285	13,069,629
4.	Total freight	707,561,826	303,115,810	134,870,248	269,575,768
5.	Passenger—principal	511,737,832	207,080,027	91,569,734	213,088,071
6.	Passenger—helper	9,996,972	4,441,663	1,369,947	4,185,362
7.	Passenger—light	14,030,124	7,896,507	1,613,028	4,520,589
8.	Total passenger	535,764,928	219,418,197	94,552,709	221,794,022
9.	Total mixed train	29,478,342	4,329,621	4,992,384	20,156,337
10.	Total special	1,583,791	795,054	142,673	646,064
11.	Train switching	48,060,592	27,038,046	5,702,850	15,319,696
12.	Yard switching—freight	337,500,767	187,565,946	49,301,683	100,633,138
13.	Yard switching—passenger	24,167,842	14,166,813	2,837,704	7,163,325
14.	Total transportation service	†1,687,755,773	‡758,952,570	§293,514,853	635,288,350
15.	Work service	54,764,257	30,243,055	8,398,698	16,122,504
	Car-miles				
16.	Freight train—loaded	14,823,569,433	6,367,268,466	2,647,941,176	5,808,359,791
17.	Freight train—empty	7,066,107,922	3,178,311,905	1,339,521,311	2,548,274,706
18.	Freight train—caboose	613,654,420	247,329,032	121,262,492	245,062,896
19.	Total freight train	22,503,331,775	9,792,909,403	4,108,724,979	8,601,697,393
20.	Passenger train—passenger	1,342,710,352	587,173,444	238,334,800	517,202,108
21.	Passenger train—sleeping, parlor and observation	733,611,096	267,546,555	126,645,325	339,419,216
22.	Passenger train—dining	107,192,787	33,508,124	15,917,748	57,766,915
23.	Passenger train—other	1,044,056,243	438,640,896	164,942,653	440,472,694
24.	Total passenger train	3,227,570,478	1,326,869,019	545,840,526	1,354,860,933
25.	Mixed train—freight—loaded	133,607,855	16,625,485	19,002,183	97,980,187
26.	Mixed train—freight—empty	59,460,172	7,884,679	8,390,076	43,185,417
27.	Mixed train—caboose	3,536,602	528,068	418,929	2,589,605
28.	Mixed train—passenger	41,397,889	6,205,557	8,465,951	26,726,381
29.	Mixed train—sleeping, parlor and observation	2,961,248	303,758	580,988	2,076,502
30.	Mixed train—dining	21,035	8,315	1,517	11,203
31.	Mixed train—other passenger train	10,869,384	2,168,290	1,647,538	7,053,556
32.	Total mixed train	251,854,185	33,724,152	38,507,182	179,622,851
33.	Total special train	18,584,191	9,199,689	1,433,175	7,951,327
34.	Total transportation service	26,001,340,629	11,162,702,263	4,694,505,862	10,144,132,504
35.	Work service	178,380,421	57,391,281	34,909,730	86,079,410
	Miscellaneous				
36.	Tons—revenue freight	2,269,861,026	1,314,179,513	341,294,735	614,386,778
37.	Tons—non-revenue freight	234,150,197	99,088,444	41,118,063	93,943,690
38.	Ton-miles—revenue freight	398,442,019,620	185,461,512,568	72,101,218,370	140,879,288,682
39.	Ton-miles—non-revenue freight	34,537,001,168	10,687,229,012	6,376,550,032	17,473,222,124
40.	Passengers carried—revenue	1,080,484,737	673,197,946	145,482,405	261,804,386
41.	Passenger-miles—revenue	42,566,342,892	19,500,136,137	7,405,114,433	15,661,092,322
42.	Ton-miles—revenue freight—per mile of road	1,729,183	3,162,751	1,671,939	1,094,985
43.	Ton-miles—revenue freight—per train-mile	621.80	735.59	573.71	535.69
44.	Ton-miles—revenue freight—per loaded car-mile	26.64	29.05	27.04	23.85
45.	Passenger-miles—revenue—per train-mile	76.71	89.09	76.79	65.37
46.	Passenger-miles—revenue—per car-mile	20.07	22.64	19.80	17.69
47.	Miles hauled—revenue freight	175.54	141.12	211.26	229.30
48.	Miles carried—revenue passengers	39.40	28.97	50.90	59.82
49.	Revenue per ton of freight	$1.50567	$1.17913	$1.59566	$2.15416
50.	Revenue per ton-mile of freight	$0.00858	$0.00836	$0.00755	$0.00939
51.	Revenue per passenger	$0.95051	$0.66061	$1.29608	$1.50394
52.	Revenue per passenger-mile	$0.02413	$0.02281	$0.02546	$0.02514
	Equipment (Owned or Leased) in Service at Close of Year				
53.	Steam locomotives—number available for service	62,988	29,070	10,411	23,507
54.	Steam locomotives—total tractive capacity (pounds)	2,200,964,462	1,052,489,873	366,242,100	782,232,489
55.	Other locomotives—number available for service	342	278	112	52
56.	Box cars—number	1,032,176	429,989	168,284	433,903
57.	Flat cars—number	110,201	27,899	27,029	55,273
58.	Stock cars—number	86,931	13,841	9,870	63,220
59.	Coal cars—number	917,734	583,253	185,619	148,862
60.	Tank cars—number	9,792	486	27	9,279
61.	Refrigerator cars—number	62,841	24,757	6,751	31,333
62.	Other freight-carrying cars—number	86,633	26,298	4,196	56,139
63.	All freight-carrying cars—number	2,306,308	1,106,523	401,776	798,009
64.	Total passenger-carrying cars—number	35,429	17,873	4,817	12,739
65.	Other passenger-train cars—number	18,184	9,263	2,594	6,327
66.	Total number of passenger-train cars	53,613	27,136	7,411	19,066

†Includes 3,637,685 miles in yard-switching service.
‡Includes 2,523,083 miles in yard-switching service.
§Includes 1,114,602 miles in yard-switching service.

The interest on funded and unfunded debt accrued by the Class 1 corporations amounted to $425,774,298 as compared with $418,229,507 in the calendar year 1917.

The corporations, although they did not operate their properties, show some entries against operating revenues and expenses. This is explained by the fact that some of the accounts of 1917 were not settled until after the close of that year. Most of the overlap items, however, appear in the income and profit and loss accounts.

The summary of federal operations is an aggregate of the reports of the individual operating units and does not include the expenses of the regional and central offices of the United States Railroad Administration, amounting to $3,647,143.23. No showing is made of the general financial transactions of the Railroad Administration, which must be obtained from reports by the director general of railroads.

The aggregate income accounts of the Class 1 operating roads under federal control show an operating income as defined in the federal control act of $682,555,220. The standard return for these roads is approximately $891,000,000. The standard return is not entered in individual reports of federal operations. Attention is called to the items of $93,954,358, miscellaneous income, and $15,330,682, miscellaneous income charges, which include the 1917 overlap items of operating expenses and revenues passing through the federal books.

The summaries covering the corporate reports and those of federal operating are given in this article.

Summary No. 3 covering the Class 1 roads not operated by the Railroad Administration covers 2,929 miles of road operated, which had railway operating revenues amounting to $29,211,246, railway operating expenses amounting to $23,677,956, and railway operating income amounting to $3,144,613.

The Coaling plant which is to be erected in the harbor of Melbourne, Australia, when completed will consist of four electrical hoists with grab buckets, which pick up four or five tons of coal at a time and deliver it to mechanically operated conveyors, which in turn, will carry to bins of 30,000 tons capacity.

Putting Our Railways on a Business Basis*

Factors Are Suggested Which Are Vital to a Satisfactory Solution of the Railway Problem

By Alba B. Johnson
President Railway Business Association.

WHAT LEGISLATION is to be passed in order to make it possible for the owners to operate their railroads without bankruptcy, has become a question pressing upon the public attention more strongly than any other at this time, save only that of the League of Nations and the Peace Treaty. We have had two years in which to think it over; yet when the time is approaching, not a matter of months, but a matter of weeks, when this problem must be solved, we find ourselves with some 36 plans offered, of which no less than seven have become widely known. The voice of the business men of the United States has been a discordant medley. Every conceivable plan has been urged for consideration. The Railway Business Association has prepared no plan, but has felt that there are certain principles which are involved, and if these principles are adopted, we care not what plan embodies them.

National Chamber Referendum

The directors of the Chamber of Commerce of the United States received the report of their Railroad Committee on the first of May last. The polls closed on the referendum July 24. The voice of the country was almost unanimous in approving such of these recommendations as favored private operation of railways and certain other principles; but since July 24, although this question changes its aspect daily, the Chamber of Commerce has been constrained to restrict its discussion to the precise recommendations upon which the constituent bodies voted in July.

This restriction is due to a rule of the Chamber which the Railway Business Association voted for when it was adopted and which we approve now. We would deplore any impairment of the system under which after deliberate study by a competent committee upon a subject of first national importance the Chamber submits the fundamentals to the business organizations of the country for a dignified and impressive expression of deliberate and enlightened opinion, the Chamber never speaking business sentiment without having ascertained it. No doubt some of the constituent bodies misunderstand this process. There is evidence that many of them expect the Chamber officers to go outside the scope defined in the referendum, believe that it does so, and fold their hands in confidence that great national measures will be carried to enactment with constant and always up-to-the-minute participation by organized business without their doing anything after voting.

That the Chamber recognized the need for supplementary machinery was shown when it authorized the calling of the National Transportation Conference, conducted under auspices of the Chamber but in no way authorized to speak for it. All the members of the Railroad Committee were appointed members of the Conference and several of them participated actively. The result was one of the seven leading plans—a plan containing matter in several aspects vitally wider than the referendum. The conferees sat as individuals. They bore no commission from organizations. They had no ways or means of rallying the constituents of the Chamber to their plan.

*An address delivered before the American Mining Congress at St. Louis, November 17, 1919.

Cooperative Committee

In these circumstances Harry H. Merrick, president of the Chicago Association of Commerce and also of the Mississippi Valley Association, arranged for a conference of officers of organizations in Atlantic City at the time of the International Trade Conference in October. Among those who accepted the invitation to be present were National Chamber officers—the chairman of the executive committee, a director, the chairman of the Railroad Committee and the general secretary. These officers were asked whether they saw any objection to the formation of a committee, representing constituent bodies, to discuss principles not inconsistent with the Chamber referendum and others not dealt with by it; and if so whether the Chamber would prefer or not to act as recipient of replies to a circular inviting cooperation from associations.

As to the second question, attention was called to the difficulty, as shown by experience, of making members of Congress understand the distinction between official recommendations of the Chamber and those of groups to which it merely lends its good offices; and it was suggested that the proposed committee keep itself wholly independent.

As to the first main question, a statement was made and was subsequently used by the Chamber in answering inquiries by constituent bodies, that the proposed independent activity of a group of associations was deemed entirely proper.

The Atlantic City conferees, including officers of four national and seven city associations, agreed to constitute themselves into what is called the Cooperative Committee on Railway Legislation. The chairman is Mr. Merrick.

Recommendations

What will the Cooperative Committee urge upon Congress? This is for the Committee to say; but I hope they will put some questions to all those who are engaged in agriculture, mining, industry or commerce. These are the questions:

I. Defective Governmental Policy

Do you not believe that apart from misdeeds of railway managers and financiers, which should be restrained, and apart from their assertions of poverty, which are a matter of business justment, the impairment of railroad credit has been in part due to the policy of the federal and state governments in the regulation of rates?

Managers Made Scape-Goat

In support of the assertion that the railroads were themselves responsible for the impairment in their credit, it has been declared that railroad-wrecking had spread its odium over properties otherwise sound and that the managers by their calamity-howling had "beared" their own credit; so that if these two elements were eliminated no change in government regulation of rates would be necessary. But investors do not invest on "front" or refrain from investing on second-hand odium; they act on expert advice, which is based on knowledge with regard to each individual property as to its income and prospects of income, and as to the integrity and stability of its management. Practically no

influence is exerted upon investment in a strong road by misdeeds or misfortunes afflicting other roads. Each road stands or falls on its own condition.

As for calamity-howling, are railway managers seriously supposed to think that statements of inadequate income laid before rate tribunals can escape the eye of those who advise investors? In any event every railroad board includes, quite properly, bankers who make a part of their living as wholesalers of securities. Who believes that they would consent, as railroad directors, to a campaign certain to curtail their dealings as bankers, if the income situation had not become desperate beyond remedy within the reach of the managers and financiers? Railroad boards contain the ablest, most successful, best respected and most fully trusted men in the country—merchants, manufacturers, professional men.

To accuse such men either of imbecility or villainy of this sort is to indict the best there is in the nation. It is incredible. It is not true.

Credit can only be restored by adapting the policy of the government to the course of events. Such a change in policy is long overdue. It should wait no longer.

Attitude of Congress

What is the apparent attitude of the two branches of Congress on this vital point?

The House bill, which has been passed, leaves the Interstate Commerce Commission without obligatory mandate to permit such rates as will yield revenue sufficient to attract capital. The spirit of the House committee is, we fear, indicated by the annexation to their report of a statement by Interstate Commerce Commissioner McChord, who says: "Whatever decline there was in railway credit previous to federal control was not due to any action of the Interstate Commerce Commission."

The Senate bill attacks the credit question directly and in a mandatory manner, requiring that such rates be permitted as will yield a specified rate of return on the value of the property. The Senate committee report, moreover, has this: "Legislation . . . must tender to the future investor . . . reasonable assurance of such yearly return as will induce him to enter the field. . . . It is here that our present system of regulation has failed."

It is the task of citizens to aid the Senate committee in commanding support in the Senate for the position set forth in that quotation and to persuade the House to concur.

II. Federal Jurisdiction Over Rates

Since the federal authorities must sanction adequate total revenue for all roads from all sources, do you not believe that any business-like regulation of carriers which are parties to interstate hauls requires that all rates of all such carriers shall be under the jurisdiction of federal authorities?

Neither the railroads nor any line of public business can be successfully regulated by 49 regulatory bodies. In order to prevent discrimination and undue burden on interstate commerce through state regulation, every carrier which hauls any interstate cargo should be subject to the regulation of all its rates by the federal authority.

III. Adequacy of Rates

Do you not believe that resumption of railway development requires, among other things, that Congress supplement its present statutory policy of restrictions only, by enacting that rates shall be such as to yield revenue sufficient for necessary expenses and for the credit basis which will enable the average road to secure improvements and extensions?

This applies to the proposition contained in Question I. That was that Congress should recognize the necessity for a change in government regulation in order to restore railway credit. Question III deals with one of the essentials in carrying out that proposal. The law as it stands gives the jurisdiction over each individual rate as to its justness and reasonableness. The Commission has no authority to sanction whole rate structures primarily to yield a certain amount of total revenue. The Senate committee bill explicitly bestows such power. The House bill does not. Such power should be a feature of the act.

IV. Advance Ascertainment and Report of Needs

Do you not believe that an indispensable requirement in putting the railways on a business basis is that the regulatory authorities at workable intervals ascertain for a forthcoming period the transportation needs of the country, and report to Congress or to the public their findings as to such needs and their estimate of the necessary revenue?

The House committee bill as introduced provided that the Commission should keep itself informed of transportation needs and operating revenues necessary to adequacy and efficiency of facilities and service. Newspaper despatches not yet verified in detail indicate that possibly this passage was eliminated on the floor.* Even if left in, it does not require the Commission to keep the public informed. The Senate committee bill provides for a similar inquiry by a Transportation Board, which is to certify its findings to the Commission, such certificate to be prima facie evidence. Whether there is to be a new board or not the results of such observation and study should be a public report of findings, and such report should cover, not past periods, like the statistics of large-scale rate-advance cases hitherto, but the future. We do not care anything about the water that has passed over the dam. You have to be prepared for the flood that is coming.

V. Announcement of Necessary Rate of Return

Do you not believe that in estimating the net income required for each group in order to attract capital in the amount approved as necessary the regulatory authorities should have the power and the duty to ascertain and announce the rate of return which under money market conditions at a given time it is necessary to allow?

"And announce." Nothing is more vital. If the regulatory authority is required to announce its estimates as a whole, and specify what rate of return this is based upon, the public will be able at all times to judge what, if any, adjustments are required to bring the estimates into line with the facts; the public, with this complete understanding of the situation, will acquiesce in such adjustments; the Commission, having set a mark to attain, will itself realize with some exactness what is required of it and bend every energy toward performance.

Are you not willing to help Congress put the railways on a business basis without regard to your preferences as to methods, by informing Senators and Representatives what you and others, whose view you have ascertained, regard as the necessary objects of railway legislation?

This last question may be summarized in two words—"Get busy." Now is the time. These next thirty days or less may be the time during which this great question of the future condition of the railways of the United States is to be established, not for next year or for the next ten years, but for an indefinite period ahead—possibly for all time.

*On the day this address was delivered the House in passing the bill eliminated the following: "The Commission shall be charged with the duty and responsibility of observing and keeping informed as to the transportation needs and the transportation facilities and service of the country, and as to the operating revenues necessary to the adequacy and efficiency of such transportation facilities and service. In reaching its conclusions as to the justness and reasonableness of any rate, fare, charge, classification, regulation or practice, the Commission shall take into consideration the interest of the public, the shippers, the reasonable cost of maintenance and operation (including the wages of labor, depreciation, and taxes), and a fair return upon the value of the property used or held for the service of transportation."

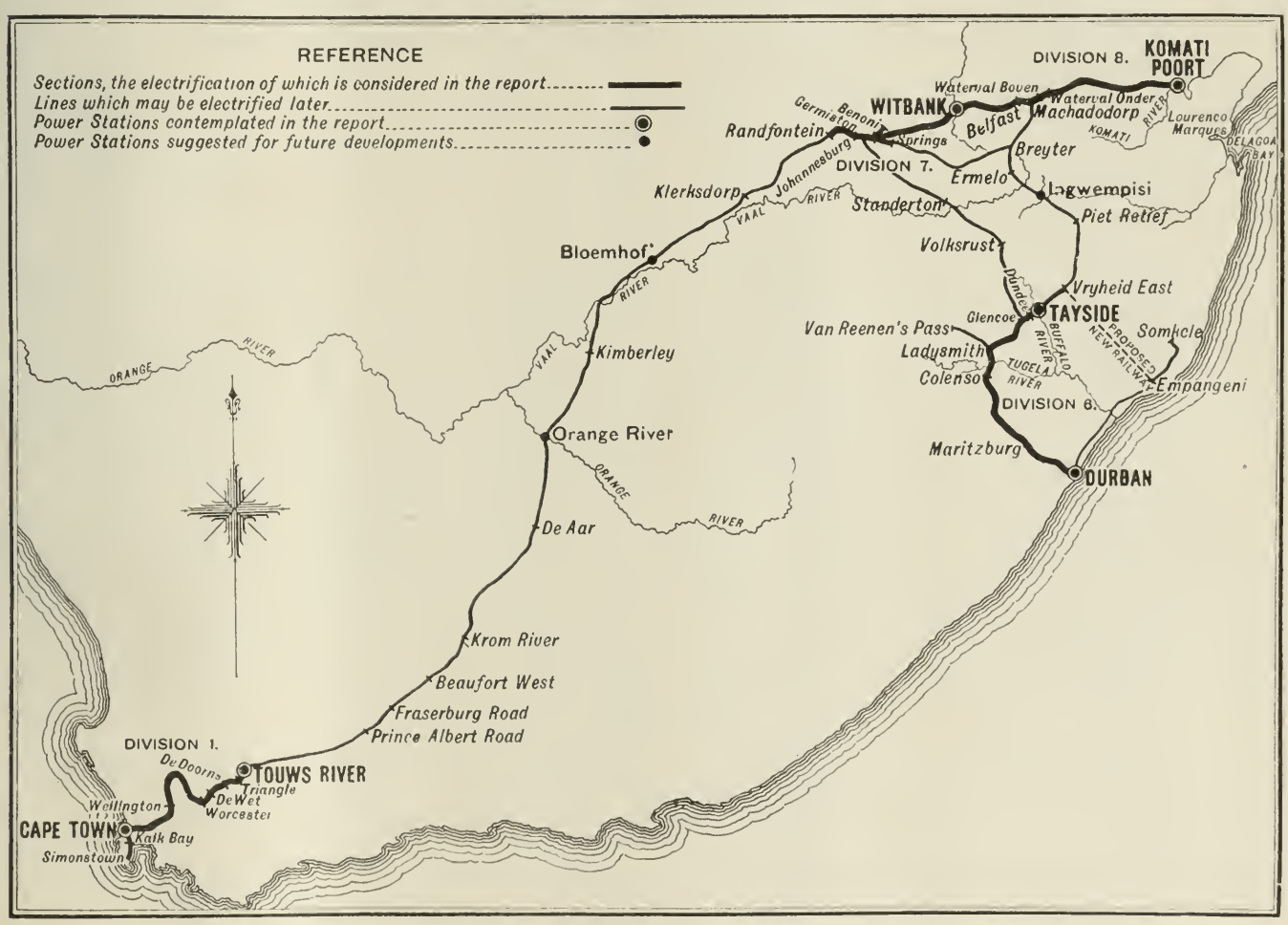
Electrification of the South African Railways

Estimated Net Expenditure of $50,000,000 to Equip 860 Route Miles—Direct Current to Be Used

By Robert E. Thayer
European Editor of the *Railway Age.*

THERE HAS BEEN PUBLISHED in London recently by Merz & McLellan, consulting engineers, a most complete report on the proposed electrification of portions of the South African Railways. There is so much interest in this report that an abstract is given below:

The South African Railways in preparation for an increase in traffic has given consideration to electrification of the more congested portions of its line by means of which heavier trains can be handled at higher average speeds than is possible at present. As an alternative to electrification material changes would have be made on the road as in some cases the traffic density has about reached the limit of that which can be handled.

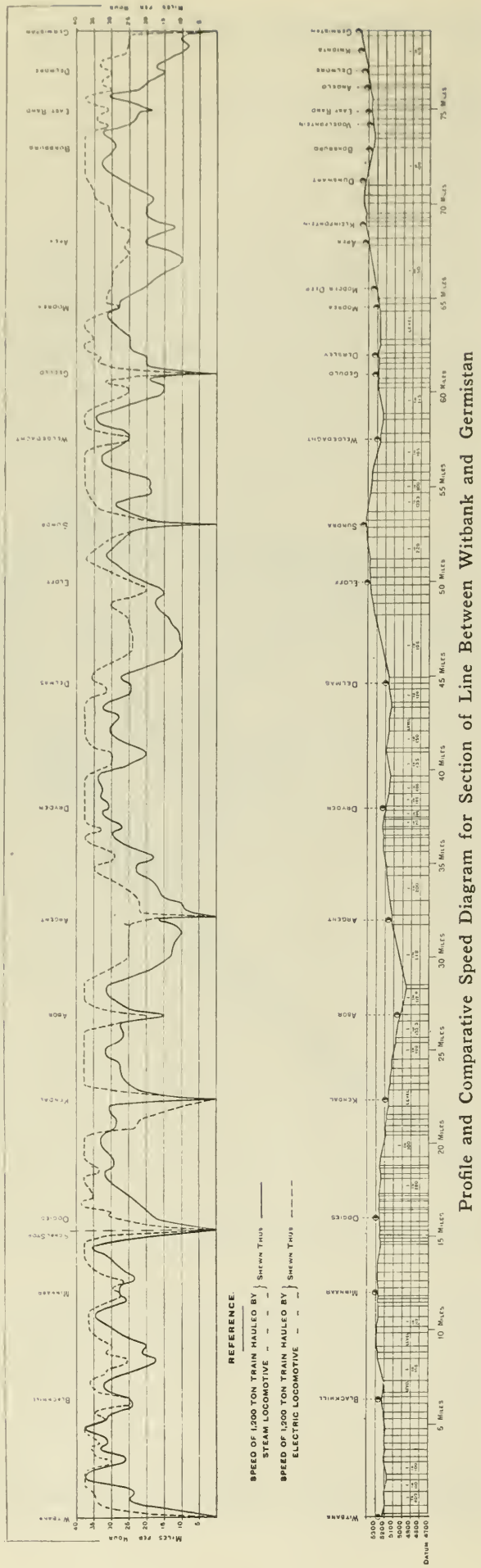


Map of South African Railways

The proposed plans contemplate an increase of traffic at 50 per cent over the electrified portions with the present trackage. Four portions of the lines are considered, which involve 860 route miles and a total trackage, including yards, sidings, etc., of 1,219 miles. The estimated net capitalization involved for this electrification amounts to £11,670,485 of which £6,396,350 is the estimated cost of power stations and transmission lines. A credit of £5,033,197 was deducted from the estimated gross total expenditure on account of the equipment that would be released from actual service in the electrified portions and on account of the cost of alterations to the lines and the additional equipment that would have been required to provide for an increase of 50 per cent in traffic under steam operation. The return on the net capital expenditure is estimated to be £801,900.

With the existing conditions in South Africa it has been deemed practical to operate electrified portions by direct current at 3,000 volts. The power will be generated in the form of three-phase alternating current at a frequency of 50 cycles.

The report recommends electric freight locomotives weighing 268,800 lb., having a tractive effort of 48,000 lb. for one hour and 64,000 lb. for short periods such as when starting a train. With the maximum traffic effort a factor of adhesion of 4.2 is obtained. For passenger service a locomotive of 161,280 lb. has been recommended which will have a tractive effort of 30,000 lb., one hour rating, and



Profile and Comparative Speed Diagram for Section of Line Between Witbank and Germistan

a maximum tractive effort of 38,400 lb. For shunting service an electric locomotive weighing 125,440 lb. has been recommended of sufficient capacity to exert a tractive effort of about 14,000 lb. at about 12.5 m. p. h., or a maximum tractive effort of about 24,000 lb. For suburban service the multiple unit system made up of combinations of one motor coach with a trailer is suggested. Regenerative braking is recommended for adoption on certain portions of the electrified lines.

Portion of Line to Be Electrified

The portion of line which is considered for the present electrification is shown on the map in Fig. 1. There are four distinct portions indicated as Divisions 1, 6, 7 and 8. In all but Division 8 there are branch lines to be electrified in addition to the main line. In the vicinity of Cape Town these branch lines deal with the suburban traffic almost exclusively and the traffic on the branch lines of the other two divisions is principally freight.

The conditions of the line in Division 6, between Durban and Glencoe, are such that electrification there is very desirable. Under the present conditions the volume of traffic which is carried on the single track line has approached the limit of the capacity of the section and the increase of 50 per cent, which is traffic on which the electrification scheme is based, would require an expenditure of at least £750,000 for sidings and double tracks, whereas the total outlay required for electrification of this portion apart from the costs of power stations and transmission lines is only £952,713.

The estimated profit chargeable to electrification of this line is estimated to be £384,110. The length of line between these two points is 249 miles and the traffic consists principally of coal from the Naval coal fields in the neighborhood of Glencoe. This line contains exceptionally heavy grades and sharp curves, the maximum grade being 3.33 per cent and the minimum radius of curvature 300 ft. Durban is, of course, at sea level and the altitude of Glencoe is about 4,300 ft. with a maximum altitude between the two places of over 5,000 ft.

The main line from Cape Town to Touws river, Division 1, is 160 miles and the ruling grade is 2.5 per cent.

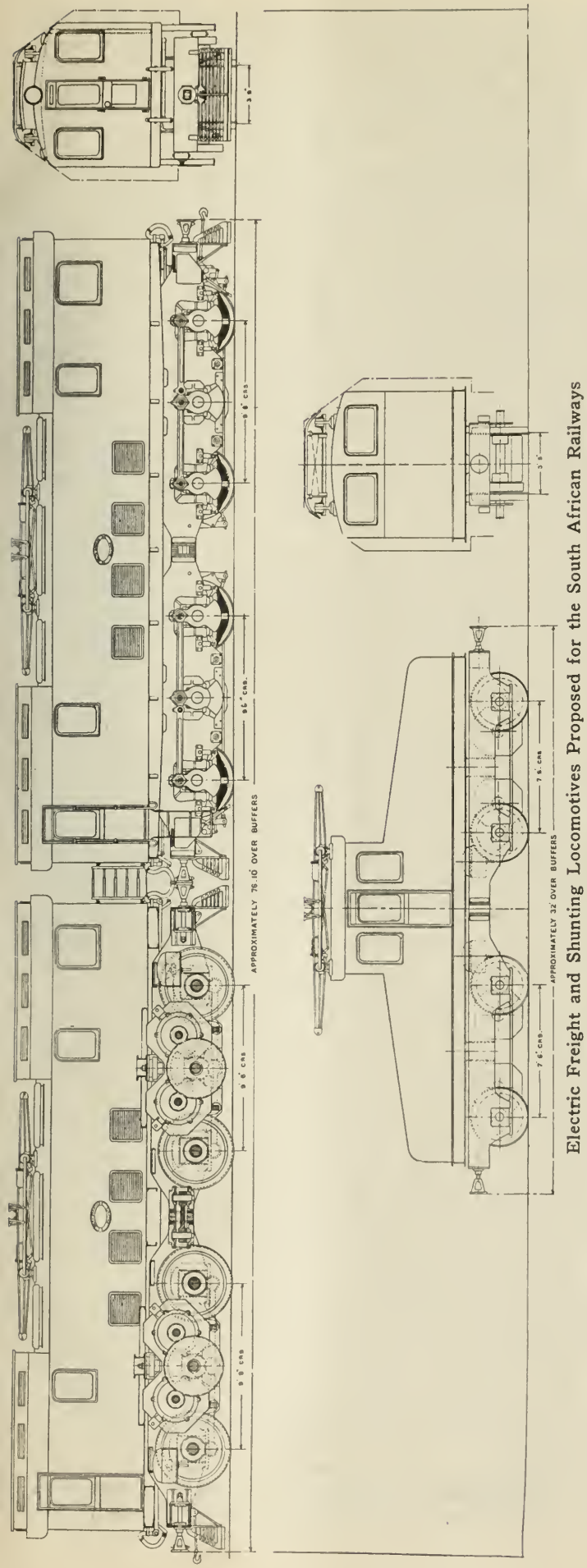
In Division 7 the main line between Witbank and Randfontein is 131 miles and the traffic consists almost entirely of coal from Witbank for Cape Town. The ruling gradients are against loaded traffic; between Witbank and Johannesburg it is 1 per cent and there are numerous heavy grades throughout the whole line as indicated in the profile of the line between Witbank and Germiston shown in Fig. 2.

The main line from Witbank to Komati Poort in Division 8 is 223 miles. The general character of line is similar to that of the main line in Division 6. Komati Poort is about 600 ft. above sea level and the line rises very steadily to 4,144 ft. at Waterval Onder. Between the latter station and the Waterval Boven which is not more than two or three miles air line, there is a rise of about 700 ft. which is covered by 8.5 miles of track, the ruling grade being 2 per cent.

It will thus be seen that there are some heavy grades throughout the territory which makes electrification particularly desirable.

Electrical System Recommended

As stated above, the conditions in South Africa favor the operation of the electric trains by direct current at 3,000 volts, with three-phase alternating current being transmitted to the sub-stations at a frequency of 50 cycles. Direct current meets the needs of the suburban service admirably and the results of the Chicago, Milwaukee & St. Paul electrification at 3,000 volts d. c., presents a practical example of the



Electric Freight and Shunting Locomotives Proposed for the South African Railways

adaptability of this system for long distance freight and passenger traffic. The chief objection to the use of the direct current system as compared with the single phase system is that more substations will be required. On the Chicago, Milwaukee & St. Paul the average distance between substations is about 32 miles and in the present case it is believed that sub-stations could logically be placed from 25 to 30 miles apart. A further objection to the direct current is that of designing the driving equipment for locomotives and motor coaches for 3,000 volts, but regardless of the fact that the narrowness of the gage of the South African railways, which is 3 ft. 6 in., presents its limitations, it has been possible to design suitable equipment. The gage, however, will not permit of placing the motors between the driving wheels, and the design of the locomotive involves the use of outside connecting rods, coupling the crank on each pair of driving axles to those of a central jack shaft which is driven through gearing by a pair of motors.

The use of direct current enables a simple construction of electrical equipment for the motor cars and locomotives in which the first cost is low and the maintenance easy and cheap. It provides for variable speeds and is well adapted to the requirements of a general system including suburban and main line traffic. In view of the several heavy grades mentioned above the use of regenerative braking is desirable. While the use of this feature is most easily accomplished with 3-phase motors it can be applied to direct current motors with the added advantage that the motors can be worked regeneratively over a wide range of speeds whereas with the 3-phase motors the current can be regenerated continuously only at one or two different speeds.

An overhead wire over the centre of each track supported at intervals by steel structures is believed the most desirable for the conditions in South Africa. The general arrangement proposed is the same as that already adopted for the electrified Sheldon-Newport branch of the North Eastern Railway in England. The contact wire is to be supported by a catanery and the line is to be divided into sections by the means of section isolators.

It is planned to locate the sub-stations at Kalk Bay, two at Cape Town, Booth Junction (near Durban), Maritzburg, Ladysmith, Glencoe and at suitable intervals between the power stations which are to be located at Cape Town, Touws River, Witbank, Komati Poort, Tayside and Durban.

The location of the generating plants required considerable study. Because of the fact that the divisions to be electrified are so far from each other, with the exception of Divisions 7 and 8, this problem had to be considered separately with a view of possible extension of the electrification system.

The possible use of water power was carefully studied, but the rainfall in South Africa is very irregular and the flow of water in most of the rivers crossed by the portions of the railway under consideration is unreliable and occasionally ceases altogether. Even the Orange and the Vaal rivers have been known to cease flowing altogether and this is a common occurrence with other rivers of less importance. Thus hydro-electric plants are out of the question. Furthermore in South Africa coal at the pit is cheap and the cost of freight is low, which again favors the use of steam-driven generating plants.

In deciding the location of the power sites, the security of supply was carefully considered and they were chosen with the idea of enabling duplication of work. Thus in Division 6 it is recommended that power plants be located at Tayside and Durban. In Division 7, a power plant is to be located at a station on the Great Olifants river. In this locality, however, it is possible to draw power from the Victoria Falls and Transvaal Power Company. For Division 8, it is recommended that power plants be located at

Komati Poort on the Komati river which with an increase of capacity of the Great Olifants river plant would be able to take care of that division. In Division 1 it is recommended to place the plants at Cape Town and Touws river. The Cape Town plant will provide power for the suburban branches around Cape Town and for a portion of the main line to Touws river. Although the distance between Cape Town and Touws river is only 160 miles by rail, it was considered inadvisable to depend upon a single source (Cape Town) and a transmission line of this length for a supply for the whole section and it was therefore recommended that the Touws river plant be included.

In considering the general question of power supply the report states that the engineers had in mind the possibility of supplying power to municipalities and possibly to private consumers in addition to the railways. It is believed that it would be a mistaken policy to regard railway electrification as distinct from the general use of electricity throughout the country. The majority of the power undertakings in South Africa have already adopted the 3-phase alternating current with a frequency of 50 cycles which would make co-operative working a simple matter. A splendid opportunity presents itself for co-operative working for a large power plant at Cape Town as the municipality of Cape Town will in the near future be obliged to increase its power facilities.

For the entire electrification project twenty-four 8,000 k. w. units and two 5,000 k. w. units have been suggested, distributed as follows:

Cape Town—Eight 8,000 k.w. units.
Touws River—One 8,000 k.w. unit.
Durban—Four 8,000 k.w. units.
Tayside—Three 8,000 k.w. units.
Great Olifants River—Eight 8,000 k.w. units.
Komati Poort—Two 5,000 k.w. units.

Electric Motive Power

As above mentioned it is believed advisable to use electric locomotives for main line passenger and freight trains and for switching work with multiple unit system for the suburban traffic.

Electric freight locomotives.—In South Africa where all the cars are fitted with air brakes, the controlling feature is the drawbar pull required to haul the train up the ruling grade. Investigation showed that the draft gear on some of the freight cars (which is to be systematically placed on all of the freight cars) was of a sufficient strength to enable a train of 1,800 short tons to be hauled up a grade of one per cent. This corresponds to a pull of about 48,000 lb. An electric freight locomotive was therefore designed to meet these conditions and the characteristics suggested were that it should have a tractive effort of 48,000 lb. and weigh 268,000 lb. The locomotives are designed for hauling a 1,200-ton train composed of loaded cars at a speed of about 40 m. p. h. on the level, or a train of 1,800 tons at not less than 30 m. p. h. Furthermore, they are designed to operate at a speed of 20 to 23 m. p. h. up to the ruling grade. Thus a substantial increase in general speed in freight trains is anticipated. The actual horse power of the proposed freight locomotives under these conditions works out at about 2,800 (one hour rating). This may be compared to from 1,000 to 1,400 h. p., the capacity of the present steam locomotives. The general arrangement of these locomotives is shown in Figure 3.

Electric passenger locomotives.—The average maximum load of the passenger train is about 600 tons. Platform and station accommodations generally limit the number of coaches per train to a maximum of 15 or 16. The maximum grade of any of the sections under construction on which a special passenger locomotive would be used is 2.5 per cent. Thus a tractive effort of about 40,000 lb. would be required. Inasmuch as these maximum grades are comparatively short and few, it was believed better to use a pusher in addition to the train engine and for that reason passenger locomotives of 161,280 lb. exerting a tractive effort of 13,000 lb. at one hour rating and a maximum tractive effort of 38,400 lb. were proposed. This locomotive would be able to haul a 600-ton train up a 1.67 per cent compensated grade without assistance and would be amply sufficient for all probable requirements.

Speed restrictions due to local conditions will not permit speeds higher than 60 m. p. h. and for that reason these locomotives have been designed for a normal speed on the level with a train of 15 main line coaches of not less than 55 m. p. h., or 28 to 29 m. p. h. on the grades. The design of the express passenger locomotive is similar to the freight locomotives with the addition of a leading four-wheel truck to adapt these engines to the higher speed. The use of this special design of passenger locomotive will, under the extent to which present electrification is to be carried, be restricted to Division 1, for on the other divisions there are but few places where a high speed is possible owing to the large number of sharp curves. It is therefore suggested that single-unit electric freight locomotives should be used on Divisions 7 and 8 for passenger and double-unit electric freight locomotives on Division 6, where the trains are heavy and the grades severe.

Electric shunting locomotives.—A large amount of shunting has to be carried out at Cape Town, Durban and Kendal, and for this purpose a special shunting locomotive has been recommended. It is of the double truck type, with a center driver's cab, weighing about 135,440 lbs., and has a tractive effort of 14,000 lbs. at 12 m. p. h. It is planned to have the electrical equipment practically identical with that of the passenger coaches of the suburban passenger trains.

Anticipated Results From Electrification

One of the chief reasons for the electrification of the South African lines was the purpose of increasing the capacity of the tracks as they now stand. The investigations were based on a 50 per cent increase in traffic. This is to be brought about by the increase in the average speed at which the trains will be operated and by increasing the train load so that greater tonnage can be hauled with a fewer number of trains. As most of the sections under consideration are single track lines, a reduction in the number of trains and an increase in speed will produce a great improvement in regard to delays at stations.

With electrical operations the average speed of the two different classes of traffic will be more equal than it is at the present time and there will be less necessity of side tracking the slower traffic. An example of what this means on the run between Witbank and Germiston is illustrated by the diagram in Fig. 2. The full lines show a record of an actual test with a steam locomotive commonly used on this line loaded to 600 tons, and the dotted lines show the calculated speed for the same load with an electrical locomotive. Electrically hauled trains will take 2 hours 40 minutes, exclusive of stops, as compared with 3 hours 45 minutes for the steam train, or a reduction of nearly 30 per cent in the running time. The saving of time on other sections is even greater. For instance, the running time for fast freight trains from DeDorns to Touws river, allowing one intermediate stop for water, is at present 2 hours 24 minutes, whereas with the electrically operated train the same distance will be covered in 1 hour 12 minutes. In passenger service the present running schedule between Cape Town and Touws river is 7 hours 50 minutes, whereas under electrical operation the journey could be done in 5 hours 45 minutes.

In regard to the suburban passenger trains operated under the multiple-unit system it is the universal experience that

such improvements in travelling facilities produce a larger volume of traffic, which is due to a growth of the population in the remoter suburbs and to more frequent use of the improved services.

With the increase in speed less equipment will be required to handle the same amount of traffic. There will be a reduction in the amount of coal consumed, with the accompanying decrease in the number of cars used for the transportation of company coal. There will be an increase in engine mileage. In the case of the freight service between Glencoe and Durban the yearly mileage of the electric locomotives would be at least 70,000 miles. Thus fewer electric locomotives will be required. In this respect it is estimated that with 262 electric freight, psasenger and shunting locomotives and 136 motor coaches, 448 steam locomotives would be available for sale or service elsewhere and that the 152 steam locomotives would not have to be purchased in order to deal with the 50 per cent increase in traffic the 262 electric locomotives and 136 motor coaches are expected to handle. In addition to this, electrification would, on account of increase in speed and the reduction in fuel consumed, make unnecessary the purchase of 1,038 new 40-ton freight cars, or their equivalent, which would be required for dealing with the increased demands under steam operation.

The decrease in annual train mileage, considering the estimated 50 per cent increase in traffic, is well illustrated in the through freight service. With steam locomotives it has been estimated that train mileage of the four divisions would be 9,846,800 miles, and with electric operation this would be 6,890,610 miles, or a saving of 2,956,190 train miles, or 30 per cent.

The saving in working expenses involves a comparison of the cost, under steam operation, of coal, water, wages of train crews, engine house expenses, lighting and heating, locomotive repairs, depreciation with, under electric operation, the cost of electrical energy, wages of train crews, engine house expenses, repairs and depreciation of the locomotives and motor equipment, depreciation, maintenance and working expenses of the sub-stations and the maintenance of the track equipment necessary for electrification. On the four divisions the estimated profit for electrical operation amounts to £801,900.

Capital Expenditures

The various items of capital expenditure involved in the electrification of these lines involves the cost of new rolling stock, electric locomotives, etc., the cost of the distribution system, the cost of the sub-stations and the cost of the power plant and transmission lines. There are other items, such as alterations to engine houses, telegraph and telephone lines, lengthening of sidings, etc. The net outlay on rolling stock is obtained by deducting from the gross expenditure for the new electric locomotives or train equipments the value of the existing steam locomotives displaced, the new steam locomotives that would be required for the additional traffic under consideration, the new wagons that would be unnecessary to purchase on account of the increased speed of the traffic, and the new wagons that it would be unnecessary to purchase due to the reduction in fuel consumption. The cost of the distribution system and sub-stations present an entirely new item of expenses, from which there is nothing to be deducted.

There are, however, additional credits which enter into the present discussion, such as the cost of alterations in the track to handle the 50 per cent increase in traffic under steam working, and which would not be necessary by electrical working. A balance of these items, exclusive of the power stations and transmission lines, show the estimated net capital outlay to be £5,274,153. The cost of power stations and transmission lines had not been included in this estimate because of the possibility of purchasing power from various outside sources. However, in the working expenses interest at 5 per cent per annum on the capital required for new stations and transmission lines in event of the railroad producing its own power is included, together with a depreciation charge of 3 per cent on the power stations. The estimated capital outlay on power stations and transmission lines amount to £6,396,350. The net return on the net capital outlay, exclusive of the cost of power stations and transmission lines, is approximately 15 per cent. If the cost of the power stations and transmission lines are included the net return would be approximately 7 per cent.

War Time Fuel Restrictions Ordered

THE LOSS OF COAL PRODUCTION during the strike has so reduced the Nation's coal supply that restrictions in the use of coal paralleling those put into effect during the war were ordered on the very eve of the proposed settlement of the strike.

The fuel administrator, Dr. Harry A. Garfield, on December 8, issued the following order giving the Railroad Administration authority to issue regulations covering the delivery, use and consumption of coal, coke or other fuel or of power generated or produced by the use or consumption of coal, coke or other fuel:

"*The United States Fuel Administrator* acting under authority of an Executive Order of the President of the United States, dated 23 August, 1917, and of subsequent Executive Orders, and in furtherance of the purpose of said Orders, and of the Act of Congress therein referred to and approved August 10, 1917.

"*Hereby orders and directs* that the Director General of Railroads and his representatives acting by and under his authority be, and they thereby are, authorized and empowered to make and prescribe such local or general regulations restricting the delivery, use and consumption of coal, coke or other fuel or of power generated or produced by the use or consumption of coal, coke or other fuel as may from time to time be necessary in the present emergency. All regulations made pursuant to the authority hereby granted shall be valid and binding as and for regulations of said Administrator.

"This order shall be effective December 8, 1919."

On December 1, the fuel administrator gave out a statement urging the conservation of coal for these uses and suggested that local authorities adopt regulations and put them into effect to carry out this purpose.

A careful survey of the coal situation indicates that even if there is a prompt settlement of the coal strike, it will take some time to adjust the country to a normal basis and that, therefore, certain restrictions will have to be placed on the consumption of bituminous coal and of light, heat and power derived therefrom, so that urgent domestic needs may be cared for, the necessary food stuffs produced and really essential light, power and heat supplied. Already in many parts of the country restrictions as to the use of coal and coke for lighting and heating purposes and for the production of electricity and power for such purposes have been adopted. Regulations were tonight issued to make such restrictions uniform over the country and thus aid in the conservation of coal. They follow:

"Pursuant to authority of the United States Fuel Administrator the following regulations governing the use of heat, light and power from bituminous coal and coke are made effective generally and uniformly in the interest of conser-

vation of existing fuel supplies, and supersede any previous instructions:

LIGHT FROM BITUMINOUS COAL AND COKE.

1. No ornamental lights, white way or other unnecessary street lights, outline lighting, electric signs or illuminated billboards, show window or show case lights, are to be operated. This does not affect street lighting necessary for the safety of the public.

2. No cabaret, dance hall, pool hall or bowling alley shall be permitted to use light except between 7 p. m. and 11 p. m.

3. Stores, including retail stores but excepting stores selling food, and warehouses must not use light (except safety lights) except for six hours per day. Manufacturing plants shall be allowed to use light only during the time prescribed for the use of power.

Exceptions:

(a) Drug stores and restaurants may remain open according to present schedules, but must reduce lighting one half.

(b) Railroad stations, hotels, hospitals, telephone, telegraph and newspaper offices are not included insofar as necessary lighting is concerned.

(c) General and office lights must be cut off not later than 4 p. m. in office buildings except necessary federal, state and municipal offices, and except where office operation of vital industries is involved.

(d) Dairies, refrigerator plants, bakeries, plants for the manufacture of necessary medicinal products, water works, sewerage plants, printing plants for the printing of newspapers only, battery charging outfits in connection with plants producing light or power for telephone, telegraph or public utility companies are exempted.

HEAT FROM BITUMINOUS COAL AND COKE.

1. Only enough heat may be used in offices, stores, warehouses and manufacturing plants to keep the average temperature at 68 deg. Fahrenheit, and then only during the hours for which light is permitted. During other hours only enough heat is to be used to prevent freezing of water pipes or sprinkler systems.

2. In manufacturing plants or plants coming under power curtailment rules, heat (to 68 deg. Fahrenheit) will be allowed only during that time prescribed for use of power.

POWER FROM BITUMINOUS COAL AND COKE

1. No manufacturing plant or factory shall be furnished bituminous coal or coke, or heat, light or power from bituminous coal or coke furnished by or through the United States Fuel Administration for operation in excess of three days a week on the basis of present working hours.

Exceptions:

Dairies, refrigerating plants, bakeries, plants for the manufacture of necessary food products, of necessary medicinal products, water works, sewerage plants, printing plants for the printing of newspapers only, battery charging outfits in connection with plants producing light or power for telephone, telegraph or public utility companies are exempted.

2. Elevator service must be curtailed as much as possible in accordance with above regulations on use of heat, light and power.

ELECTRIC RAILWAYS

1. Electric railways shall reduce schedules to minimum requirements of service under revised hours of heating, lighting and power as herein provided.

2. No heat shall be provided on electric cars during rush hours and heating during non-rush hours shall be curtailed as much as possible.

GENERAL

1. Electric railways and manufacturing plants, stores and offices shall co-operate in arranging, within the provisions of this order, schedules, days and hours of work to permit the maximum utilization of transportation equipment."

Distribution of the Railway Dollar

ONE OF THE MOST striking features of the annual report of the Bureau of Railway News and Statistics for the year ended December 31, 1918, is the diagrams on the back cover of the report showing the distribution of the railway dollar in 1918 and in 1916. According to these diagrams, the railway dollar was distributed in these two years as follows:

	Where it went to—	
	in 1918	in 1916
Labor	54.06	40.60
Fuel and locomotive supplies	11.11	7.45
Material and supplies	14.40	15.77
Loss and damages	2.02	1.67
Taxes	3.87	4.46
Total expenses	85.46	69.95
Interest	8.74	12.48
Rent of leased lines	2.59	3.96
Betterments	.56	1.83
Available for dividends, reserves and surplus	2.65	11.78
Total	100.00	100.00
For deficits	....	....

Commenting on this, the report says that "Experience has shown that when the expenses and taxes of American railways as a whole exceed 70 per cent of their revenues many roads are in distress and more lack credit."

It will be perceived that for the year 1916, when the operating income of all the roads was $1,105,106,214, the operating expenses were only .05 per cent within the zone of safety. It is this fact that makes the comparison of the diagram especially valuable. A similar diagram for the calendar year 1917 showed that the operating expenses had crossed the line of safety into the zone of danger to the extent of 6.15 degrees. In 1918 the margin of safety was left 15.46 per cent in the rear.

The first nine months of 1919 show that there has been no halt in the march of expenses into the territory abounding in deficits, defaults and receiverships, from which the taxing power of the United States alone saves its railways today. The other means to save the situation—the power to raise the rates to yield sufficient revenues—the government has so far declined to adopt.

Another figure in the diagram for 1918 commands attention—the 54.06 per cent of gross revenues paid to labor against only 40.60 per cent in 1916. Practically the entire increase in expenses is accounted for here by the increase in the percentage distributed to employees. Moreover, this 54.06 per cent is computed on the largest operating revenues in the history of American railways.

The aggregate compensation of railway employees in 1918 was $2,686,734,498, or nearly $300,000,000 more than the total operating revenues in 1908! The average pay of 1,897,741 railway employees in 1918 was $1,416 a year and the average per day was $4.52 against only $2.25 in 1908, an increase of over 100 per cent in ten years. These figures do not include the administration's pay roll, which numbers 2,500 persons whose average pay is $2,567 per year; or the 2,619 officers and employees of the corporate organizations whose pay averaged $2,147 per year. These last figures are interesting as affording a comparison between the pay of the officials dismissed by the director general and of those appointed in their places.

Another revelation contained in this report is the enormous increase shown in the pay of clerks from $120,766,765 in 1915 to $263,657,074 in 1918. The class of clerks receiving less than $900 per annum, of whom there were 101,751 in 1917, has been practically eliminated. Where this branch of the service accounted for a total of only 1.9 per cent of the operating expenses in 1907, in 1918 it amounted to 6.2 per cent.

The report covers 250,473 miles of operated line and presents the first complete review of the railways of the United States for the first year of government operation.

The Signal Engineers' December Meeting

Signal Division Holds Large Meeting in New York—Standards Discussed—Plan Next Annual Meeting

THE FOURTH MEETING of the Signal Division, Engineering Section, American Railroad Association, was held at the McAlpin Hotel, New York, on December 2 and 3. As a result of the recent letter ballot, the times of holding the meetings were changed to March and December for the stated meetings, with the annual meeting in July. A tabulation of the vote shows that 338 voted for the change and 105 against. The change was proposed so that all reports could be sent to the executive committee of the American Railroad Association, by October 15, but there is still some dissatisfaction.

The attendance at this meeting was very good—140 active and affiliated railroad members, 7 junior and 89 associate and affiliated non-railroad members, with 19 guests, a total of 250. The meeting was presided over by the chairman of the Division, C. J. Kelloway (A. C. L.). Secretary H. S. Balliet (N. Y. C.), deferred the reading of the minutes of the September meeting, as because of the printers' strike in New York, they had not been printed.

The first discussion was that on the report of Committee No. 3, power interlocking, F. B. Wiegand (N. Y. C.), chairman. This committee presented a specification for universal electric locks for hand operated switches, first and second range voltage; and a specification for an electric lock for power interlocking machines. Both were presented only for discussion, not for final adoption. Mr. Wiegand, in presenting the report, gave an abstract of information received from the Bureau of Standards, Washington, relating to proposed action by the Bureau looking to revision of the publication containing national standards of screw threads.

The discussion was participated in by Messrs. W. H. Elliott (N. Y. C.), P. E. Carter (G. R. S.), B. H. Mann (M. P.), J. C. Mock (M. C.), A. H. Rudd (Penn.), and F. L. Dodgson (G. R. S.). Questions as to the height at which a switch box shall be placed, whether indicators should or should not have doors, and as to the advisability of having contacts on locks for power interlocking machines were considered. Mr. Mock spoke of the need of improvement in arranging apparatus on power machines; there is a tendency to put too much on these machines; he has taken off such things as polarized relays and placed them in separate places, a change which was found to facilitate proper maintenance. As to locks on these machines, it was the sense of the meeting that they should have no contacts.

Committee No. 5, on maintenance rules and instructions, L. R. Mann (M. P.), chairman, presented a code of questions and answers for an examination paper for signal maintainers. This fills a dozen pages of the program issued for the meeting and was discussed at considerable length. These questions and answers were presented only as information and the dozen or more members offering criticisms dealt only with minor details. It appears that some of the things which, in this document would be required of maintainers, are forbidden by the agreement between the railroads and the maintainers as recently drawn up by the United States Railroad Administration. Another significant suggestion was that some of the clauses referring to flagging would seem to forbid a maintainer to stop a train in case of danger.

Standard Designs

Committee No. 6 submitted for approval six drawings containing standard designs, and a seventh, a base for a 4-in. mast, for discussion only, the report being presented by J. C. Mock (Michigan Central), vice-chairman. The first drawing, No. 1010, crank and jaw pins, was adopted without discussion. This and the next two are former standards revised in a few details. No. 1015, one-inch signal pipe, was adopted after brief discussion. The committee had changed the rivet holes; a member proposed that the rivet be made one-sixteenth inch smaller. This the committee promised to consider. One member wanted the plug to be made a tighter fit, but this view did not prevail. The drawing was adopted subject to possible change as to the length of rivet. Drawing No. 1220, crossarm bolts, was adopted. The list of standard cotter pins, drawing No. 1409, was adopted without discussion.

Drawing No. 1430, a semaphore lamp with two lenses, facing in opposite directions, was the subject of considerable discussion. Mr. Ralph (Northern Pacific) proposed the placing of a mark on the inside of the lamp, opposite the peep hole, to simplify the work of the instructor who has to tell illiterate men how to adjust the height of the flame. The casting shown in the drawing is designed for a backlight and a peep hole, both in one casting, although both of these holes may not be called for in all lamps; the object being to reduce the number of standard castings required. This explanation answered some inquiries as to the arrangement of the holes. W. H. Elliott, New York Central, believes backlights no longer necessary.

Mr. Beck (N. Y. C.) objected to the adoption of a standard for a two-lens lamp as such a lamp gives satisfactory service only where the line of road is straight; but to this Mr. Ralph replied that on his road a lamp made by Adams & Westlake was used with satisfaction, in which one of the lenses is adjustable for curved track. Criticism being made of the outer hood surrounding the lens in this drawing, which does not extend out quite so far as the bullseye, Mr. Mock said the committee would consider the adoption of a deeper hood; and the drawing was accepted.

Drawing No. 1449, a base for a four-inch iron mast, was explained by Mr. Mock as having been made for the purpose of providing for heavy highway crossing signals a stronger post than that usually used, while yet not so heavy as the standard semaphore post. This drawing was submitted for discussion only.

Drawing No. 101 A. R. E. A., a 16 ft. 6 in. split switch, was presented by the committee for the purpose of showing the location of the holes drilled in the switch points; after brief discussion this arrangement of drilling was adopted.

Committee No. 11, batteries, R. B. Elsworth, chairman, presented revised standard drawing No. 1224 showing a storage battery jar, cover, sand trays, etc. A few details have been added. The changes have been commended by the manufacturers, and after a brief discussion the drawing was adopted for submission to letter ballot and inclusion in the Manual. The committee submitted a specification for type A, caustic soda primary cells and renewals. Mr. Elsworth said that this had been fully discussed with the manufacturers and, except section 6, it was quickly approved. That section, prescribing the required capacity of a battery, was discussed at some length. Section 6 deals with the capacity of batteries but does not indicate the maximum capacity nor does it describe the method of making a test, the battery makers having been unable to agree on a recommendation to the committee.

There was some discussion of the question whether

primary batteries should be used for low-voltage switch machines; but Mr. Siebert, Mr. Rainey, and others said that they were using these primary batteries successfully, using two sets in multiple. Mr. Siebert's low-voltage machines operate in 30 seconds. E. W. Kolb (B. R. & P.), reporting on results brought out in his laboratory for testing primary batteries, suggested in detail a complete revision of section 6 defining capacities.

There was some discussion over the desirability of a clause in the specification providing for jars of rectangular shape. There was considerable sentiment in favor of this shape. Mr. Kelloway had found that 14 cells and 5 cells for track circuits, by using this shape, could be installed without making special provision for housing.

Committee No. 13, P. M. Gault, chairman, presented a specification for ranges and scales for voltmeters for alternating current, which was briefly discussed.

Committee No. 2, on mechanical interlocking, Samuel Miskelly, chairman, presented a specification for mechanical interlocking machine, style "A" locking. This was discussed very briefly and the meeting then turned to the specification for lever locking for mechanical machines presented by the same committee for inclusion in the Manual. It was argued that this matter should be combined with the specification for the machine, paragraph 6, but to this it was answered that considerable reprinting could be saved by keeping material concerning lever locking separate.

A discussion then arose as to whether specifications presented at a stated meeting could be acted upon by letter ballot. The rules allow this but there was doubt concerning the advisability of submitting to letter ballot specifications and other matter which has been discussed at only one meeting. It appeared to be the sense of the meeting that there should be discussion at two meetings so that all parts of the country would be more fully represented. Mr. Elliott moved that the mechanical machine lever locking be accepted for presentation at the annual meeting, and it was so voted.

Committee No. 7 on direct current relays, E. G. Stradling, chairman, presented a specification for lifting armature direct current relays, which was briefly discussed. The committee had made a number of modifications since the report was presented at Atlantic City last June. A few further changes were suggested.

Committee No. 10 on signaling practice, J. A. Peabody, chairman, presented a brief report on methods of control to cause signals to indicate stop in emergencies, giving a condensation of information received from a number of railroads replying to a circular. The committee had sent out 36 circulars and received useful information from ten roads. The Western Maryland and the Illinois Central have arrangements for opening track relay connections and also have knife switches. The New York Central uses knife switches and also arrangements for conveniently cutting by pliers. The Union Pacific opens the signal circuit wire by a knife switch or breaks the track circuit by knife switch. The Norfolk & Western shunts the track circuit by knife switch. On the Louisville & Nashville and the Chicago, Rock Island & Pacific, special indicators are provided for the information of signal maintainers. On the Northern Pacific track circuits are shunted by a controller operated by hand.

The committee recommends that for temporary protection the maintainers should be instructed to disconnect the signal circuits. Where a permanent arrangement is desired it may be provided by: (A) Opening track relay through knife switch. (B) Opening circuit wires through circuit controllers. (C) Shunting track by circuit controller or knife switch. Indicators may be provided to advise track workers of the approach of trains.

In the discussion the use of shunt wires was criticized as unreliable, especially in the hands of trackmen and others unskilled, but it was pointed out that sometimes a good deal of time can be saved by their use, as it may take a good while for a track walker to reach a relay box. If the track watchman can be depended upon to report dangerous conditions he ought to be competent to manage a shunt wire.

Valuation Work Done by the Government

Committee No. 15, J. M. Carley, chairman, presented a report detailing some of the methods employed by the Interstate Commerce Commission in its work of valuation of railroad property. This report was discussed briefly by C. H. Morrison (N. Y., N. H. & H.), T. E. Beck (N. Y. C.), G. K. Thomas (A., T. & S. F.) and K. E. Kellenberger, associate editor of the *Railway Age*. Whether or not functional depreciation should or should not be considered was the main topic under discussion.

Lubricating Oils

Committee No. 16, I. S. Raymer, chairman, presented a specification for zero lubricating oil and one for 45 degrees below zero lubricating oil. It was proposed, and the committee will consider the naming of the different kinds of oils by numbers so as to provide short names which will be distinctive and can be readily remembered. There was a long discussion on what elements should be included in describing zero oil. Because of the great demand for oil at the present time, and the consequent impracticability of always securing oil from the same field, there is a good deal of variation in quality, and oil frequently fails to behave as well in service as it does in the laboratory; but the only remedy mentioned for this condition was to get the aid of the signal manufacturer in securing satisfactory oil.

The last paragraph of each specification calls for clean, dry containers as specified by the purchaser, and in discussing this paragraph there was a demand that the committee recommend standard sizes of containers, one as small as one-half pint. No action was taken. Both of these oil specifications were accepted for submission to letter ballot with a view to including them in the Manual, but the motion evidently was adopted with the tacit understanding that changes would be made by the committee and that final disposition would be made at the annual meeting.

Committee No. 4, on D. C. automatic block signaling, C. F. Stoltz, chairman, presented for discussion a specification for universal switch circuit controllers. In the clause relating to ventilation, the committee accepted a suggestion that caps might be put on the inside of the case; also that binding posts should be prescribed of larger size. Mr. Elliott, New York Central, has used for several years binding posts 5/16-inch in diameter and finds them satisfactory. A large size is necessary to withstand the jarring to which these boxes are subject. A member called attention to the absence of any clause requiring an inside cover for the operating cams, but the committee replied that this point was omitted because on so many roads it is the practice to have no such inside cover.

The specification was accepted to be referred to the annual meeting with a view to having it referred to letter ballot and inclusion in the Manual.

Annual Meeting

At the close of the meeting, Secretary H. S. Balliet announced that the next meeting of the Division would be held in Chicago on March 16, next, and the annual meeting at Thousand Islands Hotel, Alexandria Bay, N. Y., on July 14, 15 and 16, 1920. It is intended to arrange for the reservation of rooms at the hotel by the secretary of the division, Grand Central Terminal, New York City, early in June. He and the secretary of the Signal Appliance Association will co-operate in this matter. In view of the probability of a large attendance, arrangements are being made with two other hotels within 500 feet of the Thousand Islands house.

Concerning the Utilization of Freight Cars*

Obligations of the Carrier and of the Shipper—Need of Co-operation—Car Pools

By W. C. Kendall,
Manager of the Car Service Section, Division of Operation, United States Railroad Administration

THE STEAM RAILROAD is now nearly 90 years old. The units used for transportation are still in process of development and new questions arise year by year. I am posing neither as a reformer nor a critic; but I do believe that we are just now at a period when we must take heed as to whither we are drifting.

Freight cars now number about 2,500,000 and to replace one will cost at present prices close to $3,000. In what other business can you find an article of such value literally turned loose for your use and mine? I firmly believe the experiences of the recent past have demonstrated beyond peradventure the complete interdependence of the railroad and shipping public. The railroad has found that it can no longer act in its own interest, but that the public will find a way to demand a reasonable share of consideration. The shipper has found that there are problems other than his own which must be considered. There must be some measure of give and take. Our real progress must be measured by the friendly spirit of understanding and co-operation which has grown up between those who have the commodity of transportation to sell and those who purchase. In probably no other commercial transaction does the one party have so much to say as to the fairness or otherwise of the other, either in fixing the price of the commodity which is for sale, or the value of the trade to the purchaser.

The Obligation of the Railroad

We have a country which spreads 3,000 miles in one direction and 1,500 to 2,000 miles in the other, within which area we have a public with a widely varying opinion. The coal shipper of Pennsylvania—or possibly I should say the consignee—is, relatively speaking, of a different opinion as to the type of coal car which is best adapted for his business, from that held in Missouri. One shipper of lumber demands open cars for the convenience of loading and assumes the expense of staking, while another shipper of the same kind of lumber demands a closed car to save the expense of staking, disregarding the inconveniences and increased cost of unloading. A shipper of early vegetables in one section of the country may feel that the market available to him will be better served if his product is moved under ventilation, while another shipper of the same commodity will demand refrigeration for the same distance and perhaps in the same general territory. We have constantly an exacting, and if I may be permitted to say it, finicky public to be served.

We must try to please when and as we can, sacrificing somewhat where necesary. Shippers have been generous in using unsuitable cars and in other patriotic acts, often to their loss, carriers have given some poor service, but it is to be borne in mind that in response to the demands of war time production the wheels have almost literally been run off the cars. There has not until the past six or eight months, been opportunity to stop the cars long enough for overhauling; but covering the dissipated repair forces which were so largely upset by war no effort or expense is being spared to properly and promptly condition the cars now awaiting repairs.

A road under-equipped is not doing its duty to the public. Generally, a railroad owns sufficient cars to market the commodities produced on it, but there are varied circumstances. The coal loading road has, as a rule, provided cars in sufficient quantity to carry the product of its road to destination, irrespective of whether that destination is on its rails or not. This has required a heavy outlay entirely inconsistent with purely local requirements. On the other hand, a road may be a heavy receiver of box car freight and originate little or nothing; such a road may not reasonably be expected to provide box cars for it would never succeed, except in times of serious car shortage, in getting these cars into service. Another line may be a heavy producer of perishable fruits and require large quantities of refrigerator cars. The movements may be over two or three intermediate lines which may not reasonably be expected to contribute refrigerator cars for this through movement. This question must be studied in all its variations and some formula arrived at which shall properly and equitably distribute the burden of ownership among all lines. This is not an easy question, but is one to which a competent committee, duly authorized, concentrating for a few weeks, could find the answer. By such an arrangement the roads altogether might be saved a capital expenditure approaching $300,000,000 (100,000 cars).

Service

Terminal and divisional yards must be so policed that cars may not get caught and held. In spite of such action as has been taken to correct delays in yards, I have never seen anything really effective except a record which will work automatically and force those responsible to immediate action. The individual card record can doubtless be adapted to this purpose, and is the nearest proof against error I have ever seen. While the clerical expense involved may be increased somewhat, it is but little comparatively speaking and is as nothing when measured against the possibility of saving in car days.

The shipper cares not so much for quick movement as he does for regularity and dependability. Fast service has been advertised and practically all of the special attention given has been concentrated on these particular trains while the remainder of the traffic, probably comprising 90 per cent of the whole, has been given no special thought. The public generally will be better served if the supervision is spread equitably over all freight movements. We probably lack supervision. Its first cost is expensive; but we must devise some means, automatic or otherwise, which will enable us to check our overdue movement.

Car Distribution

When a car shortage prevails the railroad must determine an equitable basis upon which cars may be divided between shippers and between commodities. Certain obligations must be met and the question of preferential treatment must not interfere. In the first place, freight houses must be kept open. This is a public necessity. All the cars required to move l.c.l. freight to other towns, must be furnished. Certain commodities such as newsprint paper must be provided for. The question of distribution gives a railroal much concern lest it be accused of discrimination.

The distribution of cars for coal and grain is on a well-established and equitable basis. It might be possible to do

*Abstract of an address delivered before the New York Railroad Club, October 17, 1919.

as well with lumber. I doubt the practicability of giving a mathematical rating to all shippers. Fair treatment of shippers, as between commodities and between stations, and between individual shippers is an element to which the railroads must give further attention, arriving at some well established and acceptable basis.

The Obligation of the Shipping Public

The average railroad official is ready to admit shortcomings and to assume his share of the burdens, but there are well-defined obligations resting upon the shipper and consignee: (1) prompt loading and unloading; (2) capacity loading of cars; (3) proper use of the reconsignment privilege. The shipper is frequently careless, not conforming his orders for cars to his actual daily requirements, he is not apt to be considerate as to specific type and capacity. The shipper should order cars in writing and well ahead of requirements; and be precise as to ability to load. Under our present system we have many cases of duplication and inflation which are misleading with a consequent derogatory effect on the car supply in general.

Some hold that demurrage is a device of the devil, designed to extract money from the unsuspecting and innocent, others that the demurrage rules are built for their benefit, to give them certain rights with property not their own, to be exercised without limit; neither position is correct. Demurrage is by necesity a punitive measure to protect one against another's neglect. [Here the speaker made a strong appeal for concentration of effort with respect to prompt loading and unloading. He finds that even after a consignee has been to considerable trouble in speeding up the unloading of his car the railroad sometimes fails in its obligation to move the car with corresponding promptness.]

Our Car Service Section records show that on a certain date 1,922 consignees on 158 railroads were holding 7,764 cars under load, an average of 3 days each *beyond* the free time, or a total of 5 days per car. This represents a total of 23,292 car days beyond the free time which divided by 16 days—an assumed average turning time of a coal car—represents the equivalent of 1,456 cars continuously tied up.

Capacity Loading

During the railroads' campaign of 1917 when all were fired with patriotism, the average loading of cars was increased by something over two tons a car, a gain of from 10 to 16 per cent. If in the flight of your imagination you consider the 250 billion ton miles already recorded as moved by the railroads under federal control for the first eight months of this calendar year, and equate the loss of 3 tons per car which is the figure for August, you will find a possible theoretical saving of something in excess of 200,000 cars for daily use. That is, instead of having 2,250,000 cars available for service daily we should have the equivalent of close to 2,500,000. In August our ton miles deceased 10.8 per cent while our loaded car miles decreased but 2.9 per cent, which gives a picture of the loss of car efficiency due to light loading. We must study the possibilities as between commodities, and the effect of minimum weights. The possibilities of double and triple loading are daily before us. One car can be made to do the work of two in moving salt, sugar, flour, feeds, etc., a saving which is of tremendous importance. Money invested in supervision of this element of transportation will return a hundred fold. Eternal vigilance is the only way.

Reconsignment

Reconsignment is a reasonable and a legitimate traffic privilege but it is subject to abuses. The broker who deals in bills of lading and has no established place of business is a parasite on the railroads; he is on a very questionable basis. There are those who send shipments from one market to another, taking chances on possible sales; and they will reconsign again and again, possibly with the object in view of dodging demurrage charges. Meantime the car is kept under load and out of the service to which it belongs. Who has not seen that sale list of a hundred or more cars of lumber "on wheels" and each with its little code word? Why, we all know that at least half of those cars do not exist!

These then are some of the more important elements of transportation in which the public has a direct responsibility toward improvement. I am sure I cannot be accused of undue bias in making the statement that none of these things represent as much actual effort or expense as do those factors for which the railroad is responsible. Supervision is the answer. But it is impossible for the railroads to have officials responsible for every little thing, with eyes and ears spread over the last inch of 200,000 miles of line, and the railroad and the shipper should sit down together, in a spirit of helpfulness, and see that the tag ends existing here and there are caught up according to the best judgment and conscience of the individual. I do not believe that corporations have no souls, for I have abiding faith in the conscience of the individual railroad official.

Advanced Movements

It is to the interest of all, economically speaking, that the traffic movements be spread as evenly as possible throughout the year. Some commodities do not lend themselves readily to this practice. Melons, peaches and grapes will not wait for transportation; transportation must wait on them. Fertilizer must move generally according to the whim of the farmer; he does not want to tie up his money and cannot store this commodity in advance of requirement. To find adjustment as between seasonal or semi-seasonal commodities and the general run of traffic presents an opportunity for the shipper, the consignee and the railroad to get together in real hedpfulness. Such commodities as pulpwood and clay for the paper mills; phosphate rock for the fertilizer plants; the winter's stock of bituminous and anthracite; wood for the chemical plants; should be moved when tracks are not crowded, and placed in storage. The phosphate rock mines of Florida have been practically idle for the past six or seven months, but the commodities necesasry for next season's fertilizers are not yet moved and they must be moved between now and February 1, our period of heaviest movement and most difficult operation. For the calendar year up to July 1 the bituminous coal production averaged about 8,500,000 tons a week with literally thousands of coal cars idle. Now, in response to vigorous demands of the public, we are hitting 11,500,000 tons weekly, which represents an increased transportation requirement of over 35 per cent for this commodity alone, accompanied by a shortage of cars for this and other commodities, and also a bit of hysteria. Here is presented real opportunity for exercise of the principle of community of interest.

Market Conditions

An established market is helpful to the railroads. It prevents a tendency to panicky conditions among shippers and creates a spread of transportation which is helpful. A shortage in the potato market at New York will send the quotations up and the Maine farmer will call for cars instantly. The warehousemen are all in the same state of mind, desiring to catch a sale on that market, and orders for cars for potatoes jump from zero to hundreds overnight, presenting to the railroads an impossible task. Suppose cars were supplied to fill all the potato orders; the shipments would then be so heavy that the market would break and the producer would immediately cease shipping. . . . There is a considerable tendency to traffic in wheat and other grains already on wheels which ties up cars and which a stabilized market would help to correct. To some extent a similar situation exists with respect to the lumber traffic. Possibly there are certain advantages in having live stock arrive at the large markets on

Monday or Tuesday, but what a saving would follow if shipments of livestock were spread through four or five days of the week! Car supply would be stabilized and train runs would be adjusted to a more even basis.

I appreciate that we cannot interfere with the inexorable law of supply and demand, but nevertheless there would seem to be presented an opportunity for movements such as these to be stabilized; perhaps through association membership which will voluntarily give control to some of these elements without in any way jeopardizing the interests of the industry or the individual.

Shipping Day Plan

The "shipping day plan" has not gained the popularity which I believe it deserves. No doubt the shipping public feel they have exercised all the patience as to the practice of this idea which can be expected. It must be borne in mind that it was presented at a time when railroads were struggling with a shortage of experienced labor, also that available labor was somewhat short of experience. Furthermore, there was not full cooperation among all railroads. But it was a bit of pioneering which should have a stronger support. The theory is excellent; it is not fool proof; it needs help and not so much suspicion that the railroad is trying to put something over.

Permits and Embargoes

In some instances of abnormally rapid development of industries a quite impossible burden is imposed on the railroad. War-time Bridgeport (Conn.) and the oil craze at Burkburnett, Tex., are instances of what I mean. Probably the development of the Texas oil fields represents the most rapid growth of railroad requirements of any period in our history. * * * But for reasons of his own the consignee does not release cars promptly. He clogs the ways. He falls behind for perhaps perfectly legitimate reasons. The embargo is then necessary. This creates a wave-like line of transportation. The permit plan of handling traffic strictly on a basis of ability to dispose of at destination becomes necessary. It creates a "delinquent" list which is quite psychological in its effect. Generally speaking the public are favorable to the permit system, for with it goes a sense of realization of its benefits. Wherever there is opposition I feel railroads must ask the public to be patient in its operation, as I am convinced that in no other way can the traffic of this country be at all times satisfactorily handled. The system has fully justified itself.

Propaganda

A certain industry anticipating a possible car shortage—it positively had not arrived—apparently communicated with all of its branch offices and correspondents in various states and definitely suggested that the question be brought to the attention of the powers that be through senators and congressmen. As a result we had complaints from practically every state in the Union, all as to a single situation at one loading station. We were in receipt of seven letters from the people's representatives of one state with enclosures which read identically the same. Propaganda of a different sort comes indirectly from newspapers and newsprint mills. If there is a temporary car shortage at a paper mill there is likely no preference as to whose paper shall have priority of movement so *all* newspapers are notified that *their* paper cannot be shipped and to get busy. There is relatively no storage of newsprint at points of consumption. We then hear of it from widely separated sources. There is only a certain quantity of cars for distribution and innumerable telegrams and letters cannot increase this quantity. To give preference where no preference is due will involve unjust dealing. Much time and energy would be saved for more important matters with a policy of direct dealing.

Car Service Rules

One of the most important questions before us today, and one in which the public will claim a vital interest, is whether we shall follow the rules observing the ownership of the car or consider all cars common railroad property and load them accordingly. In the fall of 1916 the demands for cars became so urgent that there was a tendency for every road to grab all available equipment and appropriate it to its own uses regardless of rules or obligations. The result was that the cars gravitated naturally into those arears where the industrial activity was the greatest; and not only did they gravitate to these regions but they stayed there, making a corresponding shortage in the producing sections. Then penalties were provided to force the cars home. In the following spring and after various experiments with a strict ownership plan, the war pressure became so urgent that the lid was off; it was "catch as catch can"; and a common-use plan for box cars was authorized with a forced relocation of empties as occasion might demand. In the fall and early winter of that year the situation became so acute in the industrial centers that in the interests of greater production of coal and easier operation a limited coal car pool was authorized. Both of these situations exist today and they present a somewhat complicated situation.

This brings to the fore, as the time approaches for the return of the roads to private control, the question of right or opinion as between the two schools of thought—the adherents of the ownership plan on the one side and those of the pool on the other. Probably the answer lies somewhere between the two. It probably will be conceded, based on the experience and practice of the past two years that with an ownership plan in operation there must be more flexibility than was had in the past. On the other hand, if a modified plan of common use is authorized some protection must be given the owner. Each railroad executive will probably insist that this money was expended for a certain type of car particularly adapted for the shippers and receivers on his lines. Then, too, there is a general pride of ownership which, from a psychological point of view, is important. The consensus of opinion among the lesser operating officials, and this is meant to also include the yard forces, is probably favorable to the flexibility of the common-use plan, for it gives them an opportunity to respond to the demands of their superiors for decreased operating expenses and is a very considerable factor. Thus we have the railroad family somewhat divided on this question.

The shipper is not particularly concerned as to whose car he may be using. What he asks for is a unit of a type to suit his needs—box, coal, flat, stock or refrigerator—which is in good condition and which he can load to whatever destination he chooses. If his car is not forthcoming as he has ordered it he is not at all concerned as to the marks which may be on the side of a car already in his possession. The privileges which have been extended to the shipping public the past two years with respect to the common use of cars have served to form habits which may not be easily broken. As shortages occur the shipper will demand a car without respect to any railroad rules which in his judgment deprive him of something to which he believes himself entitled. If it were possible to standardize cars overnight the problem would be easier. Standardization of equipment does not seem near at hand, although progress has been made for years; but in the nature of things standards must change as ideas develop. Great progress has been made during federal control in the way of standard types of cars and locomotives. Purchases of these standards are however but a small proportion of the whole in point of numbers. Inasmuch as the life of a car will probably average 20 years the period within which standardization can be fully accomplished is thus seen to be a very indefinite one.

I do not think that with a concentrated effort the proposi-

tion will prove an impossible one to deal with. Merely as a suggestion I believe that if ten railway presidents, ten operating executives, ten mechanical superintendents, ten transportation superintendents and ten yardmasters, all selected so as to cover a wide geographical distribution, were to assemble in committee, guaranteed the privilege of free speech and protection from the consequences thereof, and with full authority to act, in two or three days' time they would develop principles which could form the basis for a smaller committee to frame a code or an understanding under which all roads could handle cars to the best advantages and maintain them to the highest possible standards. Like every other move toward real progress this involves the good faith of the individual and, what is all-important, sufficient and efficient supervision.

There are probably car units enough in this country to handle present production. The freight equipment must however be so kept in repair that only a reasonable number of cars shall be out of service; and shipper, consignee and railroad must each do their part in conserving time and avoiding wasteful practices. For the present we should promptly replace all dismantled units, car for car, but of modern capacity. It is not altogether a lack of cars which accounts for our shortages; it is lack of utilization. Show me the actual number of cars short and I think I can show you where there are cars which are or can be made available if we will all fulfill our obligations.

Converting Cross Compound Locomotives to Simple

DURING THE YEARS 1905 and 1906 the Minneapolis, St. Paul & Sault Sainte Marie purchased considerable number of cross-compound locomotives of the Consolidation type. These engines were among the heaviest of their class at the time they were built, the total weight in working order being 101 tons. At the present time they are still used in through freight service, and in order to eliminate the unsatisfactory features of the compound, one of the class was recently converted into a simple locomotive, using superheated steam. Tests conducted to determine the relative fuel consumption of the compound and the simple superheated engine showed that the change resulted in a substantial saving of fuel.

For the purpose of the test two engines were chosen, which were in practically the same mechanical condition. Engine 448 was a cross-compound, while engine 468 was superheated with simple cylinders. One engine crew was assigned to the test and was used on all the runs. In order to obtain a close check on the fuel used, approximately the correct amount of coal for the run was weighed and put into the coal space of the tender. An additional supply was weighed out into 100 lb. sacks and was carried on the back of the tender. The fuel used in firing up and before the test started was taken from the sacks and accounted for separately. After the main supply had been burned sacked coal was used, or in case the pit was not emptied the remainder was removed and weighed. A record of the water used was made each time the tank was filled.

The division on which the test trains were run extends from Moose Lake to Boylston Junction, Minn., a distance of 38 miles. The regular tonnage for the cross-compound locomotives is 90 cars, or 1,440 tons, and the majority of the trips were made with this tonnage. On two trips with the superheated simple engine the train was increased to 100 cars of 1,600 tons. Although the increase in the rated tractive effort of the simple over the cross-compound is only six per cent, these runs showed that engine 468 would handle 100 cars better than engine 448 would handle only 90 cars.

On hauls out of the ore mines the regular rating for the compounds is 50 cars, but on test trips engine 468 handled 55, 59 and 60 cars without any difficulty. Another trial run was made from Superior to Glenwood, Minn., a distance of 200 miles. On this division the tonnage rating for the cross-compound engine is 2,200 tons, but in order to make the trip in less than 16 hours the train must be reduced to from 1,800 to 2,000 tons. With engine 468 a train of 2,157 tons was hauled from Superior to Glenwood in 10 hrs. 7 min. actual running time.

The fuel performance with the two engines on the trips between Boylston Junction and Moose Lake is summarized in the accompanying table:

Engine number	Test number	Number of cars	Tonnage	Coal per 1,000 ton miles	Decrease for Engine per cent	Coal per sq. ft. of grate per hour	Actual evap. per lb. coal	Running time
468	1 and 2	90	1,440	124	13.9	78.0	6.93	1 hr. 42 min.
448	5 and 6	90	1,440	144	....	56.5	7.78	2 hr. 37 min.
468	3 and 4	100	1,600	128	....	80.0	6.96	1 hr. 52 min.

It will be noted that the actual evaporation per pound of coal with the superheated locomotive was 10.9 per cent less than with the saturated locomotive, due no doubt to the reduction in tube heating surface resulting from the application of the superheater. In spite of this the superheated engine used 13.9 per cent less coal per 1,000-ton miles.

The principal dimensions, weights and ratios for the original and the converted locomotive are given below:

	Engine 448 (Cross compound)	Engine 468 Simple Superheated
General Data		
Gage	4 ft. 8½ in.	4 ft. 8½ in.
Service	Freight	Freight
Fuel	Bit. coal	Bit. coal
Tractive effort	37,300 lb.	39,500 lb.
Weight in working order	201,500 lb.	197,800 lb.
Weight on drivers	174,000 lb.	169,800 lb.
Weight on leading truck	27,500 lb.	28,000 lb.
Weight of engine and tender in working order	318,400 lb.	314,700 lb.
Wheel base, driving	17 ft. 0 in.	17 ft. 0 in.
Wheel base, total	25 ft. 11 in.	25 ft. 11 in.
Wheel base, engine and tender	55 ft. 9½ in.	55 ft. 9½ in.
Ratios		
Weight on drivers ÷ tractive effort	4.67	4.30
Total weight ÷ tractive effort	5.40	5.01
Tractive effort × diam. drivers ÷ equivalent heating surface	811.2	909.2
Equivalent heating surface* ÷ grate area	61.8	58.4
Firebox heating surface ÷ equivalent heating surface,* per cent	5.45	5.77
Weight on drivers ÷ equivalent heating surface*	60.1	62.0
Total weight ÷ equivalent heating surface*	69.6	72.3
Volume equivalent simple cylinders	11.45	.....
Volume both cylinders	15.65 cu. ft.	
Equivalent heating surface* ÷ vol. cylinders	252.8	174.9
Grate area ÷ vol. cylinders	4.08	3.00
Cylinders		
Kind	Cross-compound	Simple
Diameter and stroke	23 in. & 35 in. by 34 in.	22½ in. by 34 in.
Valves		
Kind	H.P. cyl. piston, L.R. cyl. slide	Piston
Diameter		12 in.
Greatest travel	6 in.	6 in.
Wheels		
Driving, diameter over tires	63 in.	63 in.
Driving, thickness of tires	3½ in.	3½ in.
Boiler		
Style	Ext. wagon top	Ext. wagon top
Working pressure	210 lb. per sq. in.	170 lb. per sq. in.
Outside diameter of first ring	67⅜ in.	67¾ in.
Firebox, length and width	96⅛ in. by 70¼ in.	96⅛ in. by 70¼ in.
Tubes, number and outside diameter	332-2 in.	178-2 in.
Flues, number and outside diameter		28-5⅜ in.
Tubes and flues, length	15 ft. 9 in.	15 ft. 9 in.
Heating surface, tubes and flues	2739 sq. ft.	2089 sq. ft.
Heating surface, firebox	158 sq. ft.	158 sq. ft.
Heating surface, total	2897 sq. ft.	2247 sq. ft.
Superheater heating surface		327 sq. ft.
Equivalent heating surface*	2897 sq. ft.	2737 sq. ft.
Grate area	46.89 sq. ft.	46.89 sq. ft.

*Equivalent heating surface = total evaporative heating surface + 1.5 times the superheating surface.

Improving the Manufacture of Steel Rails

Several Practical Suggestions for Raising the Quality by Better Inspection and Mill Practice

By Robert W. Hunt
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FROM THE EARLIEST CONSIDERATION of the subject, the value of proper inspection has always been recognized, and some of the most important points of discussion have been as to how that inspection should be conducted. It has been the writer's fortune to have been connected with the manufacture of steel rails during the whole of the existence of that industry in America and therefore he has had, from practical contact, an intimate knowledge of the various developments that have taken place in that industry; and, particularly, as during the last 31 years he has made a specialty of steel-rail inspection, he feels that he may claim to have had the best of opportunities to become familiar with the details of the procedure.

This familiarity led him, early in 1912, to recommend to his clients a more detailed system of inspection than had until then been used, which should more thoroughly supervise the progressive steps in the manufacture of the rails; beginning at the making of the steel down through the various stages of manufacture to the loading of the finished rails upon the cars for shipment. On this line, the firm of Robert W. Hunt & Co. at the request of one and with the approval of several others of its more important patrons, established in 1912 what is known as its "Special Inspection." This consists in placing inspectors in all the departments of the steel works, beginning at the open-hearth furnaces or Bessemer converters, at the soaking pits and the blooming mill, the rail mill, the drop-testing machines, the hot beds, drilling and straightening departments, and, finally, the inspection of the finished rails. These men are placed at each of these several departments day and night, their duties being to observe carefully all the details taking place; and if there should be any deviation from the provisions of the specifications under which the rails were purchased, or deviations from the accepted practice of the mills, or abnormal conditions of any kind, to make note of the same; and while not at liberty to interfere directly with the workmen, to call the attention of the foreman of the particular department in which the occurrence is taking place to what is happening, and also to pass a written report to the inspector stationed in the next succeeding department, and so on to the finished-rail inspectors. The chief inspector is also required to give a written report of unsatisfactory conditions to the superintendent of the mill, so that there may be an absolute record of what has happened to each heat of steel made on either turn, be it day or night, and as the rails are stamped with their heat numbers, and location in the ingots from which they were rolled, the mill management will possess an individual history of each rail, with the possible identification of the individual workmen who were in control of the manipulation of the rail from beginning to end.

Moreover, a comprehensive report is rendered to the proper officer of the railway company for which the rails are manufactured, resulting in the archives of that railroad possessing a detailed history of the making of the rails. Hence, should a rail fail in service, it will be possible to not only have cognizance of all the details of its manufacture, but the makers will be able to determine the workmen who participated in that manufacture. As can be appreciated, this leads to a personal responsibility being attached to every rail. It must be remembered that the workmen at the mills are paid by the ton, hence they are naturally desirous of producing as large an output as possible, and under the ordinary system of inspection, as soon as the rail left the works, all individual connection with it vanished, or, at best, any process of personal connection was extremely difficult and uncertain.

The result of this special system of inspection has been most satisfactory to both the manufacturers and the purchasers, and it receives the approbation of the workmen themselves, as each man knows that if he properly performs his duties he is protected against the danger of being held responsible for the acts of a less careful operative, while the mill management has given it, without cost, a thorough system of supervision. That it has proved satisfactory to the railway companies who have been employing it is best evidenced by the following, gathered from the records of the American Railway Engineering Association.

The statistics covering open-hearth steel rails give the failures that have occurred in five years, ending October 31, 1917, on 37,862 miles of track. Forty-five per cent of this mileage comprised rails rolled under special inspection, and therefore 55 per cent was made under other conditions. The total number of failures per hundred track miles on all of the mileage reported was 31.1, while the number of failures per hundred track miles on the rails covered by special inspection was 26.6, and the number of failures per hundred track miles of those not covered by special inspection was 34.8. Thus, there was 30 per cent in favor of specially inspected rails.

As each ingot is a separate and individual casting, I believe that, in addition to the tests representing the whole heat of metal, there should be some way of determining the physical character of the steel rolled from each and every ingot. As a destructive test seems to be the only way to actually ascertain that point, and as, of course, you cannot destroy all the rails, I, in 1915, installed what is known as the nick-and-break test, under which a test piece is cut from the top end of the first, or *A*, rail rolled from each ingot. This is nicked and broken, thus enabling the inspector to examine the fractures and, in case of the presence of segregation, pipe, or some other mechanical defect, to reject the rail represented by the test piece. Following such rejection, a test piece shall be cut from the bottom end of the same rail and broken; if that piece has similar defects, the second, or *B*, rail is rejected, and a piece cut from its lower end, and tested. In case of failure, the procedure is continued for the succeeding rails until a sound one has been reached. This has proved an expeditious and cheap procedure, and in my judgment very satisfactory.

A large tonnage of rails made under it is in American railway tracks and a much larger tonnage in those of Canadian railways. In fact, at the present time every standard steel rail rolled in Canada, and for all of that country's roads, is so made.

As the chemical composition of the steel is a fundamental part of rail specifications, a very important point is the taking, for analysis, of the drillings representing the heats of steel from which the rails are rolled. The drillings must

*A paper presented before the American Institute of Mining Engineers at a meeting in Chicago this week.

be taken from test ingots, and the time and manner of casting these ingots, as well as their shape, is receiving attention. In fact, the whole matter of ladle-test ingots is now receiving the attention and study of a committee of the American Society for Testing Materials in conjunction with the U. S. Bureau of Standards. Pending a full report on the subject by them, it would appear desirable to require the adoption of a standard sized and shaped ladle-test ingot and to insist that it be cast as sound as possible by the addition of aluminum to the molten steel; further, that two or three should be cast at equal intervals in a heat during the pouring of the large ingots and drillings from them carefully mixed. Thus, greater protection would be afforded as against a single small test ingot not representing, thoroughly, say, a 100-ton heat of steel.

All specifications should demand that the inspector representing the purchaser should have the right to witness the taking and mixing of the drillings, from which mixture, upon his request, he is given a portion for the purpose of check analysis. As a rule this is done, but at some plants it is a subject of dispute which should be prevented.

A few years ago there were many rail failures through what were designated as crescent-shaped breakages; that is, ruptures in the rail flanges extending from the outside inward toward the web, the broken pieces being of crescent shape. These fractures were frequently followed by complete cross-fractures of the rails, resulting in many costly and oftentimes fatal accidents. It was found that, as an almost inevitable rule, there was a longitudinal seam in the bottom of the rail flange at the point of fracture, which was directly under the web of the rail. This situation caused great anxiety and led to much discussion as to the causes of the seams or laps. One steel company developed and established a de-seaming adjunct to its rail mill, by which the outer steel of that part of the blooms subsequently forming the heads and flanges of the rails was milled off. The works claim success from the scheme. The later adopted sections have thicker flanges and the crescent-shaped breaking trouble seemed to have become minimized; but I regret to say that during the past year one of the prominent railway systems has been having a large number of such failures from heavy rails. Another system encountered the same kind of defects, which, in this case, fortunately were discovered before serious damage occurred. The rails were from different steel companies; therefore, it is again a matter demanding prompt and effective action. To require all producers to establish de-seaming mills is very radical, but if that is the only way property and life can be protected from such danger, it may have to be done.

Another point of less importance, but still of prime necessity, is the milling of both ends of the rails. This has been the practice of English mills for years and some American makers mill one end of some of the rails made by them. Depending on chipping and filing for the finishing of the ends of the rails is very unsatisfactory. Milling would not only eliminate all fins resulting from the hot sawing, but positively assure squareness of ends and accuracy of lengths, all three of which are of great importance in relation to joints, a part of track maintenance that is receiving more and more attention.

Much thought and considerable experiment have been given to the betterment of the cold straightening of rails. From the time of that procedure being represented by the blows of a heavy sledge swung by a sturdy man, the practice has been a brutal one. To accomplish the semblance of the desired result, the steel has to be bent beyond its elastic limit, thus enabling strains with an ever-present danger of causing actual or incipient ruptures in the metal, which may result in complete rail failures. In my judgment, it is practical to do away with cold straightening, by proper hot straightening of the rails. If, in case of uncontrollable conditions, a few rails should come from the hot beds unsuitable for use, they could, after some cold straightening, be classed as seconds and used for other than main-track purposes.

In the present practice, a rail is put under the cold press and most carefully, but brutally, punched into seeming straight line and surface. Frequently, it is later put on the ties and with equal care spiked out of a straight line into curves of varying degrees. Rails can be hot straightened without any short kinks and with lines that will permit good loading for transportation and satisfactory track laying; thus can the expense and danger of the cold straightening be avoided. There are now at least a thousand tons of rails, finished as above advocated, giving satisfactory service in the lines of several railroads having heavy traffic, and they have had over three years of trial. The rail makers will welcome such a departure from present practice and, I am confident, make it successful.

To secure sound rails it is of supreme importance to make sound ingots. Sir Robert Hadfield presented a paper before the Iron and Steel Institute in October, 1912, which attracted wide attention and much discussion. The plan is broadly designated as using a "hot-top ingot," and many plans of obtaining such castings, other than directly following Sir Robert's, have been and are being employed successfully, notably on ingots to be used in ordnance work. As yet hot-top ingots are not used in rail making; both encouraging and disappointing experiments have been made, but I am satisfied that this method is practical and will be so proved. Based on the results obtained with other than rail ingots, its success with them is bound to come. Therefore, while I am not at this time prepared to incorporate hot-top ingots in rail specifications, the time is near when it will be entirely practical to do so. It may involve a somewhat greater first cost, to be at least partly offset by saving in scrap, but if the outlay is justified when making steel to be used in destroying life, should it not be even more so when producing metal on the soundness of which human safety will so largely depend?

The threatened shortage of high-grade manganiferous ores during the late war years led to economy in the use of metallic manganese, particularly through the more general adoption of the practice of adding it to the charges in a melted condition. The obtained results from a metallurgical point of view have been very satisfactory and specifications should insist on the practice.

The importance of the chemical composition of rail steel cannot be gainsaid. In former times, when acid Bessemer steel was used for rails, its composition was restricted to a large extent by the character of the original ores, it was controlled with considerable ease by the condition of the process itself. Heat after heat of fairly uniform composition was produced and, in short, the desired aim for the various ingredients of the steel was readily obtained. But basic open-hearth steel manufacture is fraught with far more difficulty, for, while the initial composition of the charge does not exert so much influence, the attainment of the desired composition for the heat is dependent on so many constantly varying conditions that a wider latitude in the range for some of the different elements must be provided. The time will come when this will not be necessary and the practice of using molten additions for recarburizing enables operations on a much more consistent basis with respect to furnishing steel of the analysis desired.

The most harmful physical characteristic of rail steel is, of course, brittleness. The low amount of phosphorus present in open-hearth steel renders protection against the dangers from that element and permits freer use of carbon as a hardening element. Experience has pretty well demonstrated that the safe upper limit for carbon in rail steel is approximately 0.75 per cent; and accepted practice has

allowed a working range of 13 points, with the result that the lower limit of carbon has been most frequently specified as 0.59 per cent, but in some cases 0.62 or 0.63 per cent; speaking, of course, of the almost universally accepted practice of having the steel contain not over 0.04 per cent phosphorus. The problem of always making basic open-hearth steel within this range is difficult and frequently heats are cast slightly outside the limits specified. There is a much greater commercial opportunity for manufacturers to find other than rail uses for steel containing the lower amounts of carbon than when containing the higher amounts; therefore, they naturally aim to have the carbon content nearer the low side of the permitted range. Hence, the larger percentage of heats is on the low side of the allowed carbon. In repeated cases, "off heats" are produced which fail to be within the prescribed limits of the particular specification to which the rails are being rolled, but are entirely applicable to another rail specification for which the mill has orders. This leads to the ingots from such heats being temporarily discarded, later to be re-heated and rolled on the other specification. This means re-heating and rolling of cold ingots, which is invariably accompanied by an increased production of second-quality rails, largely augmented by the lack of proper control and treatment in the soaking pits.

The various railway systems of the country are now using as their standard practice about the same weight of rails. There are some variations of sections, but I do not see any serious objection to the adoption of a general or common chemical specification. We know that hundredths of percentages are very delicate variations and, especially in relation to carbon, errors may occur in the results obtained by two different chemists, particularly if working under modern manufacturing pressure. If a common carbon, silicon, manganese and phosphorus specification prevailed, the work of the open-hearth steel melter would be simplified, the cold-ingot trouble eliminated, and, I think, better general results obtained.

As a means of lessening the tendency on the part of the manufacturers to protect themselves by keeping the carbon content of the metal toward the lower range, it would be well to accept not over an agreed upon small per cent of heats slightly higher in carbon than the specifications. These rails could be specially marked and shipped, so that the roads would have them by themselves and use them in places for which they would be well adapted. I think that there would be but a very small percentage of such rails produced, but the very fact that the danger of rejection from over high carbon would be eliminated would cause the steel makers to feel less restricted in their procedure. In other words, it would allow a certain elasticity which would, undoubtedly, work to the advantage of both producers and consumers; of course, for acceptance, the high-carbon steel must have successfully passed the prescribed physical tests.

Another development of great interest is the triplex processes, both on the Bessemer open-hearth electric and the Bessemer and double open-hearth plans. These are being worked out in practice and, I believe, will soon be adding much toward the production of more regular and, hence, better steel, and, of course, also better rails.

A Convertible Stock Car

A DEVICE designed to convert the ordinary live stock car into a box car for general merchandise purposes has been placed on the market by the U. S. Convertible Car Company of Fort Worth, Texas. This equipment consists of moveable floors of 2-in. pine and steel folding side walls, which are hinged to the moveable floor and to the inside of the car near the roof. As shown in the illustrations, the moveable sides and floor are operated by means of ratchet cranks attached to a worm and sector device located under the car and connected to the moveable floor at each corner by a 3/8-in. steel cable moving over sheaves located inside of the car.

An old stock car to which this device has been applied is shown in Fig. 1. The water-tight live stock door *1*, with the protector or water seal *4*, is part of the necessary equipment, although not an integral part of the convertible device. The worm and sector *3*, the ratchet cranks *5* and *6*, and the side lock bolts are located as shown. This car operated successfully for a period of more than a year.

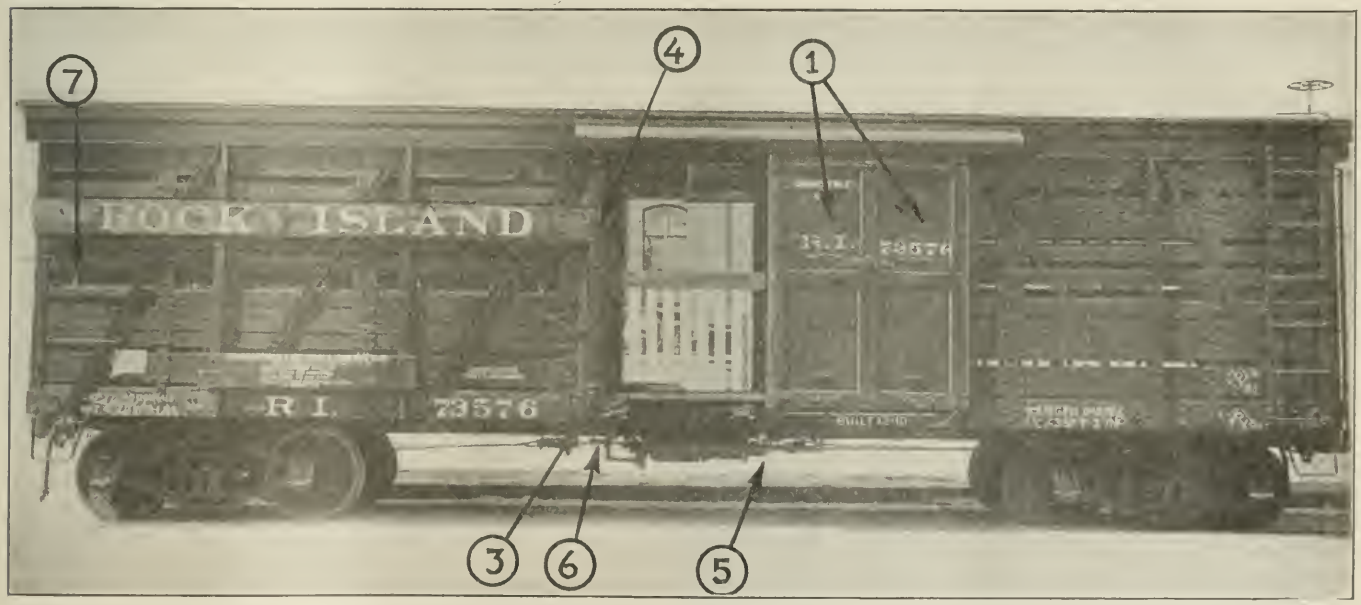


Fig. 1—A Rock Island Stock Car Equipped with the Convertible Device.

In Fig. 2 the car is shown with one end having the convertible device raised to the top of the car, as when live stock is carried, and the other end with the device in place, as when the car is used for general merchandise or grain.

The manner in which the device operates is clearely indi-

cated in Fig. 3, which shows the folding side walls 6 and 7 as they automatically unfold, as the moveable floor 8 is lowered into position on top of the permanent live stock floor 10. In the foreground of Fig. 3 the merchandise, or moveable, floor 8 is lowered down on top of the live stock floor 10 by operating the ratchet crank. The cable 4 running over the sheave, 5 lowers the floor and the side walls unfold, the slot hinge 1 and 2, secured by the U-bolt 3, permitting the movement without any binding. The side

Fig. 2—One End of Car Arranged for Merchandise. (1) Safety lock; (2) Moveable floor; (3) Showing absence of any nails or projections to injure live stock; (4) Instructions for operating device; (5) Door water seal; (6) Provision for fastening grain doors.

walls are then secured against the slatted sides 11 of the car by the side lock bolts, which are secured in place by the lock bolt button 13.

The general appearance of the interior of the car when arranged for merchandise is illustrated in Fig. 4. This shows

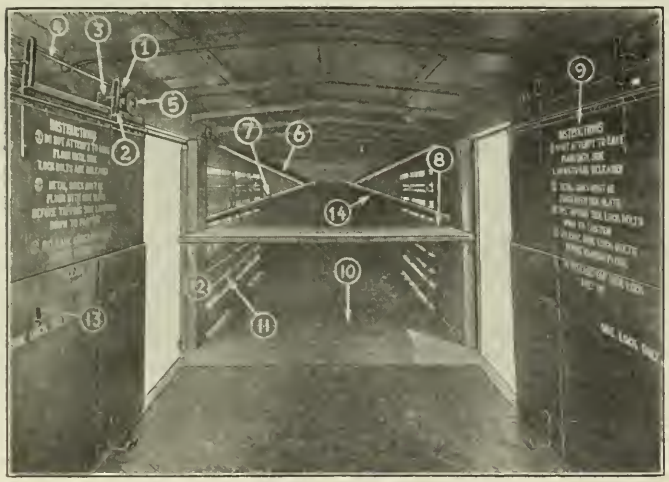


Fig. 3—One end of Car Ready for Merchandise and Convertible Device Lowering into Position in the

the clean merchandise floor 2 in place on top of the live stock floor and the ventilated door 3 closed for merchandise loading. An end door 1 is provided, so that live stock can be given necessary attention. The ends of the steel folding side walls are crimped, so that the door jamb 4 is exposed to permit the application of a grain door. With the addition of a grain door this arrangement can also be used for the transportation of grain.

A number of advantages is said to be gained by the use of this device. The transportation of live stock necessitates a type of car for which it has been impossible to find freight, of a kind that can be handled in them, in sufficient quantities to load in the cars on their return trip to the stock-

Fig. 4—Interior of Car as Arranged for General Merchandise.

raising sections of the country. This results in great loss, due to non-revenue or empty car-miles. As there are long periods when there is no live stock business, these cars must frequently lie idle, and it is estimated that the average time in service of such cars is only from 25 to 40 per cent.

This convertible appliance makes it possible to keep stock cars in practically continuous service, and the operation of the device is so simple that it is claimed that a station agent or any other person can convert from one type of car to the other without any assistance from the mechanical department.

Passenger Traffic in December

THE NUMBER OF PASSENGERS carried one mile by the railroads under federal control during the month of September amounted to 4,331,339,003, an increase of 9.2 per cent over September, 1918, according to the monthly report of the Operating Statistics Section. All regions and districts showed increases except the Southern region, which showed a decrease of 17.3 per cent. For the nine months ended September 30 the number of passengers carrid one mile was 34,949,294,185, an increase of 6.7 per cent. Decreases were shown by the Ohio-Indiana district and the Southern region.

Tie Production

THE PRODUCTION OF TIES for the 10 months ended October 30 this year has been approximately 84,500,000, according to reports received by the Forest Products Section. It is estimated that the production for November and December will amount to 10,250,000, which will make the total for the year approximately 95,000,000. The number of ties inserted for renewals up to October 30 this year was 76,580,185. The production in 1918 was only 65,000,000 while 86,000,000 were inserted during the year. The number of ties on hand when the railroads were taken over in December, 1917, was about 44,000,000. This had been reduced to 36,000,000 on January 1, 1919, but on November 1 the number of ties on hand had increased to 51,000,000.

Railway Fire Protection Association Convention

Methods of Storing and Handling Inflammable Liquids and Means of Reducing Fire Hazards

THE SIXTH ANNUAL MEETING of the Railway Fire Protection Association held at the Hotel La Salle, Chicago, on November 18, 19 and 20, inclusive, was featured by extended reports and discussions on the best methods for handling and storing fuel oil and inflammable liquids and by lengthy discussion of the means of reducing the fire hazard in rolling stock. Both of the business sessions on the first day of the convention, November 18, were fea'ured by the presentation of reports and papers dealing with the handling of inflammable and explosive liquids and fuel oil and throughout both sessions there was much discussion as to the recommendations made. The two business sessions on the second day of the convention were devoted mainly to the presenation of reports concerning heating appliances in freight and passenger equipment and the discussion thereon. The last session of the convention on November 20, was devoted largely to the question of protecting wooden bridges and trestles against fire.

The convention was formally opened at 10 o'clock on November 18, by President Robert Scott, superintendent of insurance and safety of the Atlantic Coast Line at Wilmington, N. C., who stated in his opening address that the problem before the members of the Association was to make the employees on the railroads understand their responsibility for the results arising from fire waste.

Reports of Resolution and Membership Committees

The reports of the executive committee and the committee on resolutions immediately followed Mr. Scott's address. E. B. Berry, superintendent of fire prevention of the Southern at Washington, D. C., and vice-president of the Association, speaking for the former committee, stated that the total membership in the Association had increased to 184 during the past year, or a growth of 72 per cent. C. N. Rambo, manager of the Fire Loss and Protection Section of the United States Railroad Administration presented the resolutions prepared by the latter committee. These resolutions which were unanimously adopted by the convention called attention to the following facts and measures:

(1) The reduction in the fire waste can only be accomplished through the enforcement and acceptance of individual responsibility as a matter of daily duty, through which means carelessness and defects which produce fires may be eliminated.

(2) To continue on each individual railroad the concerted work undertaken during federal control of railroads that there may be no let-up in protecting properties, even though actual war conditions may be past, and that the comprehensive system of education as to fire dangers and the use of every means possible of lessening the likelihood of fire occurring be continued.

(3) The encouragement of fire-restrictive building construction and a more genral recognition on the part of engineers and architects that through them and the adoption of improved building construction the first and gravest responsibilities rest in the elimination of much of the fire loss.

(4) The more extended use of fire walls dividing structures of large areas as a means of reducing the spread of flames.

(5) A wider general use of automatic sprinklers as a means of extinguishing fires at their incipiency and a comprehensive study of the use and service of standpipes and hose, fire hydrant systems, all with abundant water supply. A greater study of the economic results of the installation of adequate fire fighting devices, eliminating a too prevalent consideration only of the initial cost.

(6) The co-ordination of all fire prevention activities on each railroad through a central administrative officer for the promulgation of rules and regulations for the proper protection of properties and the guidance of officers and employees in the proper care of property in their charge or where they may be employed to guard against fire hazards.

(7) The appointment of fire marshals on divisions, districts or terminals to have charge of all fire equipment, and the formation and drilling of fire brigades and to make frequent inspections as to general care and cleanliness, in their respective territories.

(8) The full co-operation of all railroads with the Bureau of Explosives in the enforcement of rules and regulations for the safe transportation, storage and use of explosives and other dangerous articles.

(9) The continued employment of experienced inspectors to report on the conditions and adequacy of fire equipment, the condition of properties affecting the fire risk and the safeguards required to protect dangerous processes and occupancies.

(10) The rigid investigation of all fires, with particular effort to trace the cause and fix the responsibility for damage or destruction of property.

(11) The education of employees in careful habits with respect to common fire dangers through bulletins, meetings, etc.

(12) A full realization that fire insurance only partially ocmpensates for the fire waste and is in a measure but a tax imposed on carelessness and neglect and that there is always a large consequential loss that must be considered, which is not compensated for by insurance.

Report of the Committe on Statistics

The report of the committee on statistics presented by E. B. Berry, chairman of this committee, contained interesting data concerning the number and origin of fires on railroads of the United States during the past year. This report is substantially as follows

Through the co-operation of the Fire Loss and Protection Section of the Administration, it is possible for me to present for your information and consideration a very complete and comprehensive statement of fire losses in railroad properties for the calendar year 1918. The statement is based upon report of fires from 419 roads having trackage of 239,761 miles.

Briefly, the 419 roads under the Federal Administration reported 20,628 fires with a total loss of $12,263,220, an average loss of $594.50 per fire and $51.10 per mile of road. These figures, however, include 9.923 right-of-way fires with a loss of $1,610,190. As right-of-way fires were not reported nor included in our 1917 statement, if we eliminate the fires charged to this specific classification we have 10,705 fires with a loss of $10,653,030 in other railroad properties. With this elimination or reduction, the average loss per fire during 1918 amounted to $995.15 with loss per mile of road of $44.42, as against $857.59 average loss per fire and $34.47 average loss per mile of road during 1917.

Notwithstanding the very large percentage of increase in the number of roads sending in statistics over previous years, we find under the risk classification report that, as in past years, rolling stock and merchandise in transit have suffered 59.9 per cent of the number of fires and 48.7 per cent of the loss. It might also be of interest to note under the risk classification statement that passenger and freight stations suffered approximately 6 per cent of the total number of fires and 9 per cent of the total loss during 1918, which compares favorably with 9.3 per cent of the loss during 1917; coaling stations suffered 1.3 per cent of the total fires and 3.6 per cent of the loss during 1918, while during 1917 the

loss on this class of property was 3 per cent; mechanical property is charged with 4.3 per cent of the number of fires and 14.5 per cent of the loss during 1918, as compared with 4.8 per cent of the loss during 1917; bridges and trestles show approximately 9 per cent of the number of fires and 4 per cent of the loss during 1918 while in 1917 the loss on this class of property amounted to 2.9 per cent.

Under the origin classification statement you will find 62.74 per cent of the number of fires and 24.42 per cent of the loss was caused by locomotive sparks. The other origins following in their relative importance as to the number of fires are as follows:

	Per cent.
Unknown	13.82
Heating appliances	4.47
Ashes and cinders	2.42
Adjacent property	2.20
Hot coals from locomotives	2.13

Of the 20,628 fires reported, there were but five individual fires with loss between $100,000 and $250,000, four of these were between $100,000 and $150,000 and one fire was $242,000, so it is obvious that our heavy aggregate losses in railroad properties come from fires reporting relatively small losses.

Statement of Fire Losses by Origin Classification for Year 1918

Origin Classification	No. fires	Per cent	Loss	Per cent 1918	Per cent 1917
Adjacent property	455	2.205	$697,930	5.691	5.492
Ashes or cinders	499	2.419	63,030	.514	.620
Boilers	50	.242	14,848	.121	.525
Careless burning of roadbed, etc.	272	1.318	119,432	.974	.456
Explosion	5	.024	3,657	.030	.506
Electric wiring	116	.562	217,066	1.770	2.883
Fire works	1	.005	2,624	.021	.001
Fuel oil systems	24	.116	53,939	.440	.156
Forest fires	54	.261	486,957	3.971	.224
Friction, hot box, brake shoes	124	.601	128,371	1.047	1.516
Fusees	9	.043	1,424	.012	.155
Gasoline, oil, etc	72	.349	26,067	.212	1.792
Heating appliances	923	4.475	424,892	3.465	6.108
Heating appliances, car heaters (freight)	56	.271	27,959	.228	....
Incendiary	129	.625	483,930	3.946	1.721
Lighting appliances	191	.959	147,134	1.199	.860
Lightning	58	.281	35,335	.228	.916
Locomotive, sparks	12,963	62.740	2,995,200	24.425	9.615
Locomotives, hot coals	467	2.137	166,126	1.354	1.531
Locomotives dropping hot oil	13	.063	170,379	1.389	....
Loading charcoal, lime, etc	213	1.032	110,323	.899	.992
Matches	99	.480	78,943	.643	.271
Smoking	161	.780	102,874	.839	1.985
Spontaneous combustion	190	.920	228,807	1.866	5,864
Tire heating	12	.058	5,214	.042	....
Torches	118	.572	72,157	.588	1.265
Tramps and trespassers	146	.708	166,540	1.358	2.156
Unknown	2,810	13.825	3,783,751	30.853	38.040
Waste, lockers, etc	36	.175	67,725	.552	.427
Wrecks	205	.994	1,281,248	10.449	11.209
Miscellaneous	114	.552	79,097	.650	2.714
Miscellaneous thawing pipes	43	.208	19,641	.164	....
Total	20,628	100.000	$12,263,220	100.000	100.000

Right of way fires (property not our own)	9,923	1,610,190	162.30
Total	20,628	12,263,220	594.50

	1918	1917
Number of roads reporting	419	49
Mileage reported	239,761	141,849
Number of fires	*20,628	5,701
Loss	†12,263,220	4,899,146
Average loss per fire	594.50	857.59
Average (excluding right-of-way fires)	995.15	.....
Average loss per mile of road	51.10	34.47
(Excluding right of way loss)	44.42	.....

*Includes 9,923 right-of-way fires not included in 1917 statement.
†Includes loss of $1,610,190 not included in 1917 statement, being right-of way loss.

Comments by C. N. Rambo

The principal address of the morning session was given by C. N. Rambo, manager of the Fire Loss and Protection Section of the United States Railroad Administration, who after outlining the history of the Fire Loss and Protection Section and the results that it has accomplished in reducing fire hazards said in part:

"Fire prevention work is carried on because of the well-founded knowledge that fire hazards are ever present on railroad properties. It is a continual subject for study, developing experts in recognizing defects in material things and in practices and conditions. It is the study of the elimination of causes of fires. Fire protection, on the other hand, shows its value more directly in the study of the proper application of fire apparatus of all kinds and in the study of property construction.

"I think the railroads should feel that the fire prevention service is a necessary part of their operating plan, with the removal of certain uncertainties as to extensive property loss and interference with operation, which would seem to make any reasonable expenditure for fire protection quite desirable.

"Through the work of the Fire Loss and Protection Section of the Railroad Administration there has been a constant effort to reduce the fire waste of approximately $30,000 per day on railroads, an average loss per fire reported of nearly $1,000 and on average loss per mile of road reported of nearly $40. I believe that at least 50 per cent of this can be prevented, possibly more, by the exercise of individual care and by the acceptance of individual responsibility. There has been an effort made to prevail upon the approximate 2,000,000 employees to realize this individual responsibility and to prevent carelessness. This large fire loss means that much charged against the railroads' revenues, that much added to the operating expenses."

Other Reports at Opening Session

The report of the committee on use of inflammable and explosive compounds and liquids in shops was also presented at the morning session by Charles P. Beistle of the Bureau of Explosives and chairman of the committee. This

Statement of Fire Losses by Risk Classification for Year 1918

Risk Classification	No. Fires	Per cent.	Loss	Per cent 1918	Per cent 1917	Average loss per fire 1918	Average loss per fire 1917
Passenger and freight stations and contents, including freight	641	5.988	$958,511	9.0	9.876	$1,495.	$1,113.
Warehouse for storage of miscellaneous merchandise and contents	33	.308	209,731	2.0	.584	6,355.	134.
Automobile platforms	3	.028	1,813	....	....	604.	....
Dwelling and section houses	336	3.139	114,720	1.1	.544	341.	201.
Hotels, eating houses and contents	54	.504	47,523	.4	.891	880.	968.
Office buildings and contents	93	.869	66,152	.6	....	711.	.....
Water station and pump houses	218	2.037	113,484	1.1	.972	520.	421.
Oil tanks and contents	18	.168	100,978	.9	.080	5,609.	604.
Coaling stations and coal	142	1.327	382,648	3.6	3.078	2,694.	3,540.
Mechanical department property, including shop buildings, storehouses, round houses, etc.	458	4.279	1,539,585	14.5	4.801	3,361.	863.
Grain elevators	9	.084	116,922	1.1	.003	12,991.	53.
Stock yards, pens, loading platforms, etc	62	.579	12,706	.1	.524	204.	546.
Piers, wharves, etc	35	.329	131,534	1.2	23,000	3,758.	86,488.
Signal and interlocking towers	113	1.056	94,851	.9	.984	839.	134.
Bridges and trestles	946	8.836	461,208	4.3	2.972	487.	283.
Rolling equipment	5,453	50,940	2,450,615	23.0	19,739	449.	437.
Merchandise in transit in cars	963	8.995	2,739,263	25.7	15.265	2,844.	1,469.
Floating equipment	17	.159	37,930	.4	1.461	2,231.	4,202.
Contents of floating equipment	1	.009	270	.0	....	270.	....
Cotton platforms and warehouses	13	.121	10,318	1	.608	793.	2,265.
Cotton-carrier and warehouse man's liability	138	1.289	518,036	4.9	6.016	3,753.	2,001.
Miscellaneous, all other property not specified	959	8.958	544,233	5.1	5.432	577.	301.
Total	10,705	100,000	$10,653,030	100.00	100.00	$995.	$857.59

report went into detail concerning the uses of gasoline, benzine, paint and varnish, oils, wood alcohol, paint and varnish removers, lacquers and compressed gases in railway shops and contained many recommendations for reducing the fire hazard in handling these commodities. The paper evoked considerable discussion regarding its recommendation for the handling of gasoline and the containers therefore. As a result of this discussion the report was accepted as a progress report and suggestions were made to the committee for further consideration.

The morning session was closed with a paper presented by F. H. Elmore, on the "History of Our Association and What It Has Accomplished."

Use and Handling of Fuel Oil

The afternoon session on the first day of the convention was featured by the presentation of the report of the committee on oil burning appliances by B. S. Mace, chairman of the committee, and a paper presented by A. M. Schoen on "Fuel Oil vs. Coal for Locomotives." The report of the committee on oil burning appliances indicated that the committee had taken a great deal of care in its preparation and the report was prepared and distributed in booklet form. A liberal use was made of drawings to illustrate its recommendations. The length and detail of this report prohibit its reproduction here; however, the committee has printed 1,000 copies of the report which are to be sold through the secretary of the association. The report is the result of three years' work on the part of this committee and it contains specific rules and requirements for the storage and use of fuel oil and for the construction and installation of oil burning equipment.

Mr. Schoen's paper on "Fuel Oil vs. Coal for Locomotives" contained many recommendations concerning the various kinds of fuel oil, the methods of handling oil and the fire hazards involved, and said in part:

While oil has been used for locomotives in the West and on the Florida East Coast for a number of years, there would appear to be no well-defined standards to govern; even the individual roads seem not yet to recognize this fuel as permanent to such an extent as to formulate standards for their own use. The time now appears to have arrived, however, for changing all this and formulating standard specifications in an advisory form at least, that may be adopted by these roads preparing to adopt oil as fuel and to be worked toward, either in changes or new work by those roads having equipment already installed. From all reports the Mexican oil fields appear almost inexhaustible and bearing in mind the case of handling, reduced cost of firing and the independence of mine strikes incident to this fuel as compared with coal, there is reason to anticipate its very widespread adoption especially by roads not remote from large navigable waterways, while the recently developed colloidal fuel in which pulverized coal to a percentage of something like 35 per cent can be held in suspension in the oil will doubtless go far toward justifying the adoption of foil by many of the far inland systems.

Much more attention has been paid to locomotive efficiency than to safeguarding the storage at points along the right of way, the loading and unloading of the oil and the fueling of tenders. Among special weak points noted may be included: unloading tank cars to storage tanks, location and protection of large storage tanks, inadequate valve equipment in pipe lines, gravity feed to locomotive tenders, electric driven pumps having remote control not arranged to best advantage, oil columns dirty, wasteful and unsafely arranged, gravity and flash point of oil not kept within safe limits.

The wide variation in the flash test and viscosity test of the oils used for fuel purposes in different parts of the United States forms one of the obstacles to the determination of uniform standards, the gravity test varying from 12 or 13 deg. Baumé to as high as 30 and 32 deg. Baumé, while the flash test of untopped or undistilled oil varies from atmospheric temperatures up according to their constituents; at this date, however, it would be quite safe to say that almost without exception only topped oils are being used in railroad work.

There are two distinct kinds of oil obtained from the earth's underground reservoirs, one having a paraffine base such as that found in Pennsylvania, West Virginia, and now being found in Texas, which contains all the valuable petroleum products and is subjected to the process of fractional distillation, being too valuable to use for fuel purposes; the other has an asphaltum base, most of it being found in Mexico, California and Louisiana, with some in Texas; this oil has only a small proportion of the more valuable petroleum products in consequence of which it is subjected to fractional distillation to only a moderate extent, most of it being merely "topped" by which the lighter or more dangerous ingredients are taken off and the residue is sold for fuel purposes. Under flash test the oil used for fuel should not test lower than 150 deg. F. closed cup, or 160 deg. F. open cup test. So far as the fire hazard is concerned, of course, the gravity test is of small importance except that the lighter the oil the more readily it flows. Oil testing from 18 deg. to 26 deg. Baumé is ordinarily a good viscosity for practical purposes and the heavier oils are oftener blended to bring them within these limits. When the viscosity is very low, especially in cold weather, it is found necessary to equip both storage tanks and tenders with circulating steam coils so that the oil may be warmed sufficiently to enable it to flow more freely. Where this warming process is used the oil should never be heated to a point higher than 40 deg. F. below its flashing point.

The generally accepted standard today for large storage tanks of this character so far as capacity is concerned is 55,000 bbl. at 42 gal. The standard tank as constructed is steel throughout, that is, top as well as bottom and sides. In the past many of these tanks have been built all steel, except the top, which was built of matched boards and covered with galvanized iron. Investigation shows, however, that this form of tank has been the one to especially suffer from fire, and it is now uniformly agreed that the highest degree of safety lies in the all-steel tank with proper protective equipment provided. The covers of the tank should be equipped with manhole, explosion hatches and relief vent; the relief vent should be protected by not less than two thicknesses of not larger than 30-mesh nickel gauze separated one-half inch or more to prevent any fire striking back through escaping gases. The explosion hatches should operate quickly and positively and form a gas tight closure, as should the hatch to the manhole. Tanks should be set solidly on adequate foundations and should be enclosed by a levy or dyke having capacity of at least one and one-half times the capacity of the tank and built with a crest of not less than three feet and a slope on either side of not less than two to one. Any pipes should either be carried over the embankment or through wing walls of concrete. An O. S. & Y. valve should be set in the supply pipe inside the levy and near the tank.

The large tanks should be at a distance of not less than 350 feet from buildings or other combustible property, and this may well be made the minimum distance from the main line of the road as well, owing to the fact that should the tank be on fire and a strong wind blowing in the direction of the tracks the burning gases and dense smoke could be driven a considerable distance, and if the tank is not sufficiently isolated the operation of the main line trains might be affected for a considerable time. Also the tanks should be so located and protected that under no circumstances

could the oil reach streams, either flowing or tidal, by means of which it might be carried into the proximity of destructible property.

It is strongly recommended that the fueling of tenders by gravity pressure be avoided, in view of the danger of the entire contents of the tank escaping in event of accident. Most approved practices would require the oil to be pumped into the tender from reservoirs constructed below the grade level, which would permit of the flow being promptly shut off in event of accident to the piping or apparatus. These wells can be filled at regular intervals either by gravity feed from the large storage tanks or else direct from the tank cars. These underground reservoirs, if completely covered over, may be located at such points as may be most convenient for their intended purpose. Usually they should be constructed either of reinforced concrete or steel.

Tank cars are arranged for unloading through a pipe in the bottom, fitted with a cap at the outer end and a valve where it leaves the tank. This valve is opened and closed manually from the top of the car. With the cap screwed tightly in place, the tank car may be filled with the valve wide open, and no one will be the wiser until the cap is removed, when a large part of the contents will be lost before a man can climb to the top of the car and close the valve. It seems that this sometimes occurs and two or three thousand gallons of oil escape into the yards before the trouble can be remedied. For this and other reasons it is recommended that at unloading points pits be constructed between the tracks, 4 to 6 inches in length, over which the tank cars may be placed and their contents allowed to discharge into these pits. Through proper size pipes the oil can be flowed from this point to underground pumps of suitable capacity, from which it may be pumped to the storage tanks. This arrangement will reduce the time of unloading, improve surrounding conditions as to care and cleanliness and minimize the fire hazard.

Oil columns are vertical pipes, with a horizontal arm used for conveying the oil to the opening in the tender. In some forms the arms are arranged to swing vertically, in others horizontally, and others the vertical pipe or column itself can be turned on its axis in a horizontal plane. Oil-tight stuffing boxes are provided at the joints to prevent escape of the oil. Of the various oil columns I have seen, each has its objectionable features. The drop pan arrangement on the Rose column commends it for cleanliness, but the rigid self-cleaning telescoping device that transcends into the tender opening sometimes results, I am told, in the whole column being torn down when the locomotive moves off prematurely. The determination of the type of oil column desired would be a matter for the consideraiton of the motive power department, but whatever type is determined upon should be equipped with rapid closing gate valves at the base of the standpipe, and unless a man is to be kept at this valve while filling there should be another on the horizontal arm that can be reached by the man standing at the tender opening, and if an electrical signal to pump house or remote pump control is used the button should be promptly available to the man at the filling point. All stuffing boxes should be well made mechanically and kept in non-leaking condition.

Oil should be pumped from reservoirs to tenders by steam or electric pumps, which pumps should, wherever practicable, be arranged in duplicate in order that pumps in bad condition may be shut down at suitable times for repairs without interrupting the service. At shop yards and other places where steam is at all times available, the pumps should have permanent steam connections, and if so located that an accident to any of the oil equipment might make them unapproachable they should be equipped with remote control, by means of which they could be stopped quickly in case of emergency. At points where oil stations are considered necessary but no steam is available the pumps could be arranged for connection to the locomotive blower pipe and steam for filling furnished from that source. Air pressure from the locomotive air system might be used for filling purposes under extreme conditions, but this is considered ordinarily undesirable for mechanical reasons.

The greatest hazard to which tanks under ordinary circumstances have been subjected has been from lightning, though there has been a general misapprehension as to just how the tanks have been affected, it being thought that the steel tanks are struck by the lightning discharge and their contents ignited. As a matter of fact, tightly closed oil tanks need not be considered in any special danger from lightning, as they are not very high, expose a large mass of metal and, ordinarily resting on the ground, may be expected to provide a very fair path to earth even if struck. The tanks that are in most danger are those from which the lighter hydro-carbon gases are being thrown off, as a lightning flash in the vicinity may ignite these and flash back to the oil in the tank, which will then burst into flame and continue to burn. This is especially liable to happen when sulphuretted hydrogen gas has been brought over in suspension and is being liberated.

Naturally these accidents generally happen to the tanks containing crude oil, or else the very light products of petroleum. Fuel oil that has been properly treated should be very nearly immune, especially if it stand in properly constructed tightly closed *all-steel* tanks. The necessary vent can be effectually protected by means of small mesh metal gage, using the same principle as that embodied in the Humphrey Davy miner's lamp. When the ground on which the tank rests is very dry, or when raised on supports, artificial grounds should be provided.

The two principal agents that have been employed for the extinguishment purposes are steam and Firefoam foamite, both of which embody the same principle, namely, shutting off the air from the surface of the burning liquid and thus depriving it of the supply of oxygen that supports combustion. So long as the tank remains tight steam will render effective service, otherwise the blanketing effect is largely lost. This protection is accomplished by means of steam jets inside the tank above the surface of the oil supplied from boilers and through pipes of adequate capacity.

Foamite is a foam very much like soapsuds and is produced by bringing together two chemicals in liquid form which react when mixed to form a thick foam like soapsuds, which floats on the surface of the oil and blankets the fire. The equipment necessary to the protection of large tanks is rather extensive as well as expensive, and ordinarily is not justified except in yards or terminals, when a single equipment can be extended to protect all tanks. Foamite is especially valuable when the oil surface is exposed. All-steel tanks properly constructed, well grounded, with all seams tight, equipped with explosion hatches and proper vent and surrounded by well-constructed devices, present little if any fire hazard, unless it be from exposure of other property. In case of an installation of this kind, however, the greatest danger point will be the vent which should be regularly inspected to see that the gage service continue intact.

In addition, a paper was presented to this session of the convention by W. A. Fravel on "The Disposition of Sweepings and Rubbish from Warehouses, Freight Cars. etc."

Protection of Rolling Stock

The morning session on the second day of the convention was featured by the report of the committee on freight car heaters, presented by E. A. Ryder, chairman of the committee. The report brought forth considerable discussion as

to its recommendations; it was finally adopted by the association as a progress report.

W. S. Topping, assistant chief inspector, Bureau of Explosives, also presented a paper on "Methods of Handling Wrecks or Derailments Involving Tank Cars of Oil, etc." Mr. Topping recommended that in case of a wreck involving tank cars containing inflammable liquids the following rules should prevail:

(1) Post guards and keep all spectators away.

(2) Locate all leaks and stop them if possible, using only electric flashlights or electric hand lanterns when lights are necessary. If open flame lights must be used keep them elevated as much as possible.

(3) Dig holes and trenches to bury exposed and leaking gasoline that cannot be transferred promptly to tight containers.

(4) Allow reasonable time after stoppage of leaks and burial of gasoline for vapors to escape from wreck and vicinity.

(5) Keep steam crane fire to windward as much as possible and not less than 500 feet away until completion of work to this point.

(6) First move to safety the least injured cars to avoid starting new leaks during handling by crane. When leaks are to be expected in handling, empty the car first either by transfer of contents to other car or container, or by drainage to a hole or trench in the ground for burial.

(7) Do not allow trains to pass on adjoining tracks, especially on same or lower level, as long as gasoline is leaking or exposed in quantity. When allowed to pass keep fire doors and ash pan slides closed and draught shut off.

(8) The placing of leaking tank cars for repairs in close proximity to shops where fires or naked lights are maintained must be avoided.

Handbook on Railroad Fire Prevention and Protection

E. B. Berry, chairman of the committee preparing for Handbook on Railroad Fire Prevention and protection, presented a tentative outline of the book. In general, it is the idea of the committee that the book will be divided into two major sections, one being a general section, the other a special section. The general section will include the various railroad properties by risk classifications, to be treated in detail, showing the risk, common and special hazards, practical remedies and fire protection recommended. It is proposed that the general section be divided into sub-sections, each dealing with a specific class of risks. In other words, there will be a sub-section for mechanical property, transportation property, a section for merchandise and traffic at stations and rolling stock, etc. The special section will treat on all other independent subjects applicable to fire prevention and protection of railroad properties.

W. H. Merrill, president of the Underwriters' Laboratories, Chicago, also addressed the morning session.

Protection of Passenger Train Equipment

The afternoon session of the second day's cconvention was featured by the report of the committee of fire protection in passenger train equipment, which was presented by E. W. Osborne, chairman of the committee. The general conclusions in this report are as follows:

(1) We believe that, except in local trains specified, every coach, whether metal or wood, in main line trains should be equipped with at least one fire extinguisher, and that in local or branch trains of four cars or less there should be two in each car.

(2) That in general the liquids used in fire extinguishers should be non-freezing, but exceptions may be made where means are available for protecting liquids that are not in themselves resistive against cold.

(3) That an extinguisher with a capacity of at least 2½ gals. containing a chemical charge which has the cooling effect of water, such as is found in the calcium chloride or acid-soda types is especially to be desired in baggage and other non-passenger carrying cars.

(4) That some method should be adopted to make upholstering fire resistive.

(5) That all cars should, as far as practicable, be lighted with electricity installed according to requirements of the National Electric Code.

(6) That smoking cars should be positively prohibited in non-passenger carrying cars.

(7) That all fire extinguishers should be given the necessary tests or examinations at terminals prior to each trip to insure their being in good condition.

(8) That sufficient supplies should be kept in coach yards for immediate charging of extinguishers.

This report, like many others presented at the convention, brought forth considerable comment, and it was finally adopted as a progress report. After the presentation of a paper by E. B. Berry on the "Future Work of Our Association," the convention adjourned to visit the Underwriters' Laboratories in Chicago.

Protection of Wooden Bridges and Trestles

The closing session of the convention on Thursday morning was featured by a paper by O. B. Heppner, chief chemist of the St. Louis-San Francisco, who spoke on "The Relation of the Chemist to Fire Protection," and the report of the committee on the protection of wooden bridges and trestles against fire, which was presented by A. W. Smallen, chairman of this committee, and the election of officers. Mr. Heppner's paper told of the assistance which could be rendered to fire protection by the chemist and the chemist's relation to the success or failure of fire prevention measures. The report of the committee on the protection of wooden bridges and trestles against fire contained specific recommendations for preventative measures and for fighting fires which have been able to gain some headway. These recommendations are as follows:

As preventative measures it is recommended:

(1) That effective spark screens be provided in the front end of all locomotives and carefully maintained.

(2) That ash pans and grates be made tight and kept in good working order, as the dropping of hot coals or ashes is a source of a large amount of our trouble.

(3) That special places be provided for the dumping of cinders and ashes, and grates are not to be shaken down except at safe points.

(4) That all combustible refuse such as dry leaves, dead grass, weeds, brush and rubbish be cleared away from under and around all wooden bridges.

(5) That the decks of all wooden bridges, between the rails, be covered with No. 22 galvanized iron, this to prevent sparks from setting fire to the structure should they be dropped from the locomotive.

(6) As a further preventative measure, it is recommended that all wooden bridges be coated with a fireproof or fire retardent paint, demonstration having proven some of them to be of excellent protection, and can be applied at a cost no greater than that of ordinary paint.

As protective measures it is recommended:

(1) That one water barrel and one pail be provided for all wooden bridges of a length of 50 ft. or less, and two water barrels and two pails one to each barrel, be provided for all bridges whose length is more than 50 ft. up to a length of 150 ft., and that one water barrel and one pail be provided for each additional 150 ft.

(2) That where a bridge requires one or two barrels and pails the same are to be placed at the ends of the bridge, located at proper clearance from the track and buried in the ground to within six inches of the top, and where barrels and pails are located in the middle of the bridge, they are to be located at proper clearance from the rails and the top of the barrel is to be provided with a wooden or galvanized cover.

(3) In the past a great difficulty has been experienced in keeping pails intact with the water barrels, especially where galvanized iron pails or fire buckets have been used, and they are invariably missing when wanted and it is therefore recommended that a square wooden bucket of unfinished lumber be

provided and that the same be suspended in the water inside of the barrel.

(4) As a further means of extinguishing the blaze, it is recommended that all locomotives be equipped with fire-fighting apparatus so that they may cope with the situation should occasion arise.

The report, after considerable discussion, was accepted as a progress report, with the understanding that the next report of this committee will be made to include all bridges of all types. Considerable discussion arose over the fifth preventative measure and also over the second recommendation for extinguishing the blaze.

Other Business

The following companies arranged exhibits in connection with the convention: Aero Alarm Company, New York; Ohio Injector Company, Chicago; Nu-Ex Fire Appliance Company, Ohio; Pyro-Non Paint Company, and the Fire Protection Equipment Company, Chicago.

The election of officers, held at the last session of the convention, resulted as follows: President, E. B. Berry, superintendent of fire prevention, Southern Railway, Washington, D. C.; vice-president, W. F. Hickey, superintendent of fire prevention, New York, New Haven & Hartford; secretary and treasurer, R. R. Hackett.

Train Accidents in October[1]

THE FOLLOWING is a list of the most notable train accidents that occurred on the railways of the United States in the month of October, 1919:

Collisions

Date	Road	Place	Kind of Accident	Kind of Train	Kill'd	Inj'd
20.	Southern	McGriff, Ga.	xc	P. & P.	0	80
30.	Ft. Worth & D.	Rhome	rc	P. & P.	0	6
*30.	G. C. & St. Fe.	Crowley	rc	F. & F.	0	1

Derailments

Date	Road	Place	Cause of Derailment	Kind of Train	Kill'd	Inj'd
2.	Pennsylvania	Doylesford	acc. obst.	P.	0	1
4.	Pennsylvania	S. Elizabeth	b. rail	P.	0	25
4.	Pitts. & L. Erie	W. Ellwood J.	b. wheel	P.	0	17
10.	Erie	Belmont	ms.	F.	2	0
†12.	Missouri Pac.	Wagoner	b. rail	P.	1	15
14.	Central N. J.	Marlboro	acc. obst.	P.	1	1
17.	St. Johnsb'y & L. C.	Cambridge J.	d. eq.	P.	0	2
22.	Cent. Georgia	Eatonton	.....	P.	0	2
28.	Wabash	Percy, Ia.	b. rail	P.	0	1
29.	Gulf Coast L.	Mariana	d. wheel	P.	2	1
†29.	Sou. Pacific	Vincent, Cal.	exc. speed	P.	10	139
30.	Erie	Jersey City	exc. speed	P.	0	0
30.	Tenn. Central	Obey City	unx	F.	2	0

The trains in collision at McGriff, Ga., on the 20th, at 1:50 a. m. were southbound passenger No. 7 and northbound passenger No. 8. The northbound train was entering a side-track, and was struck in the middle by the southbound, wrecking and overturning one coach. About 80 passengers were injured, none seriously. The southbound train had an order to hold the main track and meet No. 8 at McGriff, which is the schedule meeting point for these trains. No. 8 had arrived three or four minutes before No. 7 and a trainman had thrown the switch for the side track and signaled the engineman to proceed into the side track. The electric headlight of No. 8 was not burning, because of an armature having been burnt out; and the engineman of No. 7 thought that the other train was clear of the main line; and seeing the hand signal given by the trainman to No. 8 he construed it as for himself. This engineman had been in the service 33 years, and was classed as one of the best on the division.

[1]Abbreviations and marks used in Accident List: rc, Rear collision——bs, Butting collision——xc, Other collisions——b, Broken——d, Defective——unf, Unforeseen obstruction—unx, Unexplained——derail, Open derailing switch——ms. Misplaced switch——acc. obst., Accidental obstruction——malice, Malicious obstruction of track, etc. ——boiler, Explosion of locomotive on road——fire, Cars burned while running——P. or Pass., Passenger train——F. or Ft., Freight train (including empty engines, work trains, etc.)——Asterisks, Wreck wholly or partly destroyed by fire——Dagger, One or more passengers killed.

The trains in collision on the Fort Worth & Denver, at Rhome, Tex., on the 30th, were southbound passenger trains. The leading train was standing at the station. The impact crushed its rear car. Six passengers were injured. There was a dense fog at the time.

The trains in collision on the Gulf, Colorado & Santa Fe, at Crowley, Tex., on the 30th, were southbound freight. The leading train, standing at a water tank, in a dense fog, was run into at the rear by the following train, and twelve cars were ditched. Nine tank cars, containing oil were burnt up, together with parts of the locomotive and of other cars. One brakeman was injured.

The passenger train derailed on the Pennsylvania Railroad near Daylesford, Pa., on the 2nd, was the Metropolitan express, eastbound, No. 40, traveling on track No. 2. A freight train moving westward on track No. 3, two engines and 105 cars, was preparing to make a stop when the ninety-third car, an empty wooden box car of 30-ton capacity, buckled and, with three other cars, was thrown off the track, blocking track No. 2. Train No. 40 ran into the wreck, a dense fog and the speed of the train thwarting the efforts of the flagman of the freight to stop it.

The locomotive was overturned. The fireman was slightly injured. One baggage car and four sleeping cars ran off the track, but no other personal injuries were reported.

The train derailed at South Elizabeth, N. J., on the fourth, was eastbound local passenger No. 3800 carrying about 350 passengers, moving at about 35 miles an hour. Four coaches were derailed and 25 passengers sustained minor injuries. The accident was due to a broken rail which failed because of a transverse fissure.

The train derailed at West Ellwood Junction, Pa., on the night of the 5th, was a westbound express passenger No. 19. The train running at about 50 miles an hour was derailed by a broken wheel. Four employees and 13 passengers were slightly injured.

The train derailed on the Erie Railroad at Belmont, N. Y., on the morning of the 10th, was a first-class train, westbound, No. 9, consisting of a locomotive, 16 express cars, and a car at the rear in which the train crew were riding. While running at about 60 miles an hour, the engine was thrown off the track by passing over a misplaced switch and into a side track; and the engineman and fireman were killed. Track repairers working near the spot had left the switch open. The line approaching this switch is straight for about two miles. The track foreman and his men were close to the switch; they had removed their car from the track but had neglected to straighten the switch. This accident occurred in broad daylight. The switch target is plainly visible for a good distance. The trackmen were within about 60 ft. of it and the foreman stood close to the switch-stand. The line is operated under the manual block system, but this switch is not near a block station and it has no distant signal.

The train derailed near Wagoner, Okla., on the 12th, was a northbound passenger. Two coaches were overturned. One passenger was killed and 15 were injured. The derailment was due to a broken rail.

The train derailed at Marlboro, N. J., on the 14th, was a passenger No. 220. The locomotive was derailed by striking an automobile on a crossing and was overturned. The engineman was fatally scalded, and a brakeman was injured.

The train derailed on the St. Johnsbury & Lake Champlain, near Cambridge Junction, Vt., on the 17th, was an eastbound mixed train. While running at about 40 miles an hour, a milk car near the front of the train was derailed and ditched. One passenger and one express messenger were slightly injured. The derailment was due to a loose chafing iron which became detached and fell out of position.

The train derailed near Eatonton, Ga., on the 22nd,

about 10 p. m., was northbound passenger No. 19. The locomotive was thrown of the track at a switch and was overturned, the engineman and fireman were injured.

The train derailed near Percy, Iowa, about 20 miles east of Des Moines, on the evening of the 28th, was eastbound passenger No. 14. Four coaches were overturned but the reports say only one passenger was injured. The derailment was caused by a broken rail.

The train derailed at Mariana, Tex., on the 29th, was southbound passenger train No. 3. Moving at about 20 miles an hour the locomotive and tender were derailed at a frog, by reason of a broken tender-wheel flange, and were overturned; and the engineman and fireman were fatally injured. The locomotive fell against a freight car standing on a side track and a man in charge of one of these cars was injured.

The train derailed on the Southern Pacific near Vincent, Cal., on the 29th, was eastbound passenger No. 50. The locomotive, the tender, two baggage cars and five coaches fell down a bank. One passenger, two trainmen and two trespassers were killed and 143 passengers were injured, five of them fatally. The train ran off the track at a curve of 8 deg. 10 min., on a descending grade of 2.2 per cent; the cause was excessive speed. Estimated damage to engine, cars and roadway, $40,000. All evidence concerning the track indicates that it was in perfect condition.

This is the first serious train accident in which a passenger has been killed, on the Pacific System of the Southern Pacific—7,050 miles—since July 4, 1908, or over 11 years.

The train derailed near Jersey City, N. J., on the 30th, was eastbound passenger No. 1112. Seven cars, well filled with passengers, ran off the rails, but no personal injuries are reported except those classed as "slight." The cause of the derailment is given as excessive speed in passing from the Northern of New Jersey branch to the main line.

The train derailed near Obey City, Tenn., on the 30th, was a westbound freight. The two locomotives drawing the train crossed a trestle (No. 7.83) in safety, but 13 of the 20 cars in the train fell through to the ravine below. Two brakemen were killed. The cause of the derailment was not determined.

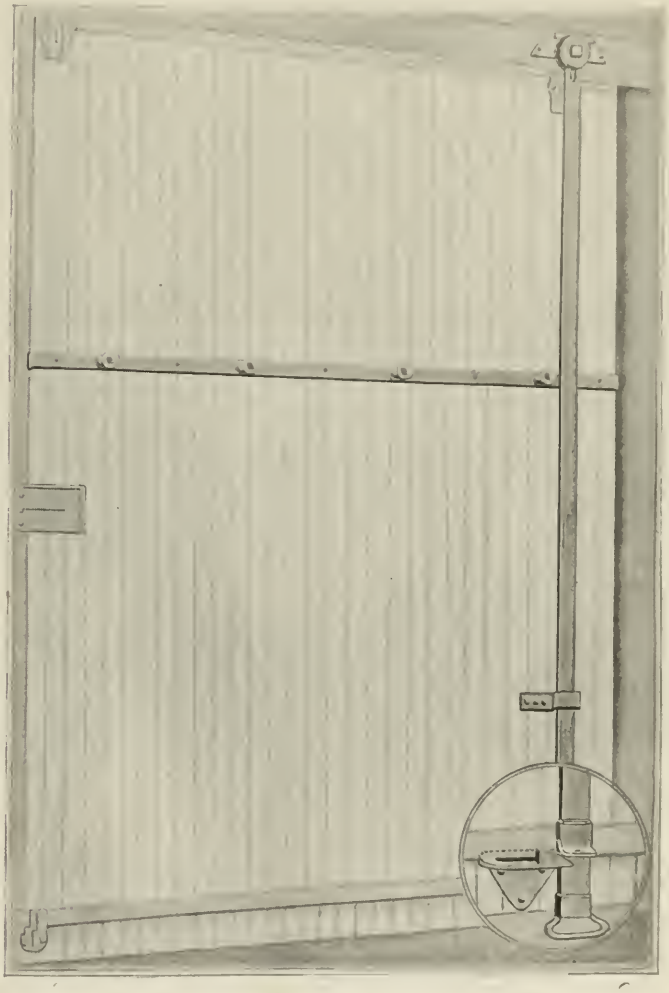
Canada.—Westbound express train No. 19 of the Grand Trunk, moving at full speed, ran off the track at Rideau, Ont., on the morning of October 23, about 1 o'clock, 11 cars going off the rails; but a broken rib of the express messenger is the only serious injury reported.

Electric Car Accidents.—In a rear collision of electric cars near Fredonia, N. Y. on the 4th, five persons were killed and 13 injured; and in a rear collision on the Interborough Elevated line in the Bronx, New York City, on the 21st, three persons were killed and 14 injured. In the New York collision two passenger cars were badly crushed, but there were only a very few passengers in them.

Freight congestion was troublesome in England even before the great strike. The London Times of September 9 reported manufacturers in Leeds as bitterly complaining of the holding up of merchandise owing to inadequate railway facilities. "Many hundreds of tons of goods have been held up for some time, and business men are at their wits' end to deliver goods to their customers. The railways are still refusing to take goods, except small consignments at occasional intervals. One woolen mill head reports that the Great Northern allowed him to send 10 cwt. of cloth to London last Thursday. Although he had tons waiting to go, since then he had not been able to get anything away. For more than a fortnight he had been wanting to dispatch a number of bales of cloth to Bristol via the Midland Railway, but the company refused to take it until yesterday, when only a small portion of an order was accepted."

A Radical Departure in Freight Car Door Fixtures

ONE OF THE TRYING PROBLEMS which railway employees have to face is that of opening freight car doors without damage to the doors. A new device which is intended to overcome this difficulty is the Jerry Loc-Lever. The Loc-Lever works on the leverage principle and when applied takes the place of locks, hasps and starters. The iron bar which forms the lever proper is suspended from the side plate of the car by a bolt and reaches a point a few inches below the lower edge of the car door. Another bar is fastened to the car door and extends across it horizontally about one-third the way from the top. To this are attached four fulcrum pinions formed of bolts inserted



A Combined Floor Lock and Opener

through steel tubes, large enough in diameter to revolve around the bolt and thus form a roller bearing. The handle of the main lever is so constructed that the seal or the lock of the car can be inserted through convenient orifices.

In operation, when the door is closed the Loco-Lever bar lies against the last pinion and holds the door securely in place. When the door is to be opened the seal is broken, thus releasing the lever, which is then raised away from the car a distance sufficient to pass it over the last pinion, against which it then lies in a diagonal position. A pull is exerted on the handle and from the resulting leverage the door is forced open a short distance. The operation is repeated on the three other pinions in turn, with the result that the door is fully opened without damage.

The device takes its name from the nickname of its in-

ventor, H. F. Jerolaman, of the traffic department of the Atchison, Topeka & Santa Fe, who is familiarly known as "Jerry." In his work Mr. Jerolaman noted the difficulties encountered in connection with the opening of car doors and this device is his idea for overcoming the trouble. Besides effecting a considerable saving in the damage ordinarily done the car door, it is anticipated that the device will also save time at stops and transfer points.

Standard Stock Sheets for Storekeepers

By W. L. W.

ONE OF THE MOST DIFFICULT THINGS confronting the storekeeper today is the problem of preparing a suitable record for recording the receipts, issues and consumption of material. The primary and essential thing to know is what is standard material and, therefore, each railroad should have a stock book in which should be shown by stock accounts the material which is standard for the various classes and kinds of equipment. Sufficient copies of this book should be made and supplied to all storehouses and departments, so that in ordering material, uniform sizes and kinds will be furnished.

It is a very common practice on most railroads today for every shop to order a different kind of material for the same purpose, and the result is that it is most difficult to transfer such material from one point to another. On the Pennsylvania Lines West a number of years ago a standard stock book was prepared showing in detail all of the items of material that were standard in the motive power department. On this sheet is shown the page and line number, description, entry number, blue print specification, etc., with columns for amount on hand, due, consumed, etc. These books are corrected currently by the general superintendent motive power when it is necessary to change specifications or reissue blue prints. Among the principal reasons for adopting this method were:

(a) Standardization of items; (b) to keep up to date the record of reissues of prints and specifications; (c) elimination of non-standard material; (d) to insure the use of uniform names for various items of material; (e) to provide an easy and simple method of checking surplus material; (f) to give a standard record of material ordered, received and consumed; (g) to assist the purchasing agent in placing orders by insuring uniformity in all items on requisition.

In standardizing the items it was found that after all the records were compiled, there were 156 different sizes of window glass. After checking over the standard items it was possible to eliminate 101 sizes. In the item of belting, one-third of the sizes were eliminated, even though it was necessary to change some pulleys to do so. Bar iron, lumber, brass castings, screws of all kinds, magnesia lagging, wheels and axles, small tools, and practically all other items showed substantial reductions. As an illustration, seven different sized cores of cast-iron wheels were being specified in order to take care of requirements, not only for home but also for foreign equipment. On account of the wheel-boring capacity of the shops it was felt that by ordering the cores of various sizes, an increase in output could be secured from the machines on account of reducing the number of cuts necessary to bore the wheel. It was found, however, in anticipating the requirements for wheels on the various weel makers, that they were also in a measure anticipating our requirements, and the result was that at times we had a large supply of wheels on hand, but not the kind of bore required. The blue prints were changed, reducing the number and sizes of cores to two for each wheel, and the whole situation was much improved, as this made it practical for the shops and also the foundries to carry fewer wheels than before, without holding a surplus on account of core measurements.

For another example, take the small tools, such as wood boring bits. It developed in the check that at 26 shops there were practically every size known or made. As an illustration, the 3/4-inch size varied from 6 inches in length to 20 inches, with 14 different lengths. It would seem that one size would be all that was necessary; that is, the size that would bore any piece of wood that would pass under the housing of the machine and likewise the thinnest piece. It was amusing when the various foremen were questioned as to why they wanted certain sizes, and finally admitted that they had always ordered and used them. Three lengths were finally agreed to, reducing the number of this size alone 11 items

6,000 Items Eliminated

Every item of material was gone over and a standard was established, resulting in the elimination of some 6,000 items from the stock books. After this record was put in use a comparison was made of January 1, 1915, with January 1, 1904, and the results were as follows:

Locomotives in service increased	92 per cent
Passenger cars increased	36 per cent
Freight cars increased	17 per cent
Stock on hand increased	9 per cent
Stock consumed per locomotive mile, decreased	21 per cent
Stock on hand per man employed, decreased	30 per cent

However, the stock on hand today is in value greatly in excess of this amount, due largely to the increase in price as well as quantity on account of conditions brouhgt about by the war.

In checking surplus material and transfering it from one shop to another, by having the standard book it is unnecessary to mention the articles, as all articles are on the same page and line. Only the page and line number are given in communications between shops. It has been of great assistance in the placing of orders by the purchasing agent to have one name, standard sizes, etc.

Another very important thing that has developed, which probably every shop has experienced, is the question of charging out material in the freight car repair yard. On account of a large percentage of car repairmen being foreigners, it was very difficult for them to learn the names of the innumerable kinds of material so that they could intelligently describe to the foreman what was wanted. It was a common sight to see from four to eight men waiting in line to secure their material orders. It was the practice to account for the material issued just as carefully as for material received. On account of the shortage of experienced help, it was decided to change the methods of handling material in the freight car repair sections. The rough material of all kinds is now carefully piled or placed in bins, the new separated from the second-hand. Instructions have been issued in the form of notices printed in as many different languages as there are employees, calling attention to the fact that they are permitted to take material from bins or piles just as needed, but they must not disturb the material nor take more than required to complete the job. Special attention is given to the material received, new or reclaimed, and at the end of the month an inventory is taken, and the quantity represented by the inventory at the close of the previous months, plus the quantity received during the month, less the quantity on hand per inventory at the close of the current month, represents the charge to freight car repairs. A record of all this material is carried through the charge-out book kept at the repair yard. This scheme has many advantages, and no disadvantages have been noted. It has reduced clerical work, saved time of foremen and workmen, and permitted the foremen to give to supervision the time formerly consumed in handling material orders.

A Conservative View of National Railroad Problem*

Merits and Faults of the Cummins Bill; Need of Specific Constructive Legislation

By Samuel Rea
President of the Pennsylvania Railroad

IT IS A PLEASURE to address those in charge of the savings banks for they have, through their guardianship and investment of the savings of our thrifty people, a substantial financial interest in the proper solution of the railroad question. The savings banks are the chief reliance of our people of small means who should not risk their savings, but should have them within convenient call at all times, and without hazard of diminution. I commend your faithfulness to the trust reposed in you by millions of our people. The investment of their money by you in safe and useful enterprises has been an important factor in developing our country and assisting its people to prosper. . . . The Senate and House committees have listened to about 50 plans; but I now hope we can soon close our talking season, and that Congress will adopt constructive railroad legislation that will recreate railroad credit. Today railroad credit is based not solely on railroad earnings but directly on the treasury of the United States, which is bad for the nation's finances and business, and a burden which increases its taxation. [The speaker here described the plan presented by the Association of Railway Executives, reported in the *Railway Age,* August 22, p. 353, and went on to explain its main features.]

Dangers of Fixing Maximum Returns

As a result of close contact with the railroad problem here and abroad and with the results of past experience of the national and state governments with public works and railroads before us, we felt that government ownership or a government guarantee was not desirable for the railroads of the country. In its last analysis a government guarantee means government operation, as, if the government is to supply the funds, it must have a controlling force in expenditures.

Although we realized our plan was not perfect, we avoided fixing a maximum return to all the railroads on their property investment, and a division of profits by individual companies if they exceeded that maximum, believing that any attempt to confiscate surplus earnings of any individual company would surely eliminate initiative, restrict competition and injure credit. Interest rates are exceedingly high compared to the pre-war period, and with the capital necessities of the world far from satisfied, any suggested maximum like 6 per cent would be too low for a period when the credit of the government itself, if left free from bank and treasury support, is nearly 5 per cent. The railroads have to raise about a billion dollars annually of new capital for improvements and equipment, as well as provide for maturing notes and securities, and may find 6 per cent insufficient for several years. The danger of maximum earnings may be illustrated by the experience of street railways. The five-cent maximum fare was regarded as providing a sufficient margin of profit to meet all conditions, but it has proved totally inadequate, so that public utility companies are as bad a problem for the country to adjust as the railroads. Many of us remember leases in which 60 per cent or 70 per cent of gross was considered an ample compensation to a lessee to operate a road but the lessees in most cases were later compelled to buy up the stocks of such roads and cancel the leases, because 60 per cent or 70 per cent of gross proved insufficient to pay operating expenses; while the rent of 40 per cent or 30 per cent of the gross paid to the lessor, as earnings increased, became a bonanza.

From a long experience I distrust arbitrary maximum returns unless all other factors such as income, taxes, interest, etc., are likewise fixed, because we cannot foresee or control future business and financial conditions. I have more sympathy with specifying a minimum return as a guide to our commissions of what is an unreasonably low transportation rate and an unfair return on the investment low transportation rate and an unfair return on the investment, instead of relying on the courts to save the carriers from confiscation. I would consider a return of 6 per cent on the property investment a minimum return, especially now when money will cost the railroads even higher figures. Judging by past experience there did not seem to be the requisite authority or initiative in the commissions—federal and state—to make rates that would produce a return of even 6 per cent for a traffic district, or rate making group of railroads, except in years when the roads showed an unexpected expansion of business and when costs continued somewhat stationary, as in parts of the calendar years 1909 and 1916. I have been informed that a minimum would not be specified by Congress, unless it be an absurdly low return, like 4 per cent, upon which even the government itself has not been able to borrow the moneys it required.

Neither a maximum nor a minimum is required, if Congress will take the responsibility of directing the federal commissions to enable the railroads to resume business on a self-sustaining credit basis, and attract the necessary additional capital for improvements to properly serve the public. The railroads cannot serve the public if they continue on the "bread line."

The Cummins Bill

Now in response to all the testimony on the railroad question, and the various plans suggested, and the serious condition of railroad credit, a tentative bill, Senate 2906, has been introduced by Senator Cummins to solve our problem. It is the first broad, friendly legislative expression towards railroads in the last fifteen years. Therefore, I propose to briefly and, I trust, constructively, review some of its salient features, with the expectation that Senator Cummins will not consider the railroads and their owners ungrateful for the work he and his committee have tried to do for the country, but with the sincere hope that he and his associates will endeavor to correct some features of the bill. . . .

The indebtedness of the roads to the government for capital expenditures made during federal control certainly ought to be funded for not less than ten years rather than five years, considering financial conditions generally, and the annual requirements for capital by the railroads. For general indebtedness, some security other than demand notes should be provided, otherwise credit will be imperiled rather than helped by such funding. The government should leave the railroads in at least as sound physical and financial condition as when they were taken over. Merchants, farmers and others have been protected by higher prices, but the railroads were not placed in that position; and they should not be asked

*An address before the savings bank section of the American Bankers' Association, at St. Louis, Mo., October 1. Abridged.

to pay the large capital expenditures of the war period without assistance from the government to fund them for a long period and at low interest rates. These capital expenditures were made to assist in protecting the life of the nation, and the roads should also have transporation rates sufficient to hereafter sustain them. [The speaker here enumerated certain features of the bill which are accepted as beneficial or which at least were subjected to no unfavorable comment; exclusive federal regulation of securities; new rates to be suspended only five months instead of ten; creation of a transportation board; better definition of the elements to be considered in prescribing a rate; prevention of strikes; pooling; commission to prescribe minimum rates.]

Objectionable Features—Cummins' Bill

Some of the objectionable features are:

The Interstate Commerce Commission is not given effective authority over intrastate rates. Without this authority how can the Commission and the transportation board fully protect railroad credit? The provisions as to making compensatory rates and permitting a return sufficient to maintain railroad credit and provide adequate facilities are not sufficiently definite and mandatory to produce that result. The labor provisions are too diffuse to be effective. The purposes for which voluntary consolidations can be made, are too restrictive in their scope and the provisions as to compulsory consolidations are fatal to railroad credit. The commandeering of the so-called excess earnings of individual companies, and penalizing surplus earnings if used to provide better railroad facilities, is a decided blow to operating initiative and conservative financing. Railroad valuation in its present form cannot be used for the various purposes proposed in the bill, nor can it be completed to enable the Commission or the carriers to promptly carry out the various provisions of this proposed law.

Valuation

The valuation found by the Interstate Commerce Commission, under the present law, is claimed by the government to be a valuation only for rate making purposes, but this bill requires the same valuation to be used for rate making, capitalization, consolidation, and the measure of a fair return, or as a selling price of the property, and apparently the commission may change that valuation from time to time. To wait for the final valuation will cause great delay and any intention of its use for all of these purposes is bound to be disappointing. Therefore, rather than stop all progress in fixing reasonable rates, let the existing records of "property investment" be used pending final valuation. It is the return on the property investment of a traffic district that is a guide to the Commission in rate making, and not that of single companies; and so far, in those districts, the return has been found too low for sound railroad credit.

Authorization of Betterments

The bill provides that the right of eminent domain cannot be exercised without a certificate of the Transportation Board and the Interstate Commerce Commission for acquisition, construction, maintenance or operation purposes, or any authorized extension or addition; but authority to proceed with any new construction is divided between the states and the federal commissions. The construction of a new line of railroad or extension must be authorized by the Transportation Board; but this Board is specifically excluded from authorizing the construction of side tracks, spurs, industrial, team or switching tracks located wholly within one state—for that the railroads must apply for state authority.

The question of branches and terminals does not seem to be very accurately defined. This serious question is further tied up by the approval of the issuance of securities, to carry out such work, being solely under federal authority. Therefore, I regard the provisions for carrying on improvement work and exercising eminent domain under such divided federal and state authority as detrimental to business. Industries cannot defer the establishment or extension of their plants on such a divided and dilatory process. The entire responsibility for authorizing the acquisition of all additional right of way or terminal areas, as well as all new capital expenditure work, should at least be concentrated under one board, just as this issuance of securities is to be solely under the Interstate Commerce Commission. When improvements are so authorized, no public benefit is secured by requiring the consent of any governmental body to the exercise of the power of eminent domain. The requirement of such consent would mean delay and enhanced cost.

Labor Provisions

The labor provisions of the bill primarily concern not only the management and investors but the welfare of 1,900,000 employees; and may affect the payment of $2,800,000,000 in wages. The final decision on railroad wages is given to the Transportation Board. No qualifications are stated for the members of this important board, which is to deal with the operating and administrative questions of all the railroads, including wages. Subordinate to this board is a committee on wages and working conditions, consisting of eight members, four to be selected from the persons nominated by the organized railroad working crafts on each railroad to represent labor, and four from among the persons nominated by all the railroad corporations; and I suppose the Transportation Board is expected to represent the public. Four years is the term of office and $4,000 each the compensation of the members of the committee on wages and working conditions. Unless this committee is expected to pass all disputes to the transporation board, surely that short term and that salary are insignificant compared to the magnitude of this responsibility, which has tested the ability of the President and the director general, and the railroad managers. For that task the best railroad managers, who understand social questions as well as operating questions, are needed, and the labor members must be up to the same standard. Any suggestion as to standard wages that takes no account of the varying living costs and conditions as between New York, Florida, California, Kansas and Maine is contrary to economic experience. No equitable plan for the avoidance of future disputes as to wages will be complete or protective against strikes, unless a sliding scale is adopted, whereby wages will be adjusted to living costs. Settlement of wages under pressure or as a compromise, is bound to produce dissatisfaction.

A further labor proviso is that on the board of directors of each carrier there shall be two labor directors and two government directors after June 30, 1920. The two labor directors shall be selected from the classified employees and nominated by the employees. The two government directors are to be appointed by the transportation board, and apparently whether satisfactory or unsatisfactory to each corporation. On all committees of the corporations' boards there shall be at least one labor director and one government director. These labor and government directors are to be compensated and their expenses paid by the corporation for attending board and committee meetings. There is nothing to show whether they are to be on the two thousand or more railroad boards of the country, or only on the boards of the operating carriers. Wages and working conditions are to be settled by the committee on wages and working conditions and by the transportation board in Washington so that no individual carrier corporation will have any responsibility for wages. Further, no carrier can prescribe the wages of its own employees independent of other railroads. Therefore, these labor and government directors on the board of directors of every carrier corporation seem to be like the fifth wheel of a wagon.

They have no prescribed responsibilities or qualifications, and nothing is said as to the responsibility of the government for their votes.

Looking for the results to be expected from the two government directors, the bill does not permit railroad companies to make capital expenditures, to exercise the power of eminent domain, or to issue securities except upon government approval. What useful service, therefore, will these two government directors render? If these four directors, instead of sitting on the carrier's board of directors, could be elected one-half by the carrier and one-half by the employees and work as subordinates to the committee on wages and working conditions, they might give a touch of home rule to the labor question, and form a thread of a labor organization, starting from the local ground and ending with the transportation board, which might be of some benefit. This is a suggestion and not a solution of the railroad labor question but it indicates the necessity for careful revision. It would appear wiser to let the transportation board, which has final responsibility for wages and for governmental supervision of the railroads, direct how employees and corporations and the public shall be represented, and avoid prescribing elaborate machinery.

There is another labor provision, *i. e.,* an employees' advisory council selected from each organized craft of railroad employees requesting representation, to administer a fund consisting of one-half of any excess earnings over a fair return, which any company guilty of that rare offense under a system of rates which must be reasonable and uniform, shall pay over to the transportation board. This duty might very easily be performed by the committee on wages and working conditions or the transportation board and this advisory council be dispensed with.

Consolidation of Roads Into Competitive Systems

I am in favor of consolidation. The bill declares it is the policy of the United States to divide the railroads into not less than 20 nor more than 35 separate and distinct systems —this division to be a division in ownership and for operating purposes. Each of the systems is to be owned and operated by a distinct corporation and, where practicable, the existing routes and channels of trade and commerce are to be maintained. The systems are to be so arranged and equalized as far as practicable, that uniform transportation costs, uniform rates and the same rate of return on value may be earned. The transportation board is to devise and adopt the system plans, but may thereafter change them. The Interstate Commerce Commission must also approve them. The government will have no financial responsibility for their formation either in the voluntary consolidation plans, or in those regional companies to be mandatorily formed after seven years by order of the transportation board. The arresting of the law of gravitation would be as easy to accomplish as to arrange and maintain these ideal systems, considering the divergent traffic conditions, physical, financial and other conditions of the various roads in even a single traffic district.

If anything is calculated to stop consolidations, and make them impossible to finance, it is a railroad alinement of this arbitrary character. The existing systems have been formed under a competitive system and follow the lines of the natural traffic routes, and are feeders and extensions of the original trunk lines, and in that way became attached to them as systems. Others might be formed gradually on similar lines, and as their organizations could be trained for the enlarged responsibilities.

The necessity for absorption, merger and consolidation of smaller corporations is apparent. In the last complete Interstate Commerce Commission report, that for the year ending June 30, 1916, we find 1590 companies divided into the following classes: Class I, 189 railroads; Class II, 276 railroads; Class III, 431 railroads; Switching and terminal companies, 227; Lessor companies, 467. These 1590 companies do not include about 600 roads that are privately owned, or industrial lines not common carriers, some of which report only to state commissions. The 189 first-class roads, together with their lessor companies, earned 97.4 per cent of the total operating revenues of the country. Now taking 162 of the chief operating companies, which earned 94.6 per cent of the total operating revenues of the country, we find that they already constitute 86 systems. But only 18 systems during the three-year test period earned over 6 per cent on their property investment . . . Until earnings are increased, it is hard to see the basis on which the railroads can proceed with any wholesale plan of absorption or consolidation. The 86 systems existing can be reduced, not arbitrarily, but as traffic and earnings justify. Indeed, as 23 systems already handle about 80 per cent of the total operating revenues, there seems to be no necessity or benefit to be obtained from constituting, valuing and financing new systems arbitrarily put together. . . .

What the railroads need is not an arbitrary division of the country into 20 or 35 distinct systems formed by mandate of the federal government and the changing views of various boards or commissions; nor any attempts to tie the weak and the strong together, in the hope that in some way or other the few strong railroads of the country can support the weak lines, including lines that have thin traffic or should never have been constructed. The railroads want laws that will permit the existing railway systems to absorb and eliminate the affiliated companies now owned, operated, leased or affiliated with their systems. Such further connecting roads may be added as may be required to round out these systems on a basis that would be approved by the federal commissions.

In the Pennsylvania system there are about 140 live companies, consisting of railroad companies, ferry companies, bridge companies, water companies and warehouse companies —all essential for transportation purposes. They are leased or operated, wholly owned, or owned in part by the parent company. Therefore, an absorption law to clear up the barriers in the existing charters and divergent state laws that prevent the absorption of such affiliated companies, to round out a single system and leave the name and securities of the parent companies unchanged, seems desirable. No such absorption of small companies by the large systems can proceed on any large scale without reasonable earnings to enable that course to be pursued, and thereafter leave the system in a strong position to do its financing on reasonable terms.

The big systems have absorbed many weak lines, and are now supporting other weak lines, and they have about reached the limit in that respect.

At the conclusion of federal control the bill states that rates are to remain in effect until changed by competent authority. This means state as well as federal. You can see what a hopeless state of confusion will be caused by throwing all the states into rate regulation again. The carriers are to file new schedules of rates, fares and charges with the commission within thirty days after federal control terminates, the same to become effective four months after they have been filed. During this period of readjustment, but for not exceeding five months, the compensation under the federal control act is to be guaranteed. During the calendar year 1917 it took about 75 cents out of every dollar to pay operating expenses and taxes, and now it is costing over 90 cents out of every dollar. Certainly for this period of reconstruction, affecting the entire nation, the United States government should readjust all rates—state and interstate—to meet the transportation costs, and properly establish railroad credit, by exercising the same control over rates as was done during federal control. It is true that the bill authorizes the Interstate Commerce Commission to co-operate with the state commissions and remove any unreasonable discrimination

against interstate and foreign commerce, but the act specifically states that it does not amend or affect the existing state laws or powers in relation to taxation or the lawful police powers of the several states, including the power to make and regulate intrastate rates, except as in the act otherwise provided. It will, therefore, be seen that such reservations will produce extensive proceedings or controversies so as to delay justice to the carriers, or to other states that may be affected by the rates made in a single state. It also divides the responsibility as to the credit of the carriers. The declarations of policy and elements affecting reasonable rates should be made so mandatory that the federal commissions should have a positive duty to see that the rates, both state and interstate, are adequate to protect that credit.

The Cummins bill as it stands, gives us no definite or prompt assurance of adequate rates, nor does it get us away from conflicting state regulations. To make it a truly constructive measure it must be strengthened and amended in these fundamental particulars.

Commandeering of Earnings

The provisions relative to commandeering and using for other railroad companies and for railroad employees the so-called excess earnings of individual companies will throw many railroad investments again into a condition of uncertainty, because a fair return is not prescribed or defined. What may be a fair return for one company, and for one year, may at the lapse of the next year be reversed by the commission, or be varied for other companies. There will be no incentive to any carrier to earn any money in excess of the payment of an ordinary dividend, not only because of the confiscation of the so-called excess earnings, but the further provision that any surplus earnings invested in the property cannot be capitalized or used as a basis for increased returns. These provisions will force all future additions, betterments and improvements to be provided from the issue and sale of securities. Such provisions would terminate conservative financing, as under private ownership, the money for new improvements could be had only from the sale of bonds under these conditions, and at higher interest rates to accord with the risk of bad years. If this system is once established for the railroads, it will in time be applied to all public utility companies at the outset, and later to industrial and manufacturing concerns, because their products are just as essential for the daily life of the citizen as railroad transportation.

I desire to emphasize the fact that the conservative railroads which have successfully weathered the various panics, industrial and financial, here and in England, without wiping out or reducing their dividends, are those railroads which used their surplus over reasonable dividends to provide additional facilities and equipment for the public use, instead of selling stocks or securities for that purpose. The Pennsylvania system is a fair example. Its property cost and marketable securities, not including holdings of securities of companies forming part of the system, exceeds the total outstanding securities in the hands of the public to the extent of over $500,000,000. If the company instead of following that practice had distributed all its yearly surplus in dividends, and had sold securities for all additions and betterments to its property and equipment, it would now require $30,000,000 per annum of additional net income to pay its 6 per cent dividends; or the company's stock would have been reduced to a 4 per cent dividend, and its bonds would have had to carry a much higher rate of interest because of weaker credit. It would have been impossible for it to have sold its stock on the market, and that would have been to the detriment of the country and industry, as well as to the company's security holders and owners.

The company's surplus was not derived from excessive transportation charges. These charges have been materially below those authorized by its charter. The freight charges especially were materially reduced from the beginning of operation, about seventy years ago, to within recent years, and almost ruinous competition among the various roads had a great effect in reducing these charges. The surplus for improving the company's credit and property was obtained not only from moderate profits in the transportation business, but by paying low dividends on its stock for a long series of years, from selling its stock at premiums, and from profits realized on its investments. This surplus was invested in the property for the improvement of the same for the public use, when legitimately it might all have been disbursed in dividends to the stockholders.

This practice was also followed by other companies without any regulation or legal requirements, and the public was benefited. What I object to is: (1st) the reprehensible feature that what a company earns under fair and uniform rates through good management and efficient transportation can be taken from it and given to others, thereby sapping the spirit of initiative and competition, and (2nd) federal regulation that ultimately will create a situation in which no surplus earnings over a fair return can exist, and that absolutely penalizes the railroads if they invest any surplus earnings in the property for the benefit of the public. If these provisions are allowed to stand, then the least I can ask is that an allowance of some surplus over a fair return in good years should be made mandatory, and not permissive, to assist in lean years. Otherwise in bad years, rates would have to be increased when shippers could least afford to pay them.

If the Pennsylvania Railroad Company after paying its fair dividends is not to have a surplus to sustain the credit and operations of weak roads in its system, then several hundred miles of railroads must stop operations and improvements, and communities must suffer.

The Pennsylvania system represents about 6.5 per cent of the whole track mileage of the country, about 13 per cent of the ton mileage, and 13.5 per cent of the passenger mileage. Its track mileage is about one-half of that of Great Britain and Ireland, and it has invested for public use $1,800,000,000, in its road and equipment, approximately one-tenth of the whole railroad investment of this country. It has been opened for traffic 67 years, and during that time its management has observed a sane and conservative financial and operating policy, and dealt generously with labor in wages and welfare funds to the extent the earnings permitted. I have the honor of having served the company, with the exception of a few years, since 1871, and for over 30 years have been closely associated with the executive department, familiar with the construction of new lines and branches to serve the public and the financing, upbuilding and compacting of the system. Therefore, I can speak intelligently, and indeed feelingly, about the company's policy and affairs. So far as public regulation is concerned, for the last ten years the company has not been allowed sufficient revenues to earn 6 per cent on the cost of its property and equipment except in 1909 and 1916. Yet so far as the management is concerned, long before there was any regulation of the railroads, as we now understand it, the Pennsylvania Railroad Company did not distribute all of its net income in dividends, but judiciously applied a substantial portion to promoting, helping and upbuilding its feeders and connecting lines, to eliminating grade crossings, and for other similar construction items. It was not alone in this policy. Other companies pursued the same course, and they could be depended upon to continue such policies, under proper regulation, without injustice to the public. Then why must Congress now propose, as a future national policy, to confiscate their so-called surplus earnings and stop incentive, and on the other hand fail to definitely order reasonable rates that must produce a fair return upon which railroads can live and make progress?

The Problem and the Remedy

The railroad problem has not changed, nor is it shrouded in mystery. It is this: Railroad earnings and credit must be created sufficient to support the existing railroad investment and attract the additional capital the transportation business requires in the public interest. New capital cannot be commandeered. Therefore, adequate rates made under public approval, with opportunity for competition, initiative and incentive, is the effective remedy for the whole problem, in my opinion. If adequate rates had been granted in the past decade, there would not have been a railroad problem. I desire to see the Cummins bill amended to definitely accomplish that result. If that mandate is not positively forthcoming as the result of the new legislation, all the boards and machinery created for regulatory purposes will be useless. Extreme care must be exercised to insure sound credit, and not theorize about it. If public regulation does not allow earnings sufficient to sustain railroad credit, and provide necessary transportation facilities, the public will be forced to regard regulation as a huge waste of money, time and effort, and demand a simplification of the situation, and start with a new slate, or drive straight for government ownership with its train of higher costs, inefficiency, and political domination of the employees and of the industries depending on the railroads. National reconstruction cannot be accomplished while railroad investments and credit are left in an unsatisfactory condition. This should spur Congress, the commissions, the investors, the employees, railroad management, and the public to work together for an equitable and prompt solution of this great problem. To that end the railroad executives are prepared to devote their whole time and attention, if the Congressional committees so desire. Further delay is extremely dangerous to all concerned.

Cost of Freight Train and Locomotive Service in August

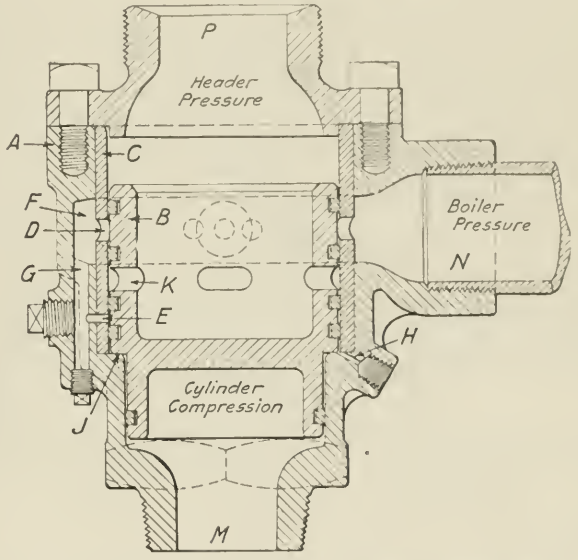
THE TOTAL COST of freight train service per 1,000 gross ton miles in August was 99.5 cents, according to the monthly report of the Operating Statistics Section. This is the lowest point it has reached this year and compares with 101.1 cents for August, 1918, a decrease of 1.6 per cent. In July it was 100.6 cents. Per mile, however, the costs are still greater than last year. The cost of freight locomotive service per locomotive mile in August was 103.2 cents, which is an increase of 1.5 per cent as compared with August, 1918, when it was 101.7 cents. In July it was 104.8 cents. The cost of freight train service per train mile in August was 152.8 as compared with 149.8 cents in August, 1918, an increase of 2 per cent. In July it was 153.8 cents. The items of locomotive repairs and fuel show decreases. The combined figures for all regions and the comparative figures for last year are as follows:

	August	
	1919	1918
Cost of locomotive service per locomotive mile	103.2	101.7
Locomotive repairs	32.3	33.6
Enginehouse expenses	8.3	7.0
Train enginemen	20.2	19.0
Locomotive fuel	39.1	39.2
Other locomotive supplies	3.3	2.9
Cost of train service per train mile	152.8	149.8
Enginehouse expenses / Locomotive repairs	46.3	46.8
Locomotive fuel	44.6	45.3
Other locomotive supplies	3.8	3.4
Train enginemen	23.0	21.9
Trainmen	26.5	25.6
Train supplies and expenses	8.6	6.9
Cost of train service per 1,000-ton miles	99.5	101.1
Locomotive repairs / Enginehouse expenses	30.1	31.6
Locomotive fuel	29.1	30.5
Other locomotive supplies	2.5	2.3
Enginemen and trainmen	32.2	32.1
Train supplies and expenses	5.6	4.6

Ripken Automatic Drifting Valve for Locomotives

SINCE SUPERHEATED STEAM has come into general use the trouble experienced with deposits on locomotive pistons and cylinders has increased greatly. The use of the drifting throttle has proved effective in eliminating this trouble, but it is difficult to insure that the engineer uses the proper amount of steam and for that reason an automatic drifting valve has important advantages over the drifting throttle. Several types of drifting valves are in use at present, the majority being arranged to come into action when a vacuum is formed in the cylinder. Since the vacuum which operates the valve will also draw in the front end gases which cause deposits on the cylinder walls, any drifting valve operated on this principle cannot entirely remove the trouble.

In order to do away with the formation of a vacuum in the cylinder, a valve has been devised which is operated by the compression in the cylinder. This device is known as the Ripken automatic drifting valve and is in use on the Minneapolis, St. Paul & Sault Sainte Marie. The valve



Section Showing the Connection of the Ripken Automatic Drifting Valve

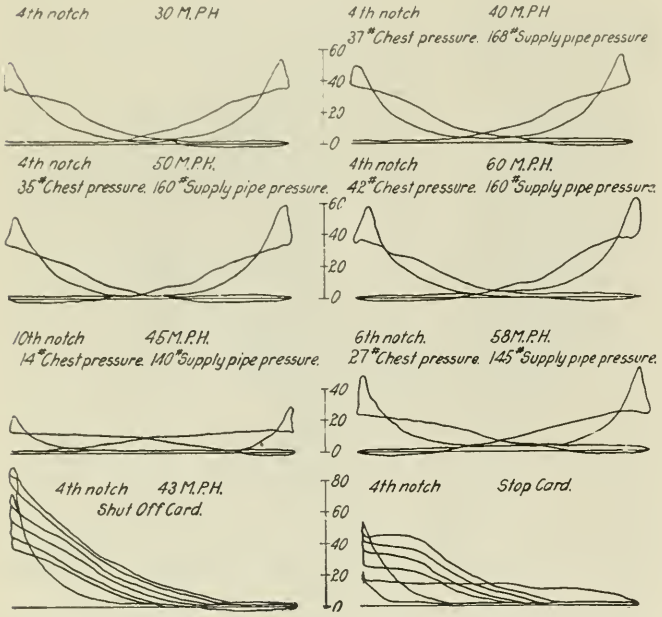
comes into operation before the cylinders are emptied of steam pressure after the throttle has been closed and is kept in operation and furnishes the needed amount of steam until the pistons cease to move. It is automatically closed just as the engine stops by the building up of pressure in the steam chest.

Only one valve per engine is used as the steam is passed directly to the branch pipe or the saturated end of the superheater header. This arrangement is advantageous as it reduces the amount of steam required and also protects the superheater elements against overheating. It is unnecessary to use either air relief valves or by-pass valves in conjunction with the Ripken drifting valve.

One illustration shows a section of the valve which serves to illustrate its operation. The operating portion consists of a cage *A*, and a differential piston valve *B*. The cage has an opening *M* at the bottom which is connected by the most direct means possible with one end of the cylinder so that the cylinder pressure is transmitted to the lower side of the piston. The side opening *N*, is connected through a two-inch pipe to a live steam line from the turret. The opening *P* at the top of the valve communicates with the branch pipe or superheater header.

Within the cage A is a bushing C, in which are ports D and E. The port D is surrounded by a duct F, which is always filled with live steam. From the duct F live steam passes through the passage G to port E. At the lower end of the bushing C is a small regulating and relief port H, connected by piping to the exhaust chamber of the locomotive.

When the main throttle is closed the pressure on top of the differential piston B falls and the compression in the cylinders acting on the bottom of the valve being in excess of the steam chest pressure raises the valve B off the shoulder J, upon which it normally rests, placing the port K in communication with port D. This permits steam to flow through the valve into the steam chest maintaining the required pressure to prevent a vacuum while drifting. The raising of the valve also uncovers port E and the steam entering the annular cavity under the valve is restricted by the port H and furnishes the counter pressure necessary to hold ports D and K in communication until the engine is almost at a standstill. As the speed decreases the pressure in the steam chest will rise, and overcoming the pressure on the bottom of the differential valve, will force the valve



Typical Indicator Cards from an Engine Fitted with the Ripken Drifting Valve

to its seat, where the fraction of the rings will hold it closed. Any slight leakage past the lower rings is taken care of by the port H and it is, therefore, practically impossible for the valve to open while the engine is at rest.

Tests on a superheater locomotive with 25 in. by 26 in. cylinders supplied with steam from a two-inch pipe showed that the valve when adjusted to close at about 40 lb. per sq. in. would maintain between 25 and 30 lb. pressure in the steam chest at 25 per cent cutoff at a speed of 60 miles an hour, preventing the formation of a harmful vacuum even at such high speed. After a shut-off with the reverse lever in running position, the valve would open when the steam chest pressure dropped to about 30 lb. The valve would close again when the steam chest pressure rose to 40 lb. which occurred just before the stop, allowing time for the superheater to empty itself before the engine came to rest. The Ripken drifting valve has been in use nearly two years with excellent results. It has required little attention and has prolonged the life of cylinder and piston rod packing on the engines to which it has been applied.

Cost of Freight Train and Locomotive Service in July

THE TOTAL COST of freight train service, including locomotive service, continues to show a steady decrease each month as compared with preceding months, although increases as compared with last year, according to the monthly report of the Operating Statistics Section. For the month of July it was 100.6 cents per 1,000 gross ton miles, as compared with 101.8 cents in June, 103.9 in May, 112.7 in April, 119.5 in March and 126.5 in February. No comparison of this figure with last year is given. The cost of freight locomotive service per locomotive mile in July was 104.8 cents, as compared with 98.7 in July, 1918, an increase of 6.2 per cent, and as compared with 107.1 cents in June of this year. The cost of freight train service per train mile was 153.8 cents, as compared with 144.2 cents in July, 1918, an increase of 6.7 per cent, and as compared with 154.7 cents in June. All items of cost continue to show increases as compared with last year, except locomotive fuel, which for July shows a slight decrease.

	July 1919	July 1918
Cost of locomotive service per locomotive mile	104.8	98.7
Locomotive repairs	35.6	32.3
Enginehouse expenses	8.3	7.0
Train enginemen	19.8	18.5
Locomotive fuel	37.7	37.9
Other locomotive supplies	3.3	2.9
Cost of train service per train mile	153.8	144.1
Enginehouse expenses / Locomotive repairs	50.1	45.3
Locomotive fuel	43.0	43.6
Other locomotive supplies	3.8	3.4
Train enginemen	22.6	21.3
Trainmen	26.1	24.8
Train supplies and expenses	8.2	5.9

	July, 1919	June, 1919	May, 1919	April, 1919	March, 1919	Feb'y, 1919
Cost of train service per 1,000 gross ton miles	100.6	101.8	103.9	112.7	119.5	126.5
Locomotive repairs / Enginehouse expenses	32.7	33.7	35.4	38.6	40.8	43.1
Locomotive fuel	28.1	29.3	30.6	34.3	37.5	40.3
Other locomotive supplies	2.5	2.6	2.6	2.9	3.1	3.4
Enginemen and trainmen	31.9	31.5	31.1	32.4	33.5	34.8
Train supplies and expenses	5.4	4.7	4.2	4.4	4.6	4.8

From the Omaha Bee

More McAdoodle

General News Department

Profane language, or anything repugnant to the clause in the rule-book calling for "the faithful, intelligent and courteous" discharge of duty may afford good cause for dismissal from the railroad service. This is the salient feature of a circular recently promulgated on the Pennsylvania Railroad. Already, according to a local paper, a number of employees on the Middle Division have been suspended for using foul and profane language.

Cars were not held at Louisville for whiskey; so says Director General Hines. In accordance with shippers' orders, instructions were issued to furnish cars for such shipments on December 8, "consistently with the performance of other transportation requirements," if the ban of the law should be lifted by the court; but cars were not held idle for that purpose. No decision having been made by the court, these orders were rescinded and no cars are being held.

Three thousand is the number of empty freight cars said to have been standing on side tracks in and near Louisville, Ky., last Monday morning, held in the expectation that by an anticipated decision of the Supreme Court, but which was not handed down on that day, the cars could be used to carry off 36,500,000 gallons of whiskey which distillers in that region are anxious to dispose of before the constitutional prohibition of liquor traffic goes into effect. Plans had been made to load the whiskey into the cars as fast as the revenue stamps could be pasted on the barrels. Whether or not any one is paying demurrage on these cars at the present time, while the decision of the Supreme Court is breathlessly awaited, is not stated.

Contracts Executed

The Railroad Administration has executed compensation contracts with the Maine Central for $2,955,696, the Hocking Valley for $2,637,167 and the Atlanta, Birmingham & Atlantic for $480,000.

Passengers Burned to Death at Muscatine, Iowa

In the derailment of a gasoline motor car on the Muscatine, Burlington & Southern, three miles south of Muscatine, Iowa, on the evening of the 4th of December, three persons were burned to death, and 13 or more were injured, every occupant of the car being either killed or injured. According to the Des Moines Register, the car was thrown off the track by a defective rail which had already been reported; the gasoline tank was punctured, when the car fell on its side, and the gasoline took fire. The only available exit from the car was a side door, which was on the side next to the ground, and, because of the rapidly spreading flames, passengers struggled in vain to escape, until a man broke a window in the rear end. Some of the escaping passengers were burned.

The Muscatine, Burlington & Southern extends from Muscatine, Iowa, southward 54 miles to Burlington. The timetable in the Official Guide shows four trains each way on week days, marked "motor car," and one other train each way.

Railway Revenues for October

The Interstate Commerce Commission has issued for October its regular compilations of revenues and expenses of class I roads (186 railroads and 17 switching and terminal companies). Net operating income for October, 1919, was $86,523,011, and the average per mile of road operated was $369. This compares with $428 per mile for the month of October in the years 1914, 1915 and 1916, included in the "test period."

The details are shown in the large table.

Railway Revenues and Expenses for October and Ten Months

		October				Ten months			
		Amount		Per mile of road operated		Amount		Per mile of road operated	
		1919	1918	1919	1918	1919	1918	1919	1918
1.	Average No. miles operated	234,122.45	233,895.90	.....	.....	233,933.37	234,301.78	.....	.....
	Revenues.	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars
2.	Freight	368,502,283	365,427,509	1,574	1,563	2,949,628,666	2,825,972,062	12,609	12,061
3.	Passenger	98,863,902	84,803,839	422	363	985,900,632	857,852,148	4,214	3,661
4.	Mail	4,529,077	4,276,597	19	18	43,445,495	44,709,901	186	191
5.	Express	13,313,006	12,693,162	57	54	96,865,254	102,675,749	414	438
6.	All other transportation	11,918,997	11,981,695	51	51	104,972,471	105,604,973	449	451
7.	Incidental	12,175,870	11,259,405	52	48	108,094,751	103,780,601	462	443
8.	Joint facility—Cr	614,829	524,566	3	2	5,679,106	4,841,659	24	21
9.	Joint facility—Dr	199,399	148,537	1	1	1,783,282	1,460,035	8	8
10.	Railway operating revenues	509,718,565	490,818,236	2,177	2,098	4,292,862,493	4,043,977,058	18,350	17,260
	Expenses								
11.	Maintenance of way and structures	72,431,070	63,899,868	309	273	647,553,193	523,527,059	2,768	2,234
12.	Maintenance of equipment	115,842,669	119,642,501	495	509	1,003,341,842	899,165,368	4,289	3,839
13.	Traffic	4,014,623	3,468,841	17	15	38,899,772	42,090,541	166	180
14.	Transportation	198,729,930	185,718,022	849	794	1,786,973,450	1,671,392,303	7,639	7,134
15.	Miscellaneous operations	4,440,912	3,288,638	19	14	40,095,812	32,152,884	171	137
16.	General	10,809,293	9,615,317	46	41	103,530,234	92,315,169	443	394
17.	Transportation for investment—Cr	457,260	579,095	2	2	4,943,745	4,690,018	21	20
18.	Railway operating expenses	405,811,237	384,454,092	1,733	1,644	3,615,440,558	3,255,953,306	15,455	13,897
19.	Net revenue from railway operations	103,907,328	106,364,144	444	454	677,361,935	788,023,752	2,895	3,363
20.	Railway tax accruals (excluding "war taxes")	17,281,136	16,591,369	74	71	158,196,921	157,257,833	676	671
21.	Uncollectible railway revenues	103,181	52,293	1	....	666,879	517,586	3	2
22.	Railway operating income	86,523,011	89,720,482	369	383	518,498,135	630,248,333	2,216	2,690
23.	Equipment rents (Dr. Bal.)	8,924,486	1,243,169	38	5	24,947,788	11,332,295	107	48
24.	Joint facility rent (Dr. Bal.)	1,201,312	1,124,028	5	5	12,467,816	11,705,360	53	50
25.	Net of items 22, 23 and 24	76,397,213	87,353,285	326	373	481,082,531	607,210,678	2,056	2,592
26.	Ratio of operating expenses to operating revenues, per cent	79.61	78.33	....	....	84.22	80.51	....	....

Foreign Railway News

Reports from Trieste say that freight rates on the Austrian State Railways, as well as on the private railways in Austria, were increased 150 per cent on October 15.

The Irish Railway Executive has had its attention drawn to the fact that a link line between the city terminus of the Cork & Macroom Railway and the Bandon & South Coast Railway, which was constructed for military purposes during the war, might now be utilized for commercial purposes with great advantage to the public and a manifest economy in labor and expense. The executive has been asked by the local authority to make such arrangements as may be necessary to adapt the link for commercial purposes.—(Modern Transport).

Automatic Signals in Australia

LONDON.

The Queensland government railway has installed a 4½-mile section of 3 position upper quadrant automatic signals.

Electrification in Bolivia

The Government of Bolivia is studying the problem of the electrification of the railroads and has declared as public domain the waters of the rivers having sufficient power for that purpose.

Raising of Rates on Uganda Government Railway

LONDON.

The proposal to raise the rates on the Uganda Government railway by 40 to 70 per cent, according to distance, is to be suspended, says the Engineer, pending further consideration.

Proposed Connection of India and Burma by Railway

LONDON

The Times Trade Supplement states that sanction has been given to a preliminary survey by State engineers for a meter gage railway line by way of Hukong Valley to connect India and Burma. This will connect the existing line to Lakhimpur with the line from Mandalay along the Upper Irrawaddy valley.

Wood Fuel on Swiss Railways

LONDON.

The Times Trade Supplement states that the results obtained from the use of wood fuel in Switzerland, are of considerable interest. The technical difficulties were not so great as were anticipated. On lighting the fires with one cubic meter of wood a steam pressure of from five to six atmospheres was obtained in 1½ hours, for which otherwise 300 kilos of coal would have been required. The cost was only £1:12:0, or approximately $13 (pre-war rate), as against £2:18:4, or approximately $15 (pre-war rate) with coal. The same maximum driving rates were obtained as with coal. The difficulty for storing fuel for long journeys was met by running a special truck behind the engine.

A Car Renting Scheme in Czechoslovakia

Several important Bohemian banks have formed a ten million crown company for the renting of freight cars under the name of Tschechoslovakische Wagonleih-A. G. Negotiations will be taken up with foreign car manufacturers. The cars will be purchased outright and rented only to such industrial undertakings as are stockholders and in proportion to the amount of stock they hold.

Oil Fuel in France

Press despatches from Paris dated November 27 say that on the day preceding the first locomotive on a French railroad to use oil as fuel was sent out on an experimental trip yesterday and hauled a heavy train with complete success. It is announced that railroads in France have planned to alter their engines so as to use oil fuel instead of coal, and that 200 locomotives may be thus changed.

German Railway Contracts

LONDON.

An extract by Modern Transport from the Koelnische Volkszeitung states that the German government has given Krupps a contract for the manufacture and delivery of 100 locomotives and 2,000 fifteen-ton freight cars per year. Full details of this contract are not yet known, but it is reported that the price to be paid will be based upon the actual cost of the material used and of the labor, and that the manufacturers themselves will only be allowed a commission profit of 2 per cent. It is also stated that directly after the armistice, Krupps converted two of its munition factories into rolling stock factories, and these two factories have a total capacity of 300 heavy locomotives and 2,500 fifteen-ton freight cars per year.

New Trans-Balkanic Railway

LONDON.

An extract from the Times Trade Supplement states that the completion of a new railroad to run from Valona on the Adriatic to Monastir will not only benefit the undeveloped country of Albania, but will give Italy through communications across the Balkans with Constantinople. The efficiency of the railway will further be increased by two ferries which will carry the train over the Otranto Canal. Thus the Italian system will be linked up with the new railway.

It is also proposed to link up Durazzo, the most important port of Albania, by a branch which will run in an almost straight line through the plain of Kavaja along the old Roman road, via Egnatia. After diverging from this road and taking the Musekeja road, it will join the Trans-Balkanic not far from Pekini, at a suitable spot between Fieri and Berat.

Mikado Locomotive for the Korean Government Railways

One of 12 locomotives recently built by the American Locomotive Company. These locomotives are for 4 ft. 8½ in. gage. They have 25 by 28 in. cylinders; 57 in. driving wheels; a total weight in working order of 210, 000 lb.; a weight on drivers of 158,500 lb. and a tractive effort of 39,800 lb.

English Railway Shopmen's Demands

LONDON.

At a meeting of the local railway shops' committees connected with the Engineering and Shipbuilding Trades' Federation recently held at York, the following draft of a national program for the railway shops of Great Britain was formulated.

1. That all craftsmen be called upon at once to join their respective craft unions.
2. District rate of wages to all grades.
3. Consolidation of all war bonuses, including the 12½ per cent, into standard district rates.
4. A 44-hour working week.
5. Abolition of systematic overtime, local arrangements to be made for overtime in cases of emergency, breakdown, repairs of plant, etc., overtime rates to be not less than time and a half for time workers and rate and a half for piece workers.
6. A week's holiday with pay, and payment for all recognized statutory holidays.
7. Abolition of the age limit in the medical examination and a share in the management and control of railways.

British Labor to Participate in Railway Control

LONDON.

J. H. Thomas, the general secretary of the National Union of Railwaymen, who has been conducting negotiations with the British Government relating to railwaymen's wages, in a speech before railwaymen at Bristol on November 16, outlined the government's offer to the railwaymen regarding their participation in government control of the railways. In brief, the plan is that three union representatives will join the Railway Executive Committee with powers equal to those of the general managers on this committee; a joint board is to be formed composed of five general managers and five representatives of the unions to deal with conditions of service; a committee of 12 is to be formed composed of four representatives from the unions, four from the railway companies and four from the public with an independent chairman, which will consider questions on which the joint board fails to agree, and, further, local committees will be formed made up of an equal number of representatives from the management and the men to deal with local grievances.

Mr. Thomas made it clear that the negotiations relating to the participation in railway control were independent of the negotiations dealing with the standardization of wages. The latter is still being discussed. In the joint board three of the five union representatives will represent the National Union of Railwaymen and two the Associated Locomotive Engine Drivers and Firemen. This joint board will have pleniary powers, but only in the sense that the men's side will be subject to their executive committee.

In commenting on the committee of twelve, representing the railwaymen, the railway companies and the public, Mr. Thomas said in regard to the four members representing the public, one will be a trade unionist not connected with the railways and another will be a representative of the great cooperative movement. Furthermore, he said: "We want you, however, clearly to understand that while they will be in a position to give recommendations and to advise and suggest, neither body will have the power to take away the right to strike so far as the men are concerned, but obviously we would not strike while a matter was being considered. That, in my judgment, is the first step towards some real machinery for dealing with working conditions."

In speaking of the three union representatives on the Railway Executive Committee, Mr. Thomas said, "I deny the possession of a monopoly of brains by the employing classes, whoever they are, and I have never hesitated to affirm that to general management the workers could contribute much." Two of the three labor members to join the Railway Executive Committee will come from the National Union of Railwaymen and the third from the Associated Locomotive Engine Drivers and Firemen.

In recommending the acceptance by the unions of the government's offer of share in control, Mr. Thomas said, that while this scheme will not render strikes impossible, it will, if properly worked in a fair and genuine spirit on both sides, do much to make trade unionism not only a means of improving men's condition, but also to smooth working on the railways of the country.

Equipment and Supplies

Cars Constructed in Railroad Shops in September

New cars were constructed in railroad shops during the month ended September 30 as follows:

Class of cars	Steel	Steel under-frame	Steel center sills	Wood	Total
Passenger—					
Sleeping	...	...	...	...	...
Parlor	...	...	...	...	...
Dining	...	...	...	...	...
Parlor observation	...	...	...	...	...
Dining observation	...	...	...	...	...
Passenger baggage	...	...	...	...	...
Passenger coach	...	...	...	...	...
Passenger and mail	...	...	...	...	...
Mail	...	...	...	...	...
Baggage and mail	...	...	...	...	...
Baggage	...	...	...	...	...
Express	...	...	...	...	...
Express and refrigerator	...	...	...	...	...
Horse express	...	...	...	...	...
Milk	...	...	...	...	...
Total passenger equipment	...	...	...	...	...
Freight—					
Stock	...	...	...	4	4
Hopper	...	...	...	7	7
Gondola	...	...	...	...	...
Flat	...	...	...	3	3
Coke rack	...	...	...	2	2
Work car	...	...	...	1	1
Miscellaneous freight cars	...	...	...	3	3
Caboose	...	22	...	1	23
Box	...	...	106	79	185
Refrigerator	...	...	...	...	...
Total freight	...	22	106	100	228
Grand total	...	22	106	100	228

Freight Cars

THE CHESAPEAKE & OHIO is in the market for 1,000 hopper car bodies.

THE INTERSTATE RAILROAD has ordered 510 55-ton hopper cars from the Pressed Steel Car Company.

THE NEW YORK CENTRAL is inquiring for 1,000 hopper car bodies for the Pittsburgh & Lake Erie.

THE U. S. STORES COMPANY, Salt Lake City, Utah, has ordered 11 box cars from the Mt. Vernon Car & Manufacturing Company, Mt. Vernon, Ill.

THE BRIAR HILL STEEL COMPANY, Youngstown, Ohio, has ordered 50 mine cars from the American Car & Foundry Company.

Passenger Cars

THE PENNSYLVANIA EQUIPMENT COMPANY, 1420 Chestnut street, Philadelphia, Pa., is in the market for six passenger coaches.

THE ST. LOUIS, BROWNVILLE & MEXICO has ordered 10 70-ft. coaches and 6 70-ft. baggage cars from the American Car & Foundry Companu.

Signaling

THE CANADIAN NATIONAL RAILWAYS have awarded contracts to the Union Switch & Signal Company, Swissvale, Pa., for two half-interlocking plants at Fort William, Ont.

THE NEW YORK CENTRAL has ordered from the Federal Signal Company, Albany, N. Y., a 64-lever, style "A," mechanical interlocking machine to be installed at Warners, N. Y.

THE LEHIGH VALLEY has awarded a contract to the Federal Signal Company, Albany, N. Y., for an electric interlocking at Newark, N. J. The machine will be a 32-lever, Federal type 4, direct current.

Railway Financial News

Boston & Maine.—See editorial elsewhere in this issue.

Canadian Pacific.—Sir John Eaton, of Toronto, has been elected a director to succeed Wilmot D. Matthews, deceased.

Chicago, Peoria & St. Louis.—The committee representing the the general and refunding mortgage bondholders has adopted a resolution declaring that "unless Congressional enactments and other subsequent developments" should make the company's prospects more promising than they now appear, the bondholders should no longer subject themselves to the loss and risk of loss involved in continuing the operation of the road. The committee calls upon the Bankers Trust Company, trustee under the mortgage, to take immediate steps to foreclose the mortgage, with the object of reducing the property under the mortgage to cash, by sale, or scrapping, or otherwise. The resolutions declare further that, pending foreclosure, the receivers should not risk further losses by operating the poperty.

The Chicago, Peoria & St. Louis owns 234 miles of line in Illinois and operates a total of 255 miles, the main line extending from Pekin to Peoria. Interest on the $2,850,000 general and refunding mortgage bonds has been in default about two years. It has $2,000,000 other bonds and $4,000,000 stock, or a total capitalization of about $38,000 per mile of line owned. Receivers were appointed in July, 1914.

Of a small issue of equipment notes, the principal and interest due November 1, 1918, were paid by the Railroad Administration, which refused to provide the funds for the notes due November 1 last.

Pere Marquette.—This company has filed a petition with the Public Utilities Commission of Illinois for an order authorizing the issue of $1,568,000 additional 5 per cent gold bonds of Series "A."

Pittsburgh, Ft. Wayne & Chicago.—This company has declared an extra dividend of $5.75 a share, addition to the regular quarterly dividends, on the common and preferred stocks.

Texas & Pacific.—J. L. Lancaster and Charles L. Wallace have been appointed receivers, succeeding Pearl Wight, former sole receiver, who has resigned.

The Long Island Railroad reports that in the month of September 95.5 per cent of its passenger trains reached destination on time. The number of trains reported was 1,986 and the number on time was 1,897.

Railway Officers

Railroad Administration

Operating

J. A. Mercer has been appointed acting trainmaster of the Montana division of the Northern Pacific, relieving D. A. MacMillan, granted leave of absence, due to illness.

W. J. Jenkins, conductor of the Denver & Rio Grande, has been appointed trainmaster of the Salt Lake division at Soldier Summit, succeeding **M. J. Ruland,** who has been transferred to the Green River division with the same headquarters.

G. M. Lillis, locomotive engineer of the Denver & Rio Grande, has been appointed traveling engineer and train master of the Salt Lake division, at Soldier Summit, Utah, succeeding **G. T. Bourne,** who has been transferred to the Green River division, with the same headquarters.

L. B. Allen, assistant general manager on the Chicago, Burlington & Quincy, with office at Chicago, has been promoted to general manager of the Lines East, with the same headquarters, succeeding **E. P. Bracken,** whose appointment as federal manager was announced in the *Railway Age* of October 10 (page 763).

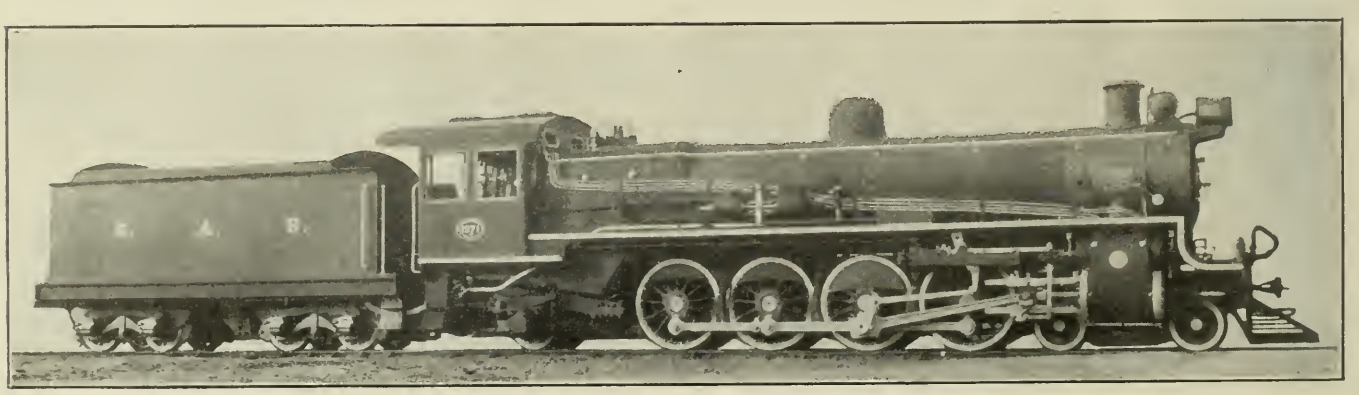
Corporate

Executive, Financial, Legal and Accounting

Pearl White, sole receiver of the Texas & Pacific, has resigned, and **J. L. Lancaster,** federal manager of that road, and **Charles L. Wallace,** assistant to the receiver, have been appointed co-receivers to succeed Mr. White. The appointment was made by the United States District Court for the Western District of Louisiana.

Special

Miss Daisy Oden, head of the information service in the general offices at Chicago of the Chicago, Burlington & Quincy, has been appointed supervisor for women service, with the same headquarters. Miss Oden will have charge of the welfare of all women in the employment of the road, looking after their comfort in the offices and other places in which they work. This is a new departure in railroad service, the outgrowth of the great increase in the number of women employed in all departments. Miss Oden was formerly passenger agent at Davenport, Rock Island and Moline for the Chicago, Burlington & Quincy.



Mountain Type Locomotive for the South African Railways

One of 20 recently ordered from the American Locomotive Company. The locomotive is superheated. It is of 3 ft. 6 in. gage; has 22 by 28 in. cylinders, 57 in. driving wheels; a total weight in working order of 194,000 lb.; a weight on drivers of 144,500 lb. and a tractive effort of 37,400. The American Locomotive Company is also building 20 other Mountain type locomotives for the South African Railways weighing 192,000 lb. with 22 by 26 in. cylinders and 48 in. driving wheels.

EDITORIAL

Railway Age

Table of Contents will be found on Page 5 of the Advertising Section.

Labor a Commodity

Samuel Gompers in protesting before the Cummins Committee of the Senate against the strike clause of the Cummins bill, asserted many times that labor was not a commodity. In questioning Mr. Gompers, members of the committee not infrequently prefaced their remarks with a disclaimer of implying that labor was a commodity. The President in his recent message to Congress reiterated the statement that labor is not a commodity. Is not this a confusion of the words labor and laborer? Laborers are not a commodity, any more than capitalists or college professors or artists are commodities. On the other hand, what the capitalist possesses, capital; what the artist produces, pictures or statuary; what the professor writes, books or lectures, are commodities. Why then all this political horror of calling labor a commodity. The Century Dictionary defines the noun labor as "work done by human being or an animal; exertion of body or mind or both for the accomplishment of an end; effort made to attain useful results in distinction from exercise, for the sake of recreation or amusement." Labor in this sense would certainly seem to be a commodity. The importance in distinguishing between the laborer and that which he has to sell goes further, however, than a mere nice distinction between words. It has led to a confusion of thought about economic problems which is peculiarly insidious because of lending itself so easily to sentimentality. Trade unionism while taking as the slogan to use in its political discussions "labor is not a commodity," clearly distinguishes between the laborers and labor when it attempts to restrict the output of the individual laborer. Then labor becomes a commodity subject to the law of supply and demand, and the laborer who sells more labor than his most inefficient brother workmen, is regarded as cheapening the price of labor because he increases the supply of it. Every article used in commerce is composed of material and of labor. Why distinguish between the two component parts and call one a commodity but not the other? Labor is a commodity in the same sense that capital is a commodity.

A Mere Nothing to Show for It.

"To the creation of our railroads, the public has contributed about $700,000,000 of public moneys, and a land area about equal to that of Texas. . . . For this tremendous contribution of public property to railroads privately owned, the public now has nothing to show." The city of Chicago, of Cincinnati, of Denver, of Dallas, in fact every inland city in the United States, owes its existence as a great city to the privately owned railroads of this country. The $700,000,000 mentioned above is but a small part of the increase in land values in Texas alone, directly attributable to the railroads created by private capital. What would wheat be worth a bushel in the Dakotas if it had to be hauled to the Great Lakes by wagon, or even by motor truck. For that matter, what would coal in West Virginia and Kentucky be worth were it not that hundreds of millions of dollars of private capital has been invested in building so perfect a transportation machine that a ton of coal can be hauled 300 miles for about 90 cents. Every commodity in commerce, has as one of its attributes, place. The value that has been added by railroad transportation to commodities is incalculable. Copper in Arizona, pork in Indiana, cotton in Texas, coal in West Virginia, silver in Colorado, are all commodities, but the consumer must have these commodities at the point of consumption. The value which is added by transportation is at least as great as the value of the article itself. Transportation to the point of consumption is as necessary to create value as is the existence of the article to be consumed. The Virginian Railway was recently enough built so that the event of its opening is still fairly fresh in the memory of the citizens of Norfolk. Let any one ask them whether new values were created for the public by the building of the Virginian. There are people still alive who can remember the first railroad built into Denver, Colorado. It is safe to say that these people would testify to the fact that the railroads have added value to Colorado. For this contribution of $700,000,000, about a tenth of one of the Liberty Loans—the public has to show the development of this United States as it is, a development inconceivable without the railroads. The statement quoted at the beginning of this paragraph was made by G. W. Anderson, for about a year a member of the Interstate Commerce Commission.

Of Negative and Destructive Character

It is significant that the Public Ownership League recently met in Chicago and endorsed the Plumb plan with minor reservations. The incident is significant because it shows the ignorance and want of rational principle on which most of the agitation for government ownership has been and is based. Until the Plumb plan was put forward the advocates of government ownership also favored government management, and their arguments were roughly divisible into two classes. The first class of arguments consisted of attacks upon private management as being dishonest, selfish, inefficient and so on. The second class of arguments were directed to showing that government management would be greatly superior to private management because the managers would represent and be responsible to the public and would therefore strive to give it good service at low cost, rather than merely to make profits.

Under the Plumb plan the government would own the railroads, but it would not manage them. They would be managed by a board of directors, one-third of whose members would be appointed by the President of the United States and two-thirds by the official employees and the classified employees. All salaries and wages would be fixed by a board consisting exclusively of official employees and classified employees. In other words, the management would be one of the employees, by the employees and for the employees. There is not a single argument that has been used in favor of government management of railroads which can rationally be advanced in favor of the kind of management proposed in the Plumb plan, because the two kinds of management would be as different from each other as private management would be from either of them.

Why, then, have those who composed the Public Owner-

ship League suddenly decided to abandon the advocacy of government management and take up the advocacy of Plumb plan management? There is only one possible answer, and that is that they have never been so much in favor of *government* management as they have been opposed to *private* management and that they are willing to take any scheme which seems to stand any chance of supplanting private management. In other words, their attitude and agitation have been much more negative than positive; they have been bent rather on destroying something they have not liked than on establishing in place of it something which knowledge and experience, and reasoning based on knowledge and experience, have led them to believe would work better than the thing they have been trying to destroy. They were bent on destroying private management; and they advocated government management only because they had to advocate something; and that, on a superficial view, it seemed the most available substitute for private management. They took up the Plumb plan because it seemed to have a chance of winning more supporters than government management.

This incident is an illustration of the most important characteristic of the modern radical movement—a characteristic which expresses the very essence of the movement. It is a movement, not so much to create new institutions, industrial or political, as to tear down existing ones; a movement not so much to enrich the poor as to impoverish the rich; a movement based not so much on solicitude for the masses as on envy of the classes; a movement not so much to "socialize" property as to destroy the private ownership of it, even though incidentally the property itself be destroyed. The only country in which the movement has been entirely triumphant is Russia, and there the destruction not only of the private ownership of property but of property itself has been so great that while the rich have been made poor the poor have been largely frozen and starved to death. The American people cannot too early become fully alive to the purely negative and destructive character of the radical movement. The prosperity and progress of the human race have been promoted, not by those who have been dominated by the instinct of destruction, but by those whose instincts have been chiefly or wholly constructive.

The Virginian's Train Rules

THE VIRGINIAN RAILWAY adopted a few months ago, a new book of rules for the operating department, which deserves mention for the numerous examples of felicitous language with which its pages are sprinkled. The officers of the road, no doubt, will look with amusement, if not with mild contempt, on the critic who gives attention first to language instead of to practice; to form instead of substance; but "there is a reason." Rule-book makers have to expend most of their energies on the form of the words. That is the element in which they can do good work and make real improvement, and improvements in language constitute the feature for which they deserve credit. Changes in the substance of the rule, on the other hand, are subject to varied dangers comparable to lightning, earthquake and other cataclysmic disturbances. For example, Rule 93, in this book, requires *all* trains to run under control within yard limits, a simplification of practice in the interest of safety which would seem at least to deserve a thorough trial; but the new rule had hardly got started before it was knocked off its pedestal; it was modified, as regards passenger trains, within a few weeks after the new code went into effect.

Rule 4 (for changing time tables) is another in which practice and language do not "function" together with any success. Innumerable conferences have used up reams of paper in rewriting this rule, and one man has written a book about it; but differences concerning its language do not seem likely to be settled in the present age. This is one of the points where all the code makers combined have failed to achieve a success. The Virginian's book settles the question in the only way that is both simple and practicable; it says that when a time-table expires all trains lose all rights. To the old-school despatcher it seems, no doubt, like sacrilege thus to cast aside the work of scores of minds through scores of years; but there is no real cause for their surprise; the simplified rule, after all, is no more radical a simplification than is the block system; and the block system is now familiar to everybody.

To make an adequate review of this book would extend far beyond the scope and limits of an editorial article. There would be many things to praise and many to criticize. Much of the clumsy and stilted language of the standard code is retained in this one, and not all of the additions which have been made can be called improvements. But we must at least take the space to give our reason for favoring the Virginian's version of Rules 93 and 4. The rule to require all trains to run under control within yard limits is really an essential element in the management of the block system on those roads which have only one signal at each station. The Virginian, on the greater part of its line, has not as yet adopted the block system; but it belongs to that class of roads which usually defer indefinitely the introduction of automatic signals and therefore affords a good example of a line where the use of the manual system is "indicated." The manual system, as it is operated on thousands of miles of single-track American lines which have nothing more than a train-order signal at most of the stations, is an example of straddling which is anything but satisfactory. It is a combination of space-interval protection and time-table protection which every operating officer ought to be glad to get rid of; and the adoption of Virginian Rule 93 would make the abolition of the patch-work practicable. It is true that such a change would purchase safety at the expense of speed; but safety always costs something.

The simplification of Rule 4, as exemplified in this book, is also desirable and commendable for the same general reason. The abolition of the complicated form of the rule helps the despatchers to recognize more fully in practice the block system principle of always giving trains absolute right to definite points. We have heard of cases where conductors and enginemen actually have lain off, when a new time table went into effect, because of their dread of problems which they would encounter in the transition from the old table to the new one, under the longer form of Rule 4.

The extensive substitution of Form 19 for Form 31 in train despatching is authorized by this book. This saves valuable time for freight trains, and is a change which is gratifying; while the retention of green signals, on the front of engines (inconsistent with green for proceed in Rule 10) produces the contrary impression; Rule 525 embodies a commendable innovation; while the mixing of instructions for officers with those for laborers (in the non-standard part of the book) is objectionable; but as has been said, the substance of the book is too large a subject for discussion in this place and must be dropped; our appeal to the reader is to examine the wording of the rules.

Some examples of the language are copied in the margin. Take, for example, Rules 526 and 529; or 538. We do not set up these examples as models of perfect English; a full discussion by railroad and linguistic experts would improve them; but they are worthy of notice as a marked improvement over ordinary railroad English. Evidently the editor of the book, in this part of his work, had full freedom to fit the words exactly to the thought which it was desired to express, a process which, in a good deal of railroad "literature" falls far short of success. "Incongruity" may be a big word for some brakemen, and nearly all brakemen may need advice

as to just what the superintendent is calling for when he tells them to "observe the conduct" of passengers; but there is much valuable suggestion in the variety of expression here presented. And if there are numerous new words in this book which need to be defined, the author will still be in good company; the same need will be found in rules of the best roads.*

As was intimated at the outset, the language of trainmen's rules everywhere is susceptible of decided improvement, and the wideawake operating officer will, of course, embrace every opportunity, such as the appearance of a new book, to re-examine the good and bad features of his own rules. The American Railway Association when, years ago, it laid on the table (or, rather, consigned to the garret) the excellent matter presented by its committee as an enlargement of the standard code, deferred a useful and needed improvement. The fact that these rules have lain buried in the dust for 20 years does not alter their value. Good rules do not insure good practice; neither is uniformity in language a satisfactory substitute for precision and clarity. The present argument is not intended to encourage the superintendent who depends on a book to enforce obedience, nor to support any Congressional bill to establish a uniform code throughout the United States; but the duty of greatly improving our rule books is exceedingly plain to every one who examines the subject with discrimination and care.

Continue Fuel Conservation Measures

THE WORK of the Fuel Conservation Section of the United States Railroad Administration may soon be brought to an end by the return of the railroads to private operation, and a brief survey of the results which have been accomplished is not out of place in relation to the future of the fuel conservation movement on the railroads.

At the beginning of its organization the Railroad Administration was confronted with a serious fuel problem. The production of coal had been greatly reduced by the extraordinarily severe winter of 1917 and 1918, and the demand for coal in 1918 gave promise of materially exceeding the supply. Aside from the necessity for conserving the available supply of fuel, the efforts at increased production had led to a heavy increase in the amount of non-combustible material in the coal, which also needed attention if the railways were effectively to meet the transportation demands of the country. The latter problem was the first to be taken up by the Fuel Conservation Section following its official birth on May 1, 1918. This part of its work was conducted largely through the fuel inspectors of the various railroads and in co-operation with the Fuel Administration.

In its efforts toward the reduction of coal consumption the Fuel Conservation Section has acted largely as a clearing house of proved practices and a source of inspiration to those needing it. As well established as the fuel department had become on some railroads during the decade prior to government control, there were a large number of roads on which no special attention had been given to the fuel problem. Many of these roads have been induced to establish strong organizations for the supervision of the distribution and consumption of the road's fuel supplies and on other roads, although distinct fuel organizations have not been established, more adequate supervision of locomotive operation has been provided, making it possible to give more attention to fuel matters. To the credit of the Fuel Conservation Section it must be said that in all its work no serious antagonism has been aroused, while a vast amount of whole-hearted co-operation has been inspired even where managements were loath to go as far as the importance of the problem of fuel conservation justifies.

The concrete result of this work is reflected in the figures of locomotive performance for the first nine months of 1919 which, making due allowance for differences in traffic handled, show a saving of 8.4 per cent in freight service and 8.3 per cent in passenger service, when compared with the same period of the previous year. For both classes of service this is a saving of $32,051,312 over the same period of the preceeding year. That this cannot be attributed entirely to the extraordinary conditions existing during the early months of 1918, is evident from the fact that for the three months of July, August and September of 1919, a saving of 5.3 per cent in freight service and 3.7 per cent in passenger service are shown as compared with the same period of 1918, making a total saving for both classes of service of $4,238,021.

It is highly desirable that such results be continued. During the year 1917 alone the average value per net ton of bituminous coal at the mine increased 94 per cent in the United States, while fuel for locomotive use alone increased from 10.3 per cent of all operating expenses in 1916 to 13.9 per cent in 1917, or from $984 to $1,697 per mile of line, and these figures do not take into account the further increase in the price of coal which has taken place since the removal of the price control exercised by the Fuel Administration during 1917-18.

It will probably not be practicable to maintain a permanent central organization or national supervision of fuel conservation after the roads return to private operation. With the economic soundness of such a course so well demonstrated, however, there is no reason why fuel supervision should not be established under strong staff control on every railroad of importance in the country and the departments already established be effectively maintained.

Coal is a bulky commodity which does not lend itself to the same care in handling as is readily exercised with most of the other materials used by the railroads. The quantity in which it is used and the ease with which it may be wasted without detection demands a degree of supervision to insure that it is not wasted in the several hands through which it must pass from the mine to the firebox, which need be given to no other material. With these facts and the results obtained during the war in mind, the magnitude of the coal bill is ample warrant for the expectation of a large return for the comparatively small cost of maintaining an effective organization for conserving the fuel supply.

*EXTRACTS FROM VIRGINIAN RAILWAY RULE BOOK.

525. . . . The proper place for flagman of a passenger train making an unusual stop in yard limits or remaining to exceed three minutes at a regular stop within yard limits is at rear of train, on ground, with flagging equipment ready to act in any emergency.

526. No passenger trainman should report for duty unless neat in appearance, uniform clean and neatly pressed, clean shaven, clean linen, and shoes polished. There should be no incongruity in dress and no unnecessary adornment.

527. Brakemen should station themselves at the point at which passengers will board or leave the train, to render any assistance that may be required. In no case must they lounge or stroll about the platform or cling to the handrailing of the cars for support, but maintain an erect attitude, alert and watchful. It is bad taste for a man in uniform to thrust his hands into his pockets, keeping them there.

528. After leaving stations, they should notice whether or not persons are hanging to sides of cars unable to enter on account of closed vestibules, and if so, go immediately to their assistance.

529. Under no circumstances should passenger trainmen engage in unnecessary conversation with each other or with passengers, at stations, or on trains. To do so will sooner or later result in their overlooking some important duty. Necessary conversations of a business character should be conducted in a dignified and respectful manner, with never-failing courtesy.

530. Passenger trainmen are required to exert themselves constantly to see after the comfort of passengers. However, care should be taken not to render themselves objectionable to particularly sensitive people.

534. Passenger trainmen should refrain from reading on duty or congregating in the same car. They should pass through the cars frequently, looking after the wants of passengers and observe their conduct, seeing that none are engaged in anything that might be offensive to others or violation of rules.

538. The announcing of stations must be done in a CLEAR and DISTINCT tone of voice and not less than twice in each coach, and in such a manner as that each person in the car can hear the name of the station, except such as may be deaf, who are entitled to special attention. This announcement should be made with closed doors approaching the station and at such a time as that the roar of the train or the whistle of the engine will not prevent the announcement being disinctly heard. Brakemen should, as far as practicable, learn the destination of passengers and assist the conductor in preventing their being carried by their destinations.

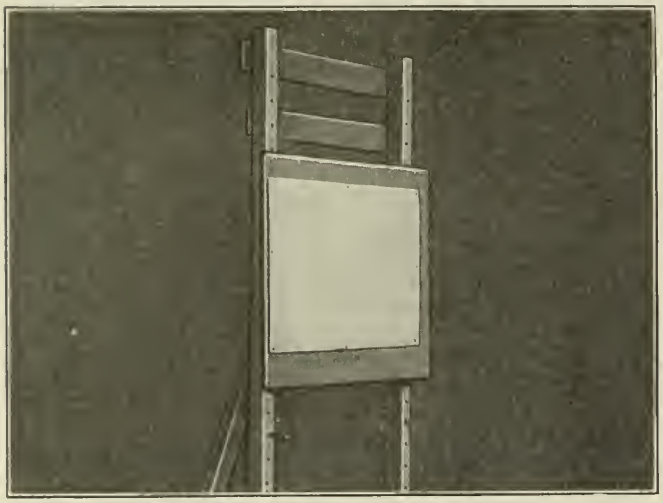
Deflections of Staybolts in Locomotive Boilers

Relative Action of Rigid and Flexible Staybolts and the Sheets of Locomotive Fireboxes

By George L. Fowler

For many years the breakage of staybolts in locomotive boilers has been a source of danger and this danger was emphasized very soon after the locomotive took its rapid leap ahead in size when it was found that it was no longer necessary to limit firebox dimensions to the space available between the driving axles and the frames.

The increase in the length of fireboxes caused a corresponding increase in staybolt breakages. It was assumed that this breakage was caused by the bending of the staybolts due to a variation in the expansion of the two sheets which they connected, by which they were strained beyond their elastic



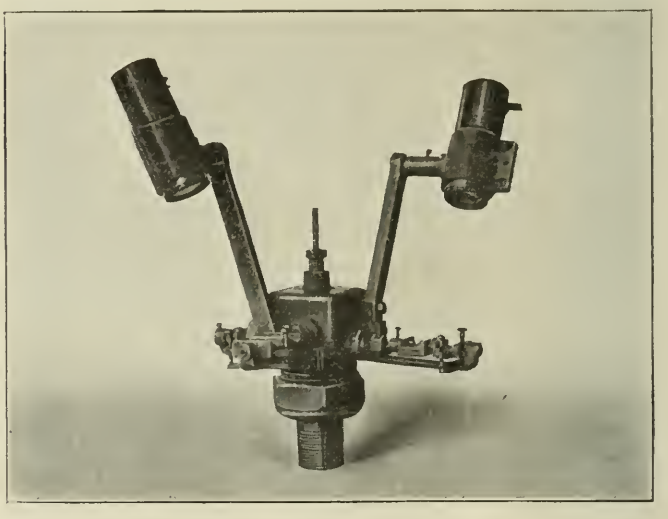
Screen for Recording the Movement of the Beams of Light Reflected by the Mirrors

limits, thus producing a progressive fracture. It was also assumed when the boiler was working under normal conditions that staybolts were straight in their normal position and were subjected only to that stress which would be imposed upon them by the steam pressure acting upon the plates. It was further assumed that the deflection of the bolts occurred during the process of raising steam, and that, because the breakage occurred at the ends of the firebox, there was a neutral vertical zone at the longitudinal center of the firebox along which there was no staybolt deflection. But, while assumptions and theories were as plentiful as autumn leaves, there was no data on the subject and no one knew. The most that had been done, in the way of investigation, was to determine that, under certain conditions, there was an upward and downward movement of the crown-sheet and the tubes.

The object of the investigation described in this article was to determine, by actual measurement, the amount of relative movement between the inner and outer sheets of a locomotive firebox and also when that motion occurred as well as its general character. There was no precedent upon which to proceed nor any thing more than the vaguest of guesses as to the amount of motion to be looked for—except that probably it would be very slight.

The apparatus used was of a very simple character and involved only one moving part. Its work consisted of resolving the motion of the inner sheet relatively to the outer one, into its vertical and horizontal components and projecting them on a screen. These were afterwards recombined to plot this relative movement in the form of a diagram. The mechanism of the apparatus consisted of two small metallic mirrors that were first adjusted to a perfect parallel. A beam of light from a narrow slit was reflected back to a screen. One mirror was fastened rigidly to the outer sheet and traveled with it and remained parallel to it at all times. The main body of the apparatus including all lenses and adjustments was also attached to this same sheet. The second mirror was suspended on the main body of the apparatus but was so connected to the inner sheet that, if any motion took place between the two sheets, the mirror would be rotated. This would cause a separation of the two beams of light on the screen and the amount of separation was a measure of the relative movement of the sheets. The calculation of the motion was simply dependent upon the distance at which the screen was set from the mirrors.

The first setting was such that separation of 1/16 in. indicated a relative movement of 1/20,000 in. between the two plates. This was found to give finer measurements than were needed and the whole of the work, hereinafter detailed, was done with the screen so set that each 1/16 in. separation



The Original Apparatus

of the beams of light indicated a relative movement of 1/6400 in. between the plates.

The first boilers subjected to investigation were of the radial stayed type as illustrated in the accompanying engravings. There were two of them that were identical in construction except that one was fitted with a complete installation of the ordinary rigid staybolts and the other with a complete installation of the Tate flexible staybolts.

The firebox dimensions were:

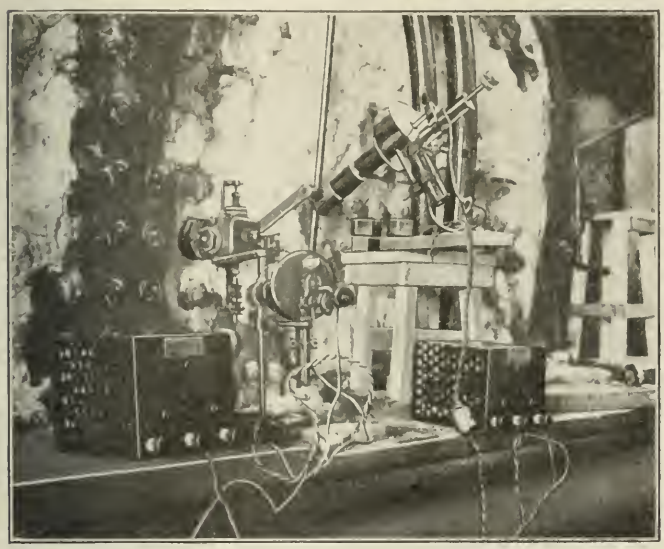
Length at bottom	8 ft. 3 in.
Length at top	8 ft. 8½ in.
Width at bottom	5 ft. 2 in.
Width at top	4 ft. 8 in.

The general arrangement of the apparatus is shown in the illustrations. Each firebox was fitted with four water tubes for carrying a brick arch which was located as shown.

New fireboxes had been placed in each of the boilers immediately prior to the tests so that all of the sheets affected were fresh and clean.

Scope of Investigation

The scope of the investigation was as follows: Determination of the difference in the movement of the inner and outer side sheets of the firebox at eight points; the difference in movement of the crownsheet relatively to the roofsheet; of the back firebox sheet relatively to the back head; of the throat sheet relatively to the front tubesheet and of the front tubesheet relatively to the shell. Determination of the temperature of the fire and water sides of the inner firebox sheet at the side at five points; the water temperatures in the



The Original Apparatus Applied to a Radially Stayed Boiler

throat at the foundation ring and in front of the arch tube openings, while steam was being raised in the boiler and while it was at work.

Two methods of conducting the tests were employed. In one the fire was kindled and the fireman instructed to raise steam in the manner usual in regular roundhouse work. When the safety valve opened, the fire was maintained so as to keep the valve blowing for from 10 to 20 minutes, when the fire was dumped and the boiler allowed to cool. The time required to raise the steam pressure to the blowing off point varied from 50 to 90 minutes.

The second method was the same as the first insofar as the raising of steam pressure is concerned; but, when this was done, the distribution valves having been removed from the locomotive, the throttle was opened and, with the injector running to capacity, the fire was maintained so as to hold the steam pressure at the blowing-off point—195 lb.—for about 30 minutes and then the fire was dumped and the boiler cooled.

In raising steam the shop blower, carrying a pressure of about 60 lb. per sq. in., was attached to the locomotive and used until the boiler pressure reached that amount, after which the regular locomotive blowers were used.

In cooling the boiler steam was blown out so as to cause a fall of pressure of about 1 lb. per min., taking about three hours to reduce the pressure to zero.

In making the tests the apparatus was successively located at the staybolts marked 1, 2, 3, 4, 5, 6, 7 and 8.

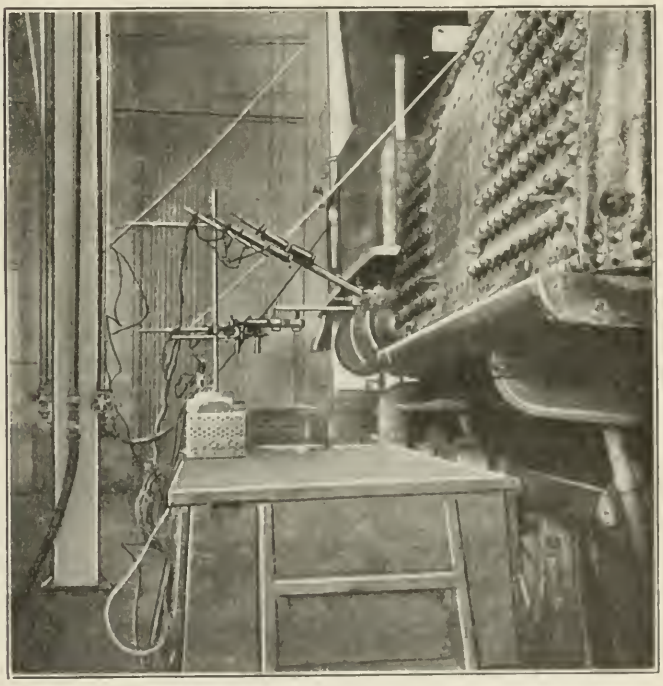
Lack of space will make it impossible to enter into the details of all of the work done, and only enough of it will be described to give an idea of what was learned and the basis for the tentative conclusions that have been reached. I say "tentative" because the investigation has not yet been completed and full information is not available as to how all kinds of fireboxes act in service. The reasons for this will appear as the description proceeds.

In the tests at staybolt No. 1, which was at the front upper corner of the firebox, the first method of testing was used, and the results obtained are shown in the diagram. In this, as in all diagrams to follow, the scale of movement is in thousandths of an inch, on either side, vertically or horizontally, of the starting point at O which denotes the normal position of the two sheets when the boiler was cold at the commencement of the test.

In the first test at staybolt No. 1, it will be noticed that the initial movement of the inner sheet relatively to the outer one was downward and to the rear, and it will be seen later that this initial downward movement was characteristic of nearly all of the tests. Both the downward and rearward movements were, however, quickly reversed and the inner sheet moved up and to the front.

There are features brought out in this diagram that are characteristic of all of the others and to which attention may be called here. One is that the sheets do not expand and return to their normal position when a steam pressure is raised; a second that the sheets are in constant motion relatively to each other at all times, and that the relative motion is much greater with a boiler fitted with flexible stays than it is with one having rigid stays.

In the case of staybolt No. 1, this difference in movement



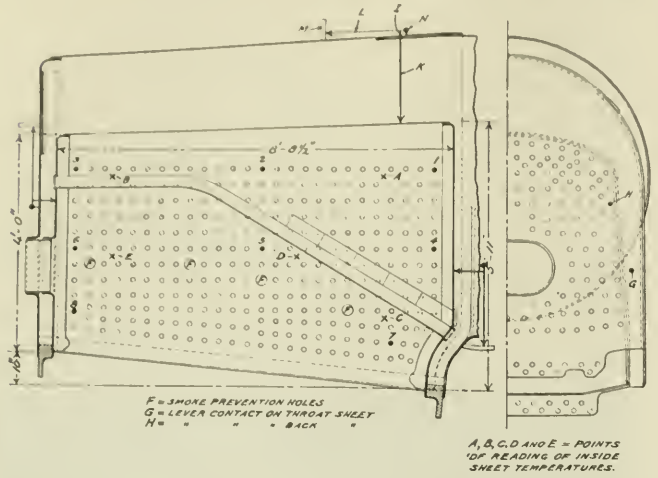
The Redesigned Apparatus Applied to a Boiler Having a Wootten Firebox

is very marked and the total maximum deflection of the flexibly stayed boiler is more than twice that of the rigidly stayed. If the variation of vertical movement alone is taken into consideration, that of the flexibly stayed boiler is more than five times as great as that of the rigidly stayed. It will be seen, too, that there is a general progressive movement until the blowing-off pressure is reached, then, while that is being maintained, there was a movement of the sheets to and fro, with a general return movement towards the original normal position after the fire was dumped and until the boiler had been cooled to the disappearance of all pressure.

In this first diagram, the rigidly stayed sheet returned to within about .001 in. of its original position, while the

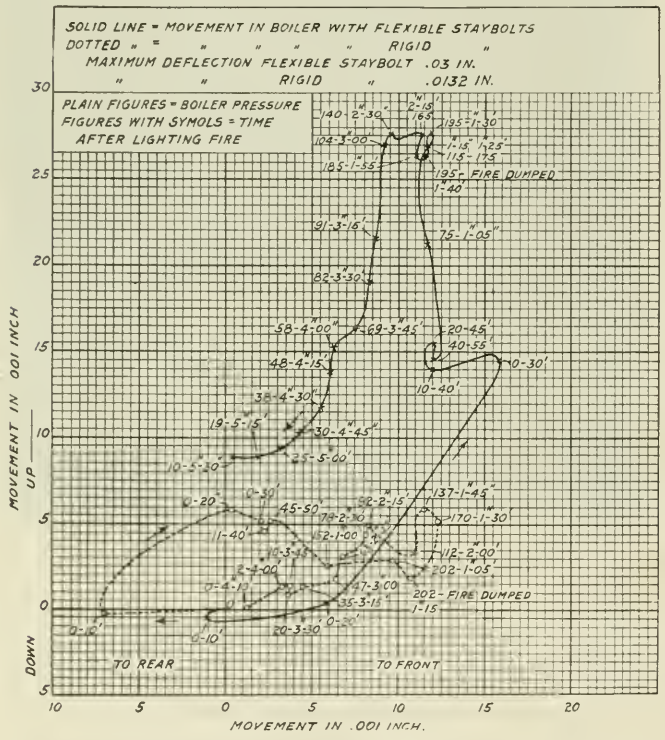
flexibly stayed sheet was out about .009 in. at the conclusion of the test.

Owing to the fact that, in rigidly stayed boilers, the breakage at the upper front and back corners of the side sheet was much greater than it was midway between the two, it has been assumed that there was a neutral point on this midway



Arrangement of Firebox in Lake Shore Michigan Southern Locomotive for Temperature and Expansion Tests

line, on which the staybolt deflection was little or nothing. That this surmise was approximately correct is shown by the diagram of the tests made at staybolt No. 2 which was at the center of the upper row. Here, in both the flexibly and rigidly stayed boiler, we find that the horizontal motion was



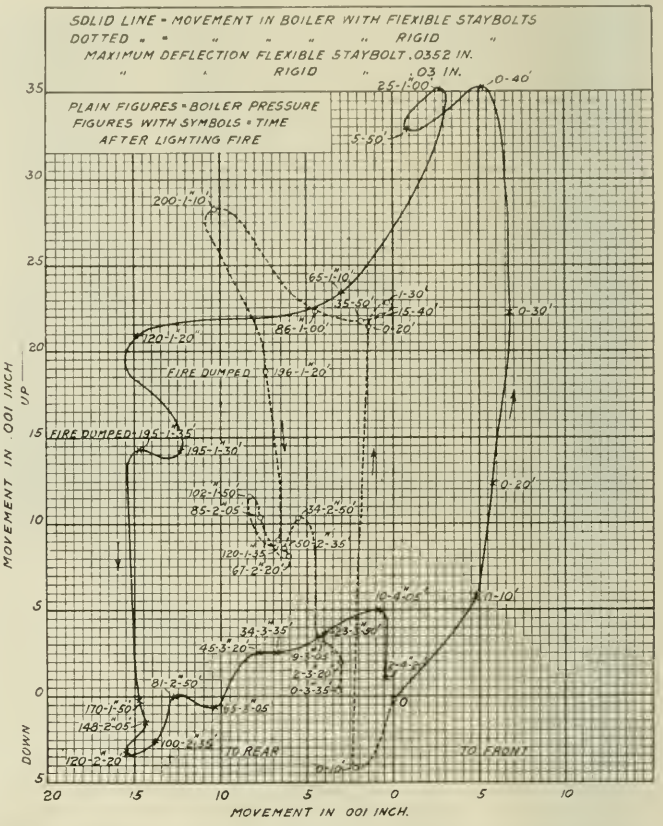
Staybolt No. 1 Top Row Front—Lake Shore & Michigan Southern Locomotive

much less than the vertical, indicating an approach to a neutral zone, but, as at staybolt No. 1, we find the horizontal movement of the sheet to be something more than twice as much on the flexible as on the rigidly stayed boiler.

It is impossible to state positively that there is no neutral line with the rigid boiler, but the statement can be made regarding the flexibly stayed boiler. Of course, if the front end of the inner sheet goes to the front and the back end to the rear there is, possibly, an instantaneous neutral line, but it must be in constant motion and, therefore, does not fulfil the preconceived ideas as to the neutral line.

From a study of the curves of movement of the staybolts examined on the rigidly stayed boiler, the evidence is that the same holds true for that boiler, namely, that the point of no movement—that is, where the two sheets occupy their original or normal positions—is in constant motion. This means that all staybolts are being constantly bent back and forth, which is corroborated by the determination of sheet temperatures which formed a part of this investigation.

In the case of staybolt No. 3, which was at the back end



Staybolt No. 2 Top Row Center—Lake Shore & Michigan Southern

of the top row and close to the back head, there was a sudden and rapid movement of the inner sheet to the rear on both rigidly and flexibly stayed boilers, and the maximum of the horizontal movement was reached in a very short time after the kindling of the fire; the rigidly stayed boiler reaching it in 10 and the flexibly stayed in 20 minutes.

Without going into details of the other tests, it may be stated that while the amount of movement varied, the character of the motion did not vary essentially and the same relationship between the rigidly and the flexibly stayed boilers was maintained.

When tests were made at the next to the bottom row of staybolts, however, a matter developed that proved to be of very great importance. Attention has already been called to the fact that in the test at staybolt No. 1, the first apparent motion of the sheet was downward, but as this only amounted to .00075 in. it was regarded as a negligible quantity. At the bolt below it, (No. 4,) there was a drop of .00225 in. which was still not enough to excite suspicion, but at No. 7 this drop increased to .009 in., apparently indicating a downward movement of the inner sheet at a point

only a few inches above where it was riveted to the mud ring. Evidently this is an impossibility, and the only explanation to be made was that the sheet had buckled and, by throwing the apparatus out of line, caused it to indicate a downward movement.

These first tests therefore must be regarded as showing but two things: the constant movement of the staybolts while in service and the relative movement of the sheets of a rigidly and flexibly stayed boiler.

With no precedent to serve as guide, the apparatus had been designed on the assumption that the two sheets would remain parallel to each other at all times. When this evident buckling was discovered the apparatus was redesigned so as to indicate not only the movement of the sheets but any buckling that might take place.

This redesigned apparatus was used on some boilers having a Wootten firebox with general dimensions as follows:

Length	10 ft.	1	in.
Width at foundation ring	8 ft.	11¾	in.
Height at front	5 ft.	8	in.
Height at back	5 ft.	1½	in.
Depth of combustion chamber		5¼	in.
Number of 2 in. tubes		411	
Length of tubes	14 ft.	6	in.
Inside diameter of shell (front)	6 ft.	1	in.
Height of roof over crown (front)	1 ft.	6¾	in.
Height of roof over crown (rear)	1 ft.	9½	in.

There were three rows of expansion stays at the front to hold the crown sheet and eight on each side of the center line as shown in the drawing. The staybolts were spaced on four in. centers and the rigid bolts were ⅞ in. in diameter.

The two boilers were not as distinctly flexibly and rigidly stayed as were those used in the first tests. The boiler which has been designated as the rigidly stayed had a number of Tate flexible staybolts as indicated in the drawing. In the throat sheet all of the bolts in the seven upper rows and all of the bolts in the outer row, were flexible. In the side sheets there were 15 Tate flexible bolts in the front row, and 12 other scattering Tate bolts that had been put in for repairs, in the locations shown in the drawing.

The other boiler, which is designated as the flexibly stayed boiler, had a complete installation of flexible bolts in the throat sheet, with the exception of 20 bolts near the foundation ring that were rigid as shown in the drawing. Of a total of 510 staybolts in the side sheet, 248 were flexible bolts. These were located in equal numbers and with the same arrangement at the front and back end of the firebox. There were six in the top horizontal row next to the crown sheet, with a gradual increase from the top to the bottom as shown in the drawing and the photograph. This left a wide section of firebox at the center that was stayed by rigid bolts and which, evidently, exerted an important influence on the results as will be pointed out later.

The staybolts at which these tests were made were located at the numbered points 1 to 9 on the two drawings, and the tests were made as before, by raising steam, holding the throttle open for 30 minutes and then blowing down at the rate of 1 lb. per min., readings of the sheet movements having been made during the whole period at 10-minute intervals.

Whether it is because the apparatus used on the radially stayed boilers only indicated the apparent motion of the sheets while that used on the Wootten boilers indicated the actual movement, that the diagrams of these movements are much more complicated for the latter boilers cannot be stated positively. That the buckling that evidently did occur in the sheet of the radially stayed boilers had its effect on the actual movement of the sheets is a reasonable supposition, but certainly there is a great difference in the character of the two.

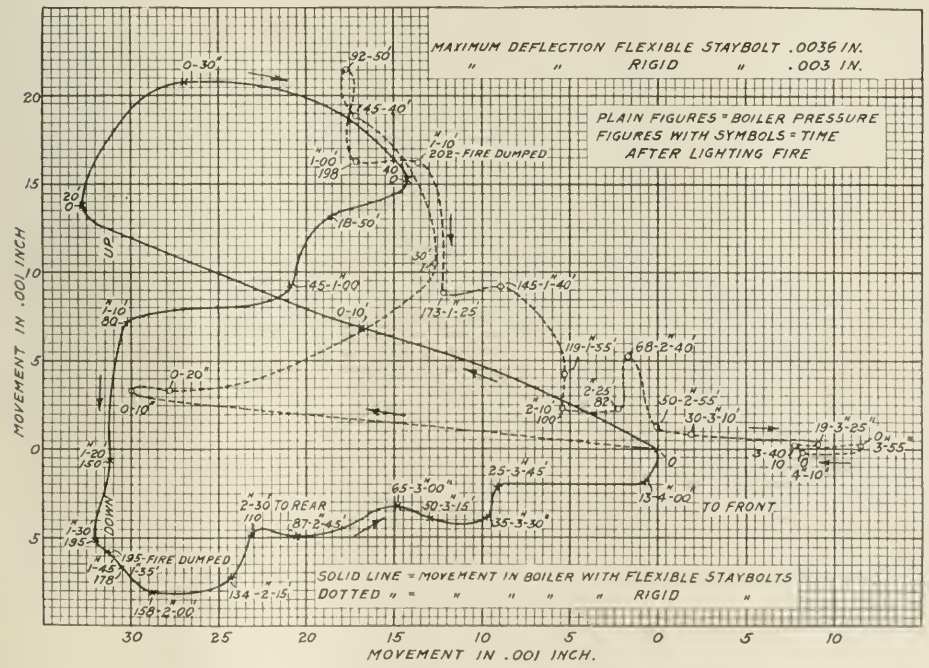
Comparison of Two Types of Boilers

Let us compare those for staybolts No. 1, in the two types of boilers: In the radial stayed boilers there is a steady even motion of the sheet with little or no doubling back and looping over itself. There was a constant movement, but it was, in the main, a progressive movement ending with an apparent deflection of about .008 in. from the starting point of the flexibly stayed boiler.

The rigidly stayed boiler was a little more complicated in its motion, but still not at all confusing, and ended with a deflection of a little more than .001 in. from the starting point.

The diagram for the corresponding staybolt of the Wootten boiler is a mass of knots and loops and back doubling. This is especially true of the period prior to the development of the first steam pressure. This appeared at the point marked O-2H-10′ in the diagram when steam began escaping from the whistle valve. Then there was a rapid upward movement for 20 minutes until a pressure of 75 lb. was reached followed by an equally rapid forward and downward movement during a quick building up of the pressure to 200 lb. Then came a quick recovery horizontally during the period that the throttle was open with only a very slight change in vertical position between the beginning and the end.

This movement is easily explicable if the tube action as indicated by other tests is taken into consideration. It was found that during the early period of raising steam the tubes were heated more rapidly than the shell with the result that the back tube sheet and with it, probably, the front end of the firebox was pushed to the rear. This explains the slight rear-



Staybolt No. 3 Top Row Back—Lake Shore & Michigan Southern Locomotive

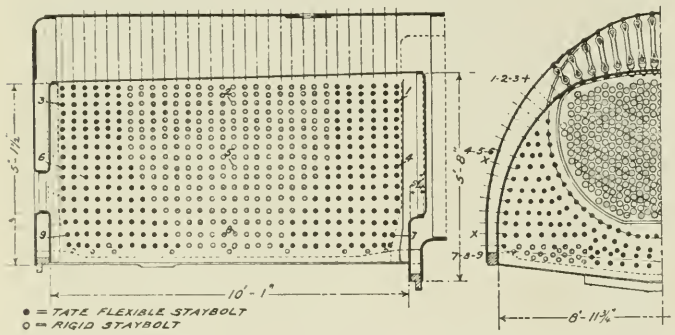
ward movement of the staybolt at the starting of the test. Then, as the water became heated there was a tending toward equalization of the temperatures of the tubes and the shell. This resulted in a relative forward movement of the tube sheet permitting the firebox to expand normally. Then, when the throttle was opened, there was a rapid increase of firebox temperature resulting in a corresponding increase in the temperature of the gases in the tubes themselves, which again pushed the tubesheet to the rear carrying the front end of the firebox with it. Then followed the looping and doubling of the movement during the cooling down, ending with the staybolt a little more than .002 in. from its original position.

In the rigidly stayed boiler the entanglement of the line of the movement is equally marked and is of the same general character, but, as in the other cases, the extent of the movement is much less.

This condition holds throughout the whole range of the work, varying in extent with the location of the staybolt and the method of staying. In general the movement was greater at the ends and upper portions of the firebox than at the center and lower portions.

There is another matter in connection with the rigidly stayed boilers that does not fully appear in the diagrams: The evident reason for the lesser deflection of the rigidly stayed boiler is that it is rigid. The staybolts tend to hold the sheets in one position and resist all tendency to move, and this manifests itself in the jerky character of such motion as takes place. That is to say, there are sudden variations in the distance from the original position which indicate that the stays resist the effect of the expansion of the sheet to move them, possibly buckling the sheet, and then when the pressure becomes more than they can carry, they suddenly yield.

The one point where a close comparison and check between the radially stayed and Wootten type is possible is in the movement of the staybolts when the boiler is in service. In both cases it was found that the sheets were in constant motion relatively to each other from the instant the fire was built until the boiler was cold. Also the extent



Delaware & Hudson Locomotive No. 813 with Flexibly Stayed Wootten Firebox

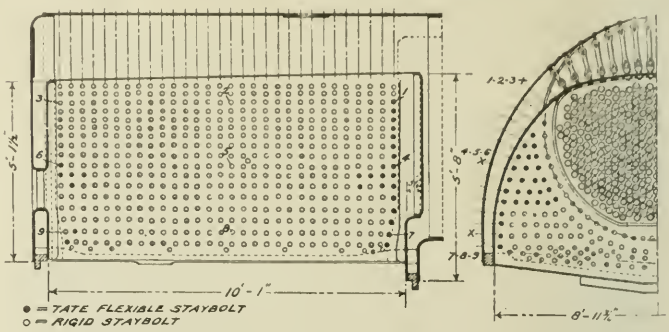
of the movement was much greater in the flexibly stayed boiler than in the rigidly stayed.

The character of the movement was, however, apparently quite different in the two types of boilers. There was more bending to and fro in the Wootten as well as a much greater movement. This is especially manifest in staybolt No. 1, where the maximum deflection of the flexible bolt in the Wootten type was about nine times that of the radially stayed, and this amount entirely in a vertical direction.

There may have been several reasons for this. The Wootten firebox was 1 ft. 4½ in. longer and 1 ft. 1½ in. deeper and the staybolt was 8 in. long as against 5¾ in. for the radially stayed boiler. Each of these items would tend to increase the deflection, while the comparatively small amount of horizontal deflection is explicable from the fact that there was a complete installation of flexible bolts in the radially stayed boiler, while in the Wootten type there was a line of 18 rigid bolts in the central section that tended to stiffen the boiler and prevent a relative movement of the sheets. These are set forth as suggested reasons, not as demonstrated proofs.

The main fact, however, stands out very prominently that the character and amount of the staybolt deflection is quite different in the two boilers. As yet, there is not sufficient data accumulated to be able to state definitely as to just why this is so, and what should be done to the general design of one or both of the boilers to put the least possible strain on each.

In the matter of the buckling of the sheets caused by the



Delaware & Hudson Locomotive No. 794 with Rigidly Stayed Wootten Firebox

combined action of sheet expansion and resultant staybolt deflection, it was found that the buckling was greater with the flexible than with the rigid bolts; but, it must be borne in mind that the deflection was also greater, and a study of the details shows that the ratio of the buckling of the flexibly stayed to the rigidly stayed was less than the corresponding ratio of deflection. In other words, given a fixed amount of staybolt deflection the buckle put in the sheet would be less with a flexible than with a rigid staybolt.

While at work on the rigidly stayed boiler having the Wootten firebox an attachment was made in the space just ahead of the No. 5 staybolt. As might have been expected, the actual movement of the sheet was about the same as at the No. 5 staybolt, but there was less buckling. This developed the probability that, in this long and wide firebox at least, the whole sheet, while under steam pressure, assumes a series of shallow corrugations that hold it out of alinement with its original shape, and which are sweeping over it in waves, as it were, according as the sheet expands or contracts. The depth of the corrugations is slight and the angle made by the sides of the same with the original line of the sheet is never as much as one degree. The greatest angle obtained on the Wootten type was 48 minutes 52 seconds with a general average for all points tested on the flexibly stayed boiler of 7 minutes 29 seconds.

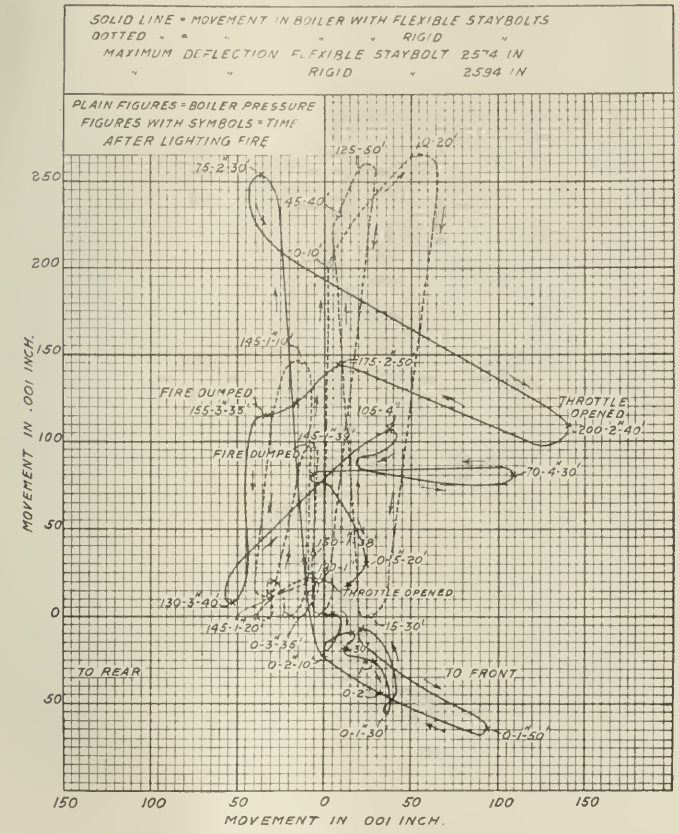
It is also possible that the buckling of the sheet might be appreciably decreased by a change in the original adjustment of the flexible staybolts, and also that there might be an increase in the deflection of the bolts. The suggested methods of accomplishing this is to give a little more play in the head of the bolt and the allowing of a little slack under the heads in the first place. This would permit of an easier adjustment to the movement of the sheet during the period of raising steam, when there is no load on the bolt, and the allowance of a little freedom of angular motion when the sheet and bolt are under strain.

Other matters were taken up in connection with this investigation for which there is no space to deal in full at this time. There were the effects of the admission of cold air to the firebox on sheet temperature and the apparent lack of circulation in the water leg.

Conclusions

The fundamental facts fully brought out were that the staybolt deflection is much greater in a flexibly stayed boiler than in a rigidly stayed boiler, that certainly during the whole period of operation and probably until the boiler temperature had reached that of the atmosphere the staybolt is in constant motion as evidenced by the fact that, out of the hundreds of measurements taken, there were no two consecutive measurements alike; that the two types of boiler construction (Wootten and radially stayed) have quite different effects on staybolt deflection; and that firebox temperatures and the action of the tubes have a marked influence on staybolt deflection at the front end of the firebox.

These tests also showed in a marked degree the extreme



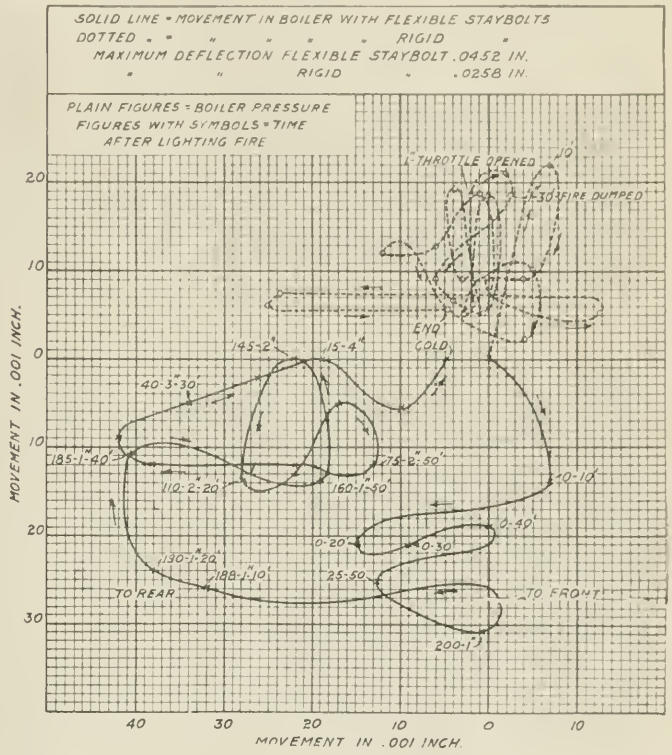
Staybolt No. 1 Top Row Front—Delaware & Hudson Locomotive

sensitiveness of the plates to changes of temperature. For example, a cold boiler may be filled with water of any temperature from cold to boiling and there will be no relative motion between the sheets. But let the fire be laid and a piece of lighted waste thrown in to ignite it, and it has, thus far, been impossible to get a reading before the sheets would show a movement, though this has been done within ten seconds from the time of the ignition of the waste.

This investigation is merely indicative and not conclusive. The absence of any data upon which to estimate the probable movement and buckling of the sheets made a redesigning of the apparatus necessary, and the use of boilers with a mixed assortment of staybolts in the second case, gave results that would probably be greatly modified were boilers with complete installations to be used. But there is this indication, that the boiler will expand and the staybolts deflect if they have a chance, and that this chance is much greater with a flexible bolt than it is with a rigid one.

As has already been intimated, the difference in the conditions of operation of the apparatus makes a clean-cut comparison between the Wootten type and the wide firebox radially stayed boiler impossible. But the impression left by the test is that the Wootten firebox is much more rigid than the wide firebox when rigidly stayed with the radial stays, and that if it were given a complete installation of flexible bolts the difference between the two would be very much greater than that indicated in these tests.

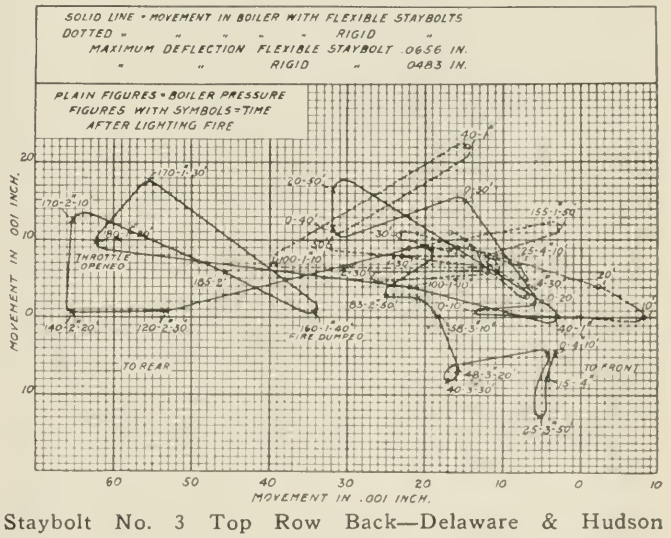
In every case the extreme sensitiveness of the sheets to



Staybolt No. 2 Top Row Center—Delaware & Hudson Locomotive

any changes of firebox temperature was noted. This fully explains the constant bending motion to which the bolts are subjected while the boiler is at work.

It naturally follows from this that a boiler which is so



Staybolt No. 3 Top Row Back—Delaware & Hudson Locomotive

built as to permit the sheets to expand under the influence of temperature changes, will put less stress upon the staybolts and sheets than one where such freedom of motion does not exist. There is no reason to think that there was any great difference in the temperatures of the sheets of the two boilers, and yet, as I have already indicated, there was

a marked difference in the movements of the staybolts and the sheets. If a given change of temperature produces a definite change of dimension in the sheet, anything that prevents this change must itself be subjected to stress and must put a similar stress upon the sheets. Hence, so far as these investigations have been carried, they indicate the value of using the flexible in preference to the rigid bolt.

There is one point that cannot be expressed in cold figures and that is the impression that this work makes on observers. After watching the delicate and sensitive movement of the sheets and staybolts and the difference in the action of the flexible and the rigid bolts, everyone was greatly impressed with the superiority of the flexible bolt as a means of reducing the probable stresses that the several parts of the boiler are called upon to sustain. The progress of this work has driven home in a convincing manner the advantages of flexibility in boiler construction.

Coal Strike Settled

The strike of the bituminous coal miners begun on November 1 at the call of the United Mine Workers was definitely called off on December 10 when the officers of the union at a meeting in Indianapolis agreed to accept a plan of settlement proposed on December 6 by President Wilson and sent telegrams to the striking miners urging them to return to work. The President's proposition was that the miners immediately return to work with the 14 per cent increase in wages which was recently offered by Fuel Administrator Garfield and which was put into effect for the men who remained at work by the coal operators, and that the President should appoint a commission composed of a practical miner, a mine owner or operator in active business and one other, which commission will consider further questions of wages and working conditions as well as profits of operators and proper prices for coal, readjusting both wages and prices if it shall so decide, including differentials and internal conditions in and between districts. The report is to be made within 60 days if possible and will be accepted as the basis of a new wage agreement, the effective date and duration of which shall also be determined by the commission.

The 14 per cent increase was given on the condition that it should not increase the government prices for coal and therefore comes out of the profits of the operators as long as the government's prices remain in effect. The original demand of the miners was for a 60 per cent increase in wages, a five-day week and a six-hour day. They refused to accept an offer from the operators of a 20 per cent increase and also the 14 per cent offer when made by Dr. Garfield.

Walker D. Hines, director general of railroads, authorized the following statement:

"The dislocation which the strike has created in the production, transportation and distribution of coal cannot be instantly remedied, and pending readjustment it is highly important for the public to continue to exercise great caution in the consumption of coal and it is hoped there will be a due appreciation of the difficulties which cannot be immediately overcome.

"During the strike the weekly production of coal was cut from 11 to 12,000,000 tons to about 5,000,000 tons and this much reduced tonnage was mostly mined in Pennsylvania and West Virginia. Widely distant portions of the country which were ordinarily dependent upon other coal fields had to be supplied from these and other unusual sources of supply. The central part of the country, the great consuming territory of the Mississippi and Missouri valleys, is depending on shipments from the East and West, 41 per cent of present production in the Allegheny and Pocahontas regions now being delivered to the West. The result has been that the Railroad Administration has been compelled to transport coal over the most unusual routes and for distances far in excess of the normal hauls. This has required a much greater amount of equipment than would be required in normal times to move the same tonnage to its usual destinations and has resulted in equipment constructed for use in special parts of the country being scattered widely to other parts of the country. A period of time will be required for the complete relocation of this equipment and meanwhile it is not to be anticipated that all mines can be fully supplied with cars.

"The director general today saw a committee of the National Coal Association and pointed out these difficulties and urged that as rapidly as that organization had information concerning the expected resumption of mining operations such information be duly communicated to the Railroad Administration as well as to the local railroad officers. There was manifested a policy to assist in this matter as far as practicable. It is hoped that the general public, the coal operators and the miners will appreciate these difficulties and make allowances for the time required to restore normal conditions.

"The loss of production of coal since the strike began 5½ weeks ago has been a serious economic loss to the country. In many important respects the losses to the country cannot be made up at all and it will require some time before coal production can bring the country's supply up to the point where it ought to be.

"At the beginning of the strike and when the fuel administrator turned over the distribution of coal to the Railroad Administration, the railroads had in their possession either in storage or in cars about 22,000,000 tons of coal. It is estimated that the consumption during November was 40,000,000 tons, of which 18,800,000 tons were produced during the month, 11,200,000 tons were used from consumers' stocks cumulated prior to November 1, and 10,000,000 tons were taken from the 22,000,000 tons in possession of the railroads.

"Since the end of November the stock in the possession of the railroads has been still further depleted.

"Of the 22,000,000 tons in the possession of the railroads at the beginning of the strike, 12,000,000 tons were held by the railroads for their own consumption, representing approximately 30 days supply. Subsequently the Railroad Administration adopted the policy of cutting its supply to 15 days and now as a temporary measure to aid in the most rapid possible meeting of the needs of other consumers the Railroad Administration will where necessary reduce the supply of coal for its own consumption to a 10 days supply.

"As a preliminary to bringing back normal conditions, the Railroad Administration will as soon as practicable place in effect an arrangement under which coal as mined will be allowed to run as billed except that tidewater and export embargo will continue; orders placed for coal to western regions from Pocahontas and Allegheny regions will be cancelled, but coal billed on these orders prior to cancellation will be permitted to go and be expedited, so that these cars can be promptly released for mines.

"Just as soon as practicable regulations in connection with the use of bituminous coal for power, light and heat will be rescinded or modified and the same is true of the supplying of coal to necessary industries. It will be necessary to observe conditions as the situation progresses before definite time can be fixed for changing of these regulations and orders.

"It is highly important for the public to realize that serious scarcity of coal is likely to continue for some time. It will require time to bring consumption of coal back to normal and meanwhile there is a tremendous shortage which needs to be made up. On all hands, therefore, great caution ought to continue to be the rule in the consumption of coal."

The question of the extent to which the curtailed passenger service can be further curtailed was to be taken up for consideration on Thursday.

Railroad Bill Debated in the Senate

Very Nearly Passed by Default; Senator La Follette Blocks Its Passage and Opens Attack on It

WASHINGTON, D. C.

THE RAILROAD BILL came near to being passed by the Senate by default but has since encountered what almost amounts to a filibuster by Senator La Follette. After having been before the Senate for a week as the unfinished business, while the attendance scarcely exceeded a dozen at any time except for roll calls, the Cummins bill was reported to the Senate from the committee of the whole on December 8, read the third time and a vote on its final passage had been called for, when the proceedings were interrupted by a call for a quorum by Senator La Follette. Some of the senators who were called into the Senate by the call for a quorum, however, displayed more interest in the matter than they had previously and on a motion by Senator Lenroot it was voted to reconsider the vote whereby the bill was passed to a third reading. This left it in the Senate as in legislative session and open to amendments.

On the following day the bill was restored to the committee of the whole and an attack upon it was opened by Senator La Follette. Only one amendment had been offered up to that time, that by Senator Curtis of Kansas to strike out section 7 of the bill, which provides for the creation of a transportation board. Senator Curtis explained that he was opposed to other provisions of the bill, such as that providing for compulsory consolidations, but thought the sentiment of the Senate could be tested by his amendment which would eliminate the transportation board. If this had been adopted he proposed to strike out other provisions of the bill relating to the functions to be exercised by the transportation board, but the amendment was rejected without a roll call.

Confidence has been expressed by Senate leaders that the bill can be passed before the holiday recess, tentatively set to begin on December 20, when it will go to conference for a reconciliation of the differences between it and the Esch bill. Senator Cummins on December 9 reported the Esch bill from the committee with a recommendation to strike out all after the enacting clause and that the Senate bill be substituted, in order to lay the foundation for a conference. There is no expectation that the conferees will be able to reach an agreement short of nearly a month but it is expected that after the passage of the Senate bill a resolution will be offered providing for a temporary continuance of the guaranty to the railroads.

Dirctor General Hines on December 9 submitted to the President a report on the railroad and legislative situation, after conferring with Chairman Cummins and Esch of the committees on interstate commerce and with other members of the Senate committee. This was for the information of the President in preparing his proposed message to Congress on the railroad situation which was expected to set at rest the question of the date for the return of the railroads. Many members of Congress seem to feel that the President might postpone the relinquishment for a short time after December 31 to wait for the completion o fthe permanent railroad bill, but there has been no confirmation to indicate that the belief is well-founded.

Senator Kellogg on Government Operation

Four formal speeches were made while the bill was in committee of the whole, by Senators Cummins, Kellogg, Curtis and Myers.

Senator Kellogg gave estimated figures for the earnings of the railroads showing a net income for 1919 of $536,500,000, or nearly $400,000,000 less than the standard return. He said the people are now paying over a billion and a half dollars more in expenses for handling less traffic in 1919 than was handled in 1917. In 1917 the Class I railroads earned 5.38 per cent on their property investment. In 1918, he said, they earned 3.71 per cent, and during the first six months of 1919 only .84 per cent. For nine months of the year the net operating income was 2.19 per cent and for the year it is estimated at 2.92 per cent, or less than the interest and fixed charges. For the nine months, Senator Kellogg said, 57 railroads earned $111,000,000 more than their fixed charges, while 108 railroads earned $168,000,000 less than their fixed charges.

Referring to statements by Director General McAdoo expressing the hope that large economies in operation would be accomplished, Senator Kellogg said that in no single department of railroad management, except possibly the legal department, has there been economy, but, on the contrary, enormous extravagance. He referred to the increase in the number of employees and while he said he would not contend that the general average wage of the principal classes of employees is too high, having been increased in about the same proportion as the cost of living since 1915, he criticized the policy of standardizing wages throughout the United States, irrespective of local conditions, and of allowing very large increases to some employees by reclassification. The inequalities, he said, have added grossly to the cost of operation, have created unrest and have had a bad effect upon the morale of the service.

Senator Kellogg commended the provision of the bill which would extend the guaranty temporarily, but he criticized the provision for division of so-called excess earnings above 6 per cent. He said it may be that the public necessity for keeping all the roads operating as efficient systems would justify a plan which would take away from the more fortunate a portion of what is called their excess earnings, but a sufficient percentage on the earnings above 6 per cent should be left with the road producing it to encourage economical operation and good service. He questioned whether the 5½ per cent return would be sufficient and pointed out that it is not merely the so-called weak roads, but the stronger roads which need most to borrow large sums of money with which to make large extensions and improvements and buy needed equipment. Senator Kellogg also put in the record voluminous statistical tables illustrating the effects of government operation.

"We are now facing the most tremendous economic problem ever presented to this country for solution, to a large extent incident to the direct result of the government's operation of the railways during the last two years," Senator Kellogg said. "When the President indicated, in December, 1917, his intention to take over, for government operation, all the railways of the United States, many were convinced that there was no necessity for it and that it would be disastrous. The experiment has amply justified all our fears. It has cost the taxpayers of this country hundreds of millions of dollars, destroyed the efficiency of the service, and placed the railroads today in a position where unless some drastic steps are taken this country faces a financial crash, which will not only destroy hundreds of millions in property held by the people of the United States but destroy the efficiency of our transportation system.

"When the war broke out we had in this country, all in

all, the best, cheapest, and the most efficient transportation system in the world. That it was not perfect goes without saying. But this is true, and will be conceded by substantially all the experts in the world, that nearly all the inventions, improvements, and advancements of transportation facilities have resulted from American incentive, genius, and energy and enterprise. An efficient and constantly growing transportation system is absolutely necessary to the very life and prosperity of this nation and must be had to maintain the growth of the country. In the main, the present deplorable condition of the railroads is due to inefficient and extravagant government management and stupid bureaucratic control. There was no necessity for taking over the railroads any more than there was for taking over the telegraphs, telephones, and cables, which has now been demonstrated beyond question, and which proved so expensive to the government and disastrous to good service. The postmaster general reports a loss to date of $14,418,237 in the operation of telephone, telegraph and cable systems, and there are many companies with which a settlement has not yet been made.

"Because there was temporary congestion on account of the sudden and enormous increase of business in a comparatively small territory, the President took over all the railroads of the United States for government operation, created a great central bureau, which, as everyone knows, always is inefficient. I do not claim that after the war broke out the transportation system of this country was sufficient to effectively take care of the sudden increase of business. But during the first nine months of the war the railroads themselves, with all the handicaps of government interference, priority orders, and laws which prevented the co-ordination of their facilities, handled as great a business under more adverse conditions at a less expense than has been handled by the Railroad Administration since that time."

Regarding the proposed guaranty during readjustment, Senator Kellogg said: "I think it is evident to everyone that the government, having produced this condition of the railroads, without regard to the merits of the increase of operating expenses, incurs the duty for a reasonable time, while the rates are being readjusted, to meet operating costs and continue its guaranty. We have no right to take over a public-service corporation and use it for government purposes, increase its operating expenses so as to render the property valueless, and turn it back without any remedy. Furthermore, should this be done, a financial collapse in this country is bound to follow, and as the bonds of these railroads are held in savings banks, insurance companies, and by millions of individuals, and are a large basis of credit, the greatest care should be taken to preserve their integrity.

"It may be said that the government, having taken over the railroads and fixed the rentals, owes no duty after the properties are turned back. The railroads were not consulted about being taken over. The Congress practically fixed the terms of the agreement, and the agreement was presented to the railroads to accept or reject, as they saw fit. Their only remedy, if they refused to accept the agreement, was to go into the Court of Claims, and sue the government—a remedy which, of course, was entirely inadequate, as the roads needed their income to pay interest and taxes.

"The true relation of the government to a public-service corporation is that the government has regulatory powers to prevent the companies from earning more than a reasonable income. But it has no right to reduce that income to the basis of confiscation or to take the property over and destroy it. So the least that can be done is to continue this guaranty for a few months while the rates and operating expenses are being readjusted."

Senator Myers devoted himself particularly to the anti-strike provisions of the bill, which he declared are absolutely necessary to the welfare, good order and domestic tranquillity of the people of the United States. The regulate commerce, he said, certainly includes power to prevent interference therewith or extinction thereof and he thought the time has come when Congress should create a tribunal to hear and determine disputes between railroad companies and their employees with power to enforce the granting of reasonable wages and fair working conditions, but as a corollary this should be accompanied by a provision to prevent a nation-wide or territorially extensive railroad strike from being suddenly and arbitrarily precipitated upon the people of the country.

Senator Myers on Anti-Strike Provisions

"In my opinion," Senator Myers said, "the time has come when the people are entitled to know whether their government is to be supreme in the realm of domestic tranquillity, general welfare, law and order, or whether a class of citizens, only a small part of the people, banded together by class organization, is to be supreme; whether the government or organized labor is more powerful. There appears to be in labor circles a belief that labor is now in the saddle and has things coming its way, and a determination to go to the uttermost extremity regardless of consequences."

Senator Myers expressed the opinion that the Adamson law was a grave mistake and that the country is now reaping its consequences because much of the trouble which has since arisen in regard to the operation of the railroads, much of the government's deficit in the operation of the railroads, may be traced to that act.

"As a result of class legislation in favor of wage workers," he said, "there has grown up in this country an inner government. It is inside of the regular or constitutional government. It is not an invisible government. It is very visible. It does not operate under the surface or behind the scenes. It is bold and open and very much aboveboard. The inner government consists of combined organized labor and it is a grave question if the inner government today is not superior to and more powerful than the constitutional government."

Senator Curtis Opposes Transportation Board

Senator Curtis moved to strike out the section providing for the transportation board, on the ground that the bill provides entirely too many boards and commissions and because he believed the Interstate Commerce Commission could do the work more satisfactorily and also because he was opposed to the plan of consolidation which under the provisions of the bill would be worked out by the board.

Senator Cummins said he sincerely hoped the Senate would not mutilate the bill in that way. If the amendment should prevail it would become necessary to re-form the entire measure because it would so destroy the machinery through which the bill is to be administered that it would become entirely unworkable. The time has come, he said, when the Interstate Commerce Commission must be largely occupied in what are known as quasi-judicial or semi-judicial duties and it is desirable to disassociate the purely administrative duties from them. He also said that one purpose of the bill is to prevent strikes and if strikes are to be prohibited it is necessary to create a governmental tribunal that will adjudicate the merits of a dispute between the employer and the employee. The proposed transportation board is to exercise this function where an agreement is not reached by the wage boards.

Senator King supported the Curtis amendment, expressing the opinion that the Interstate Commerce Commission could perform all the functions proposed for the transportation board, including final authority in wage matters.

Senator Cummins said there is no sanctity about the Interstate Commerce Commission, but agreed that it has or has had the confidence of the people and he wanted it to continue to have the confidence of the people but it cannot do so unless it can do its work with much more rapidity and much

more promptly than it has done its work in former times.

After a vote on the passage of the bill had been interrupted by the call for a quorum and the motion to reconsider, several senators objected to the rapidity with which the bill was apparently being put through. Senator Cummins replied to the effect that it was not his fault if senators were not sufficiently interested in the bill to be present and participate in the discussion and that the voting stage had been reached merely because no one had interposed anything else. He objected to a proposal to re-commit the bill to the committee of the whole, pointing out that it was open to any amendments that might be offered after the vote by which it was passed to third reading had been reconsidered.

Senator Thomas expressed wonder that the attendance had been so small during the consideration of a bill of such vast importance. He said he thought he could say with propriety and within bounds that except immediately after roll calls scarcely 10 senators had remained on the average during the speeches.

Senator Cummins on December 9 withdrew his objection to the restoration of the bill to the committee of the whole, after which Senator La Follette made a four-hour speech attacking the bill. He said it was a "railroad bill," on whose passage "railroad stocks will go kiting" and that T. De Witt Cuyler, of the Association of Railway Executives, and S. Davies Warfield, of the National Association of Owners of Railroad Securities, were responsible for it. His argument followed closely that of his minority report, in which he urged a five-year extension of government control, and charged that the railroads had broken down in 1917.

Senator Dial of South Carolina opposed the bill because he said it undertook to say that every dollar invested in railroad property shall receive enough return to pay 5½ per cent interest on the value of the property. He objected to this because of the great difficulty in finding out the value of the railroad property and also because he seemed to be under the impression that the bill was to guarantee to every railroad that has not been making as much as 5½ per cent a return equal to that amount for all time to come.

Senators King, Cummins and Pomerene tried to disabuse the senator's mind, but apparently made little impression. They pointed out that the bill does not contain any guaranty, but merely an instruction to the commission to make rates produce as nearly as may be to 5½ per cent, that many railroads under the bill would receive much less than 5½ per cent, while others would receive more and would have to give up two-thirds of the excess over 6 per cent. Senator Cummins also pointed out that provision was made for a readjustment of the rate of return by the Interstate Commerce Commission after five years, but Senator Dial continued his speech on the assumption that it was proposed "to stamp a certificate of value upon every dollar invested in railroad property, without taking into consideration whether or not it was necessary to build more railroads or whether it was necessary to maintain them." He said he did not complain of the rate of 5½ per cent because if he could have gotten that rate on the money he had borrowed during his life he would be much better off today, but he objected to giving that percentage to all railroads. He said that government operation had been generally conceded to have resulted in failure, but he thought the failure was not so great as had sometimes been made to appear and that the results of the war should be taken care of by paying the bills and a new start made. He suggested that instead of an elaborate bill in an effort to stabilize railroad returns, it would be preferable to write a short bill promising the railroads the return of their properties after 90 days or something like that with a provision for the guaranteed standard return for six months to allow them to get back to the old basis of operation and to become normal again. Then, he said, if the anti-combination law ought to be repealed it could be repealed later and he would like to repeal also the Adamson law.

Senator La Follette resumed his discussion on Wednesday. It was reported that he had planned a twelve-hour speech.

Imperator Takes Too Much Coal

The steamship "Imperator" which had been held up at the request of the Railroad Administration for loading too much coal was allowed to depart from New York on December 11. Following a conference between representatives of the Railroad Administration, of the British Ministry of Shipping and of the Cunard Line, regarding the loading of 5,900 tons of coal in excess of amount of 2,500 tons for which permit was issued by the Railroad Administration acting under authority of the Fuel Administrator. The British Minister of Shipping has expressed his regret over the occurrence, and offered to replace the coal so loaded in violation of the regulations of the Railroad Administration within one month. As a result of the Railroad Administration, with the concurrence of the Department of Justice officials handling the matter, requested the Treasury Department to grant the "Imperator" clearance, it being understood, however, that this action will in no way impair civil or criminal action in connection with the supplying of this coal by the coal companies involved or the receiving of it by the steamship. Permit had been issued only for coal sufficient to take the boat to Halifax, the first available coaling station. Following the conference correspondence on the subject was exchanged and made public.

The letter from S. M. Raeburn, director general of the British Ministry of Shipping to H. B. Spencer, chairman, Central Coal Committee of the Railroad Administration, said:

"The British government is the owner of S. S. Imperator which is operated for and on behalf of the British government by the Cunard Line. I have been informed that owing to an error, which the British Ministry of Shipping greatly regrets, 5,900 tons of coal have recently been loaded on board her without due permit and that yesterday clearance was refused the vessel at New York on this account, and that the excess coal, amounting to 5,900 tons, has been ordered removed from her, and that clearance papers will not be granted until this coal has been removed. I submit herewith copy of report of survey held December 9, 1919, at 6.00 p. m. by technical experts, from which it appears that owing to the structural conditions of the ship and the arrangement of her stoke holds and bunkers, it will take at least a period of seven weeks to remove the coal. I am further advised that the vessel while lying at her pier is consuming about 240 tons a day.

"The British government and the British Ministry of Shipping had no knowledge of any violation of any United States statute or regulation, and desires to clear the vessel so soon as possible. To that end, I offer on behalf of the British government, if the vessel is allowed to clear tomorrow, to replace the coal taken in excess of permit, that is to say, 5,900 tons, and to do so at New York harbor within one month of the date of vessel's clearance. Every effort will, of course, be made to get the coal here sooner, if possible."

The coal turned over in reparation must be coal produced outside of the United States.

The California Railroad Commission has denied the petition of the Pacific Electric Railway Company for authority to increase freight rates on petroleum, c. l. The company desired to place its rates on a parity with those charged by competing federal controlled roads, but the Commission finds that the proposed change would result in advances ranging as high as 225 per cent.

A. R. A. Issues New Specifications for Track Scales*

These New Rules Are the Work of a Joint Committee Representing a Number of Associations

THE AMERICAN RAILROAD ASSOCIATION has issued a new set of specifications for the purchase of track scales, which were drawn up by a joint committee representing the American Railway Engineering Association, the United States Bureau of Standards, The Railroad and Warehouse Commission of Minnesota, the National Scale Men's Association and the Scale Manufacturers' Association. The specifications are modeled largely after those previously prepared by the Bureau of Standards and the Minnesota commission, and, with the standing they will have under the sponsorship of the American Railroad Association, they are certain to effect a distinct advance in scale practice.

They are intended to apply to knife edge scale of the straight and torsion lever types for weighing cars in regular interchange service. They do not apply to overhead suspended scales, nor to scales now in service, except that reinstallations of old scales should be governed as nearly as practicable by the provisions of the specifications relating to the installation of new scales. They are intended, except in special cases, to secure reasonable uniformity in scales for similar service, but without preventing improvements in types of scales or in scale parts.

Classes of Scales

Character of Classification: Scales shall be divided into two classes, namely, heavy service scales and light service scales; and except when otherwise specifically provided these specifications are to apply to both classes of scales.

Heavy Service Scales: Heavy service scales are those over which a large number of cars are to be weighed; and they shall have sectional capacities of 75 or 100 tons, except for special cases.

Light Service Scales: Light service scales are those over which only relatively few cars are to be weighed; and they shall have sectional capacities of 60 or 75 tons, except for special cases.

Special Cases: For special cases which cannot be covered in these specifications, it is recommended that the material, workmanship, etc., shall be at least equal to that required in these specifications, and that the principles herein set forth be followed in so far as they apply.

Capacity

Capacity Defined: The capacity of a scale is equal to the weight of the heaviest car it will weigh, provided that the scale will support a train of such cars passing over the scale without stresses being developed in the members of the scale which are in excess of those hereinafter specified.

Sectional Capacity: The sectional capacity of the scale is the greatest weight which, if applied on the load knife edges of each pair of main levers, will produce stresses in the scale parts not exceeding those given in the table of working stresses.

Plans

Plans: The manufacturer shall furnish to the purchaser plans of design showing stresses and detailed dimensions for all scale parts, and the material of which they are to be fabricated; also assembly plans showing location of all field connections and all information necessary for the purchaser to design and construct the pit and parts not furnished by the scale manufacturer.

Working Stresses

The following unit stresses shall not be exceeded when the scale is loaded to its capacity as defined above. These stresses include an allowance for impact caused by moving loads. The strength of each member shall be determined by its weakest cross-section.

*Abstracted from the complete specifications.

Iron and steel working stresses in pounds per square inch:

IRON AND STEEL, WORKING STRESSES IN POUNDS PER SQUARE INCH

Nature of stress	Cast iron	Steel Cast-ings	Machin-ery steel	Struc-tural steel	Steel for pivots and bearings: High carbon	Steel for pivots and bearings: Special alloy
Tension	1,500	8,000	8,000	10,000	24,000	30,000
Compression	8,000	10,000	8,000	10,000	24,000	30,000
Transverse bending:						
Tension	2,500	8,000	8,000	10,000	24,000	30,000
Compression ..	8,000	10,000	8,000	10,000	24,000	30,000
Shear	2,500	6,000	5,000	7,000	.....	.....
Torsion	2,500	6,000	.....	7,000	.....	.....

The bearing stress on steel pins shall not exceed 15,000 lb. per sq. in.

Knife Edge Bearing Stresses: For heavy service scales the load per linear inch of knife edge shall not exceed 5,000 lb. for high carbon steel or 6,000 lb. for special alloy steel.

For light service scales the load per linear inch of knife edge shall not exceed 6,000 lb. for high carbon steel, or 7,000 lb. for special alloy steel.

Concrete Bearing Stresses: Stresses to be allowed for bearing on concrete shall not exceed 300 lb. per sq. in. under scale lever stands, and at all other points shall not exceed 400 lb. per sq. in.

Loops, Formula for Stresses: Considering the end of the loop as a simple beam, its section at the point of maximum bending shall be determined by the formula $\frac{W}{4}\left\{L-\frac{l}{2}\right\}$ wherein W equals the maximum load applied to the loop, L equals the distance between the center lines of the depending sides, and l equals the distance over which the load is distributed.

LENGTH OF SCALE AND NUMBER OF SECTIONS.

Scale Length Defined: The length of a scale shall be considered as the effective weighing length of the live rails. In no case shall this effective weighing length be greater than the distance between the centers of end sections.

Scale Lengths Standardized: The length of scales, except in restricted traffic movements, or for special cases, shall be 50, 56 or 60 ft.

Number of Sections: Scales of 60 ft. or less in length shall not be constructed in more than four sections.

Motion Weighing: When cars are to be weighed in motion the speed shall not exceed four miles per hour, and each car shall be entirely and alone on the scale a minimum of three seconds. This condition applies to cars normally weighed. When scales are of such a design or length as not to permit of the above condition, cars shall be spotted to secure accurate weights.

Scale Levers

Machined Ways for Nose Irons: Levers that are to be equipped with nose irons shall have those portions of the lever ends receiving them machined for the full distance over which the nose irons are to move.

Leveling Lugs: In scales of the straight lever type each lever shall be provided with leveling lugs for longitudinal alinement. In scales of the torsion lever type, leveling lugs shall be provided on the pipe or torsion member for transverse alinement and on the extension arm for longitudinal alinement. Each pair of lugs shall be spaced 11 in. The leveling surfaces of each pair of lugs shall be finished to a common plane which shall be parallel to the plane established by the knife edges of the end pivots.

Length, Allowable Variation: All main levers shall be true to within ⅛ in.; and all extension levers shall be true to within ¼ in. of their nominal lengths between the knife edges of end pivots.

Loading of Levers Other Than Main Levers: In establishing the load for determining the stresses in the levers other than main levers, it shall be assumed that the end extension levers carry a total live and dead load corresponding to 100 per cent

of the sectional capacity; the portion of the middle extension levers carrying the load from the end section only, 100 per cent of the sectional capacity; and the portion of the middle extension levers carrying the combined load from the end section and inner section, 160 per cent of the sectional capacity; the transverse extension lever, shelf lever and beam, 300 per cent of the sectional capacity.

Pivots and Knife Edges

Material: The requirements for physical properties of the steel used for pivots shall be as follows:

Special Alloy Steel in the Annealed State:

Elastic limit	Not over 75,000 lb. per sq. in.
Tensile strength	Not over 110,000 lb. per sq. in.
Elongation in 2 in.	Not les than 20 per cent.
Reduction in area	Not less than 35 per cent

Special Alloy Steel Hardened:

Elastic limit	Not les than 160,000 lb. per sq. in.
Tensile strength	Not less than 200,000 lb. per sq. in.
Elongation in 2 in.	Not less than 5 per cent.
Reduction in area	Not less than 25 per cent.
Shore hardness	Not less than 85.

High Carbon Steel in the Annealed State:

Elastic limit	Not over 55,000 lb. per sq. in.
Tensile strength	Not over 117,000 lb. per sq. in.
Elongation in 2 in.	Not less than 15 per cent.
Reduction in area	Not less than 25 per cent.

High Carbon Steel Hardened:

Elastic limit	Not less than 135,000 lb. per sq. in.
Tensile strength	Not less than 180,000 lb. per sq. in.
Elongation in 2 in.	Not less than 3 per cent.
Reduction in area	Not less than 12 per cent.
Shore hardness	Not less than 85.

Design: All pivots shall be designed and manufactured so that the two sides joining to form the knife edge shall make an angle that will not exceed 90 deg.; that the tolerance for offset of the knife edge of the pivot, as figured from the center line of the pivot at its base, shall be within 10 per cent of the width of the pivot for "machined in" pivots, and 15 per cent of the width of the pivot for "cast in" pivots.

Machining: For heavy service scales all pivots of the main levers shall be machined and fitted into machined ways.

Continuous Contact: All pivots shall be mounted so as to secure equal and continuous contact of the knife edges with their respective bearings for the full length of the parts designed to be in contact; in loop bearings the knife edges shall project slightly beyond the bearings in the loops.

Position: The pivots shall be so mounted that each knife edge in a given lever will be maintained in a horizontal plane under any load; and shall be so mounted that a plane bisecting the angle of a knife edge wil be perpendicular to the horizontal plane established by the knife edges of the end pivots, and shall be so mounted that the knife edges in a given lever will be parallel to each other.

Support for Projecting Pivots: The reinforcing on the levers to support projecting pivots shall be tapered off to prevent lodgment of dirt next to the pivots and to provide proper clearances.

Location of Main Lever Load Knife Edges: The load knife edges of the main levers shall be so located that the center line of the live rails can be placed in the vertical plane established by the centers of those knife edges.

Nose Irons

Design and Fastening: The nose irons shall be firmly fastened in proper position by means of screws or bolts of a recognized standard size and thread, or other equally effective mechanical devices.

The means for clamping nose irons in position shall be of such design that identations in the lever will not be made, and shall be independent of any means provided for adjustment.

The means for clamping nose irons in position shall force or hold them against the lever in the same direction as they would be forced by the load.

The movement of the nose irons shall be controlled by means of adjusting screws of recognized standard size and thread. These screws shall be made of a material which will not corrode.

Finish and Pivot Mounting: Those surfaces of the nose irons intended to come in sliding contact with the levers shall be made true so as to secure an accurate fit of the nose irons on or in the levers. Each nose iron shall be of such design that when adjustments are made the knife edge will be held parallel to its original position.

Lever Fulcrum Stands

Design: The height of the pillars and the dimensions of the bases of the stands shall be sufficient to prevent a tipping action. In stands of the two-pillar type, both pillars shall be of equal height.

The pillars or upright portions of the stands carrying the bearings shall be so placed on the bases that the centers of the bearing lines shall be over the center of gravity of the bearing surfaces of the stands.

Bases for Lever Stands: The bases of the stands shall be finished to within a tolerance of 1/32 in. or machined when to be mounted on metal bed plates; accurate to a plane perpendicular to the axis of the upright portion of the stand, and the knife-edge bearing line shall be parallel to the surface of the base.

Pillars, Finish of Tops: The tops of the pillars for receiving the bearing steels, caps or blocks shall be finished to a tolerance of 1/32 in.

Bearings, Bearing Blocks and Links

Material for Bearing Steels: The bearing steels shall be equal to or greater in hardness than the knife edges which oppose them. It is found good practice to have the bearing steels not less than 95 points hardness on the Shore recording scleroscope for high carbon steel, and not less than 90 for special alloy steel.

Design of Bearings: Scales shall be so designed that, when the load is applied to the live rails, the oscillation of the weigh-bridge will not displace the bearings at points of contact on the knife edges.

Mounting of Bearing Steels: All like bearing steels shall be interchangeable or mounted in interchangeable bearing steel blocks. When the steels are separable and interchangeable in the blocks they shall be fastened in position by means of set screws of a recognized standard size and thread, and of a material which will not corrode, or by other equally effective devices.

Weigh-Bridge Bearings: The tops of weigh-bridge bearings making contact with the weigh-bridge girders shall be finished to within 1/32 in. of a true plane that will bring them all to the same height when in position, and in a plane parallel to the bottom of the bases of the fulcrum stands. These tops shall be provided with bolt holes of a sufficiently large diameter to allow for adjustment both tranversely and longitudinally to secure a proper alinement of parts.

Loops and Connections

Design Proportion: In loops which form bearings for projecting pivots, the radius of the portion of the bearing making immediate contact with the knife edges and the radius of the eye of the loop shall be not less than the length of the longest side of the cross-section of the pivot to be used in the loop.

Length: All loops in like connections, except where made adjustable, shall be of the same length.

Checks

Type: All weigh-bridges shall be checked by adjustable checks of the rod or other approved type which shall be equal to the rod type in functioning. Both longitudinal and transverse checks shall be provided.

Number: Not less than four longitudinal and eight transverse checks shall be provided. When the rod type is used, they shall be assumed to act in tension only.

Strength: The combined area in square inches of the check rods at either end or side shall be not less than the sectional capacity in pounds divided by 60,000 when steel check rods are used.

Weigh-Beam and Accessories

Capacity: The maximum capacity of the beam shall be not greater than 1⅔ times the sectional capacity.

Full Capacity Beam: Except for special cases a beam of the full capacity type shall be provided.

Notches: The number of notches for the main poise shall not exceed six per inch.

Registering Beam: Scales that are to be used exclusively for

spot weighing of cars or carload freight shall be equipped with a type registering, or other registering beam, of a capacity that will enable the entire load to be weighed in one draft, and without the use of additional weights of any kind, except for special weighing.

Fractional Bar Stops: On registering beams the fractional poise shall be equipped with means to insure a positive stop at any 20-lb. interval, and a stop shall be provided to prevent the movement of the fractional bar beyond its proper travel in either direction.

Operating Lever: A substantial double or other approved type of hand grip shall be provided to facilitate the printing or registering of the weight on the ticket with the least possible disturbance of the beam.

Receptacle for Weight Ticket: On registering beams, means shall be provided to prevent the placing of the weight ticket in its receptacle in any position in which an incorrect weight can be registered.

Intervals: The notches and graduations on the main beam shall be made at the thousand-pound intervals.

Balance Ball: A balance ball shall be provided and its movement shall be controlled by means of a self-contained hand operated screw or other device which will not require that the ball be rotated in making any adjustments. A means for locking the ball in position shall be provided. The balance ball shall be provided with vertical adjustment.

Counterbalance Weight: If counterbalance weights are to be used, the lower end of the hanger stem shall be threaded; a cup for the loose balancing material shall be screwed to the lower end of the stem and each additional weight shall be provided with an elongated hole in the center through which the hanger stem may pass. No slotted counterbalance weights are to be used. When no counterbalance weights are necessary on top of the counterbalance cup the cavity shall be closed by a cover, secured in a positive manner. No counterbalance weights shall be used in any place in the scale, except at the beam.

Multiplication: A pivot with a loop shall be provided at the tip of the beam. The multiplication to this pivot knife edge shall be 7,000 or 10,000, which shall be plainly and permanently stamped on the beam.

Beam Fulcrum Stand: The beam shall be supported on a stand provided with compensating bearings, and shall not be suspended. The height of the pillars and the dimensions of the base of the stand shall be such as to prevent a tipping action.

The bearing surface of the base of the stand shall be finished to a plane perpendicular to the axis of the upright portion of the stand, and the knife-edge line of the bearing shall be parallel to the base. The center of the bearing line shall be vertically over the center of gravity of the bearing surface of the base.

Trig Loop: The contact parts of the trig loop shall be made of a non-magnetic material.

The play of the beam in the trig loop shall be not more than 2 per cent of the distance from the trig loop to the knife edge of the fulcrum pivot.

The beam shall be fitted with a pointer to be used in connection with a fixed graduation or other device on the trig loop to indicate a central position in the trig loop when the beam is horizontal.

Anti-Friction Points and Plates

Required: Anti-friction points and plates shall be provided to limit the relative lengthwise displacement of all knife edges with respect to their bearings.

Material: The anti-friction points and plates shall be made of hardened carbon steel and the plates shall be at least as hard as the points which come in contact with them.

Clearances: The clearances between the anti-friction plates and anti-friction points shall not exceed 1/16 in. on the beam, ⅛ in. on the shelf lever, and ¼ in. on all other levers, and the minimum clearances shall be not less than one-half these amounts, respectively.

Clearances

The clearance around and between the fixed and live parts of the lever system of a scale shall be at least ¾ in. except at points where other clearances are specified.

Factory Adjustments

Levers: The design, workmanship and factory adjustment of the levers and beam shall be such that the proper ratio of the lever arms will be maintained.

Beams: Each notch in the beam shall be adjusted to within .002 in. of the nominal distance from the zero notch.

Interchangeability

Like parts of all like scales of the same design and manufacture shall be interchangeable unless otherwise herein specified. The scale drawings and the parts of the scale shall be marked to indicate the proper positions of the parts in the scale, so as to prevent parts not symmetrically designed being incorrectly placed when the scale is set up.

Sensibility Reciprocal

Definition: The sensibility reciprocal shall be that weight required to be added to or removed from the live rails to turn the beam from a horizontal position of equilibrium in the center of the trig loop to a position of equilibrium at either limit of its travel.

Value: The sensibility reciprocal shall not exceed 50 lb. in any case.

Tolerance

The manufacturers' tolerance to be allowed on the first field test, after installation corrections, of all new railroad track scales shall not exceed 1/20 of 1 per cent, or 50 lb. per 100,000 lb., for any position of the test car load on the scale. The minimum test car load to be applied shall be 30,000 lb.

Scale Weigh-Bridges

Type of Girders: In scales of more than two sections, weigh-bridge girders may be either of the continuous type or the non-continuous type, but non-continuous girders of such design of joints over centers of bearings as will admit of flexure vertically without derangement of sections are recommended.

Steel Specifications: Structural steel work shall conform to the specifications of the American Railway Engineering Association.

Bracing: Each weigh-bridge span shall be designed for a lateral force of 200 lb. per lin. ft. plus 4 per cent of the sectional capacity of the scale, applied at the top of the live rail and uniformly distributed.

Diagonal Bracing: Diagonal bracing shall consist of not less than 3-in. x ⅜-in. angles and not less than three diagonals per span shall be used, or the equivalent of this bracing shall be employed.

Photo from International Film Service

Samuel M. Vauclain, President of the Baldwin Locomotive Works (center) and Other Representatives of the Baldwin Works at the Tests of the 14-in. Naval Gun at Dahlgren, Va.

The Essentials of Efficiency in Railroad Shops*

Machine Tools and Other Facilities Are Far Behind Developments in Motive Power and Cars

By Frank McManamy
Assistant Director, Division of Operation, United States Railroad Administration.

SHOP EFFICIENCY is a subject that is usually very closely associated in the minds of most of us with intensive production and stop-watch studies of the different operations in connection with shop output, and from that viewpoint it is a subject which can never be exhausted. There is no doubt but that a great deal has been and can be accomplished in that way in the matter of increasing production, although it is usually done at the expense of a more or less serious dispute with the workmen. I have sometimes found that while making time studies of shop operations with split-second stop-watches, we were overlooking conditions and methods where the time that might be saved could be measured with the hour-glass, and that we are, in many of our shops, using machines and methods that are as far behind the most modern and up-to-date practices as the hour-glass is behind the split-second stop-watch.

The transportation machine has, perhaps, been left by the war in more nearly a normal condition than any other industry for the reason that while it was worked to capacity during the war—in fact, most of the time was overworked—yet, owing to the limited facilities, it is not possible to greatly enlarge the plant, and there are no greatly increased forces because both were impossible to obtain during the war. The increased transportation furnished represented almost wholly increased effort on the part of those producing transportation and increased output of existing facilities.

The change which appears to be most important and far-reaching, so far as the railroad shops are concerned, is the change in working conditions and the increase in the rates of pay of railroad shop labor, both skilled and unskilled, and to my mind, this is a change which is permanent; therefore, it must be reckoned with in all calculations relating to the purchase or maintenance of shop equipment. These changes have made it essential to see that our men are provided with modern tools and improved facilities, because in no other way can operating costs be reduced.

The use of out-of-date tools and machinery in railroad shops—although never satisfactory—may have been in the interests of economy at the rates paid for labor before the war, but under the rates now paid the use of inefficient machinery is not only unsatisfactory but decidedly expensive.

It is a well-known fact that many railroad shops, together with their equipment were, at the time the railroads were taken over by the Government, and are today almost hopelessly out of date, and that the methods which this lack of facilities makes necessary are such that no manufacturing industry, operated on a competitive basis, could practice and exist. In fact, it has been stated that $10,000,000 spent for shops and shop machinery prior to 1917 would have made it unnecessary for the Government to have assumed control of the railroads. Whether or not this statement is true, it is a fact that one of the principal reasons for taking over the railroads was the condition of locomotives and cars in certain sections of the country which, together with insufficient terminal facilties and the effort of many shippers to use the cars as storehouses, caused such a congestion that nothing short of centralized control with complete authority could have met the situation.

A survey of the situation immediately following Federal control showed many railroads hopelessly behind in the matter of repairs to equipment, due to their limited shop capacity, although it was proved that the total shop capacity of the country, if properly distributed, was sufficient to maintain the equipment. The inadequacy of existing shops and the character and quantity of shop machinery was one of the things that received immediate consideration from the Railroad Administration, and while it was impossible in the time at hand and under war conditions to start and complete large, new projects, the matter of providing additional equipment and facilities at existing shops received earnest consideration and vigorous handling.

Investigations of shops and shop facilities during this period confirmed a belief that many of us had that the importance of having shop facilities on any railroad keep pace with other improvements is usually neglected and frequently entirely overlooked. To promote efficient operation, grades are cut down, curvature reduced, terminal facilities are added, bridges and roadbed improved and strengthened to meet the requirements of new and heavier equipment, but the last thing that is given consideration—if, in fact, it receives any consideration at all until it is forced by the condition of power and terminal delays—is the question of providing shop and roundhouse facilities for the new and heavier equipment.

The general rule in the matter of making improvements is that if the saving to be brought about by the improved facility will pay the carrying charge on the investment, the improvement is a justifiable one, and under this rule, we have all seen locomotives and other equipment scrapped because of obsolescence—that is, because the work performed by the more modern equipment was sufficient to pay the carrying charge on the investment and, therefore, the additional investment was justifiable. Locomotives from 15 to 20 years old are either modernized by rebuilding or scrapped to make room for modern power, yet a trip through the shops on practically any railroad will show that we are trying to maintain this modern power with shop tools and machinery, much of which is more than 50 years old and which should have been replaced by modern equipment years ago.

I am familiar with the statements which will probably be made that the reasons for failure to provide proper equipment in the shops is because of the difficulty in financing, but this does not cover the case because a check of the service performed by locomotives and the time lost at terminals will show that in many cases it would have been profitable to have spent the money that was spent for the last order of locomotives in providing shop facilities to maintain locomotives already on the line and that, if this had been done, the additional locomotives would not have been needed.

Efficiency

Efficiency, as applied to railroad shops, is, therefore, the ratio of the shop output to the time, labor, material and capital expended. In order that a railroad shop may be efficient it is necessary to have: first, suitable shop buildings with proper equipment and lay-out; second, an effective shop organization; third, necessary schedules so that the

*Abstract of a paper read before the New England Railway Club.

various departments of the railroad in any way related to the shop organization may coordinate their efforts.

The efficient railroad shop must have as its fundamentals proper equipment suitably disposed and properly housed. It is difficult to understand, in view of the saving to be effected thereby, why we have so long failed to erect suitable buildings for shop purposes, and this not only applies to the car department where suitable buildings do not exist, but also to the locomotive department where the loss of output in decreased efficiency due to placing machines in badly lighted, poorly arranged buildings where unusual effort is required to deliver material to and from machines which are not accessible, even to an ordinary warehouse truck, is really a very serious question. So far as possible, the travel of material through the shop should be arranged to eliminate backhauls. The material should move in as nearly a straight line as possible from the foundry or smith shop to the locomotive or car. I have seen shops where driving-box brasses were machined at one end of the shop and pressed into the box at the other end of the shop, several hundred feet distant; then returned for boring.

When any new shop machinery is requisitioned at the present time, the purchase is objected to on the grounds of the high cost, and this argument has been very effectively used. We must now, however, consider this in the light of the comparative cost for machinery and labor, and when we consider the rate paid to shop labor at the present time, we will realize that in the life of the average machine, its cost will be paid many times by the saving in the time of the workmen, to say nothing of the increase in efficiency and shop output and the additional service obtained from locomotives and cars, which are often sorely needed.

A very costly part of shop operation is the handling of material in the shop. For that reason, crane transportation, where it can be installed, is desirable, and in any event, wide aisles for the trucking of material should be provided.

Shop machinery should be located with a view to the use to be made of it, with machines or appliances for each particular kind of work in one group. For example, all the work belonging to the valve motion should be handled in one place. Similarly, driving-box work and brake rigging work should be located in one particular portion of the shop.

Someone has said, "Information is the essence of efficient operation." Nowhere is this more true than in the proper conduct of a railroad shop and, generally speaking, in few places is information as to probable requirements so sparingly furnished. Locomotives sent to the shop for repairs which are said to require the renewal of a set of flues are found to require fireboxes, and locomotives sent to the shop for fireboxes are found to need only a set of flues. It is of great importance that proper record of the condition of locomotives and cars be kept and the shops furnished as much in advance as possible with information as to the repairs which will be required on equipment destined for the shop within the next two or three months, in order that the shops can provide the necessary material when the locomotive or car is placed in the shop, thereby avoiding the too common practice of having them occupy valuable space while waiting on material.

Organization

Organization is defined as "A systematic union of individuals in a body whose officers, agents and members work together for a common end." This is especially applicable to railroad shops where the ends sought are efficient production and minimum costs. While to some it may seem unfair that brilliant, individual performances should be submerged in an average, at the same time, whether in baseball or business, team work is essentially the thing that counts.

Without an organization embodying as well as implying cooperation, little, if anything, will be gained, and this is entirely up to the supervision. Each investigation made of points where shop output is unsatisfactory confirms the belief which I have long had that effective and constant supervision is necessary in order to obtain a satisfactory output. Quality as well as quantity in production comes from the top downward. The average workman will give you, in the matter of output, exactly what you are willing to take. If the supervision is satisfied with a minimum performance and low-grade work, that is exactly what they will get.

If we are to have efficient operation in any shop, we must have supervision that is constantly on the job, and will show that the officials and foremen are as much interested in both the quantity and quality of output as they expect the workmen to be, and that they are willing to aid in promoting efficiency by seeing that the workmen have: first, a suitable place to work; second, necessary tools that are as well maintained as they can be, and third, material and supplies promptly delivered so that the workmen will not be required to lose time waiting for their helpers to obtain material from a storehouse inconveniently located, or have to hunt it themselves from the scrap pile, or rob other locomotives or cars in order to obtain it.

An important factor in obtaining shop output is properly scheduling the work through the shop so that the work of the various departments may be properly coordinated and in harmony. Scheduling will have a decided influence to keep everything moving and avoid delays due to one department waiting on another, and these schedules should not be interrupted from day to day by switching in jobs of running repairs which could perhaps be better performed in the roundhouse.

Locomotive schedules must be made very carefully. It is almost as much of a task to make out a proper schedule for locomotives through the shop as it is to make out a time card for a division. Schedules that work satisfactorily in one shop will no more apply to another than a time card for one division can be made to apply to another. A schedule once made must be carefully followed, or one gang or machine will be crowded with more work to be done at one time than it is possible to accomplish.

Locomotive schedules bear the same relation to getting work through the shop that time cards do to getting trains over the line. Every possible effort should be made to live up to the schedule, but when something goes wrong, the despatcher in the case of trains, or the general foreman in the case of the shop, must take a hand, make new meeting points, or devise new methods, hold some work back and advance other; in fact, take whatever action is necessary until the business is straightened out again.

It is no more possible to keep every engine in a big shop moving on schedule time than it is to keep every train between New York and Boston on time. If it is found that locomotives are continually behind schedule, it may be due to two causes: first, the schedule may be too fast; or second, something may be wrong in the shop that needs straightening out.

A schedule of any kind is of very little use unless some real and earnest effort is made to live up to it.

Equipment

The equipment of railroad shops is an important factor with respect both to efficiency and output. It is not efficient to continue in service, machine tools which have long since outlived their usefulness. A few conditions noted on a trip over a railroad which operates about 1,500 locomotives will, perhaps, explain more clearly than any other method of discussing the situation, the conditions I have in mind which must be given attention if we are to reduce shop costs.

The principal shop is an old structure that has been added to from time to time, and has no modern facilities or crane service. Locomotive driving wheels are removed on drop

pits in the shop. On account of the length of the shop, when removing wheels from 2-10-2 type locomotives, they are moved over the pit and spotted with the shop locomotive, and two pairs of driving wheels are removed. The locomotive is then taken out of the shop to the roundhouse turntable about 150 yards distant and turned around, returned to the shop, and the other three pairs of driving wheels are removed. To handle these wheels requires all the men that can get around them. In re-wheeling the locomotive the same process is followed; that is, three pairs of wheels are applied to the locomotive, it is then taken to the roundhouse turntable, turned around and returned to the shop so that the other two pairs of drivers may be applied.

At another shop on the same railroad, in checking the movement of parts of locomotives from the stripping pit, it was found that the driving boxes, rods, cross-heads, driver brake rigging, springs, hangers, etc., are trucked through the entire length of the shop to the lye vat, a distance of 700 feet, and then distributed to the respective places for repairs, and finally returned to the point they started from. This movement of material which is trucked through a congested shop could be eliminated by placing the lye vat at the stripping pit and in re-grouping some machines in the shop.

The driving boxes move 1,900 feet from the stripping pit until returned finished. This could be reduced to 400 feet by re-grouping the machines.

At various other points on the same railroad, we found repairs being made with the following obsolete machinery:

Wheel lathe, which was installed in 1878, on which it requires seven hours to bore a driving wheel tire which could be done with a modern, heavy duty boring mill in 30 minutes.

Tender truck wheels being turned on a 36-inch engine lathe in which but one tire can be turned at a time; therefore, the operation is very expensive. It requires five hours to turn tires which on a modern, heavy duty wheel lathe could be turned in 30 minutes.

Crown brass turning machine, built in 1861, which is entirely unsuitable for doing this work.

Wheel lathe, date of installation not obtainable, but is very old and requires seven hours to turn one pair of driving-wheel tires and six hours to turn one pair of engine or tender truck wheels.

Wheel lathe, old type, which requires six hours to turn one pair of 50-inch driving wheels, and four and one-half hours to turn tires on one pair of engine or tender truck wheels.

Wheel lathe, which was placed in the shop in 1879 and was second-hand at that time. On this machine it requires from three and one-half to four hours to bore one driving-wheel tire.

At another point locomotives are used to haul a transfer table, and this practice has been in existence for about six years.

Planers of different sizes, built in 1864 and in 1867. These machines have but one cross rail head and no side head, and are entirely unsuitable for present-day requirements.

On a mountain railroad with over 100 locomotives, a large percentage of which are Mallets, there is no wheel lathe. Tires are removed from the wheel centers and turned on a boring mill, and when necessary to turn the journals the wheels are pressed off the axles and the journals turned in an engine lathe.

This list could be added to, either on this same railroad or by going to any one of a number of others where this is fairly representative of their shop conditions, and when we consider that these and other similar machines must be used to maintain some of the heaviest, modern locomotives now in service, we will realize what some of the mechanical departments are up against in their efforts to maintain equipment.

Modern appliances are an absolute necessity, and it seems a shame that some of the up-to-date shops should be filled with hopelessly back-number machinery. In such cases, aside from improved facilities for handling, no decrease in the cost of machine work and no adequate output can be expected, and a road with such equipment will require a greater investment in motive power and cars to handle the business. The principal question is not how many locomotives a road has, but how many good, serviceable locomotives, and this depends entirely upon the facilities for repairing them and keeping them in service.

Next to the machine installation, it seems to me that the problem presented in shop operation which is most deserving of study is the question of transportation of parts; traveling cranes, mono-rail runways and jib cranes are wonderful factors in efficient shop operation.

Manufacture of Parts

It is usual for railroad shops to purchase some material and manufacture other. In some shops, the manufacturing of material is a large portion of the work done. In others, the material purchased much outweighs the material manufactured. Of course, shops, generally speaking, are repair plants and not manufacturing establishments; therefore, if we are to manufacture material or parts, I believe that a sharp line should be drawn as between material or parts to be purchased and material or parts to be manufactured, and having decided what is to be manufactured, prepare to do it in an economical and efficient manner.

The railroads have not as a general rule organized their mechanical departments on a manufacturing basis, but have depended upon outside sources for the majority of their manufactured products and such shop facilities as they have maintained have been largely for repair and maintenance work. Because of the diversified products of the ordinary railroad repair shop of today, the question of production has not been given the consideration it has in other fields. On some railroads, a start has been made towards the introduction of manufacturing methods by the establishment of centralized shop facilities which act as manufacturing plants for such commodities as can be distributed to outlying points where facilities for economical manufacture are not maintained. Such work, however, has usually been carried on as a side line at the largest repair shops on the individual roads. On this basis, it has been found economical to install special machinery and methods at a centralized point and manufacture pieces in quantities for storehouse stock to be distributed on requisition to the smaller shops or terminals over the system.

It is hardly to be expected that in railroad work, it will be possible to introduce the methods used in automobile manufacture or kindred lines, but it should be quite possible profitably to produce parts used in sufficiently large quantities at a centralized shop or manufacturing plant. Inasmuch as the finished parts for locomotives and cars are not designed to be absolutely interchangeable, either in design or manufacturing tolerances, it is necessary for the most part to provide sufficient latitude to permit of the final fitting of each piece at the point where application is to be made.

During the past few years, great improvement has been made and is being made in the design of machine tools and special machinery for railroad shop work. The installation of automatic and semi-automatic machinery adapted for railroad shop uses has been extended. The introduction of modern high capacity and special machinery into railroad shops has not always been an economical procedure, however, because of the fact that the output of the shop, where installed, has not been particularly adapted to the machinery, or because in the average shop such machinery can only be used a part of the time for the purpose to which it is par-

ticularly adapted. If parts are to be manufactured on a substantial scale, it could probably best be accomplished through the establishment of centralized manufacturing shops equipped with up-to-date machine tools and shop equipment, with particular attention to automatic and semi-automatic machines for the production of locomotive and car parts in quantities.

One of the most important factors in the successful operation of a centralized shop for manufacturing purposes is the relation between the mechanical and storehouse departments. In order to derive the maximum or even satisfactory results from such an organization, it is essential that the shop be organized for quantity production on requisitions originating with the stores department; otherwise, we would be apt to have duplication of unnecessary parts and an accumulation of expensive manufactured parts which represent obsolete designs and have no value other than scrap.

With increasing cost for material and labor, it will be necessary to reorganize railroad shop facilities with a view to keeping equipment maintenance costs within reason; therefore, modern methods of shop production should be applied to railroad work in a much greater degree than is prevalent today. Locomotives and cars should be looked at from the viewpoint of a large investment, the productivity of which increases in exact ratio to the percentage which is available for service. It is usually estimated that the locomotives on a railroad represent approximately eight per cent. of the total cost of the property, but it is this eight per cent. which makes the other 92 per cent profitable, so that even assuming that by suitable shop facilities and efficient shop operation we are able to reduce our percentage of unserviceable locomotives from 12 per cent to 10 per cent, we have done more than the percentage figures indicate since the amount of transportation which can be furnished is represented by the number of serviceable locomotives.

Steel Car Repairs

While it is true that there has been failure in many instances on the part of railroads to provide locomotive shop facilities, the situation is even worse so far as steel freight cars are concerned, and with the exception of a very few railroads, practically nothing has been done along the line of facilities for the repair of steel freight cars. Where these facilities are provided they are, as a rule, of the most meagre character; frequently home-made furnaces, which result in extravagant consumption of fuel, totally inadequate equipment of clamps, formers, etc., worn out pneumatic tools, an insufficient supply of compressed air and, in a great many cases, actual shortage of repair material is found to exist.

Hundreds of thousands of rivets are being cut by hand which could be cut by proper pneumatic appliances in a fraction of the time. With proper buildings, proper equipment and a sincere and determined effort on the part of those responsible, the steel car plant can and should be as well organized and as efficient as any portion of our repair facilities. It can be made so only by presenting to the proper officers, a list of needs, clearly showing the saving which will result from their installation and, if they are installed, by making efficient use of them. The only locomotive and the only car that earns revenue is the serviceable one.

Do not understand this as a criticism of the men in charge of the mechanical departments on the various railroads except as it may be considered a criticism of their failure more aggressively to urge that adequate facilities more promptly and economically to repair equipment be provided. Neither is it intended to make us dissatisfied with what we have, because all must realize that we must do the best we can with existing facilities.

It is rather intended to be an outline of existing conditions and is given for the purpose of directing attention to the importance of formulating and following a definite and progressive policy of railroad shop improvement, because under the changed conditions which confront the railroads at the present time, with respect to labor costs, if we are to keep shop costs within reason, efficient and adequate facilities in the way of improved shops and shop equipment, particularly machine tools, must be provided.

The Great Northern Railway of Russia

By Kenneth Durant

A CONCESSION for the building of the long projected Great Northern Railway in Russia was granted recently to a Norwegian-American syndicate, according to information transmitted to the Department of Commerce by Norman L. Anderson, the American trade commissioner at Stockholm.

The "Svensk Handelstidning" of Stockholm recently reprinted an official report of the franchise from the "Severnaya Kommuna" (Northern Commune), of Petrograd, stating that the constructing syndicate was backed by American capital, and mentioning the name of "Hannevig"—well known in Norwegian financial and commercial circles—as one of the principals. The report adds, in conclusion, that if this group does not assume the undertaking, the concession will be offered on the international financial market.

The Great Northern Railway, which is essential to all plans for the development of the great natural resources of North Russia, was planned and its immediate construction urged by a special commission created under the Russian Ministry of Ways and Communications in 1916 for the purpose of outlining the whole railroad program of the Russian Empire. The commission was headed by the assistant minister of ways and communications, I. N. Borissov. At that time the traffic on the Siberian lines was growing at the rate of 20 per cent annually and the entire railroad system of Russia was suffering from rapidly increasing congestion. The commission reported that the construction of several new trunk lines, equipped for heavy traffic was immediately essential if the economic development of the country was not to suffer serious interference. The commission outlined an extensive program of railroad construction, which included the building of 4,150 miles in the five years 1917-1821, with an additional 1,400 annually during the succeeding five years. (This estimate left out of account special lines urged on the grounds of strategic necessity.) The whole program called for the construction of between 28,000 and 30,000 miles of railway between 1917 and 1926. If this plan had been realized, Russia would have between 70,000 and 75,000 miles of railroad by 1927; still greatly less, of course, than the railroad mileage of the United States in 1914. The plans outlined by the commission would have given Russia only 4.5 miles of railroad per 10,000 population and only 9.4 miles per 1,000 square miles of territory. The budget for materials and labor necessary for this program was estimated by the commission at $600,000,000.

Among the roads recommended for immediate construction by this commission was the Great Northern Railway, running north of, and parallel to, the Trans-Siberian railroad, and designed to relieve the heavy traffic on the latter and to stimulate the development of the vast coal and mineral resources of the Urals.

The Great Northern Railway is planned to run from Soroka, a station midway on the Murman Railway, near the Gulf of Onega, via Kotlas, a town on the Dvina river, thence across the Urals, and so on to the junction of the Obi and Irtish rivers in Siberia. From Kotlas it is proposed also to run two main lines to Zvanka, where the Murman Railway joins the Petrograd-Vyatka-trans-Siberian line, or else to run

past Zvanka directly to Petrograd. In addition there are planned shorter spur lines into important industrial districts. In all, the project represents about 2,000 miles of railway.

The concession first comprises the construction and operation of a Russian standard gage (5 ft.) road for general traffic. In addition the contracting syndicate secures the right to exploit about 22,000,000 acres of Russian forest. Of this about 5,500,000 acres are for the needs of the constructing company for a term of 80 years, the net profits from whatever mills and factories the company may establish to be included in the surplus of the railway. The remaining 16,500,000 acres of forest are given to the company for 48 years with the right to fell the whole district. Besides the forest concessions, the constructing syndicate is given the right to exploit all live mineral lodes found on examination of the lines. The company also has the right to establish and run shipyards, ports, and steamship lines, and will be given, free of charge, districts suitable for the establishment of towns and villages. Further, it may use all water power in the neighborhood of the railway. All such undertakings are considered a part of the railway enterprise.

In return the Russian Soviet Republic is to be paid one half kopeck per pood (36 lb.) for ore mined, without regard to the kind of ore; and will collect a charge of 5 per cent of the London market price on all timber cut. The company is relieved from income and industrial taxes, paying, instead, 25 per cent of its net profit.

The road, should it be built, would be of incalculable importance to the future development of North Russia, bringing transportation for the first time to the vast mineral, coal, timber, petroleum and agricultural resources of North Russia.

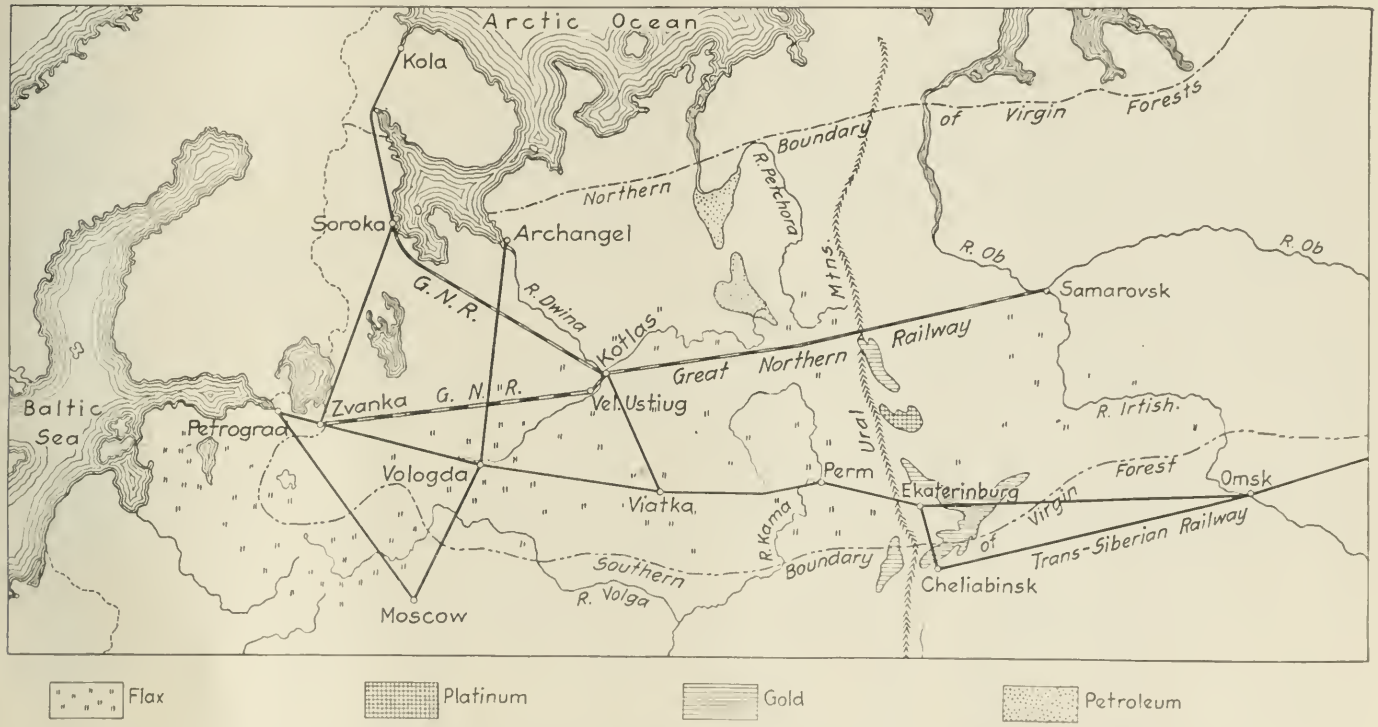


Diagram Showing the Proposed Great Northern Railway and Its Relation to Russia's Present Railways

Farmers Would Build Railway.—The farmers of Lake St. John, Canada, are applying for a provincial charter to build and operate their own railway through the entire region, covering several hundred miles and giving the remote districts of the north an outlet on the gulf board of the St. Lawrence, probably at the mouth of the Saguenay river.

Relation of Freight Charges to Values of Commodities*

By Julius Kruttschnitt

Chairman of the Executive Committee and President of the Southern Pacific Company

As THE GENERAL IMPRESSION of the relation of increases in steam railroad freight rates to the present high values of commodities is greatly exaggerated, the time seems peculiarly opportune to place some computations before you which show that transportation charges have played but a small part in lifting commodity prices to their present unparalleled level. This erroneous impression has been inspired and fostered by public speakers, by representatives of organized labor and by others, due we believe almost entirely to ignorance of the slight influence of freight charges on costs of commodities. The cumulative effect of all steam railroad freight charges, which in their remotest ramifications could affect the values of commodities, for the year 1914, which marked the opening of the war, has been weighed, and the same has been done for 1919. As we seek to establish the comparative effect of freight charges on commodity prices in two periods, six years apart, the Commission's methods used in computing tonnage and revenue statistics and ours in establishing prices being the same in both periods, will not affect the soundness of our conclusions.

	1919	1914
Average commodity value per ton of "freight originated" dollars	119.00	56.00
Freight charges per ton originated, dollars	2.80	2.00
Ratio of charges to value, per cent	2.4	3.6
Increase in cost to consumer, 1919 over 1914, dollars	63.00	.....
Increase in freight charges per ton, dollars	0.80	.....
Relation of freight increase to cost increase, per cent	1.3	.....

In other words, only 80 cents out of $63, or 1.3 cents out of every dollar of increase in value of commodities in 1919, was caused by increased freight charges; the responsibility for the remaining $62.20, or 98.7 cents out of every dollar,

*A letter to Hon. John J. Esch, chairman of the committee on interstate and foreign commerce, House of Representatives.

must be sought elsewhere; it was not caused by freight charges.

So many commodities originate on railroads, the values of which are affected by freight charges, some exerting substantial and some exerting negligible influence, that their influence on commodity values in individual cases cannot satisfactorily be computed, but the relation that the nation's entire yearly freight bill bears to the value of all commodities transported by the railroads can be satisfactorily and accurately measured.

In the year ended June 30, 1914, the Interstate Commerce Commission reports show that all Class I and Class II steam roads in the United States originated 1,094,123,895 tons of classified freight, (tonnage of Class III roads that earn less than $100,000 per annum, whose aggregate freight revenue is but 0.53 per cent of the total, is not reported by the Commission), for transporting which the carriers collected $2,114,697,629, an average of $1.93 per ton; they also received $75,541,569 express revenue for transporting additional tonnage of unknown amount; nevertheless, we have added express revenue to freight revenue without any addition to aggregate tonnage or values, thereby increasing the average freight charge per ton from $1.93 to $2, and the percentage of freight revenue to commodity value from 3.4 to 3.6. The 1,094,123,895 tons are classified by the Commission under 38 heads, to which appropriate unit values, based on data obtained from publications of the United States Department of Labor, from the United States Railroad Administration, from quotations in the press and from other reliable sources, have been assigned.

The aggregate value of all tonnage originated and transported by the railroads, thus determined, is $61,482,000,000 (*does not include the value of express tonnage, which is unobtainable*), which, divided by the number of tons originated, gives the average value per ton of all commodities $56, to which the $2 freight charge bears the relation of 3.6 per cent.

Under the heading of "tons originated," the Interstate Commerce Commission includes every ton of freight that originated on the lines of the carriers. A ton originating at San Francisco, for example, and shipped through to New York is counted as but one ton, regardless of the number of carriers over whose lines it passes. Freight and express revenues as reported by the Interstate Commerce Commission include all freight and express charges accruing both before and after manufacture. No transportation charge, however small or remotely affecting the cost of either a raw or of a manufactured article, can escape detection and inclusion in aggregate freight and express charges.

	Bradstreet's index No.		Ton mile rate (cents)	
Year	Actual	Relative	Actual	Relative
(1)	(2)	(3)	(4)	(5)
1899	7.21	100.00	.724	100.00
1900	7.88	109.35	.729	100.69
1901	7.57	105.06	.750	103.59
1902	7.88	109.24	.757	104.56
1903	7.94	110.07	.763	105.39
1904	7.92	109.83	.780	107.73
1905	8.10	112.33	.766	105.80
1906	8.42	116.75	.748	103.31
1907	8.90	123.50	.759	104.83
1908	8.01	111.09	.754	104.14
1909	8.52	118.10	.763	105.39
1910	8.99	124.66	.753	104.01
1911	8.71	120.85	.757	104.56
1912	9.19	127.42	.744	102.76
1913	9.21	127.71	.729	100.69
1914	8.90	123.49	.733	101.24
1915	9.85	136.66	.732	101.10
1916	11.83	164.01	.716	98.89
1917	15.66	217.15	.723	99.86
1918	18.73	259.84	.862	119.06
1919	18 11	251.21	.986	136.46

We have had to estimate data for the entire year 1919 from those that have already appeared for the first six months, and as the estimated traffic is substantially the same as that of 1916 we have applied 1919 prices to the tonnage of classified commodities of 1916, whence the average value per ton is $119, or 112 per cent more than that of 1914. Freight charges per ton, including express charges received by the carriers, are found to be $2.80, or 40 per cent more than in 1914. From this it appears that the relation of average freight charges to the average value of commodities, because of the more rapid rise in values than in charges, is less in 1919 than it was in 1914.

The preceding table shows the relation of average freight rates to values for the past 21 years. Column 2 gives Bradstreet's Index Numbers of commodity prices, Column 3 reduces these numbers to the basis of that of 1899. Columns 4 and 5 give actual and relative average ton mile rates.

The following will be observed:

From 1899 to 1900: Rise in prices 100 to 109.35, freight rates substantially unchanged. From 1907 to 1908: Fall in prices 123.5 to 111.09, rates substantially unchanged. From 1908 to 1912: Rise in prices 111.09 to 127.42, fall in rates. From 1915 to 1916: Rise in prices 136.66 to 164.01, fall in rates. In 1916 and 1917 prices were *higher* and freight rates *lower* than at any time in 19 years. From 1918 to 1919 a fall in prices of 259.84 to 251.21 and a sharp rise in rates.

The New York Sun, August 31, 1919, gives Dun's index numbers of living costs for each of the first seven months of 1919. During this period freight rates were unchanged; nevertheless, the index number for August is 10.4 per cent higher than in April.

In the case of imports that reach our shores unaffected by domestic freight charges, the slight influence of freight charges on their selling prices is ascertainable. For example:

Commodity	From	To	Miles	Freight per 100 lb.	Value per 100 lb.	Per cent frt. to value
Brazil coffee,	New York,	Pittsburgh	444	$0.27	$20.50	1.30
Japan rice,	New York,	Pittsburgh	444	.225	13.00	1.70
Japan tea (Yg. Hyson),	New York,	Buffalo	440	.60	65.00	0.92
Japan tea (Breakfast),	New York,	Buffalo	440	.60	34.00	1.80

California oranges have at times been bought by the box in the East *at the California price.* Prices of cantaloupes by the case are shown in the United States Department of Agriculture review of Imperial Valley, cantaloupe crop of 1919, as follows:

PREVAILING MARKET PRICES—(BOX OF 45s)

	San Francisco	Miles from Imperial Valley	N. Y.	Miles from Imperial Valley
July 1	$3.10	700	$2.75	2,580
2	3.35	700	3.35	2,580
5	3.25	700	3.35	2,580

In dealing with the almost numberless commodities embraced in a total of over a billion tons, it is impossible, in casting up "average commodity value per ton of freight originated," to assign to each its exact influence, although great care was exercised in selecting unit values. Criticism of our investigation in some direction is perhaps unescapable, but as the relation of commodity values in 1914 to those of 1919, computed by us, is 100 to 212 and that of the United States Department of Labor, published in the Labor Review of July, 1919, is 100 to 210, we feel that the close coincidence of these figures strengthens our confidence in our computations and conclusions, which we believe are free of substantial error.

A JAPANESE COMMISSION of railway and civil engineers is now in Mexico for the purpose of making a study of the topography of the Isthmus of Tehuantepec. This has given rise to reports that Japanese interests will build a railroad across the Isthmus. Recently it was announced that Japanese merchant ships were making Salina Cruz, on the west coast of Mexico, a port of call. Japanese settlers are said to be entering through this port. The only present railroad across the Isthmus of Tehuantepec is owned by British capital, but is controlled by the Mexican government.

Maintenance of Way Painters Convene at St. Louis

Propose Vocational Training and Labor Saving Equipment to Offset Shortage of Workman

THE SIXTEENTH ANNUAL CONVENTION of the Maintenance of Way Master Painters' Association, which was held at St. Louis, Mo., on October 23, 24 and 26, was devoted for the most part to a discussion of ways and means of overcoming the prevailing shortage of skilled painters. As a means to this end, the spray process was accorded the most interested discussion, but considerable attention was also given to a paper on the employment of painters the year round as a means of attracting and holding a better class of workmen, and to an address on the need of vocational training to replace the abandoned apprenticeship system. Other papers were devoted to further matters of direct application to the special problems of the trade. G. W. Thompson, Research Laboratories, National Lead Company, Brooklyn, N. Y., presented a paper entitled "The Limited Palette," in which he demonstrated that a wide variety of colors and shades could be obtained by the intelligent mixing of a few basic colors. Martin Kane, bridge and building master, Delaware & Hudson, Albany, N. Y., recalled the work of the grainer, which was once so popular and pointed to a number of modern tendencies that were leading to a revival of graining as a surface treatment. F. C. Rieboldt, master painter, Chicago, Milwaukee & St. Paul, Milwaukee, Wis., outlined the precautions necessary to obtain good results in painting under extremes of temperature. H. B. Wilson, master painter, Bessemer & Lake Erie, Greenville, Pa., submitted a very complete list of tools and equipment required for all classes of maintenance of way painting together with a discussion of the requirements of the more important items in the list. Economy in the handling of tools was also subjected to a lively discussion.

The officers of this association during the past year were: President, H. E. Conrad, master painter, Pennsylvania Railroad, Huntingdon, Pa.; first vice-president, H. F. Jones, master painter, Cleveland, Cincinnati, Chicago & St. Louis, Wabash, Ind.; second vice-president, Ole Stubstad, master painter, Chicago & North Western, Winona, Minn.; secretary-treasurer, F. W. Hager, master painter, Fort Worth & Denver, Fort Worth, Tex.

Address of the President

The most pertinent feature of President Conrad's address to the convention at the opening session was his reference to the Plumb plan, which is presented in part below:

"I wish to make an appeal to the members of this association on the subject of loyalty to our employers. At the present time much propaganda is being spread for the Plumb plan of government control and it has many followers among the radical class.

"The most ordinary common sense, awakened self-interest and knowledge of human nature and human experience should quickly repudiate the fallacies inherent in this plan. The danger is that public thought will not be quickened to the situation, and through lack of understanding and organization, legislation may be forced through Congress by means of organized political pressure, backed by abundant funds for propaganda and lobbying, which will work irreparable mischief before the public is aroused to the peril. As to the labor unions, they are on trial before the public of this country, and they must cleanse themselves of their anarchistic elements or fall. Therefore, let each and every one of us, who believes in American institutions, in property rights, in orderly government, line up in opposition to those who wish to confiscate our industries and bring about a chaotic state in our government."

The report of the secretary recorded a net gain in membership of 11, giving a total of 82 members in good standing. Thirty members were in attendance at the meeting.

Below is given an abstract of three of the papers presented, together with the discussions following their presentation.

Keep Men Employed Throughout the Year

BY HARRY F. JONES

Master Painter, Cleveland, Cincinnati, Chicago & St. Louis, Wabash, Ind.

It is impossible to keep practical men by working them six months of the year and laying them off the other six. Under this system we are merely operating a trade school. The men we get are inexperienced. We spend our time during the summer trying to teach them, but some other industry gets the benefit, for when we lay them off in the fall we very seldom get them back in the spring. When the time comes to put on men we open up our trade school again and pay another gang of inexperienced men good wages to teach them the trade.

The problem of arranging the work so as to keep men employed throughout the year would be a very small job for the master painter were he allowed to do so. My system of handling the work is as follows: We do our road work as early in the spring as possible, using motor cars and men enough to finish it in as short a time as possible. Consequently, we do not drag it along in the middle of the summer, using valuable time and weather that should be used to better advantage on other work. After completing the road work we give the steel work the attention it should have. I think steel structures should be taken care of during the warm months of the year. My experience has been that we get better results—a better job of cleaning and longer life of the paint.

After completing the steel I start the station work, doing the exterior work first, leaving interior work wherever possible for winter months, especially all offices, interiors of shops, etc. During October we take care of all the glass requirements, replacing all broken glass, also reglazing all sash that require it.

The first of the year I make a schedule of the work to be done that year, showing the amount of labor and material that will be required to execute the work we have listed We have been using this system for several years and I find it much better and more practical than the old way under which we had no system. We get a better class of work at less cost by keeping the men employed throughout the year.

Results Secured with Spray Painting

BY H. S. BIRD

Master Painter, Philadelphia & Reading, Philadelphia, Pa.

Spray painting is not of a recent origin. My first experience with it was in 1897. The machine was a rather crude affair, composed of a hand pump for compressing air into a storage tank, a receptacle for mixed paint and a hose with a nozzle attachment. The paint used was rather thin in character; owing to the low pressure obtained with a hand-

pump the heavier paints could not be used. Two men were required to operate this machine. The spray produced was of a cloud effect and as the operator received a large portion of the spray and inhaled a considerable quantity, the results were not at all satisfactory.

The modern spray machine is quite different. It is equipped with power air compressors which provide air at higher pressures and make it possible to use a heavier bodied paint, which is applied with considerable force and in a satisfactory manner. The nozzle or gun can be adjusted to a broad or fine spray, the broad spray being adapted to large flat surfaces. The finer spray can be adjusted to narrow surfaces and deep crevices which cannot be reached with a brush.

Some reports I have received from concerns using spray equipment complain of the heavy bodied paints clogging the nozzle. This may be due to many reasons other than the fault of the equipment. The pigment may not be thoroughly mixed, or an incompetent operator may be at fault.

Spray painting applied by an experienced operator is economical in more ways than one. He is not only able to cover a large surface in much less time than with brush work, but he has a greater reach, therefore saving in the moving of planks and scaffolds. He is also able to reach inconvenient places, thereby eliminating the erection of special scaffolds or rigging, which would be necessary in brush work. I find in some cases a saving in the labor cost of 80 per cent and in material of 30 per cent. This is no doubt true where a competent operator is employed, but in painting railings or lattice work it is the general opinion that the spray is wasteful of paint. This loss, however, is small in comparison to the saving in the cost of labor.

As to the permanence of coatings, this is a question which seems yet to be in doubt. Some report that the spray coatings seem to be equal to that of the brush method, while others are of the opinion that it is not as satisfactory as brushing the material thoroughly. This, of course, could be determined by making a comparative test.

Discussion

Several members raised a question as to the saving of 30 per cent of the material. One or two related some unsatisfactory results secured with the spray process, but upon inquiry by others it developed that these experiences concerned the use of home-made devices or to attempts to use the spraying machines without proper instruction or training. President Conrad stated that in painting some girders stored in a yard one man with a spray accomplished as much as five men with brushes, but he did not claim that this record could be equaled on all classes of work. He found the spray of particular advantage for close quarters, as on the inside of box girders, but felt that there was a considerable value in the thorough brushing of paint, which was not obtained with the spray process.

He also emphasized the necessity for thorough instruction of the workmen in the proper use of the spray; in his experience, the men were very much opposed to the machine at the start but became very enthusiastic about it after becoming accustomed to its operation. In answer to a question, Mr. Conrad said that he mixed a certain amount of turpentine with the paint to thin it, but had found it practicable to use straight lead and oil in the machine.

The general tenor of the discussion indicated a serious interest in the possibility of the spray process as the solution of the labor problem of the master painter. Several expressed a willingness to co-operate with the manufacturers in the development and application of this labor-saving device.

C. B. Lyons, representing the DeVilbiss Manufacturing Company, Toledo, Ohio, presented a lantern slide talk on camouflage spray painting in France and a general exposition of spray painting practice, which served to answer many of the questions which had been raised in the course of the preceding discussion.

Vocational Training

By D. Louis Ireton

Chairman, The International Trade Education Development Committee of the United States and Canada, New York.

The need for more and better trained workmen in the painting trade is recognized everywhere. The abandonment of the old-time apprenticeship system, and our dependence upon foreign trained or untrained brush hands has caused a great deterioration in the quality of the work, and a lowering of its standards, until now we find it very hard to attract ambitious boys and young men to the trade. Unless there is a great awakening among those directly interested and greater co-operation and support of some definite apprenticeship system by master painters and manufacturers of paint materials, we are bound to suffer the consequences.

Ever since the passing of the old apprenticeship system, little or no consideration has been given to providing a substitute, because in our rush for greater production, and the ease with which we obtained the foreign trained worker immigrating to our shores, caused us to forget and willfully neglect our own American youth, who were left to drift haphazardly into all sorts and kinds of blind-alley jobs that lead nowhere.

America is a great industrial nation and must in the future depend upon her own resources for supplying the necessary skill and efficiency. It can no longer rely upon the foreign trained product, as in the past, but it is our own American youth who must meet the new conditions, and right now is the time for us to adopt a system of training that will fit them for present emergencies, and for others that are bound to follow as additional demands are made upon us. This presents problems, the solution of which calls for the fullest co-operation of all trades.

It is generally recognized that in abandoning the training which was given by apprenticeship and falling in line with the trend towards specialization in modern industry our workmen became greatly handicapped. There is a vast difference between the mechanic trained in one operation and the craftsman who has been trained thoroughly for all operations. The industries still have need for workmen who are qualified to assume every part of the particular trade in which they are engaged, and this can be provided for only through a properly organized apprenticeship system, either in the shops or schools, where a trade is taught in its entirety and a definite standard of ability established.

We must meet the issue fairly and squarely and solve the problem through compulsory laws if need be, but let us put a stop to this vast waste that results from our present faulty system, which menaces the welfare of thousands of our youth and causes millions of dollars of loss to employers through the lack of efficient and properly trained workmen. Let us have trade schools that will not only extend vocational training, but also help in increasing civic efficiency.

The national government believes in this new and much needed form of education as very essential to the country in establishing standards of efficiency for all vocations. But you must bear in mind that no scheme of education is self-operating, and that your craft will not be represented in this broad and most liberal provision unless you personally take the initiative in your own locality and thereby show the necessity for training apprentices in your craft.

In conclusion, I would warn you of the great problems facing us, of the unrest among the laboring classes; of the dangerous propaganda and influence of agitators striving to obtain control of our labor element for personal gains. The demoralization of our laboring classes by this alien element

is far reaching, and its influence will be felt not only in our workshops but also in our homes.

We must have 100 per cent Americanism among our workers, and we must insist that in our system of education and training, and also in the utilization of our resources, we recognize and maintain a standard that will insure 100 per cent Americanism in our civic, social and industrial life.

Closing Business

Acting upon the suggestion of President Conrad, the date of the next convention was selected so as not to conflict with that of the Bridge and Building convention, and it will be held at Detroit, Mich., on October 5, 6 and 7, 1920. The annual election of officers resulted in the selection of the following officers for the coming year: President, H. F. Jones, master painter, Cleveland, Cincinnati, Chicago & St. Louis, Wabash, Ind.; first vice-president, H. B. Wilson, master painter, Bessemer & Lake Erie, Greenville, Pa.; second vice-president, Bert. E. Darrow, master painter, Atchison, Topeka & Santa Fe, Kansas City, Mo.; secretary-treasurer, and E. E. Martin, master painter, Union Pacific, Kansas City, Mo.

Operation of the New York Terminal District*

Export Freight Has More Than Doubled in Five Years, but Facilities Were Built Forty-five Years Ago

By J. J. Mantell
Terminal Manager, New York Terminal District

THE PORT of New York presents, I believe, the largest and most difficult freight handling problem in the world today. It has fifty miles of waterfront with berthing facilities for from 450 to 500 vessels; 90 per cent of these facilities are located on the Staten Island, Brooklyn and Manhattan shores, the remainder on the Jersey side. The percentage of piers equipped to handle freight direct from car to vessel is negligible. The carriers have provided accommodations at the rail-heads for 31 vessels; these piers, however, are principally used for storage and for the transfer of freight from storage and from cars to lighters and barges.

New York is essentially a lighterage port and differs materially from other large ports, both here and abroad, in that practically all of them have rail-head service more or less on the order of Boston, where direct deliveries are made from cars to steamships. Furthermore, within a radius of twenty miles of lower Manhattan reside one-tenth of the population of the entire country. When you consider the industrial needs of this population together with the large import and export tonnage handled, and the peculiar physical characteristics of the harbor, it will give some conception of the magnitude of the railroad facilities necessary and the expensive operation that must obtain to serve a community and a port of this kind.

Before attempting a description of the facilities including marine equipment and piers it might be well to give some data as to tonnage handled by the railroads. The total imports and exports of the United States for the fiscal year ending June 30, 1918, amounted to approximately 45,000,000 tons; 18,000,000 or 40 per cent was handled through the port of New York. As a comparison the Seattle district handled 5,400,000 tons, New Orleans 4,800,000, Philadelphia 3,000,000, Norfolk 2,800,000, Baltimore 2,250,000, San Francisco 2,300,000, Boston 2,200,000, Galveston 1,100,000 and Savannah 260,000 tons.

The daily average local handling is 6,000 cars. There are maintained for this purpose 95 freight stations with storage capacity for 4,000 carloads and team track facilities for 3,500 cars. Practically all of the stations in Manhattan and Brooklyn are what is known as "pier stations" served from car-floats. The movement to these latter stations via car-float is 2,000 cars daily and there originates at these same stations 1,400 carloads of outbound freight. Advantage is taken of cars made empty on car-floats for outbound loading and the surplus empties are returned across the harbor for forwarding. The direct rail station service on Manhattan and Brooklyn approximates 600 cars per day; the same traffic on the New Jersey side amounts to 800 cars per day and service to the industrial sidings in the territory amounts to 1,200 cars per day.

The fruit and vegetable traffic affords a very interesting study of the highly specialized character of one of the operations. There are 90,000 cars of fruits and vegetables handled to New York yearly and this movement is confined almost exclusively to two railroads, the Pennsylvania handling practically all the southern and the Erie the western business. The California fruit, arriving over the Erie, is not only delivered at its Duane Street pier station but is first unloaded and sorted, then displayed and auctioned on the premises, after which it is removed by the buyers. The southern movement over the Pennsylvania Railroad from the Virginia gateways is disposed of in like manner, except that the sale is conducted privately on the piers. Considering that this is a seasonal movement, some conception may be had of the demand made upon the railway facilities involved.

Of the export freight 90 per cent is handled at the Jersey shore terminals. With but very few of the steamships docking on the Jersey shore, it is necessary that practically all cargo be lightered to ship's side at steamship piers. To handle the lighterage business in the port the railroads maintain for ordinary freight 1,600 open and covered barges with a capacity of 12,000 carloads, 371 car-floats with a total capacity of 5,300 cars and a fleet of 134 tugboats for towing purposes. This is the fleet maintained under normal conditions but, of necessity, is augmented by charter when business is above normal. Export grain and tidewater coal is handled by special equipment, the export grain being handled by five elevators and one trestle, four of which have facilities for direct vessel loading. When steamers do not take full grain cargo it is handled to ship's side on special barges and there loaded by floating elevators. The carriers operate some 100 grain boats in this service. In the tidewater coal traffic there are 2,590 coal boats in use and during the past year 537,324 carloads of tidewater coal were received at the port of New York, aggregating 24,968,313 tons, of which 4,770,320 tons were destined and carried by water to New England points as far east as Boston, the latter figures being exclusive of that coal moved to this section on car-floats through New York harbor. The transfer of the fuel from car to boat is accomplished by 12 McMyler auto-

*Address before the New England Railroad Club, December 9, 1919.

matic dumpers having a ten-hour capacity of 250 cars each. There are also 13 old style coal trestles, the latter being maintained more as an emergency than for general daily use.

There are nine principal trunk lines serving the port of New York and with the exception of the New Haven, all maintain terminals on the New Jersey shore. The New York Central is the only line that enters Manhattan by rail; the freight movement via this route is confined practically to team track, industrial side track and inland station deliveries. Export as well as other domestic freight is routed over the West Shore road to the terminals at Weehawken on the New Jersey shore.

Between the Hudson river and the Palisades and Newark bay the carriers maintain tidewater yards through which the business for pier stations in Manhattan and Brooklyn as well as the interchange is handled over 50 float-bridges, some of these are electrically operated and capable of loading six floats per hour. In these yards there are maintained 70 covered and open docks for the accommodation of domestic and export lighterage freight. The covered docks have a storage capacity of 9,000 carloads of freight and storage has been developed on the ground in the various terminals for 20,000 carloads of rough freight. Local team tracks, freight stations and warehouse facilities are also maintained in these yards. The team tracks, local stations, lighterage piers and other warehouses are served from these yards, cars being regulated to the tidewater yards from the large classification yards which all railroads maintain on the west side of the Palisades and Newark bay, and which are connected to the tidewater yards through mile long tunnels, open cuts and bridges. The open docks are equipped with mechanical cranes, both electrically and steam operated, of the locomotive, Gantry, etc., type. In addition, the suburban passenger traffic of all lines but the New York Central, New Haven and Long Island discharges at stations in this highly congested territory.

West of the Palisades and Newark bay on the meadowland are located the general classification yards or break-up yards, which include receiving, hump or gravity classification and storage yards, some of which have a capacity as high as 7,000 cars. In addition to the purely rail operation, all the necessary facilities such as icing stations, car repair shops, transfer platforms and ground or open storage are provided. Here inbound trains are received and broken up, cars reclassified and held until such time as they can be accepted in the advance or tidewater tracks. The capacity of all yards in the New York district is 90,000 cars, the normal in and outbound daily movement is 25,000 cars. At times in the past year there have been as high as 65,000 cars held in this territory. The movement of the freight traffic requires 640 eight-hour switch engine shifts.

Handling Export Freight

It is noteworthy to mention some of the important features in the handling of export freight. The fluctuation in the number of available ocean bottoms, the uncertainties of scheduled arrivals causing congestion at the piers, and the necessity of proper time distribution of weight and measurement cargo for ship's side, require a highly specialized car and lighter handling. These factors coupled with the complicated requirements of the consular and customs departments of the different receiving countries, made necessary the institution of the ten day free time feature on export freight. To obviate the necessity for holding this cargo on wheels awaiting movement to vessels the railroads have provided the storage previously mentioned. This necessitates a second handling but increases the capacity of the port by that many cars and results in the saving of an inestimable number of car days. Single, double and triple deck piers, equipped with elevators and gravity conveyors, electric trucks, electric tractor trucks and trailers and various other mechanical devices are used in conjunction with this export lighterage operation. Local consignees also have the privilege of lighter service at any of the 114 equitably distributed public piers and bulkheads or at any place they may designate within the harbor. This is, of course, in addition to the deliveries made at the established freight stations.

Prior to and during the war the railroads developed berthing space alongside the various piers on the New Jersey shore to accommodate 31 vessels. The traffic intended for direct vessel loading was regulated from the interior in practically full cargo lots and was handled direct from car to steamer. There was as high as 104 steamers per month handled at these railroad piers with a resultant saving of barges, lighters, tugboats and expense. The tendency during the last few months has been against direct loading of this kind owing to the lack of teamways at certain piers to take care of a small amount of freight originating at New York City. This condition could no doubt be taken care of until such time as teamways were improved or provided by the lightering of the New York City freight to the Jersey shore piers; this freight would not amount to 10 or 15 per cent of the entire cargo.

Exports Doubled in Five Years

The export handling through the port of New York has doubled in the last five years. If New York is to retain its supremacy as the foremost port serious and immediate consideration must be given to its proper economic development, considering the port as a whole and not only that part which is under the jurisdiction of the city of New York and state of New York but, as well, the section on the Jersey shore. The pier development in New York is by no means modern, with the probable exception of the Chelsea district; practically all the piers from the Battery to this district were planned and built over 45 years ago, and with the exception of the extensions that have gone on from time to time these piers remain the same narrow piers as originally constructed, being from 60 to 95 feet wide. The slips are narrow and intended for the accommodation of the old type steamer. With two modern steamships in a berth there is little room for the accommodation of freight barges, and in many instances when steamers are taking bunker coal, with other barges alongside loading and unloading, it is impossible to shift out empty barges from the forward hatches. Railroad equipment is seriously delayed and it takes practically twice as long to turn over marine equipment today in comparison with the operation five years ago, with a resultant increase in expense to the carriers. The city must also give serious consideration to the fact that the ever increasing population increases the traffic that must be handled by the carriers, and that practically all of the railroad stations serving the city are pier stations municipally owned and are now being used to the utmost of their capacity. While many plans have been prepared by the different city administrations nothing definite has been worked out, nor has any start been made. There have been many plans for marginal railroads, interior freight stations and warehouses; most of them looked good from an engineering viewpoint but lacked the essentials of practical operation, did not comprehend the volume of business to be handled and made no provision for the future. To handle the present domestic business now handled by car-float and lighter to pier stations and to care for prospective increases in the business for the next 15 to 20 years would require several batteries of floatbridges taking up a considerable portion of the space available through the release of pier stations, and would tremendously increase the expense incidntal to the operation of an underground marginal railroad with its heavy overhead and heavy direct operating expenses, in addition to the switching expense necessary to serve the floatbridges, inland freight stations, team tracks, etc.

It is a question in my mind whether you or I will see the

day when the railroads can get away from the pier stations in New York, but it is certain most of them will be forced to make increasing deliveries of New York City freight at team tracks and stations on the Jersey shore. In fact, during the peak periods it is now necessary that some volume of the New York City business be handled on the Jersey shore. A vehicular tunnel has been planned by the States of New York and New Jersey to connect Manhattan Island and Jersey City, with the New York end to be located at Canal street and the Jersey City end at 12th street. The traffic which is now trucked via ferry will no doubt be diverted to the tunnel, but the full benefits of the proposed tunnel will not be felt until the railroads have money available for the further development of their Jersey shore properties. They will require additional freight stations, team tracks, warehouses, etc. The territory in Manhattan to be served by the tunnel is somewhat limited; I have in mind the large stretch of territory from the Battery to the Bronx, and in this connection the Brooklyn and Long Island situation. Further, the heavy interchange of cars between the New Jersey and New England roads should be via tunnel connecting Greenville and Bay Ridge under New York Bay. A tunnel of this kind would cost approximately thirty million dollars.

Heavy Cost of Terminal Handling

To emphasize the expensive operation at this port I might say that on many of the commodities handled the cost of the terminal handling from receipt of car at the outside classification yard to delivery in New York equals the operating cost of hauling cars from Buffalo to Pittsburgh to the terminal. This situation can be corrected by the development of facilities along the lines of economic handling with the co-operation of the States interested, the Federal Government and the railroads. The solution, I believe, is the development of two large clearing yards in New Jersey, one to the south and one to the north, to take the place of present individual classification yards. It would be necessary to have two clearing yards as one yard sufficiently large to accommodate the business of the port would be unwieldy in its handling. These yards could be connected by a belt line railroad; floatbridges could be centralized and the water front developed to provide multiple story steamship piers along the New Jersey shore from Greenville to Weehawken, a distance of approximately nine miles, the upper floors to be used for storage and the lower floor equipped with teamways and tracks for the handling of freight direct from car to steamer. Piers should be developed to suit the needs of the individual interests and so constructed as to provide for the handling of weight and measurement cargo at the same pier. Outside open tracks should be provided, where necessary and piers equipped with overhead cranes and various other mechanical devices, detailed description of which would take up too much time.

What is true of conditions in New York, in respect to modern facilities and mechanical devices, modern piers and adequate slip room between piers is also true of practically all the other ports in this country. We Americans have the inventive genius but we do not seem to apply it at home. New York and other American ports cannot be compared with some of the ports abroad, particularly Hamburg. The import and export freight of the United States is increasing in volume from year to year; the increase is more pronounced at the North Atlantic ports and there is at present some competition among the various ports for the handling of this business. To my mind the port that will get the greatest volume is the one that will economically handle freight, both from a railroad and a steamship standpoint in the way of effecting rail head deliveries and in the quicker turnover of steamships. The economy in handling can only be brought about by modernization. There is very keen competition in the steamship business and I have no doubt that steamers will naturally flow to that port where a quicker turnover of steamships will make it possible for steamship companies to increase the number of round trips made by their vessels during the year.

The Erie Commended

The Erie can be commended for its farsightedness in the planning and erecting, prior to the war, of a modern pier 1000 feet long, 100 ft. wide, at their freight terminals at Weehawken, N. J. On this pier are five railroad tracks and it is equipped with four electric traveling portal Gantry cranes which have a capacity of ten and twenty tons. These cranes operate overhead and the switching operations are carried on independent of crane operation. Ocean freighters are brought direct to this pier for loading direct from car to boat using the mechanical facilities of the pier in loading. This is a radical departure in cargo handling and the most modern unit in the harbor. The time consumed in loading ships with these facilities is about one-half of that consumed under the old method of unloading from cars to lighters and towing lighters alongside of vessels and arranging for special derricks to handle heavy commodities such as locomotive boilers, car parts, etc. The expense of direct handling from the pier is considerably less and there is twice as much freight handled than under the old method. This facility is fully described in the April 18, 1919, issue of the *Railway Age*.

I would like to degress for a moment to touch in a brief way upon some modern facilities at Norfolk, Va., and Seattle, Wash. The coal piers located at Norfolk and maintained by the Virginian, Norfolk & Western, and Chesapeake & Ohio R. R., are, I believe, the most modern to be found anywhere. When I visited that port not long since I was greatly impressed with the operation; the ease and facility with which the handling was performed brought forcibly to my mind the necessity for immediate modernization of all large freight handling ports. Steamers are turned over at these piers twice as quickly as is possible at New York and the expense of the operation is considerably less than at ports with less modern facilities.

The city of Seattle has given serious consideration to modern pier facilities. They have already made a good start in the construction of a modern pier, municipally owned; one-half of this pier is open and is equipped with stiff leg derricks and Gantry cranes. The open section of pier is on the land end and the steamship berths at that end to take on its weight cargo, moving backwards to the river end of the pier, which is covered and equipped for the handling of measurement cargo.

Speaking of pier development, New York has practically stood still for several years and with the exception of the development in the Chelsea district, which was more or less on the old order of pier construction, no recent improvements have been made. The city of New York has many plans and many others are being prepared for the development of Staten Island, where only a limited amount of freight can be delivered at rail heads. There are other plans for the development of Jamaica bay which contemplate the use of it as a distributing center for Brooklyn, Manhattan and the Bronx. Staten Island is approximately six miles from the center of lighterage activity and Jamaica Bay is approximately seventeen miles from the consuming and forwarding center of the city. You can readily appreciate that such a scheme is impractical. Any development along these lines should consider only the needs of the territory within a radius of six or seven miles. Manhattan, as well as the large New Jersey district, which is fast developing, should be taken care of by the modernization of the New Jersey shore front somewhat on the order heretofore outlined. Of course any development on such a large scale as that pro-

posed could not be undertaken by the railroads alone; to carry out a project of this kind it would require considerable financial assistance from the two states and the Federal Government. When you consider that a development along modern lines would undoubtedly reduce by 50 per cent the lighterage that is now perfromed and, proportionately, other terminal costs and would place the port on an economic basis to compete with the other American ports, it is very evident that some comprehensive development must be made if New York is to retain its present supremacy as the foremost American port. These are the questions engaging our attention at the present time and they will be before us more than ever in the future.

A Word About Passenger Travel

My talk would not be complete without mentioning the enormous passenger travel in and out of the city; there are approximately 522,000 passengers handled in and out of the various passenger stations each working day or very nearly the population of the city of Boston. The flexibility of the terminal organizations will be appreciated when it is considered that for the war period, prior to November 11, 1918, in addition to the normal volume of business, 80 per cent of the total movement or 1,650,679 troops were moved through the port of New York to points overseas.

The following table will give an idea of the passenger movement as between the railroads and the different passenger stations:

NUMBER OF PASSENGER TRAINS AND PASENGERS IN AND OUT OF NEW YORK FOR ONE MONTH

Station	Railroads	Number of trains: Inbound	Number of trains: Outbound	Number of passengers: Inbound	Number of passengers: Outbound
Grand Central Station, N. Y.	N. Y. C. and N. Y. N. H. & H.	5,648	6,101	1,384,376	1,443,336
Pennsylvania Station, N. Y.	Long Island	3,592	3,432	756,098	754,982
	PER L.V. & B.&O.	5,593	5,640	403,444	403,444
		9,185	9,072	1,159,542	1,158,426
Flatbush Ave., Brooklyn	Long Island	3,964	3,920	1,069,280	1,048,027
Jersey City	Erie	3,724	3,713	1,050,000	1,050,000
Jersey City	C. R. R. of N. J.	3,814	3,684	821,272	836,668
Hoboken	D. L. & W.	2,874	2,955	875,195	900,359
St. George, Staten Island	S. I. R. T.	4,494	4,494	382,566	382,566
Jersey City	P. R. R.	2,172	2,230	309,680	330,460
Weehawken	West Shore	851	843	290,102	272,244
Total		36,726	37,012	7,342,013	7,427,066

Percentage of Trains on Time in September

DURING SEPTEMBER an even higher percentage of passenger trains made on-time runs than in August, according to a statement issued by the Railroad Administration, although the results in August were adversely affected by various unauthorized strikes of shopmen. Figures compiled by the Operating Statistics Section show for the month for all regions that an average of 84.3 per cent of the passenger trains arrived at their terminals on time, compared with 83 per cent in August. Including trains leaving initial terminals late because of delay to connections, 88.1 per cent made their runs in schedule time or better, compared with 87.3 per cent in August.

In the Southern region, comprising 33 roads, on which 48,905 passenger trains were operated in September, 43,216, or 88.4 per cent, arrived on schedule time, while 44,940, or 91.9 per cent, made their runs in schedule time or better.

The following compilation, covering all regions, embraces the Class 1 roads under federal control. Suburban trains are not included:

Region	Month	Number of roads	Total trains operated	Trains which arrived on schedule time: Number	Trains which arrived on schedule time: Per ct. of total trains	Trains which arrived on schedule time or which, if late, made run in schedule time or less: Number	Trains which arrived on schedule time or which, if late, made run in schedule time or less: Per ct. of total trains
Eastern	September.	43	95,972	80,985	84.4	83,598	87.1
	August ...	43	98,081	82,071	83.7	85,989	87.7
Allegheny	September.	15	77,523	68,745	88.7	70,700	91.2
	August ...	15	86,261	76,756	88.1	72,912	90.8
Pocahontas	September.	3	7,648	6,460	84.5	6,920	90.5
	August ...	3	3,970	2,949	74.3	3,073	77.4
Southern	September.	33	48,905	43,216	88.4	44,940	91.9
	August ...	33	49,683	42,224	85.0	44,668	89.9
Northwestern	September.	15	25,372	20,431	80.5	21,399	84.3
	August ...	15	25,960	19,939	76.8	21,064	81.1
Central Western	September.	24	42,312	32,412	76.6	35,485	83.9
	August ...	24	42,474	32,390	76.3	35,272	83.0
Southwestern	September.	23	20,010	15,459	77.3	16,792	83.9
	August ...	23	20,289	15,855	78.1	16,992	83.8
Average for all regions	September.	156	317,742	267,708	84.3	279,834	88.1
	August ...	156	320,718	266,184	83.0	279,970	87.3

In the foregoing trains arriving at final terminal 10 minutes late or less are considered on time. When considering time of departure, delays at initial terminal chargeable to causes other than waiting for connections are considered as part of running time. Delays at intermediate points waiting for connections are considered as part of running time.

The Broken Hill Steel Works at Newcastle, New South Wales, Australia

The Relation of Standardization to Progress

President of the Railway Business Association Presents Concrete Illustration to Congress

DURING THE HEARINGS before the House Committee on Interstate and Foreign Commerce, a number of manufacturers of railway equipment presented voluntary statements as to certain phases of the question of the disposition of the railroads at the expiration of federal operation. During their appearance before the committee these men were practically all asked for their opinions relative to standardization of railway equipment. In response to these questions the following letter was addressed to Representative Esch, chairman of the committee, by Alba B. Johnson, president of the Railway Business Association. The letter, which presents a concrete illustration of the part competition and initiative have played in the rapid development and improvement of railway facilities, is as follows:

Manufacturers of railway equipment upon concluding voluntary statements before your committee were asked by you their opinion regarding standardization. They replied that they favored interchangeability of car or locomotive parts through standardization of dimensions, but regarded it as essential to progress that there be variety of design and competition among inventors and developers of appliances.

Competition Essential to Progress

It is due to you and to ourselves that a fuller explanation of our view and of the reasons underlying it should be made. By conference and correspondence we have obtained the knowledge and judgment of members of our association and others. In the subjoined statement we endeavor to demonstrate that competition is essential to progress in service and in economy, that voluntary standardization by the railways acting collectively has long afforded and can continue to afford all desirable interchangeability, and that diversity of design is the indispensable condition for exertions by inventors and by developers of appliances. As bearing upon diversity of design, a description is given of a typical competitive appliance, the brake beam rigging. Authorities quoted in the statement are connected with the several concerns which make such rigging, and speak in response to our request.

As a factor in progress what is at stake is competition. If Congress adopts the principles set forth in Section 9 of the Cummins Bill (S. 2906), which deals with consolidations, the 20 to 35 ultimate systems will be so formed that 'competition shall be preserved as fully as possible.' The government determines rates, in which competition has therefore largely ceased. What remains is competition in service and economy.

Such competition in the past has been maintained between railways and between makers of devices. The makers' occupational motive for maintaining competition in both directions is self-preservation; but the public has a vital interest in the preservation of these manufacturing enterprises and in the continuance of competing railway systems, since upon such enterprises and such railway competition depends quality and cheapness of transportation performance.

From economical operation, the public benefits through larger railway income, stronger railway credit, more vigorous improvements of and additions to facilities and through a tendency to keep down rates.

Standardization means the elimination of competition.

Insofar as standardization is desirable for the sake of practical stability and convenience of repairs, the railroads themselves, with the co-operation of the manufacturers, have in the natural course of business adopted and employed it. A standard specification in vogue on American railways is not the edict of a potentate or board of potentates. It comes up from below. It must make its way into general approval before it can have the force of a regulation which the minority will observe. So far as the manufacturer goes, the matter of applicability, of usability, which is the same thing as interchangeability, is out of his hands without action of government.

For several decades the Master Car Builders' Association and the Railway Master Mechanics' Association (locomotive), scientific institutes of railway officers, have annually added to the appliances whose dimensions and requirements for performance are specified. These the American Railway Association, as it existed prior to government control, recommended to all the roads. Generally, they were put into effect as soon as announced.

The need of standardization of locomotives is almost wholly imaginary. A locomotive rarely leaves the road owning it or even the division for which it was built; hence in time of peace and almost entirely in time of war all locomotive repairs are made at home.

As to cars, interchangeability has been made universal in the United States. Accompanying this statement we present to your committee copies of two dictionaries issued annually by the Simmons-Boardman Publishing Company, publishers of the *Railway Age,* one dealing with locomotive appliances, the other with car appliances. The latter part of each book contains the standards referred to, with pictures and drawings. From these books your committee can derive a conception of the extent to which the railroads when occasion required have standardized voluntarily.

Fundamentals of Railroad Economy

To grasp the significance of the burden which a developing mechanical practice sustains in transportation progress, it is necessary to bear in the mind the fundamental of railroad economy.

In freight, the problem is the number of tons that can be hauled by one locomotive with one crew—in a word, the train-load. Possibly the largest single factor in the notable prosperity of such a road as the Union Pacific has been the success of the management in attaining heavy train-loading. It was in pursuit of this economy that the late Mr. Harriman gave his days to experiment and devoted hundreds of millions to capital improvements. For augmentation of train-load, railroads in all parts of the country which had been permitted to accumulate the investment basis have poured out expenditures. They have built larger and stronger cars. They have constructed more powerful engines to haul the larger cars and more of these cars to the train. They have provided heavier roadway, rails, and bridges to sustain the enormously more ponderous train and cargo.

These expenditures, by reducing the cost of drawing freight per ton per mile, not only paid for themselves, but so far offset the rising cost in wages and material as to postpone for years before 1910 the necessity for asking that freight rates be raised. The train-load as a foundation basis of railroading explains the despair of managers when employees proposed extra men in crews and a limit on length of trains.

Passenger trains have been made heavier also. More

persons are carried to the car. Steel has taken the place of wood for safety. Speed has been increased for convenience.

Development of Air Brake

To all this development there has been at every stage and in every phase a mechanical limit. For instance, the movement of the train must be controlled. The engineer must be able to slow down or stop in any emergency. That is to say, railways can progress in economy of operation no faster than the development of the brake. The air brake of the 60's replacing for more exacting uses the hand brake, achieved a stupendous advance; but stopping the toy trains of that era was to the stopping of the 100-car train of 125-ton loaded cars of today what the air brake of 1870 was to the air brake of 1919. Progress in the trainload and in the brake has gone hand in hand.

Even in the years when because of patent protection there was only one maker of air brakes, competition was an ever-present influence. First there was the competition between railways. The most progressive-minded of the managers were perpetually engaged in rivalry for cheaper operation. If practice had been standardized for all lines no departure could have been undertaken on any of them until the whole national system, perhaps a central omnipotent board, could be persuaded. Cars of a certain capacity would have been obligatory until all news cars for all lines contracted for after a specified date might be built larger. Territorial and topographical contrasts in conditions confronting the several lines might imperfectly and tardily be met. The working of this tendency in practice can be observed in the government standard cars allocated to some roads which had long since adopted larger capacity as best suited to their special problems.

Second there was the potential competition of makers who might bring out competing brakes sufficiently original to convince the patent office. A rival actually established itself, though it now in part covers its patent situation by a license arrangement. What kept one concern so long alone in the field was that it diligently developed improvements —in short, it acted as it would have had to act if competition had been actual instead of merely potential. A vivid form of potential competition was that of makers ready to enter the field the moment patent rights expired. To maintain its commercial position the single maker long before each such expiration abandoned the air brake of yesterday and substituted a new device, protected in turn by new patents. The public was benefited because the essential advantage which induced progressive railways to try and use the newer appliance was the net saving in cost of operation through enlargement of the trainload.

A significant feature of the standard vehicles built by the United States Railroad Administration was the effort, in some cases successful, to use an appliance upon which patent rights had run out and thus to exclude from the bidding more recent inventions still protected. From the point of view of the public this is penny wise and pound foolish. It attains a little immediate cheapness. In doing so it exterminates by starvation the breed of inventors whose work is to promote not alone little economies but great ones.

Brake Beam Standardization

An illustration more typical than the air brake is its adjunct, the brake beam. In what follows it has been thought convenient to employ for concrete illustration one appliance rather than several. For this purpose the deveice selected is the brake beam. This appliance is attached both to locomotives and to cars. Rigid standardization of its dimensions and of its strength is necessary and is enforced. From six to a dozen types are in use, while unsolved problems with regard to it are today the object of study and experiment. A somewhat full description of this rigging will facilitate an understanding of subsequent references.

The air brake can develop no faster than the beam. For between the air cylinder, whose piston is operated by pressure initiated in the locomotive cab, and the metal shoe which in action is forced against the wheel, there is a mechanism which directly applies the power to the shoe. A failure of that mechanism puts the brake out of commission. The cylinder piston operates a rod located under the vehicle midway laterally, and by a system of levers moves the two, three or four trussed brake beam structures toward the pairs of wheels which they are to brake. The performance which is expected of the beam rigging is this: that it receive the cylinder power; that it move so that simultaneously the shoe, which is fastened to it, will be pressed against the wheel; and that it stand the strain.

It is in standing the strain—that is, the dependability and durability—that progress has been made and is still promised in the brake beam. If a manufacturer claims superiority for his type it is to those qualities that he refers.

The Master Car Builders' standards tell him how many inches the beam must measure from tip to tip and throughout its external outline in order to fit the various cars. They prescribe the height at which the beam must hang above the rail. They require specified dimensions and locations for certain parts of trussed structures. Consequently when a car off the rails of the owning road is found with a damaged brake beam and the road on whose rails it is sojourning is addicted to a beam of another type, the defective beam can be replaced by one carried in stock by the road which does the repairing.

The argument in favor of standardization is that while interchangeability of beams as a whole is maintained with variety of detail, each several part of the beam structure cannot be replaced by a part from another type of beam, but the whole beam must be substituted. Another view prevails. This is that serviceable and safe brake beam repairs are only made when the parts of the beam structure have been put together under the same tests and conditions as surround the manufacture, inspection and acceptance of new beams; whereas such conditions are not and cannot be presented on yard repair tracks. The discarded beam is not wasted. It is sebsequently carried to a place where under rigid conditions qualified mechanics restore it; and it takes its course of standard inspection like a new beam before it can again be placed on a vehicle.

In their requirements the Master Car Builders' Association includes loads that beams shall successfully carry; but the means by which the maker shall impart the specified power of resistance to the beam and its parts is within his own province. That is, the field in which progress lies.

The original brake beam was wooden. As trainloads began to enlarge it was seen that a wooden beam strong enough for the new conditions would be a monstrosity in size. C. F. Huntoon writes that "the best design of truss metal beam 15 years ago weighing approximately 63 lb., carried a load of 6,500 lb. at 1/16-in. deflection, this deflection being the maximum allowed by the M.C.B. Association, while today a beam of 77 lb. weight, or 20 per cent increase, will carry a load of 15,000 lb. at 1/16-in. deflection, an increase of over 125 per cent in strength and efficiency." Mr. Huntoon attributes such progress "to specialists who have directed their efforts to some one device or detail—each vying with the other to produce an article of superior merit" and he says, "without this competition and the protection afforded by letters patent, there would be no fast schedule trains and boats, no telephones on the desk or automobiles for convenience or pleasure; in fact, the industrial progress of this country has been stimulated by and is largely due to these very factors."

The advance proceeded through various forms in metal. At first light metal beams met the situation, beginning with

a trussed structure of pipe. Further increase in train weights led from year to year to development of more adequate trussed brake beam structures by various manufacturers, differing in the various parts, most notably in the "beam" or "compression" part proper—for example, the "U," the solid bar, the "channel," the angle, the "T" and so on. Each of these types taken in cross section has a distinctive value within itself and within its relation to other parts of the brake beam structure. Each of them represents the means by which inventive genius competes for superiority in meeting conditions as they evolve. Tests of these types and features are continually going on.

There have been strong and eminent advocates of a standard beam. The railway men as a whole have prefered to leave the opportunity open for continued improvement. Since the proposal for a standard beam was made seriously in 1910 substantial improvement has been made.

A. H. Peycke writes: "The brake beam manufacturers have conferred with the Brake Shoe and Brake Beam Committee this last year with a view to straightening out a good many points in relation to interchange dimensions, clearance conditions, etc., and cites a report delivered before the M.C.B. convention in Atlantic City in 1919 by B. B. Milner, of the New York Central, suggesting changes which are necessary; also giving a complete synopsis of the brake beam situation since about 1905. Mr. Peycke's opinion is that "The standardization of brake beams would be decidedly disadvantageous to the railroads and people of the country, and any attempt to adopt a standard beam would suppress initiative, invention, genius and progress."

Albert Waycott observes: "Seven or eight different types of brake beams, all interchangeable on equipment in service and all meeting the M.C.B. tests, will surely illustrate how both improvement and competition might easily have been greatly reduced had any one type been insisted upon."

The manifest need today, according to C. Haines Williams, "is a more strict enforcement of existing M.C.B. rules and more rigid application of test and manufacturing requirements. * * * No single design of beam has advantages sufficient to compensate for the penalty of having brake beams stand still for years. * * * The initiative and unhampered genius that produced the brake beam and brake transmission rigging that has always satisfactorily controlled our high speed trains cannot with safety be destroyed. * * * The success of past practice guarantees proper care of future problems if not interfered with by standardization, which would unquestionably develop indifference on the part of the interested brake beam manufacturers of today. All the present M.C.B. rules, specifications, requirements and safeguards have come, without exception, from the recommendations and practices of brake beam manufacturers."

Whatever may be the future of voluntary standardization, it is our conviction that the best interest of the public lies in leaving the railways free without any government participation in the process.

Centralized Buying

An important consideration cognate to this view in every line of railway requirements is that of centralized buying. Standardization would, we fear, do more than put a stop to the maintenance of vigorous departments of the manufacturing establishments for the testing and development of new devices and features. Not only would all the companies be reduced, so to speak, to automata filling orders to specifications, but there would be the further tendency to concentration of purchasing in some central bureau. Its responsible heads would probably not get and keep personal knowledge of the reliability and resources of individual makers. Bidding would tend to be controlled more and more by the element of price, and less and less by the element of quality and durability. The bureau would tend to leave in the hands of subordinates the designation of those makers permitted to bid. Inevitably this would degenerate into a stereotyped process bereft of commercial enterprise and intelligence on both sides of the counter.

What demands the future will make who can phophecy? Charles J. Graham remarks: "Had the thought of standardization of parts been put into effect some years ago, we would still be using wooden brake beams. * * * The same is true today. There remains ample field for further improvements if they are not stifled by the fixing of standard details for parts."

We are told that locomotives and cars have reached nearly if not quite their maximum capacity; that they already crowd the overhead clearance of bridges and tunnels; that to widen the traffic gage would involve expenditures of appalling magnitude not only in acquirements of wider rights of way but in shifting and relaying existing tracks while traffic was carried on; that to lengthen the vehicles would involve us in costly track problems and complications involving station platforms and the like.

Such pessimism is a counsel of sloth. For freight transportation at least higher actual speeds may be a possibility contained in the now rapid elimination of grade crossings. To what extent will this and other tendencies toward fuller use of cars affect the stresses placed upon every part of the rolling stock? Is it certain that electric propulsion will bring no new conditions in this respect, or that fuel or other source of motive energy in the future is even yet identified? Who can affirm that the controlling factor in transportation development is yet dreamed of in our physics and chemistry or other branch of scientific pioneering?

The manufacturer has always anticipated each new demand. When it came he was ready for it. He can exist and perform that function only if experimentation is free on the several railway systems and if achievements for the welfare of mankind promise reward to the inventor of appliances and profit to the developer.

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The Anhalter Bahnhof in Berlin as Seen from the Passenger Dirigible, Bodensee

Operating Locomotive Boilers Using Treated Water

Instruction of Enginemen in the Use of the Blow-Off Cock Essential to Secure Best Results

By F. W. Dunning

TREATING WATER for locomotive boilers has received much attention for years. Today it is attracting still more consideration and those informed on the subject agree as to the benefits derived. It would not be feasible here to go into the merits of every method now used; suffice it to say that the majority of the roads have decided on the use of soda ash, or soda ash and lime together, as the most economical means for treating the average boiler water. The following discussion, therefore, deals chiefly with water treated in this manner.

The process of water treatment must be divided into two equally important phases; first, the actual mechanical features involved in introducing the chemical into the water; second, the handling of the water in the locomotive boiler, after treatment has been received. Both of these divisions need careful attention and close supervision. One of the greatest errors that can be made in water treatment is neglect of the latter feature. Very often the handling of the water in the locomotive boiler is entirely ignored, and due to this oversight the treatment is doomed to failure. Improper handling of the treated water can cause as much damage as the raw or untreated water.

The substances contained in the water in solution cause such trouble as scaling, pitting and foaming. It is utterly impossible to overcome these troubles by simply placing certain chemicals in the water, unless attention is given to other details. Some of these substances can be removed and the chemical form of others can be changed, but not all the troublesome matter can be removed. Therefore it is necessary to call on the engineman to help out, particularly where soda ash is used.

Interesting Enginemen in Water Treatment

The engineman cannot assist in securing the best results from the treatment unless he has the necessary information, and while this is not simple, yet it is fairly easy to assimilate. Whether the instructions are given by bulletin or by talks collectively or individually does not matter parcticularly, although it is necessary to use all these methods to a greater or lesser extent. The point is, the engineman must know how to handle the boiler when using treated water. Few men will continue to carry out mere instructions unless they have reason to believe they are accomplishing some useful result. Therefore the objects and purposes of the water treatment should be fully explained.

One good method for educating the enginemen is as follows: Some capable person should be placed in charge of the educational work, local conditions determining how much time must be allotted to this subject. First, a list of all enginemen and firemen in the territory under consideration should be procured, and preferably by personal observation these men should be graded as to their knowledge, ability and performance in handling the locomotive boiler. The men at the bottom of the list can be given special attention and instruction. It is then a simple matter quickly to remedy boiler troubles insofar as man failures are concerned.

Causes of Foaming and Priming

All the trouble resultant from water treatment is caused by the foaming or priming of the water. Generally, foaming can be attributed to the following substances contained in the water: animal or vegetable matter, mud or sediment, and alkali salts. It is not necessary to consider the first cause as this is not a result of treatment, and should be avoided by changing the source of supply, or removing the substances before passing the water to the engine tank. Alkali salts and sediment such as sludge are a result of soda ash treatment, although these substances frequently occur from natural causes. Soda ash, when introduced into the water, attacks the sulphate of lime, changing it into carbonate of lime and sulphate of soda. Only a small portion of the carbonate of lime is precipitated before the water reaches the boiler; the remainder causes the white sludge present in the boiler. The sulphate of soda is an alkaline salt and remains in solution. As water is continually being evaporated the sulphate of soda continues to increase in quantity since it does not pass off with the steam.

When the boiler is allowed to remain quiet, the mud or sludge has a tendency to settle and work back toward the firebox. Thus it will be found that the suspended matter is much more heavily concentrated at the blow-off valve than it is at the water glass. The distribution of the alkaline salts, which are in solution, is practically uniform throughout the boiler. To reduce the mud, it must be allowed to settle and then be removed by opening the blow-off valve. To reduce the alkaline salts, part of the water must be blown out and replaced with water containing less alkaline salts. This does not require separate blowing for each case.

Reducing Concentration in Boilers

For instance, assume the alkaline salts have reached a concentration of 200 parts per hundred thousand. The concentration is not reduced by simply removing part of the water. The alkaline salts are uniformly distributed and the water remaining in the boiler has the same amount in solution as the water blown out. It is necessary to open the injector and replace the water blown out. If the tank water has only 20 parts of alkaline salts and 10 per cent of the contents of the boiler is added as fresh water from the tank, the result is the boiler water will now show 182 parts of alkaline salts per 100,000 parts of water. It is apparent then that the reduction of the alkaline salts can only be accomplished by blowing out and replacing with water of a lower concentration.

As water is continuously being evaporated, and the amount of mud and alkaline salts continuously increased in the boiler, it is necessaray to remove these substances before they get to a troublesome point. This means the boiler must be blown out at equal time intervals during a run. These intervals and the amount to remove must be determined by the quality of the water. Heavy treatment will entail heavy blowing and light treatment a lesser amount of blowing.

Use of the Blow-Off Cock

The proper time for blowing out is four or five minutes after both the throttle and injector have been shut off. This allows violent circulation to stop and the sludge to settle where the blow-off valve can remove it. It is well not to remove more than six inches of water as measured in the water glass at one time, because an undue amount of cold

water has a bad effect on the flues and firebox sheets and may cause leaking. The blow-off should never be opened while the injector is working (except in emergency) as this brings the cooling effect on the firebox sheets to the extreme limit, and also allows a great deal of fresh water to pass out.

Definite directions for blowing out cannot be given without investigating thoroughly the quality of the water in use in the territory in question, or running several tests to determine the proper amount of blowing that is necessary. Foaming trouble can be materially lessened by carrying the water low in the boiler. Arrangements should always be made at terminals to have the hostler give the boiler a certain amount of blowing out, thus lessening the amount of blowing which must be done on the road.

The whole question of taking care of the boiler using treated water resolves itself into a matter of the proper way and proper time to do the blowing out. The proper way is explained above. The proper time must be determined by conditions and should be extended to three or four periods, occurring at about equal intervals during a run. All the blowing out should never be attempted at one time, neither at the beginning, middle, or end of the trip, as satisfactory results will not be obtained in this manner. When the proper amount and time for blowing off have been determined, this schedule should be strictly adhered to.

The La Crosse division of the Chicago, Burlington & Quincy has averaged about 2,000 miles per boiler per washout. This means about one washout per month for each boiler. This division uses soda ash treatment at all of its water stations. Other divisions will approximate this performance when the blowing out proposition is given sufficient attention.

Analyzing Samples from Boilers

At the various terminals or sub-division points on those divisions of the Chicago, Burlington & Quincy system where treatement is used, samples of water are collected at least once a month from locomotive boilers. These samples are analyzed and reports sent to the master mechanics in charge of the territorty affected. Explanations accompanying each report state whether the treatment is correct or not, and also call attention to the amount of blowing out, as determined by the total dissolved solids or alkaline salts in the water. It then devolves largely on the master mechanic to take such corrective measures as are necessary to insure the proper blowing out. The treatment itself is maintained correct by frequent inspections and analyses at the various treating plants, and these boiler samples serve also as an additional check on the various waters last used by the locomotive.

Thousands of dollars have been saved in locomotive repairs, flue failures, washing out, and in coal consumed, through the medium of treated water. Thousands of dollars have been wasted on water treatment because enginemen were not informed about their part of this work, and the project in many instances has been given up.

Results Secured by Co-operation

Many cases have come to my attention where one engineman on a certain division would have no trouble with treated water, while the next man would continually have difficulty. The first man had made it a point to inform himself on the subject, while the other had made no effort to get the all-important information. One particularly striking case occurred with two passenger enginemen on the same run. The first man had a "regular" engine on a hard local run. Conditions were excellent on this run for foaming trouble, as every water station on the division furnished water treated with soda ash. However, this engineman had no trouble and repeatedly offered to run his engine 30 or even 60 days to a washout. As a matter of fact, the boiler was washed out every 15 days. One day the regular engineer "layed off" sick, and his run was taken by a second man, who was also a regular passenger engineman. There was no end of foaming trouble while he was on the run. The boiler must be washed out after each trip. This man was of the type who did not take kindly to the information at his disposal. His attitude was, "I have run engines thirty years ago, before we ever heard of water treatment, and I can see no advantage at this late date in using soda ash. It is all rot." When the other engineer came back on the job there was no further trouble. The engineman who would not assist in getting the best results from treated water did not bother to learn that the life of this same locomotive boiler had been increased over 100 per cent between shoppings for boiler repairs since the water treatment was introduced.

The same point is illustrated in connection with the introduction of water treatment on two railroad divisions; the first division had its entire force of enginemen lined up in about four months from the time it was introduced, and the locomotive performance was remarkable as compared to the previous period. In this case the two traveling engineers made a special point of instructing these men on handling the boiler. The second division, after ten months, was still having trouble. In the latter case the traveling engineers made no special attempt to educate the men on the proper handling of the locomotive boilers. The results in each case illustrate my point.

It cannot be emphasized too strongly that where water treatment is contemplated, the handling of the locomotive boiler must be given full and proper attention. By neglecting this phase of the subject, water treatment can be made an entire failure where otherwise it would effect a big saving.

Why the Railroads Should Be Returned

A. H. Smith, formerly regional director under the Railroad administration, who recently resigned to return to the presidency of the New York Central, has outlined his views regarding the railways in a letter to Senator Calder of New York, in which he says:

When I resigned as regional director of the United States Railroad Administration certain newspapers asked for a statement of my impressions of government operation of the railroads and my views of the railroad problem generally. I have refrained from issuing such a statement, believing that it would be best to convey any ideas that I have on the subject to you and the other gentlemen who are working on the problem. Therefore, if your mind is still open with reference to the solution of the railroad situation, perhaps what I have to say may be acceptable to you.

The human element in American railroads represents 90 per cent of its effectiveness. The other small percentage of the whole would be useless without individual vision, effort and experience. Fixed responsibility really has seemed to be impossible under government management. It leads into such a maze of interests and interferences that the employees do not get into that state of mind that they do in private operation, and the state of mind is one of the most important parts of railroad operation. Destroy it and the effect is manifest all through the rank and file and every part of the great machine.

I know that you realize fully that it is a business that must have the individual concern of the employee—the engineer at the throttle, the fireman beside him, the conductor, the flagman, the signalman, the section foreman, and on up to the officers of the company—they all must have a

fixed responsibility. Most of the work is done beyond the eye of the officers, because it spreads over a vast territory. The man at midnight and in the storm must do his duty absolutely and fully, with no one to see him and no one to direct him. He must have an incentive—not one of mere salary, but one of pride and hope that he may some time be more than he is.

It has been stated, and so far as I know never disputed, that before the war the American railroads for each dollar paid them rendered considerably greater and substantially better service than the railways of England, France or Germany. The European railways, however, do not in any degree compare with the American railways in extent. They are short railways for the most part, with dense populations, while the American railways are spread over a vast and, in some cases, sparsely settled territory.

If we are to become what we are destined to become if we make no mistakes—a great commercial country, from a foreign as well as a domestic standpoint—we must have sufficient and efficient transportation. Those that produce it by providing the capital and labor should be properly rewarded. The manufacturers and the merchants and the public as a whole owe that to them. Ours is a country of great distances, and with that handicap we shall not be able to compete successfully with those countries with shorter distances unless our transportation system is adequate and efficient. The American railways require capital properly and liberally expended to furnish more facilities and modern equipment to offset the labor and other charges which have been placed upon them. To my mind, it is important, therefore, that a fair return be allowed, so that capital will enter and provide those facilities.

Looking backward, it is a little over a year ago when the congestion was so acute that the people were willing to pay almost anything for transportation if they could have it, and such conditions should be avoided. These railroads have stood still in their expansion and development, broadly speaking, for a long time. Economy is going to come in their expansion and refinement, and economy in rates will result, not from radically cutting wage costs, but by giving the railroads and employees a better machine to work with, more facilities, more yards and shops, and other essentials that go to make up a successful transportation instrumentality. Pre-war we had approximately $450,000,000 of equipment standing idle. Since the signing of the armistice we have seen substantially the same condition repeated. This is a situation that is inevitable and the compensation to the railroad companies must provide for the lean years which produce such a condition, for the reason that it is impossible to provide the facilities as fast as the business demands in periods of abnormal traffic.

In the matter of the return of the railroads to the corporations: My opinion is that they should be restored at an early date. It will eliminate uncertainty in the state of mind referred to previously, and the morale will improve. The government said when the roads were taken over that they would be returned in as good condition as when they were taken. That means not only physically but as nearly as possible mentally, and the government can not afford to do other than to keep its promise. Perhaps a law can be written that will cover all the involved questions that exist and permit settlement with the restoration. But the situation is very complicated, and it may be that the government will find it advisable to appoint a commission or board to make the settlement after the return, in the meantime giving the benefit of private operation to the people—the present system of compensation being continued as a guaranty pending settlement—a limited time to be allowed after the return to effect the settlement and avoid protracted delays. This commission might well be made a permanent feature of our system of railroad regulation and should be composed of at least three commissioners and be charged with the responsibility of keeping informed with respect to the transportation necessities of the country generally, and to make representations to the Interstate Commerce Commission with respect to the revenues required to provide the necessary facilities and service and insure proper development of the transportation system.

The cases of the weak and the strong roads, so to speak, should be weighed out by this commission. If the road is so weak that it can not stand, it should have special treatment. If it is absolutely necessary to the needs and comfort of the people it should have some extra allowances locally or otherwise. The entire rate structure should not be thrown out of proper position because of some exceptional case any more than any other business undertaking in our country should be gaged by the exceptions. The question of rates, in which the public are most deeply concerned, because it affects the cost of living and the amount of business we may do, is a matter for study by experts. Much has already been accomplished in this direction by the Interstate Commerce Commission and those drafted into government service, and they have shaped up a great amount of valuable information which is available to any authority that the government might designate. Rates established as a war measure and to meet the changed conditions should be continued as presumptively reasonable. Pre-war rates should not be the basis of future rate regulation. I believe that it is generally admitted that the interstate commerce law sought to regulate the railways on a basis of reasonableness and justice. The operation of that act, however, has put the burden of proof in all instances on the railroads, and that, it seems to me, is a fundamental violation of justice. As I see it, what is needed is to bring order out of the confusion of conflict of regulation between the various authorities.

Briefly, the foregoing suggestions contemplate the prompt return of the railroads; the continuance of the present rates until changed and adjusted to meet the largely increased charges; the continuance of the guaranteed standard return until this is accomplished; the creation of a board or commission which will act as an administrative board, charged with the responsibility to represent the public interest in respect to the adequacy of facilities and service, and in addition to exercise the functions and powers of the present Interstate Commerce Commission, except as to accounting, valuation, rates, etc.

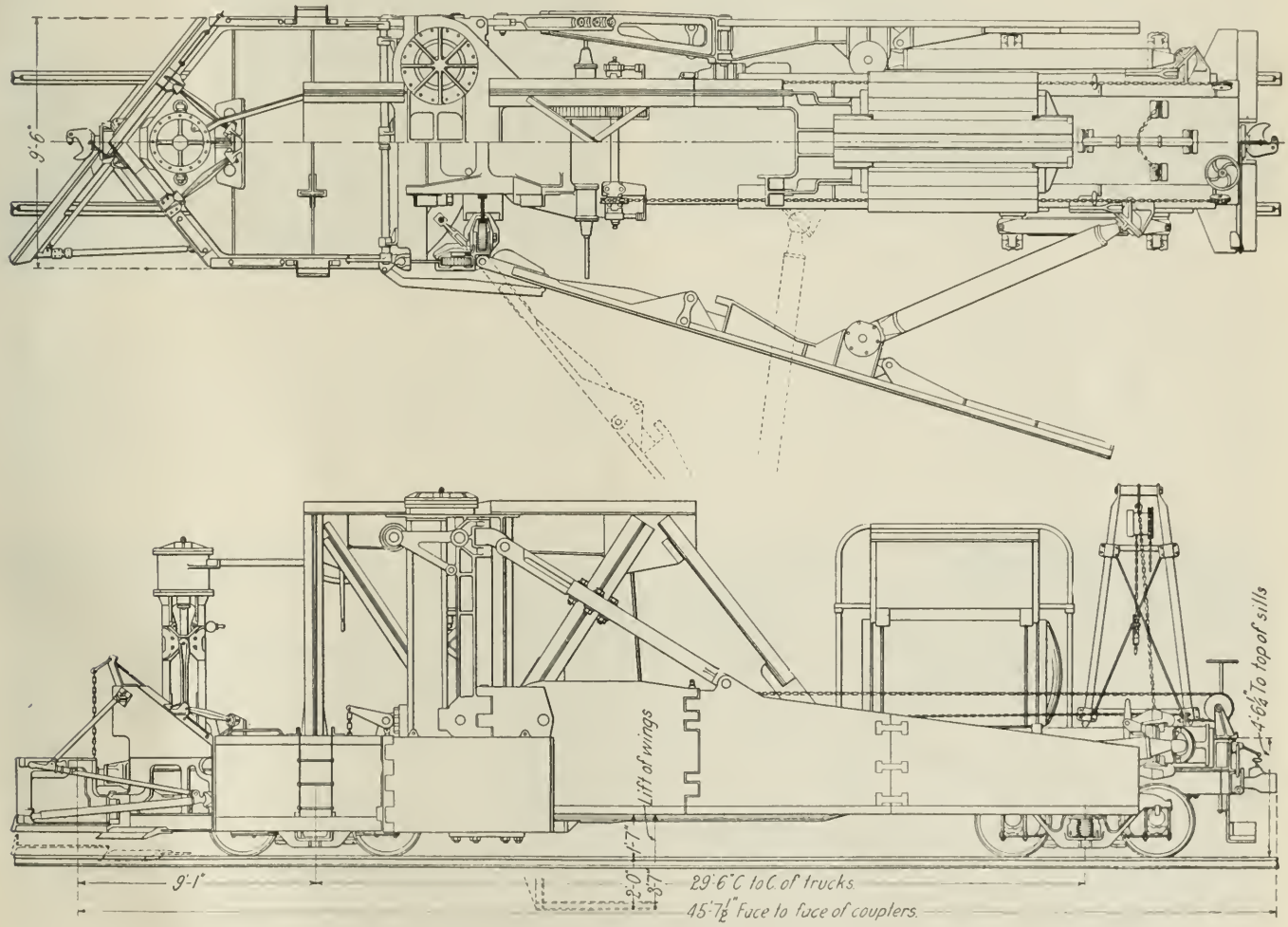
It is estimated that 12 per cent of the Nation's wealth is invested in the country's transportation systems. It is safe to say that 100 per cent of the public interest is involved therein. It is one of the great problems that we have before us. It is of prime importance that it be solved properly. Politics or theories have no place in its consideration; it is a business of manufacturing transportation. Good machinery should be used, together with good brains and full effort, to the end that the country and the people shall continue to have what they always have had—the best transportation in the world; the greatest in volume and heretofore the least in cost.

On Guard Against the Wicked Railroads.—The New York Board of Trade and Transportation has written to Chairman Esch of the House Committee on Interstate and Foreign Commerce, requesting the passage of a joint resolution (a draft of which is offered) "to continue in effect rate making laws until Congress shall enact the general railway laws" for which the country is waiting. The letter declares that in the probable absence of the passage of any such general railway legislation this month the effect of President Wilson's recent veto of the Senate bill to restore the Interstate Commerce Commission's pre-war powers will be to give the railroads full power to raise rates without hindrance.

All Steel Spreader Plow Embodies New Feature

Unusually Heavy Machine Was Recently Subjected to Series of Severe Service Tests

THE BUCYRUS COMPANY, South Milwaukee, Wis., has developed and is now introducing a spreader plow which embodies a number of new features, and also involves much heavier construction than any previous designs. This spreader has recently been subjected to an extended series of tests under heavy service on the lean ore and waste dumps of the Oliver Iron Mining Company, at Hibbing, Minn., where it has demonstrated it's ability to stand up under unusually severe conditions. It is designed to plow material from between the rails to either or both sides to a depth of 2½ in. below the top of the rail and to spread



General Plan and Elevation of New Spreader

it at either side to a maximum distance of 22½ ft. from the center of the track.

This spreader plow is of unusually heavy design and is built of steel throughout. It weighs 136,620 lb. of which 80,640 lb. is carried on the front truck, this latter weight being an important factor in holding the spreader on the track and reducing the liability of derailment. The frame is designed throughout for 100,000 lb. draw bar load. It is equipped with the Waugh friction draft gear, which with the trucks is built to M. C. B. Standards.

The wings, which weigh approximately 12,000 lb. each, are solid steel castings made in three sections with a total length of 25 ft. The section at the outer end is hinged to the rest of the wing and held in position by three Bishop bolts or shrink links so designed that they will break and allow this section of the wing to swing back on striking a stationary object, before the wing itself suffers injury. When in position the wing spreads a minimum width of 12 ft. and a maximum of 22½ ft. when horizontal or when inclined at the greatest angle. It can spread to a level of 19 in. above the top of rail or 24 in. below, giving a maximum vertical range of 43 in., which can be secured in increments of three inches. The wing can also be inclined at the outer end to a maximum depression of 12 in. below or to an elevation of 84 in. above the inner end. The wearing edge of the wings is of high carbon steel angle castings. An important and distinctive development in this spreader plow is the arrangement whereby the wings can be folded in to the car regardless of the pitch or angle at which they may be standing.

The spreader wing is held in plowing position by a tubular brace built of 9-in. extra-heavy, lap-welded steel pipe. The forward end of this brace is connected to the wing by means of a universal joint, while the rear end is connected to a movable cross-head by means of a ball and socket joint.

The travel of this cross-head determines the width of spread. This width of spread may be varied by increments of approximately 1 ft. between 12 and 16 ft. and by increments of 6 in. from 16 ft. to 22½ ft. This arrangement is also a unique feature and makes it possible to open and close the wing from the cab automatically to any pre-determined width of spread. This may be accomplished with little effort and with no loss of time. The vertical inclination of the wing above and below the horizontal is accomplished by shortening or lengthening the inclined support brace.

The V-shaped pilot plow is located in front of the main

Rear View of the Wing, Showing Construction

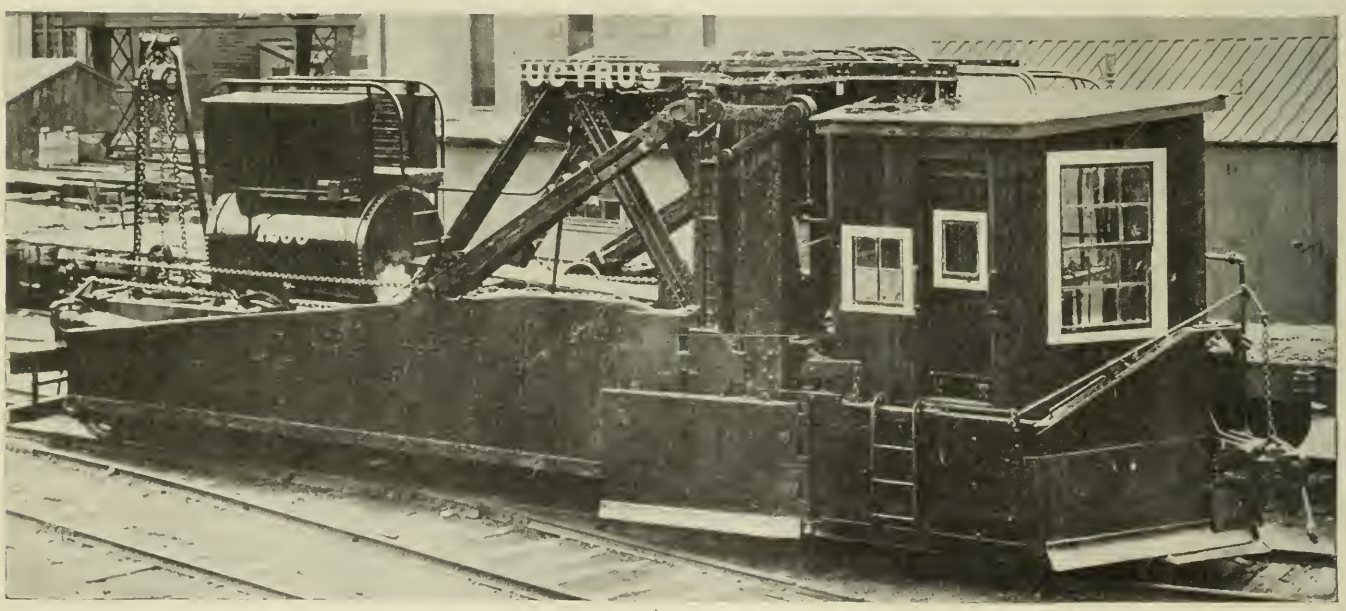
car body and is arranged in such a manner that it may be used for plowing and flanging either snow or ice from between the rails to a depth of 2½ in. below the top of the rail. Each side of the pilot plow carries a transfer or shift wing that can readily be opened and fixed in position by one man, for the purpose of transferring loose material from one side of the track to the other.

Four air cylinders control all the operations of the plow. The air for the operating cylinders is taken from the locomotive and the machine is provided with an air reservoir four feet in diameter by seven feet long.

All movable parts of the spreader are machine finished which tends not only toward accuracy of fit but towards ease of operation with resulting conservation of air. The contact between the wings and the vertical sliding posts on

Plowing a Shoulder Down

which they are raised and lowered is by rollers, greatly reducing the friction from that with a sliding contact. As a result the wings can be raised with a minimum air pressure of 50 lb. while the spreader plow can be operated readily with the average train line pressure of 70 lb. Summing up, the plow presents to railroad men. A wide range of spread



The Spreader With Wings Folded Back

One cylinder is employed for raising and lowering each of the two large wings, one for raising and lowering the pilot plow and one for opening and closing both wings. These cylinders are controlled by four-way valves located on a table in the front of the car which may be enclosed in a cab.

both in width and elevation; The automatic opening and closing of the wings to any pre-determined width; The opening and closing with the wings to any vertical angle; Adaptability to flanging snow and ice from between the rails and use as a snow plow in yards or on the main line.

Interchange Inspectors' and Car Foremen's Meeting

Discussion of Changes in the Rules of Interchange; Uniform Inspection Records Advocated

THE CHIEF INTERCHANGE CAR INSPECTORS' and Car Foremen's Association met at the Planters Hotel, St. Louis, Mo., September 23-25, with W. J. Stoll, chief interchange inspector at Toledo, Ohio, presiding. At the first session, prayer was offered by Captain Arthur Andrews of the Salvation Army; L. McDaniel, prosecuting attorney, welcomed the convention, T. J. O'Donnell responding for the association.

President's Address

In his address as president of the association, Mr. Stoll spoke in part as follows: "The discussion of the M. C. B. rules and other matters pertaining to the construction and maintenance of cars is an important question and one which requires sound judgment and executive ability. The changes in the M. C. B. rules of interchange, which take effect October 1, while not numerous, are quite important. The rules now in effect have not as yet been discussed by this association, and I hope the members will take advantage of this opportunity to discuss them. I would also call attention to the fact that the loading rules have been rearranged and a discussion of them would be of interest and beneficial, as many cars are being improperly loaded. This association might well recommend that shippers should be furnished with copies of the loading rules. Because of the conditions which have been brought about by the war, such as pooling certain portions of the equipment, routing cars away from home where material was not available to make proper repairs, insufficient help, etc., it is necessary for this association as well as others to put forth its best efforts to remedy conditions."

The report of the secretary-treasurer was then read; it showed that the total membership was 508 and that there was a satisfactory balance in the treasury.

Discussion of the Rules of Interchange

At the session on Tuesday afternoon, the discussion of the Rules of Interchange was taken up. The first question raised was with regard to the meaning of paragraph 6 in Rule 2, which reads, "Empty cars offered in interchange, if in safe and serviceable condition, must be accepted." T. J. O'Donnell (Buffalo) asked what constituted a serviceable empty car and whether this rule was to be construed as permitting the offering in interchange of cars with minor defects, which could readily be repaired. F. C. Schultz (Chicago) advocated ignoring slight defects in order to expedite traffic. There was considerable difference of opinion as to whether the receiving line had the power to refuse cars which were not serviceable for the commodities for which they were desired. F. Trapnell (Kansas City) stated that instructions had been received from the regional director defining what should be regarded as a serviceable car and in the Kansas City Terminal district inspectors had been working under this interpretation. Several expressed the opinion that under present conditions it is necessary for the joint interchange inspectors to allocate cars to the various railroads, taking whatever measures local conditions make necessary to move the traffic. Mr. O'Donnell contended that there should be some general ruling which could be applied regardless of the immediate circumstances. G. Lynch (Cleveland) brought out that the rules make a definite distinction between the handling of loaded and empty cars. While loaded cars must be accepted by the receiving line and run, repaired or transferred, the empty cars can be rejected if in the judgment of the receiving line they are not in safe and serviceable condition. This rule has made it easy for roads that originate a great deal of traffic to get cars off their lines, while roads that offer a great many empty cars to connections have suffered from the accumulation of bad order cars which they are unable to dispose of.

The discussion showed that there was a wide diversity of practice in different sections of the country, due in part to lack of uniformity in the orders issued by the regional directors. A committee was appointed to consider the matter further and to present a report to the convention. The committee after deliberation reported that it did not feel it consistent with the basic intent and purpose of this rule and the decisions thereon by the Railroad Administration, that any changes in the application of the rule should be recommended other than the proper supervision by those in authority at the several terminals and interchange points consistent with local conditions.

Changes Recommended by the Arbitration Committee

Following the discussion of Rule 2, the association proceeded to consider changes in the rules as recommended in the report of the Arbitration Committee presented at the 1919 convention of the Mechanical Section of the American Railroad Association. The revised text of the rules, together with the discussion concerning them, are given below:

Rule 32. (Delivering line responsible) Damage to any car (including cars on ferries or floats) if caused by (a) derailment, (b) cornering, (c) side swiping, (d) collision or impact other than that occurring in regular switching, (e) handling of cars with broken or missing couplers, or couplers out of place, (f) colliding with or shoving over bumping post or other fixed obstruction, (g) shifting of loads from other cars, (h) overloading, (i) explosion, (j) collapsing buildings or other structures on right of way, (k) unconcealed fire damage, (l) flood, (m) storm where car is derailed or destroyed, (n) failure to close hopper or drop doors before moving car.

The former wording of this rule made the delivering company responsible for damage due to wrecks, and this indefinite term had caused many controversies. H. W. L. Porth (Swift & Company) brought out that while the changes clarify the meaning of this rule, the judgment of the inspector will still enter in determining what constitutes regular switching. F. C. Schultz stated that the rules now in force made it possible for roads to break up cars in switching and yet hold the owners responsible for the damage if the trucks were not derailed. G. Lynch called attention to the fact that the terms collision, impact and regular switching are still indefinite and even the new rule will be hard to interpret. J. P. Carney (Michigan Central) expressed the opinion that the changes in the rule were not intended to put the responsibility for damage to weak equipment on the handling line. A motion was adopted stating that it was the sense of the meeting that if cars are damaged the owner is to be held responsible, if the trucks are not derailed and the car is not cornered or side swiped.

Rule 66. (Owners responsible) Periodical repacking of journal boxes, regardless of the responsibility of delivering company for change of wheels, journal boxes or journal bearings. No charge shall be made for repacking unless all boxes are repacked. No charge shall be made if the repacking is done within nine months from date stenciled on the car. If car bears no stenciling showing date of previous repacking, all journals may be repacked if necessary and charged for.

(a) All journal boxes shall be repacked with properly prepared packing (new or renovated) at least once every 12 months, at which time all packing will be removed from the boxes and the boxes cleaned. Dust guards to be renewed when wheels are changed.

The requirements for periodical repacking of journal boxes were endorsed by all who discussed the rule. The opinion was expressed that this practice would improve op-

erating conditions and result in a large saving. Attention was called to the fact that the work is often slighted and it was suggested that improper repacking could be eliminated by requiring the work to be done only at stations which are equipped with apparatus for reclaiming oil and waste.

Inspection of Loads in Open-Top Cars

A question was raised as to the advisability of inspectors making records of depressions in loads shipped in open-top cars in order to eliminate leakage en route and to protect the railroads in case claims for shortage are filed by the shipper. The discussion brought out that at most terminals the inspectors who examine the roofs of the cars are required to note any apparent shortages. A report is made to the agent and the cars are weighed to determine the loss of contents and to establish the amount occurring on each line in case the shipment is hauled over more than one road. In general, if the road does not transfer the load it must participate in any expense due to loss of lading.

Interchange Inspection Record

President Stoll stated that a communication had been received from one of the large interchange points asking that uniformity of inspection records at interchange points be discussed at the meeting. T. J. O'Donnell stated that in the Niagara district some roads require the inspectors to take the numbers of all cars interchanged, while others record only the defective cars. J. C. Keene (Wabash) brought out the fact that there is no standard form for keeping the record of cars interchanged. Mr. Keene advocated the adoption of a uniform form which would be a check against the interchange record. F. W. Trapnell (Kansas City) assented that the car inspector's record is valuable, as no record of seal numbers is taken and there is less liability of error. H. J. Smith (D. L. & W.) objected to any practice which would compel the car inspectors to write the number of every car interchanged, on the grounds that it would consume much time that should be devoted to other work. This contention was sustained by several other members. One member brought out the fact that claim agents often request records of the condition of cars when interchanged from the car inspectors and no information can be furnished on cars not found defective unless the numbers and initials of each car are taken down. J. C. Keene brought out that the interchange record does not necessarily furnish proof that the car has been inspected at the time it was interchanged. T. S. Cheadle (Richmond) stated that since the inspectors had been relieved of the necessity of recording the numbers of all cars, more efficient inspection had been secured. A committee was appointed to consider the matter and report upon it at the next convention.

Other Business

On Wednesday a special train was provided for the members so that they might make an inspection trip around the St. Louis Terminal district. At the closing session addresses were delivered by A. E. Bouchner, superintendent of the Terminal division of the Missouri, Kansas & Texas and also chairman of the Interchange Committee of St. Louis, and by L. T. Canfield, of the Union Draft Gear Company.

The following officers were elected: president, J. J. Gainey, general foreman car department, Southern; first vice-president, E. Pendleton, car foreman, Chicago & Alton; second vice-president, A. Armstrong, chief interchange inspector, Atlanta, Ga.; secretary-treasurer, J. C. Keene, general car inspector, Wabash.

List of Exhibitors

The following is a list of the companies exhibiting at the convention:

American Brake Company, St. Louis, Mo.—Foundation brake gear for cars and locomotives. Represented by R. E. Adreon.

American Brake Shoe & Foundry Company, New York.—Brake shoes for freight and passenger cars and locomotives. Represented by C. G. Weaver.

American Steel Foundries, Chicago.—Simplex adjustable coupler pocket with detachable shelf, Economy draft arm, Simplex coupler, Atlas safety guard. Represented by W. C. Walsh, J. H. Tinker, M. De Anglis and W. G. Wallace.

Bettendorf Company, Bettendorf, Iowa.—Freight cars, Bettendorf car trucks, steel castings. Represented by J. W. Clasen.

Boss Nut Company, Chicago.—Boss lock nuts, bolts, rivets and screws. Represented by W. G. Willcoxson, J. W. Fogg and W. C. Irwin.

Buckeye Steel Castings Company, Columbus, Ohio.—Cast steel coupler yokes, Major couplers, M. C. B. type D couplers, Andrews channel section side frames, U. S. R. A. standard tender bolsters, Buckeye truck bolsters, cast steel box section body bolsters. Represented by F. J. Cooledge.

Chicago-Cleveland Car Roofing Company, Chicago.—Pressed steel ends, outside metal roofs, all steel roofs and pressed steel parts. Represented by R. C. Munro and J. L. Stark.

Chicago Pneumatic Tool Company, Chicago.—Little Giant air drills, Boyer pneumatic hammers. Represented by L. C. Sprague, C. W. Cross and H. W. Buker.

Chicago Railway Equipment Company, Chicago.—Cresco brake beams, Cresco third point support. Represented by E. A. LeBeau.

Columbia Nut & Bolt Company, Bridgeport, Conn.—Lock nuts. Represented by H. P. Cook and J. E. Eipper.

Commonwealth Steel Co., St. Louis, Mo.—Underframes and ends for passenger cars, transom draft gear, steel castings. Represented by G. E. Howard and C. S. Shallenberger.

Duff Manufacturing Company, Pittsburgh, Pa.—Barrett car repair jack, Duff ball bearing journal jacks and car and locomotive jacks. Represented by C. N. Thulin.

Galena Signal Oil Company, Franklin, Pa.—Lubricating oils. Represented by W. E. Auger, W. J. Burnett, T. J. Powell and R. E. Webb.

Gold Car Heating Company, New York.—Gold vapor system of car heating, steam pressure regulators, steam hose couplings, thermostatic control end valve. Represented by W. H. Ivers and A. Sheldon.

Griffin Wheel Company, Chicago.—Chilled iron car wheels. Represented by H. N. Scott

Grip Nut Company, Chicago.—Grip nuts. Represented by H. J. Tierney.

Heath & Milligan, Chicago.—Railway paints. Represented by W. H. Pratt.

Hutchins Car Roofing Company, Detroit, Mich.—Hutchins flexible all steel roof, Hutchins standard all steel roof, Hutchins Type D outside light gage metal roof, Hutchins plastic roof. Represented by A. R. Wilson and C. F. Pape.

Imperial Appliance Company, Chicago.—Uncoupling attachments. Represented by J. T. Cralley.

Independent Pneumatic Tool Company, Chicago.—Thor air drills, hammers, pneumatic hoists, air hose couplings, Universal electric drills. Represented by R. S. Cooper and F. J. Passino.

Joliet Railway Supply Company, Chicago.—Bolsters, brake beams, side-bearings, journal boxes. Represented by J. E. Simons.

Lehon Company, Chicago.—Mule hide canvas roofing for cabs, Mule hide insulating paper and fabric, plastic car roofing. Represented by D. B. Wright and C. V. Eades.

McCord & Company, Chicago.—Journal boxes for freight and passenger cars. Represented by J. A. Lamon.

Mahr Manufacturing Company, Minneapolis, Minn.—Oil burning torches and rivet forges. Represented by N. S. Griffith and D. W. Simonds.

W. H. Miner, Chicago.—Friction draft gear, side-bearings, Ideal safety hand brake, bolster locking center pin and drawbar yokes. Represented by A. L. Canavan and J. R. Mitchell.

National Malleable Castings Company, Chicago.—National quadruple shear cast steel yoke for passenger couplers, M. C. B. Type D coupler, Sharon coupler, National extended floor engine pockets. Represented by C. H. McCrea and G. V. Martin.

Oxweld Railroad Service Company, Chicago.—Cutting and welding torches and tips, oxygen and acetylene regulators. Represented by Wm. Leighton, J. P. Furbeck and A. L. West.

Pierce Oil Corporation, St. Louis, Mo.—Lubricating oils. Represented by J. J. Casey, E. S. Marshall, F. Reardon and R. M. Wiggin.

Scarritt Car Seat & Manufacturing Company, St. Louis, Mo.—Seats for railroad coaches. Represented by B. C. Howard.

Simmons-Boardman Publishing Company, Chicago.—Railway Age, Railway Mechanical Engineer, Car Builders' Dictionary, Locomotive Dictionary. Represented by C. L. Smythe, J. W. Bailey and J. W. George.

Southern Wheel Company, St. Louis, Mo.—Chilled iron car wheels. Represented by W. C. Doering.

Union Draft Gear Company, Chicago.—Cardwell friction draft gear. Represented by J. W. Hathaway and C. J. Gorman.

Union Spring & Manufacturing Company, Louisville, Ky.—Car springs. Represented by A. C. Woods and J. W. Chandler.

Universal Draft Gear Company, Chicago.—Cast steel draft arms, draw bar yokes, draft lugs and tandem draft castings. Represented by C. C. Kirsman.

Western Railway Equipment Company, St. Louis, Mo.—Car door fixtures, malleable journal bearing wedge, Western steel carline, Western timber pockets, Acme pipe clamp, security dust guard, Western brake jaws. Represented by S. H. Campbell and R. M. Hoerr.

Westinghouse Air Brake Company, Wilmerding, Pa.—Air brakes for freight and passenger cars. Represented by F. B. Johnson.

Wine Railway Appliance Company, Toledo, Ohio.—Wine steel ladders, Wine side bearings, Wine hopper door latches, Wine ventilators. Represented by W. E. Wine, W. F. Cremain and C. J. Holland.

The San Francisco (Cal.) Chamber of Commerce has complained before the State Railroad Commission that the Southern Pacific charges excessive rates on lumber between San Francisco and all California points, but the complaint has been dismissed by the Commission. The Commission holds that it lacks jurisdiction because the lines in question are under federal control. For the same reason the Commission discontinued its investigation into the intrastate lumber rates of the Atchison, Topeka & Santa Fe, the Western Pacific, the San Pedro, Los Angeles & Salt Lake, the Southern Pacific and the Northwestern Pacific.

The Unification of Terminals and Foreign Commerce*

Formation of Local Commissions Proposed to Develop and Operate All Port Facilities

By T. C. Powell
Director of Capital Expenditures, U. S. Railroad Administration

IT IS A TRITE SAYING that history repeats itself, but, as a matter of fact, shipping has always been ahead of the port facilities. In 1860, the Great Eastern (sometimes called the Leviathan) made her first trip from England to the United States, and then found that there was no port in this country with sufficient depth of water to accommodate her draft. We pass over a period of a great many years and reach the year 1918, when we operated as a transport of the United States, one of the German ships which had been interned in New York, and which was also christened the Leviathan. On the first trip that this Leviathan made with American troops, she also encountered the difficulty of inadequate port facilities, and was compelled to land in Liverpool because there was not a port in France deep enough to accommodate her great draft.

Under the impetus of war, and under the direction of the War Department, of which S. M. Felton, director general of military railways, was the representative, the ports of France assigned to the American army were radically improved. The channels were deepened, new piers were constructed and unloading machinery was installed, so that in these ports of France there were cranes of a size such as had never been put in use in any port of the United States. If this can be done by the United States government in an emergency within a few months from the time the emergency appeared, it seems as though we should, in the next few years, provide equal, or greater, facilities in this country for all of the ports of the Union.

Lack of Information Regarding Ports

It was because of the lack of information regarding American ports and because of the need of assembling all available data for further consideration and use by the U. S. Shipping Board, that that board created the Port and Harbor Facilities Commission. The commission, through its department of statistics, has collected, and is collecting, all possible available data, not only with respect to the American ports as they now are, but also in regard to foreign ports in Great Britain and France.

The chief engineer of the commission, Captain Chambers, was sent to Great Britain, and has returned with a very large amount of data obtained through the courtesy of the officials of Great Britain. Director General Felton, who is also vice-chairman of the commission, made an exhaustive examination of the French ports. Captain Chambers developed that the English ports, to some extent, were very much in the same condition as the American ports with respect to the diversified authority in charge of the facilities. . . .

Scope of the Harbor Commission's Work

The Port and Harbor Facilities Commission is making studies not only of the physical conditions at each port, but of all conceivable factors affecting foreign traffic. In cooperation with the Department of Commerce and the Railroad Administration, the commission is securing statistics of the products of each state and each industrial community and is comparing and analyzing that proportion of traffic which is exported, as compared with the domestic traffic marketed in the United States.

Many tables and charts have already been prepared, and by extending the studies to an analysis of the imports from foreign countries, the commission will be able to show at any time the relative volume moving into and out of the United States, thereby posting the exporter as to the most economical ports and routes.

In addition to these investigations, the Port and Harbor Facilities Commission, under the resolution creating it, is also authorized to investigate the situation as to drydocks, coaling piers, ship repair plants, etc., and to recommend to the Shipping Board additional facilities of this character.

The commission has established close relations with the Department of Commerce. The speaker is one of the unofficial advisors of the secretary, and it is gratifying to know that the recommendations of Secretary Redfield have been approved by the Appropriations Committee, and the indications are they will be approved by Congress, with the result that for the development of foreign commerce alone, there will be a fund of over $900,000 available, enabling the Department of Commerce to establish something like 30 representatives throughout the foreign countries to report on the possibilities of commerce, including information as to port facilities which will be embodied in the data of the Port and Harbor Facilities Commission and be available for any port commission in the United States.

Diverse Control of Port Facilities in This Country

The authorities in charge of port facilities in this country are varied. First come historically the private owners; next the development by local authorities; next come the steamboat and steamship companies which acquired their own property. Probably next in order come the railroads, which provided such facilities as seemed necessary to handle the traffic of the railroads; then the War Department and the Navy Department, each developing to a certain extent its own facilities, especially during the last year. In addition to any facilities on land, the War Department has had charge of the deepening of channels, while the Department of Commerce is responsible for the safeguarding of the harbor lights, lighthouses, etc.

In all of this there is not definite co-operation between the different authorities responsible for the port facilities. In some cases one railroad has built against another railroad; at other ports the municipality has built in competition with the railroads and in competition with private owners. In some cases steamship companies have developed their facilities independent of any other development in the same locality, while private owners, for personal profit, have built piers, warehouses and coaling facilities.

The result of this has been in many cases excessive prices; in others, unnecessary duplication of facilities, so that it has seemed clear to the Port and Harbor Facilities Commission that there should be at each port a single controlling head authorized to operate the facilities as a whole to the best advantage of the commerce of the port and of the country.

Freight Congestion a Reflection of Terminal Deficiencies

I suppose as long as any of us live we shall remember the freight congestion of 1917-18, resulting partly from the enormous tonnage shipped overseas and partly from the

*Address delivered before the Mississippi Valley Foreign Trade Convention at New Orleans, La.

extraordinary weather conditions. Nothing paralyzes transportation operations, whether by rail or water, as congestion. And the congestion was not only on this side. Through lack of facilities, ships carrying munitions and supplies to the Allies were held up at French ports, not simply for days and weeks, but sometimes for months, because the facilities for unloading were inadequate.

The war is practically over, but the quick turn-around of a vessel, reduction of lay days, and the cutting off of demurrage are among the essentials of successful foreign commerce. These reforms must be brought about by unified action, and recognizing this the Railroad Administration has for the last year been carrying out the policy of unifying terminals, placing at every important terminal and port one official in charge of the entire zone. This may appear to be in opposition to the former policy of railroad corporations. It is, therefore, interesting to note that the committee, of which S. Davies Warfield is chairman, and which is said to represent a very large number of security holders, has already publicly endorsed unification of terminals. The Interstate Commerce Commission has recommended the continuance of this policy. Many railroad officials concur in this view, and . . . finally, the committee of Railway Executives, in the plan submitted by its chairman to the Senate committee within the last week, has provided for a Secretary of Transportation, one of whose specific duties shall be to harmonize any differences arising between the railroads using the same terminals.

Therefore, I think it can be safely said for the first time in the history of transportation in the United States, that the national and corporation interests and the state and municipal authorities have united in the thought that all terminals must be unified and must be made common between all parties, and it necessarily follows that this should include not only the tracks and warehouses property of the railroad companies, but particularly as to the ports of the United States, should apply to all facilities of whatever character necessary in the handling of foreign and domestic traffic within and through the port terminal zone.

The Local Port Commission and Its Duties

Not only is it necessary that these port facilities shall be unified and operated on the most economical basis possible consistent with efficiency, but it is also necessary to advertise these conditions and to notify the manufacturers and shippers of the United States, and the manufacturers and shippers of foreign countries with which we deal.

It has not always been easy for a man located directly at a port to understand the conditions, and it is infinitely more difficult for a man located 500 or 1,000 miles in the interior to keep track of the conditions, not merely of one port, but of several possible ports through which he may undertake to forward his traffic. It is for that reason that the Port and Harbor Facilities Commission has strongly advocated through the press and by correspondence the formation in every port of a local port commission to be made up of representatives of not only the transportation interests, rail and water, but also state and municipal authorities, banks, and of the commercial organizations of that particular port.

It is particularly necessary that on such a commission there shall be responsible representatives of the banking interests, who will naturally solicit the accounts of those engaged in export and import traffic by making a specialty of handling the documents of those corporations and individuals so engaged.

The local port commission should be the medium through which advice as to conditions at that port shall be given to the country. In such advertising there should be sufficient detail so that the foreign producer or buyer will have some idea of the relative advantages of the different ports and, of course, the same information should be given to the domestic manufacturer and shipper.

Correspondence with over 1,000 manufacturers of the United States has shown that these may be divided into several classes:

(1) Those who have been engaged in foreign trade so long and are so well posted that they are the ones to give us information rather than for us to give them information.

(2) Those who depend upon export agents, associations or commission houses to make all necessary arrangements, including methods of packing, and for information as to all those details which a single manufacturer could not perhaps afford to enter into until his trade has grown to greater volume.

(3) Those who sell outright and ship to a port without any clear idea as to whether their product is to go abroad or not

There must, therefore, be a constant growth from Class 3 to Class 2 and Class 1, and further study by the commission shows that there is a tendency for export traffic to move through those ports which are best equipped with responsible export agents or commission houses. Such organizations relieve the shipper and manufacturer from the burden of many details, and, in my opinion, it is necessary for any port which expects to be successful to see that these organizations are encouraged, so that at each port, and especially at each of the Gulf ports, there will be a medium developed through which information regarding the possibility of shipping through that port will be made known to the interior manufacturer.

The local port commission should assume the responsibility of supervising the handling of freight through the port of which it is in charge. If a shipper sends his business through a certain port, which we will designate Port A, and finds that complaints are received alleging damage to packages and he is told that the tackle is old-fashioned and so inadequate that in spite of his best efforts his goods arrive at destination in bad condition, he will no longer patronize that port because, in spite of the fact that in some cases the charges may be lower, the annoyance of his correspondence and the dissatisfaction of his customers will more than counteract this charge.

Informative Work By Commissions Important

The possibility of working out through such a local port commission the necessary details for the development of foreign commerce can hardly be conceived until it is investigated.

I saw the other day a map of Persia. At this particular time trade with Persia is curtailed, but sooner or later the War Trade Board will release these restrictions, and it will be possible to trade freely with Damascus, which is a terminal point for overland caravans bringing from Bagdad rugs, figs, dates, tobaccos and other articles of American import and luxury.

This map of Persia was on a scale of probably 25 miles to the inch, and is in such detail that by studying the symbols one may get all of the information, and more, too, than I shall now enumerate. In the first place, there is a symbol for a steam railroad; another for tramways. Another shows important highways available for every kind of vehicle and beast of burden; another the highways not suitable for vehicles, but which can be used by beast of burden, while still another shows highways that can be used by oxen, mules and horses, but not by camels. Another direction shows that certain highways cannot be used by camels by day because of the stifling heat, but can be used by camels by night. All this information has been worked out in detail for the benefit of the merchant intending to trade with Persia, and I need not tell you that it was prepared in Berlin.

Now, if the Gulf ports will work out the data with the same detail with which Berlin prepared this map of Persia, and will put the information in the hands of every manufacturer of this country, and in every foreign country with which the United States expects to do business, there will be such a distribution of reliable information as has never been equaled before in the history of the commercial business of the United States.

General News Department

Canadian control of railroads in this country is the subject of a report by the Interstate Commerce Commission, made in response to a Senate resolution asking for information as to present or prospective ownership, etc. The Commission has examined the facts regarding the ownership or control of the lines in question: (a) some short subsidiaries of the Canadian Northern operated by the Canadian National Railways and (b) the lines of the Canadian Pacific and the Grand Trunk which are operated by the United States Railroad Administration. The report says it does not appear that there is any present or prospective ownership or control by the Canadian government of any lines in the United States other than those included in the systems named.

Chairman Good, of the House Committee on Appropriations, in discussing the estimates submitted by the Secretary of the Treasury for the expenses of the government during the fiscal year ending June 30, 1921, stated that no estimate for the Railroad Administration had been included because on the date of the report the Railroad Administration was unable to make an estimate; the sums that will be required are almost entirely dependent upon Congressional action in connection with the return of the railroads to their owners' control. Aside from the question of guaranteeing a return to the railroads after they have been restored, there will remain enormous obligations of the government to pay the deficit; but the amount of these depends on the settlements which the Railroad Administration may be able to make in the disposition of cars and engines bought by the government and in the collection of advances already made to railroad companies.

The accident near Parkersburg, W. Va., on August 14, last, when 12 passengers in a street car were killed, has been made the subject of a special report by the Interstate Commerce Commission. This report, dated October 13, is signed by W. P. Borland, chief of the Bureau of Safety. The accident was briefly noted in the *Railway Age* of October 10, page 750. The electric car, a high speed interurban, ran into a switching engine of the Baltimore & Ohio, at a crossing of an industry track, and was wrecked. The locomotive was hidden from the oncoming street car by a building. It had just started from a standstill and had moved but a few feet; and the conductor and a brakeman were in front of the engine and should have given stop signals to the street car; but the investigator finds that they were inattentive to their duty, and did not notice the street car until it got within about 150 ft. of the crossing. The street car, however, was running too fast. It appears that there are no specific printed regulations at this crossing, but trainmen had been specially instructed in the trainmaster's office in regard to it, and the conductor of the switching train was responsible for the safe movement of his engine over the crossing. Street cars do not make a regular stop for the crossing. The locomotive was moving very slowly. The conductor was making his first trip on this job as conductor, though he had served as flagman and was thoroughly acquainted with the conditions.

New England Governors and Business Men

The six governors of the six New England States met in Boston on December 10 to consider transportation and fuel problems; and they adopted resolutions urging that financial assistance be given to the New England railroads by the Federal Government after their return to private control, and that the United States Shipping Board be requested to "allocate some of its large ships to New England owners, operators and managers of steamers." Representatives of the New England railroads and business interests were present at the conference. To return the roads to private control without legislation to restore former conditions "would be disastrous to New England industries, institutions and investors," said the resolution. Financial assistance to New England railroads was requested so as to provide "for the payment of the government guarantee until rates have been put in effect by the Interstate Commerce Commission which shall restore the pre-war relationship of rates between New England and other rate districts, with such increased divisions and allowances as shall assure to the New England roads sufficient revenue properly to serve the New England public without undue increase in intra-New England rates. . . ."

The resolution recited that "owing to increases in expenses the New England roads have been more severely affected than roads in any other section of the country; they cannot under rates now in effect render sufficient service to the public; their working capital has been depleted and they are substantially without credit."

Edward G. Buckland, president of the New York, New Haven & Hartford, presented a statement showing that the railroads in New England during the three years prior to the war averaged a combined net income totalling $38,883,011, during the twenty-two months of government operation net income was reduced to $10,612,375, and in place of a surplus of $10,511,828 there was a deficit of $19,968,991.

The roads in this district, he said, had earned during the period of government control 29.9 per cent of the government guarantee, whereas roads in other sections had earned between 75 and 76 per cent. The relatively poor showing, he explained, was due to increased costs of carrying coal, terminal charges that were excessive because of peculiar geographical conditions and wage advances that had been particularly severe on the New England roads because in this section pre-war wages were below the average.

Machinery for Disposing of Administration Business

A discussion as to the kind of organization that would be necessary to dispose of unfinished business at the time of the return of the railroads to private control was started at the recent annual meeting of the National Industrial Traffic League at Chicago. After some consideration of the subject it was agreed that O. W. T. Tong, traffic manager and secretary of the Northern Potato Traffic Association, Minneapolis, Minn., who started the discussion, should communicate his views to the executive committee of the league in order that some definite agreement as to the league's stand on this subject might be taken. In compliance with this arrangement, Mr. Tong in a letter to H. C. Barlow, chairman of the league's executive committee said in part:

"The bills now before Congress appear to make adequate provision for the preservation of shippers' rights in all matters that may remain unadjusted on the date of return to private control. These bills, however, do not furnish the necessary machinery to carry out the legal intent, and it is, therefore, important for the National Industrial Traffic League to aid in getting the necessary organization to protect the shippers' rights in their future dealings with the government.

"It is not difficult to foresee disastrous times ahead for shippers if they do not now act intelligently in arranging for an organization subsequent to return to private control. There will be, for instance, many overcharge, loss and damage and reparation claims which will be unadjusted, and there must, necessarily, be an organization which will be competent, efficient and duly authorized to dispose of these unadjusted matters in a manner satisfactory to parties interested. Furthermore, it is altogether probable that the Interstate Commerce Commission will issue, after January 1, 1920, many

reparation orders directed to the Railroad Administration.

"When the Railroad Administration was created there was a great deal of unadjusted private control business, and the employees, who then became employees for the government, were allowed to proceed to dispose of this private control business the same as though the carriers had not been taken over. It would be natural, of course, upon return to private control, to have all the carriers continue to handle the business of the government and dispose of it the same as though there were no change in the management, but it is my view this would, in all probability, not work out satisfactorily unless safeguarded, as I doubt very much whether, after the expiration of from three to six months, the carriers would take the same interest in disposing of government affairs as they formerly took in disposing of the corporation affairs after they were on the government payrolls. This is not said in a spirit of criticism. It would be natural for the carriers to attend to their own affairs first, after return to private control, and this outstanding government business would then be given secondary consideration, whereas the affairs will be important and should be efficiently and promptly handled.

"In my view, arrangements should be made to continue in office, for the disposition of government business, all treasurers of the railroads who may, after return to private control, be appointed as treasurers of the corporations. They should act in the dual capacity of treasurer for the government and for the corporation. In the same manner, all other officers of the corporations, after return to private control, should act in the dual capacity of officers for both the corporation and the government. In addition thereto, every effort should be made to retain the present officers of the Railroad Administration, such as Hon. Max Thelen, Mr. Edward Chambers, Hon. Chas. A. Prouty, and the others who are at the head of the various departments at Washington, they to be given such authority as to retain on the government payrolls the necessary employees. Provision should also be made to insure government employees' obedience to every request or order from such government departments.

"The preferable way, of course, is to retain the present Railroad Administration at Washington, with full power to dispose of the unfinished business, but my fear is that many of these officers will desire to leave the service immediately upon return of carriers to private control, and if this is done it is imperative that exceedingly good judgment be used in selecting successors. This will be difficult on account of the natural inclination to reject positions with dead and obsolete departments, particularly as the departments will handle business which will be, to say the least, very uninteresting and with no particular incentive to be wholly efficient."

National Chamber Urges Rule of Rate-Making

Unless the public in the regulation of railroads adopts a policy that will enable the private corporations to meet their expenses and to secure necessary capital, corporate operation will fail, and the government will have to resume the burden of operating and probably of owning the railroads, according to a statement by the special committee appointed by the board of directors of the Chamber of Commerce of the United States to make effective the results of the national chamber's referendum No. 28 on needed railroad legislation.

Elliot H. Goodwin, general secretary of the chamber, in a letter advising officers of local chambers of the views of the special committee, says that the time has come for the business men of the country to urge their representatives in Congress to include in the railroad legislation about to be enacted a rule of rate making designed to yield sufficient revenue to enable the railroads to furnish the service that is required by the public.

Mr. Goodwin calls attention to the referendum taken last summer which declared almost unanimously in favor of a rule of rate-making. The Cummins railroad bill, now being considered in the Senate, includes such a rule. The Esch bill originally included a rule of rate making, and the House committee on interstate and foreign commerce recommended it; but when the House took the measure up for consideration the rule was stricken out.

"All commercial organizations that stand for the rule of rate making—all business men who believe in it—should immediately communicate their views to their senators and representatives and urge them to do all in their power to have this principle incorporated in the law that will provide for the regulation of the railroads after they are returned to private operation," General Secretary Goodwin says. Reasons why the rule of rate-making should be adopted, prepared by the special committee, are attached to Secretary Goodwin's letter.

"It is generally recognized," the committee points out, "that when the railroads were taken over by the government their revenues were not sufficient to enable them to supply the country with adequate transportation facilities and to furnish the services needed by the public. During the period of government operation the financial burden of maintaining transportation has been borne by the government, which has drawn part of the funds necessary for maintaining the roads from the Treasury of the United States.

"The railroads are soon to be returned to their owners, who must necessarily incur large expenditures for postponed construction and for deferred maintenance.

"It is clear that the revenues of the railroads in the future must be greater than in the past, both because extraordinary capital expenditures must be made and because current expenses, due to increased wages and higher costs of materials and supplies, will be much larger than they have been in the past. Unless the public in the regulation of railroads adopts a policy that will enable the private corporations to meet their expenses and to secure necessary capital, corporate operation will fail and the government will have to resume the burden of operating and probably of owning the railroads.

"A choice must be made of one of three courses of action; (1) the statutory power and responsibilities of the Interstate Commerce Commission as regards the rates and revenues of the carriers may be left unchanged and reliance be placed upon the commission to adopt and adhere to a policy of rate regulation that will cause the carriers to obtain the income needed to provide the transportation facilities and services necessary for the public; (2) the government may guarantee a definite minimum return upon capital now devoted to railroad transportation or hereafter invested therein; or (3) Congress may adopt a statutory rule to be observed by the Interstate Commerce Commission in regulating, adjusting, and prescribing rates and fares.

"To adopt the first of these three policies and to enact no legislation to make railroad revenues more definite and the credit of the railroads more stable would be to invite financial disaster on the part of a large share of the railroads and to make probable the failure of corporate ownership and operation. Public regulation would defeat its own object and would start the country upon the fatuous course of government ownership and operation.

"The objections to a guarantee by the government of a minimum return to each railroad company either upon its capitalization or upon the property devoted to the public service are definite and conclusive. As the Railroad Committee of the Chamber of Commerce of the United States stated in the report which accompanied Referendum 26, 'a government guarantee would tend to lessen initiative and cause both the prosperous and the unprosperous roads to feel less responsibility for efficient management.'

"The reasons in favor of the adoption by Congress of a statutory rule of rate-making are as convincing as are the arguments against either no action by Congress or the adoption of the policy of government guarantee of the return upon the capital of the railroad companies. Such a rule would give the Interstate Commerce Commission definite guidance. It would establish a form of rates and revenues which the commission, the carriers, the shippers, and the public could recognize as determining their obligations and rights. It would not be a government guarantee because the government would assume no financial responsibility. It would not lessen initiative on the part of the carriers because it would not take away from them the incentives to improvements in economy and efficiency of service."

Commission and Court News

Court News

Refusal to Carry on Wrongly Routed Ticket

A passenger bought a ticket at Columbia, S. C., for Florence, between which places there are two routes. She specified the route she wished, but the conductor subsequently refused the ticket because it was not so routed. In an action for actual and punitive damages, the South Carolina Supreme Court held that the testimony was not at all suggestive of the willful conduct of the conductor, but merely of negligence of the ticket seller, for which the plaintiff was compensated by a verdict for actual damages, assessed by the jury at $2.20.—Penn v. Atlantic Coast Line (S. Car.) 98 S. E. 793.

Damages for Refusal to Accept Mileage Book

A conductor refused to accept a mileage book coupon, thinking the book was not good on that road, and demanded the cash fare—15 cents—which was paid. He discovered his mistake the same day, and next day, when the passenger tendered the same book, he accepted the coupon, acknowledged his mistake, and tendered three cents—the difference between the cash fare paid and the value of the coupon. The passenger declined the offer and sued the railroad for $100 damages. The South Carolina Supreme Court affirmed a judgment for three cents, as the actual damage sustained, holding that the circumstances did not warrant the finding of punitive damages.—Schirmer v. Charleston & Western Carolina (S. Car.) 98 S. E. 134.

Construction of Uniform Bill of Lading

An action to recover damages for the loss of merchandise delivered to the Erie Railroad for transportation from Passaic, N. J., to New York City involved the proper construction of Uniform Bill of Lading, section 5, providing that property when received from private or other sidings, etc., shall be at owner's risk until cars are attached to trains. The merchandise had been loaded by the consignors on a car placed on a track laid by the railroad on its own land for the use and convenience only of shippers whose warehouses were adjacent thereto. The New York Court of Appeals holds that the track was a "private or other" siding within the bill of lading, the words "or other" following the word "private" include not *all* sidings, but only sidings *like* private sidings, such as this.—Bers v. Erie (N. Y.) 122 N. E. 456.

Modification of Freight Rate Contracts

The Pennsylvania Supreme Court holds that equity will not restrain a railroad from charging a higher rate than that fixed by a contract made in consideration of the grant of a right of way over a shipper's land, though made prior to 1913, where the railroad is charging regular rates fixed by the Public Service Commission. The shipper's remedy is by application to the commission for a reduction of rates under the act of 1913. It would be impossible for the commission to enforce an equality of reasonable rates, except upon the basis that it is not bound by contracts previously entered into between a public service company and either a municipality, another corporation or a private individual. A party entering into a contract with a railroad relating to rates is presumed to do so with knowledge that the state's right to exercise its police power is expressly reserved, and that, if public interest demands, its provisions may be modified without violating the provision of the Constitution of the United tates forbidding impairment of the obligation of contracts.—Teiper v. Baltimore & Philadelphia (Pa.) 105 Atl. 551.

Foreign Railway News

Armstrong Whitworth's Locomotive Shops

LONDON.

On November 12, one year after the signing of the Armistice, Sir W. G. Armstrong, Whitworth & Co., Ltd., celebrated the conversion of its shell works at Scotswood to a locomotive manufacturing plant, by the official steaming and trial of the first locomotive completed at these works. This engine is a freight engine of the 0-8-0 type and is the first of an order of 50 for the North Eastern Railway.

In view of the extreme difficulties of obtaining suitable equipment immediately after the signing of the Armistice, the change from war work to that of locomotive building was exceptionally interesting. These shops are designed to produce from 300 to 400 locomotives a year, and the erecting shops have a capacity of 50 locomotives without tenders.

The First Locomotive Built at the Former Shell Works of Armstrong-Whitworth, at Its Trial at Newcastle, November 12

The management of the shops is in charge of R. B. McColl, who was for 15 years with the American Locomotive Company at Montreal, and who came to England at the beginning of this year from a one year's engagement with the Baldwin Locomotive Works of Eddystone. Under his direction a well laid out plant has been built, which is undoubtedly the most up-to-date locomotive building plant in England. Orders have already been received for locomotives for India, which will be built at this plant.

The official opening ceremony at the works was presided over by Sir Vincent L. Raven, chief mechanical engineer of the North Eastern Railway. At a banquet given in the evenning Mr. Faulkner, chairman of the Armstrong, Whitworth Company presided and mentioned the fact that this was the third attempt of this company in the manufacture of locomotives since 1849. He stated that this plant will be in a position to manufacture electric locomotives shortly.

RAILROAD DEVELOPMENT AT CHICAGO.—The Illinois Central Railroad Company and the Michigan Central Railroad Company have made a joint application to the Public Utilities Commission of Illinois for an order consenting to the acceptance of an ordinance for the establishment of Harbor District No. 3, the construction by the Illinois Central of a new passenger station at Chicago, the electrification of certain of the lines of the Illinois Central and the Michigan Central within the city of Chicago and development of the Chicago lake front, passed by the Chicago City Council on July 21, 1919.

Equipment and Supplies

Freight Cars

The New York Central is inquiring for 1,000 55-ton hopper cars.

The Ann Arbor is inquiring for from 100 to 200 U. S. R. A. standard, single sheathed box cars.

The Detroit, Toledo & Ironton is inquiring for 700 U. S. R. A. standard 40-ton double sheathed box cars.

The Briar Hill Steel Company, Youngstown, Ohio, has ordered 50 gondolas from the Ralston Steel Car Company, Columbus, Ohio.

The Manhattan Oil Company, Minneapolis, Minn., reported in the *Railway Age* of October 24 as being in the market for 200 tank cars, has ordered 100 tank cars from the General American Tank Car Company.

Passenger Cars

The Long Island Railroad, reported in the *Railway Age* Emergency Bulletin of November 6 as inquiring for 50 trailer cars, 30 steam coaches and 20 motor cars, is negotiating with the American Car & Foundry Company for this equipment. The American Car & Foundry Company, it is reported on reliable authority, will probably build the cars if it decides to accept the proposal of the Long Island by accepting payment in car trust certificates and notes extending over a period of ten years. The American Car & Foundry Company is asking the manufacturers of the material specified for use on the cars to accept their respective shares of the burden; and if they all consent the contract will probably be signed by the end of the month.

Locomotive Deliveries in September

The Railroad Administration has issued the following statement of locomotives shipped for the month of September:

	On order prior to Federal control		USRA Administration orders		Constructed in railroad shops			
Name of road	Type	No.	Type	No.	Type	No.	Total	Builders
A. C. L.	..	..	USRA Pa.	11	..	..	11	American
A. T. & S. F.	Santa Fe	1	..	..	..	..	1	Baldwin
Ann Arbor	..	..	USRA S. F.	4	..	..	4	Baldwin
B. & O.	..	..	USRA Pac.	6	..	..	6	American
C. C. & O.	..	..	USRA Mal.	3	..	..	3	Baldwin
I. H. B.	..	..	USRA Mik.	8	..	..	8	Lima
L. V.	Santa Fe	15	..	..	..	..	15	Baldwin
Missouri Pac.	..	..	USRA Mik.	15	..	..	15	Lima
N. & W.	Mallet	2	USRA Mal.	4	..	..	6	Baldwin
P. L. W.	Santa Fe	7	USRA S. F.	4	..	..	11	Baldwin
P. L. W.	Mallet	1	..	..	..	..	1	Baldwin
P. & R.	Mallet	1	..	..	..	..	1	Baldwin
S. A. L.	..	..	USRA S. F.	4	..	..	4	Baldwin
Sou. Pac.	..	..	..	..	Switch	1	1	Southern Pacific
Virginian	..	..	USRA Mal.	1	..	..	1	American
W. & L. E.	..	..	USRA Mal.	6	..	..	6	Baldwin
P. R. R.	..	..	..	..	Decapod	4	4	Penn. R. R.
Total		27		66		5		

The Traffic Club of Chicago held a memorial meeting on December 8, as a tribute of respect to Frank B. Montgomery, formerly president of the Traffic Club and traffic manager of the International Harvester Company, who died on November 24.

The Lake Tahoe Railway Transportation Company has been authorized by the Railroad Commission of California to issue to the Union Trust Company of San Francisco, Cal., 6 per cent notes aggregating $50,000 to renew notes now held by the latter company.

Supply Trade News

Franklin Schneider, president of the Van Dorn Electric Tool Company, has been elected vice-president of the **Van Dorn & Dutton Company**, Cleveland, Ohio.

George Royal, western railroad representative of the Nathan Manufacturing Company, New York, with office at Chicago, has been appointed railroad representative of **Jenkins Brothers**, Chicago, manufacturers of valves and packings, with the same headquarters.

Fairbanks, Morse & Company are planning to erect a $1,500,000 foundry at Beloit, Wis. The erection of the new plant, which is to be 900 ft. long, 550 ft. wide and will contain 495 sq. ft. of floor space, will be started next spring. The foundry, when completed, will consist of one large building covering 11 acres of ground and including facilities for the storage of flasks, iron, sand, etc. The capacity of the new plant will be approximately 350 to 400 tons of gray iron daily. Plans and specifications for the structure are rapidly nearing completion and the raw material for its construction will be placed on the ground during the winter. Much of the equipment in the foundry will be electrical, the present plans calling for electric cranes, grab buckets, magnets and conveyors.

Trade Publications

Oil Burning Appliances.—The Aeroil Burner Company, Union Hill, N. J., manufacturers of oil burning appliances, has issued an eight-page bulletin describing their outfits for thawing out frozen cars, pockets, hoppers, pipes, switches, loading gates, chutes, etc. The bulletin is fully illustrated showing the application of the various outfits to the particular work to which they are adaptable.

Condensers, Pumps and Cooling Towers.—Bulletin No. 112-B revised and enlarged, entitled "Condensers, Pumps, Cooling Towers, Etc." has just been published by the Wheeler Condenser & Engineering Company, Carteret, N. J. This bulletin illustrates the latest developments in condenser practice and shows photographs of a number of actual installations of surface condensers. It illustrates and describes surface condensers, jet condensers, barometric condensers, the Wheeler-Edwards air pump, the Wheeler rotative dry vacuum pump, the Wheeler turbo-air pump, the patented Wheeler steam jet air pump, Wheeler centrifugal pumps for all services, jet condensers, barometric condensers, natural and forced draft cooling towers, feed water heaters, and Wheeler evaporators and dryers.

EDITORIAL

Railway Age

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The Latest in Unification

The operation of the railways of the United States as one unified system has resulted in the very general pooling of the supplies of the individual roads for the common use of all. As a result the relatively large quantities of materials held in stock by the more forehanded roads have been drawn on to replenish the depleted supplies of others, to the interest of the railway supply companies. This practice has been introduced very generally in the mechanical department; it has been followed in the transportation department; the maintenance of way department has not been immune from its influence. More recently this wave has reached the dining car department; the waiters on a dining car on the most important train on one of the leading trunk lines have been observed a few days ago to be wearing jackets bearing the initials of three different roads. Surely, the possibilities of unified operation are great and the limitations are few.

Judge Dickinson's Big Railroad "Salary"

In the issue of the *Railway Age* for October 10, which was printed on November 26, there was given, beginning on page 351, a list of railway salaries paid in 1917 which was published in the Congressional Record of November 18 at the instance of Representative Sims of Tennessee. In this list the name of Jacob M. Dickinson, receiver of the Chicago, Rock Island & Pacific Railway Company, appeared, and it was stated that his salary was $120,732.90. The *Railway Age* has received a letter from Frank Nay, vice-president and comptroller of the Rock Island company, in which he states the correct facts regarding Judge Dickinson's compensation. "In the amount named," says Mr. Nay, "is a special fee granted by the court in July, 1917, amounting to $100,000, which in reality covered the entire period of the receivership from April 19, 1915, to June 24, 1917, inclusive, a period of more than 26 months, or about $3,800 a month. Your remarks give the impression that Mr. Dickinson received about $120,000 a year, which, you will note, is far above the fact." It is probable that if similar explanations were made regarding the amounts stated to have been paid to other railway officers the alleged "fancy salaries" paid would be substantially reduced in many cases.

Place Your Order Now

If labor conditions are still in an unsettled and unsatisfactory state, as now seems probable, at the start of the 1920 construction season and the railroads, through legislation, find themselves in a favorable financial condition to start work on a construction program which will anywhere nearly approach their needs, there will arise the important question of developing means to carry out the work. The logical answer will be the increased utilization of mechanical substitutes for manpower. This would seem to be the proper time for each officer concerned with construction or maintenance to undertake careful studies to determine the character of the work to be done under his direction, in the prosecution of which labor-saving devices are most applicable, and if the proper equipment is available. Each year it is being demonstrated that the field of railway work in which machines may be used economically is enlarging. It is only within recent years that section motor cars have been adopted to any considerable extent, and while many roads already consider them indispensable still each year's experience discloses new uses to which they may be put advantageously. The history of other devices in the long list of labor-saving machines already used by the roads is similar. There never was a time when the need for more extensive use of these substitutes for labor was more urgent. After there is reasonable assurance that the most is being made of existing equipment there remains the question—is the present equipment sufficient to meet the requirements of the emergency which it seems certain will confront the roads in the spring? In many cases the probable answer is "no." If so the opening of the season's work will be marked by a demand for machines beyond the capacity of manufacturing plants to supply on short notice. An analysis of the needs made now followed promptly with orders will ensure more timely deliveries and save much valuable time during the working season.

An Example of War-Time Engineering

No record of the part played by engineers in the recent world conflict is complete without reference to their work in the conduct of purely civil pursuits. In an effort to meet the conditions imposed by the state of war, practices were adopted and measures instituted which might be considered highly questionable under normal circumstances, but which under war conditions represent excellent engineering. In many cases as high a degree of ingenuity was displayed in the design and building of what might be termed makeshift constructions of the war period as in the permanent work of peace times. One excellent illustration of war construction is the new Chamberlain bridge of the Chicago, Milwaukee & St. Paul over the Missouri river, described elsewhere in this issue. At first thought the use of 300 ft. spans on timber piers in a river subject to a shifting bottom and heavy ice floes seems unwarranted, but after a careful study of the circumstances under which the structure was built, as outlined in the introduction of the article referred to, the reasons for adopting this particular design will be readily appreciated. The combination of reinforced concrete with timber is unique, but, with respect to this also, careful analysis will disclose that there were excellent reasons for adopting its use. It is not alone in expensive permanent construction that the design is afforded opportunities to evince his technical knowledge and ingenuity. The limitations placed on construction by war conditions served to foster skillful engineering rather than to suppress it.

"Don't Take Chances"

THIS WARNING, peculiarly appropriate in addressing automobile drivers, is being sent by the State of New York to four hundred thousand of its citizens, owners of automobiles, addressed personally to each individual, in the shape of a card which is reproduced herewith in facsimile, reduced one third in width and height. Francis M. Hugo, secretary of state, is sending the cards in the envelope with his regular annual circular advising automobile owners of the approach of the date when their licenses expire and need to be renewed. This is a highly commendable example of co-operation between the state and the railroads, the cards being furnished by the safety department of the New York Central Railroad.

The card is particularly commendable in itself. Its forceful language is addressed to the head and to the heart. The first paragraph is arresting even if the reader had no heart. The fact that fatalities are increasing month by month is just as certain and obvious as the fact that the city of Detroit is turning out 5,000 new automobiles every day. The multiplication table alone should be sufficient to call a halt. The heart is appealed to in the word "deplorable." The immediate reason why we Americans so persistently pursue our course of self-destruction is that we do not deplore the

STOP! Each year more than 1500 persons are killed and 4000 injured on railroad crossings in the United States. The number is steadily increasing.

LOOK!! The majority of the deplorable accidents **can be avoided** by automobilists exercising care at grade crossings. **Don't take chances.** Even if a crossing is protected by gates, flagman or bell, be sure you are safe.

LISTEN!!! The best safety device in the world is a careful driver. **Stop,** look **both** ways, and **listen.** Play safe. A moment's caution may save your life.

Francis M. Hugo
Secretary of State.

tragedies which are thrust before us every day in the newspapers. As long as it is someone else, we continue serene. If that word "LOOK!" could turn the reader's eyes to such a disaster as that at Clarksboro, N. J., on November 7, last, when 16 or more men and women were killed at midnight, it would impress the necessity of caution with real effectiveness.

It is desirable to repeat such warnings occasionally. With a tithe of the ingenuity displayed in warning people not to buy some other manufacturer's garters, or razors, or cigars, "safety first" could be impressed on those who need the warning, in a way that would be astonishing. The word "caution" in the last line of this card should be the subject of an essay by itself. It implies (in this case) the cultivation of the *habit* of stopping at crossings *whether the stop is necessary or not.* The people of Massachusetts and Connecticut, through their legislatures, adopted this rule for railroad trains crossing other railroads and crossing drawbridges, about 60 years ago; and they still keep it on their statute books: but like the people of the other states, they have thus far failed to adopt the rule for themselves. The automobilist, today, comes pretty near being in the same class with the locomotive enginemen of 1853 (the year of the South Norwalk drawbridge disaster) and he needs the stop rule just as much as they did. They were liable by carelessness to kill a hundred people: he may kill only a half dozen, but there is always the possibility that one of the half dozen may be *himself.*

The Railroad Problem and the "Party of Business"

THE RAILWAY AGE is not a political newspaper, but it is within its province as a railway paper to discuss the relationship of party politics to the railroad question.

Government control of railroads was adopted by a democratic administration and the railroad control law was passed by a democratic Congress. The Republican leaders and newspapers have made much political capital out of the results of the policy of government operation established under democratic auspices. The unpopularity of government operation of the railroads and the telegraph and telephone lines was one of the principal reasons for the election of a Republican Congress in 1918. The Republican party has always prided itself upon being the "party of business and of general prosperity," and we were assured both before and after the election of 1918 that a Republican Congress would speedily pass constructive legislation under which the railroads could be and would be safely returned to the more efficient management of the private companies.

President Wilson, who usually has shown himself to be an astute politician, passed over to the Republican Congress both the opportunity and the responsibility of drafting and passing the needed railroad legislation. He announced last May that the railways would be returned to their owners at the end of this year. He called Congress in special session early last summer. He made no specific recmomendations regarding the legislation which should be enacted. The Republicans had a majority in the House of Congress. Congress had ample time in which to frame and pass the needed legislation before January 1, and the country knew it then and knows it now.

Work upon the proposed legislation was begun at once by the Senate and House committees on Interstate Commerce. These committees conducted hearings at which the facts about the railway situation were fully presented and able men representing all points of view put forward and advocated plans for the solution of the problem. The hearings and subsequent developments disclosed that the committees of both houses were headed by and composed of able men who had a good grasp of the situation. The Democrats and Republicans upon these committees acted together amicably. They did not play politics. Each committee reported to its own house a railroad bill. While these bills differed in many respects, and while each had shortcomings from the standpoints of all classes of students of the railroad problem, most of those who really knew anything about the subject conceded that either bill if passed would effect a great improvement in our system of railroad regulation and management.

The House with its Republican majority could have passed the Esch bill as originally reported from committee. It did not do so. It emasculated the bill by eliminating some of its best and most needed provisions. It inserted other provisions some of which, especially those relating to the handling of labor controversies, are so bad that the enactment of the bill as a whole into a law probably would make the country's system of regulation worse rather than better than it has been in the past. A Republican majority in the House could have passed a good bill, but it passed, or permitted to be passed, a bad bill.

The Senate adjourned without acting on the Cummins bill. Since it has met again the bill has been discussed at length, especially by members of the committee that drafted it. Although the bill deals with the most important of the nation's post-war reconstruction problems, it has been almost impossible to keep in the Senate chamber a quorum to hear and participate in these discussions. What the news-

papers call " unexpected opposition" has developed. This opposition is directed principally first, against the provisions which are intended to assure to the railway companies opportunity to raise sufficient capital adequately to develop their facilities; and, second, against the provisions which are intended to prohibit strikes upon the railways and to establish means of peaceably and equitably settling labor controversies.

The date on which the President originally said he would return the roads to their owners is now (December 15) only two weeks away. In ten months out of the twelve which ended on October 31 the railways incurred a deficit as compared with the net operating income earned by the companies under private operation on which the guaranteed returns to the companies are based. The total deficit for the year ended October 31 was about $375,000,000. There is no doubt that the railways will also show large deficits in November and December. Their facilities have become so inadequate that they are unable to handle the commerce of the country, and therefore they are the limiting factor in production in America. The country will never again be able to produce to its maximum capacity until the capacity of the railroads is increased. Until the questions whether and when the railways are going to be returned to their owners, and under what kind of permanent legislation, are settled, the imperatively needed enlargement of transportation facilities will not be and cannot be commenced.

It is by no means a certainty that the President will not return the railways to their owners at the end of the year and withdraw the government guarantees whether any legislation is passed or not. Everybody knows that this would result in widespread railroad bankruptcy; and yet the members of Congress continue their course of paltering inaction. To return the railways to their owners under temporary legislation merely continuing the guarantees would postpone the time when rehabilitation of their facilities could be commenced. Because of the understanding that the return to private operation is imminent, the Railroad Administration is daily losing able men from its organizaton by their return to the companies. In these circumstances it cannot continue to operate the properties with any satisfactory degree of efficiency.

The foregoing is a plain statement of facts. No man can dispute its accuracy in any detail. All that is needed to precipitate a national catastrophe is for Congress, with its Republican majority, to continue for awhile along the course which it has been following.

If as a result of the way in which this problem has been handled in Congress the railways are not returned to private operation, or if they are returned without adequate legislation, there cannot be in the mind of any intelligent person the slightest question as to the political party which will have to assume responsibility for the consequences. The Republican party, because it has a majority in both houses of Congress, and because President Wilson passed the whole question over to Congress, will have to assume the responsibility. Is the Republican party going to vindicate its claims as the "party of business and prosperity," or is it going to stultify them?

The Republican party may be the "party of business and prosperity," but certainly the Republican majority in Congress has not thus far dealt with the railroad problem in a way which commends itself to the business men of the country, or which is adapted to promote the prosperity of the American people. The "party of business" had better get down to business, or it will go into the next political campaign with a record for dealing with the railroad problem which will estop its newspapers and spellbinders from making any effective criticisms of government control and operation of railroads under Democratic auspices.

Letters to the Editor

Good and Bad Whistling

Buffalo, N. Y.

To the Editor:

What is this preposterous announcement that I find in your issue, Number 17, October 24, page 822, that some committee recommends the modification of the rule for the highway-crossing whistle-signal so as to require the engineman to rend the air for nine seconds? What are these committeemen thinking of? Do they dwell continually in the tomb and in the barren mountains, like the wild man that we read of in the Gospel? That man was continually crying out and cutting himself with stones—a sort of self-punishment for his sins! To make larger the unavoidably large volume of noise which comes from the big locomotive of today is little less than an outrage. What is the purpose of the highway crossing signal? Is it to alarm all of the farmers within a mile? I should like to have any member of that committee, who can conveniently get hold of a buzzer or a common electric door bell, go through the motions of making the "7" signal of such a length as to occupy nine seconds. He will be ashamed of the disturbance which he finds himself making. *Three seconds* is ample time in which to make a loud, distinctive and in all respects sufficient signal.

Look at a few familiar facts. For many years the crossing signal consisted of only one blast; and everybody was happy. What need is there for having this signal different from the signal signifying the approach to a station? It has been argued that the way to improve our whistling is to make it easier for the engineman to adjust his mind to what is demanded; if that is the case a change from four blasts to one blast would be a very simple way to go about it. One prominent road has—at least on some divisions—discontinued the use of the station approach signal. Discontinuing it everywhere might not be an unprofitable experiment. You, Mr. Editor, have been arguing for years for moderation and common sense in whistling; perhaps the easier way to make such arguing effective would be to propose to modify the whistling in this way—urge its abolition. Where crossings have an attendant the use of the crossing whistle, in numerous instances, has been wholly discontinued, and with satisfactory results.

The American Railroad Association has been noted for its persistent conservatism. Assuming that the signal ought to be changed, this committee might naturally be expected to demand that the proposition be supported by a good body of experience in favor of changing. What have they got to offer? Many men in that association, as many other railroad officers, all over the country, are Morse telegraphers; and every one familiar with the Morse alphabet will agree that the way to make the crossing signal, which is equivalent to "7," is to do it in comparatively quick time. The specialists in psychology will tell you that there is a pleasing rhythm in "7" that is lacking in the long drawn out screeching which is now proposed.

The whistle nuisance is bad enough, in all conscience, already. No reasonable man, considerate of the public, can think of making it worse. Some of the safety sharps in the National Council have demanded that the crossing whistle be drawn out longer, but these men are thoughtless extremists. They are simply following some of the shortsighted legislators of former years, who actually prescribed by statute the continuous blowing of the whistle of every train, for

80 rods before reaching a crossing! And there are enginemen who are willing to aid and abet such a crime. Foolish people who recklessly approach crossings without looking and listening are, indeed, entitled to a good warning, but there is no reason in going to extremes; their lives are not worth it.

The lives of innocent people residing near crossings deserve consideration. The passengers in trains are to be considered also; I have ridden a hundred miles in an express train on a prominent Eastern road, in a coach next to the engine; and the frequent and excessive whistling for crossings were an absolute nuisance. It was, perhaps, a necessary evil, but an engineman with a conscience, with the musician's ear for time, and with *proper instruction* from his superintendent, could have reduced the evil 50 per cent or more. Some of the best runners habitually make the signal in *two seconds*.

R. C. G.

Remodeling Locomotives

To the Editor:

The interesting account in the *Railway Age* of November 14 of the rebuilding of the Prairie type into Mikado type locomotives on the Northern Pacific is of extreme interest, and one that officials in charge of the motive power of our railroads can well study.

It is true that every motive power official must study this question from his own "angle," and that a remedy suggested for one road would not cure another, but the problem is one of importance for all that.

For some years the writer has been a close observer of the motive power of the various roads in the east, and while the "east is east," the "cure" may not fit those of the west at all. I think one of the best examples and most successful ones at rebuilding locomotives occurred on the New York Central when they rebuilt a large number of their Consolidation locomotives into Mikados; I have been informed that the results obtained for this rebuilding has given them one of the best working type of freight locomotives on that road.

In July, 1918, I had reason to make a trip over the Buffalo, Rochester & Pittsburgh and stopped off at East Salamanca, N. Y. I saw there a line of locomotives, perhaps half a dozen, Consolidation and 4-8-0 type, not in use, and when I made inquiries concerning these locomotives, I received the reply that they were to be sold—that it was the policy of this road to dispose of its locomotives whenever they became too light for service and replace them with thoroughly modern power. This policy has its advantages —provided a purchaser can be found.

On the other hand, take a large road the size of the Pennsylvania. It was not very long ago that that road offered for sale some of its Atlantic type locomotives; yet as late at 1905 in their own Juniata shops they built eight-wheel locomotives for their lighter passenger trains, a commendable policy. A road the size of the Pennsylvania with its subsidiaries should have little difficulty in assigning the proper class of locomotive for service which it can handle most economically.

The New England roads, with their short runs and requirements of frequent service present a different problem. For years the eight-wheel passenger locomotive was the only type used for passenger trains. On the New Haven, the ten-wheel type was not introduced until 1904 and the Pacific and Atlantic until 1907; consequently this road has an abundance of the eight-wheel type that can be used very advantageously on shorter runs and lighter trains.

As I view the problem, the chief difficulty confronting our officials at the head of the motive power departments is not so much in the specifications of new locomotives, but in what way can the present power, ten to fifteen years old, be remodeled to handle the constantly increasing loads caused by heavier equipment, etc. Brick arches, though used here long ago by Mr. Griggs on the Boston & Providence and superheaters, and other devices have and will help—but the locomotive itself, can any more power be gotten out of it, and is it worth it? This looks to me like the vital problem that is going to soon confront the motive power officials after January first, next.

It seems to the writer to be folly to run some of these trains, two and three cars, with locomotives intended for heavier service and half worn out, but I have seen it many a time and know that on some back shop track there are probably three or four smaller ones, which with a little fixing up would do the work and burn less coal. Up to last summer, locomotives designed by Mr. Buchanan and built in the early nineties ran out of Rochester over the Auburn road with three steel coaches behind them, yet I have seen on other roads two- and three-car trains which were handled by Pacific, Atlantic, yes and even by Mogul locomotives.

The problem is distinctive with each road, and it is bound to present itself, sooner or later, and is one that our motive power officials must wrestle with and answer according to the requirements or needs of his own system.

Chas. E. Fisher.

The Switchman as Diplomat.—The switchman who does industry work has to deal with the public and he has a better chance to use his qualifications as a salesman than those who work on inside jobs. He is not only selling his labor, but he is in a position to represent his company. If he does his work promptly and cheerfully, he will have no trouble to throw all the shipments from these industries over to his employer. By obtaining this additional business for his employer he is building a reputation for himself and getting more work for his fellow employees to do.

Give the public all the help and information you can because it is the public that keeps us busy. The public also pays for the fine passenger trains that travel over our line. When you have work to do on these trains do it carefully. If you do not handle passenger trains carefully the public will be afraid to ride on your line and you will be the cause of some "old timer" returning to the freight service.—*Duit Wright.*

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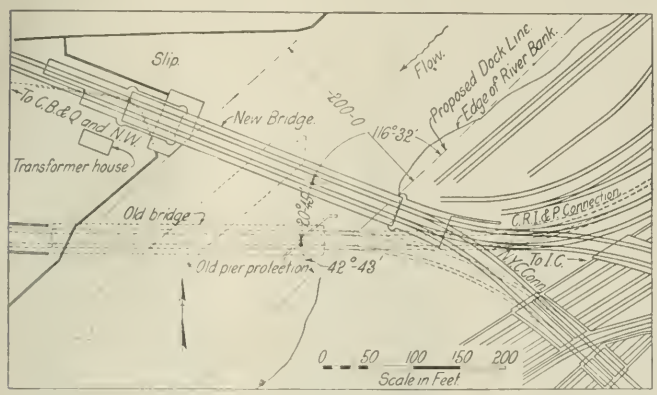
The Russian People Bid Farewell to the American Troops Leaving

World's Longest Bascule Span Erected at Chicago

Recently Completed St. Charles Air Line Bridge Contains a Single-Leaf Span 260 Ft. Long

A NEW RECORD in bridge construction has been established in the recent completion of the St. Charles Air Line structure over the Chicago river, which comprises the longest single-leaf bascule bridge ever built. Aside from the introduction of special details necessary for the completion of a record structure of this type, the prosecution of both the substructure and superstructure work involved the application of some unusual construction methods.



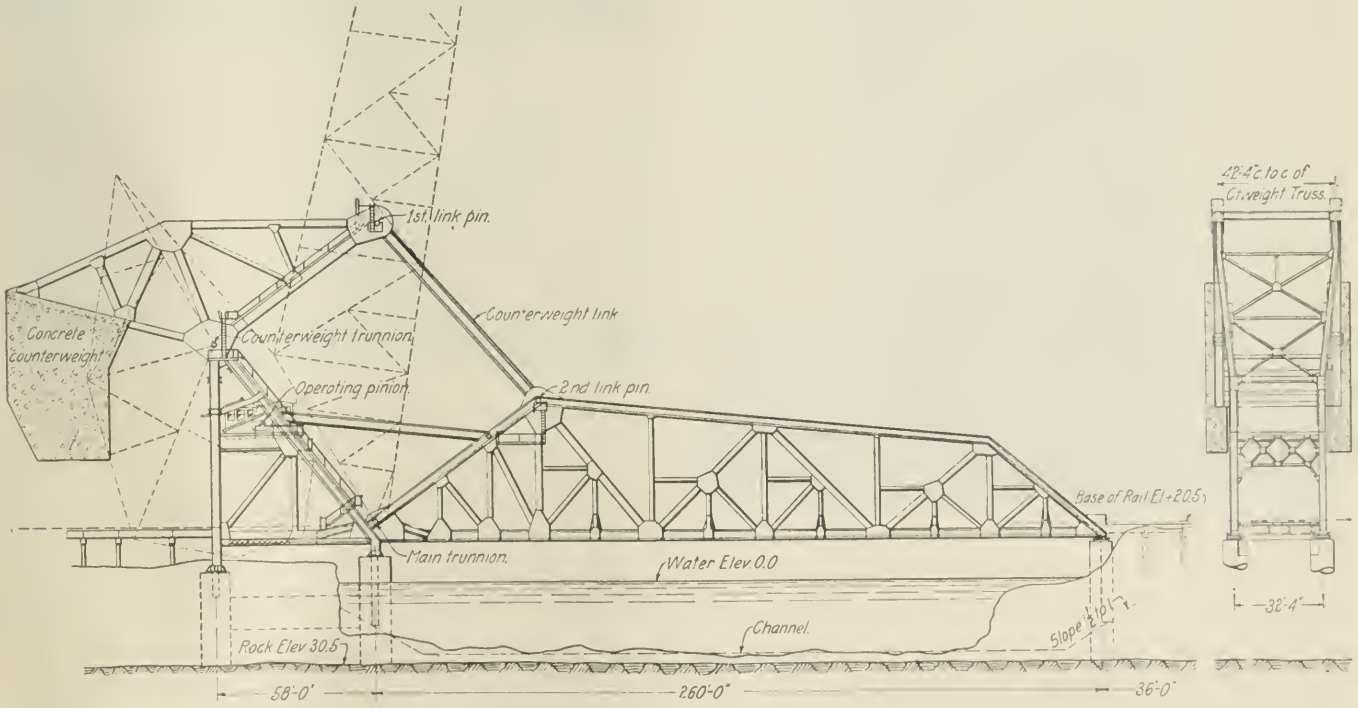
Location Map Showing Re-alinement of the Crossing

This structure occupies the approximate site of one of the earliest railroad bridges in Chicago, since the St. Charles Air Line was one of the first lines of railroad built in that city. Projected in 1857 as a trunk line railway extending westward from the city, the St. Charles Air Line is now but a short east and west transfer facility, extending from the Illinois Central property on the lake front in the vicinity of Sixteenth street to a point a short distance west of the Chicago river. Although it is considerably less than a mile in length it connects the Illinois Central and its tenant, the Michigan Central, at the eastern end with the New York Central, the Chicago, Rock Island & Pacific, the Chicago, Burlington & Quincy, and the Chicago & North Western. It is owned jointly by the Illinois Central, the Michigan Central, the Burlington and the North Western and is operated by the Illinois Central. The traffic over the bridge is entirely interchange, largely between the owning and operating roads. However, it is also used for the transfer of mail and express between the Union and the La Salle street stations, while during the war many troop trains were handled across this line.

The new structure replaces a swing span built in 1882, which is 297 ft. 6 in. long and crosses the river at an angle of 42 deg. 45 min., providing two channels, one of 59 ft. and one of 55 ft. The alinement and track arrangement were changed, as indicated, to accommodate the new double-track bridge which crosses the river at an angle of 63 deg. 28 min., being 260 ft. long between end bearings of the moving leaf and providing a clear channel for navigation 200 ft. wide.

Superstructure

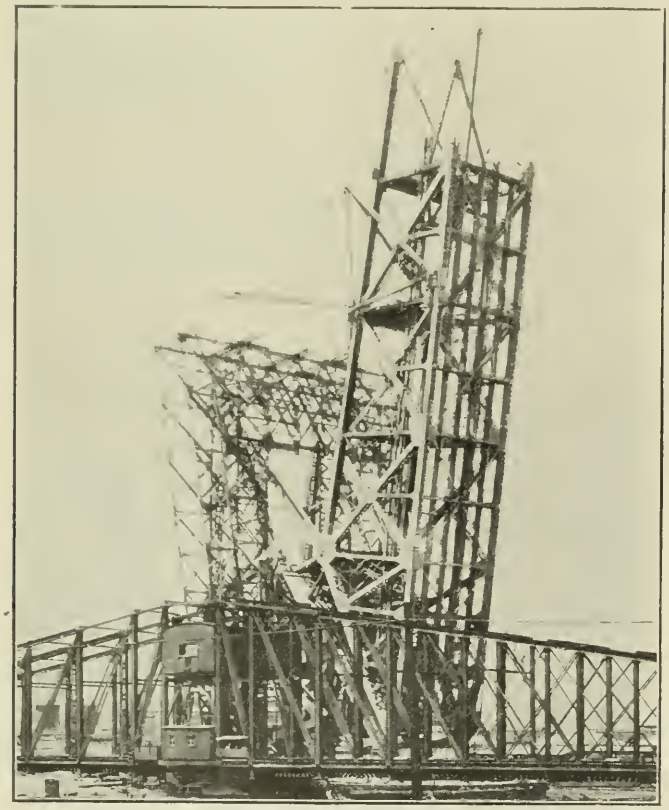
The location of the new structure was selected to avoid interference with the old bridge during construction and to reduce the skew of the crossing and, therefore, the length of the bridge as much as possible. However, the track layout on the east side of the river, particularly the south wye, gave little latitude in the location of the bridge. The drawings show the general plan and elevation of the new bridge, including the concrete trestle approaches, which will readily



Side and End Elevation of the Bridge

be recognized as the Strauss heel trunnion type of bascule bridge.

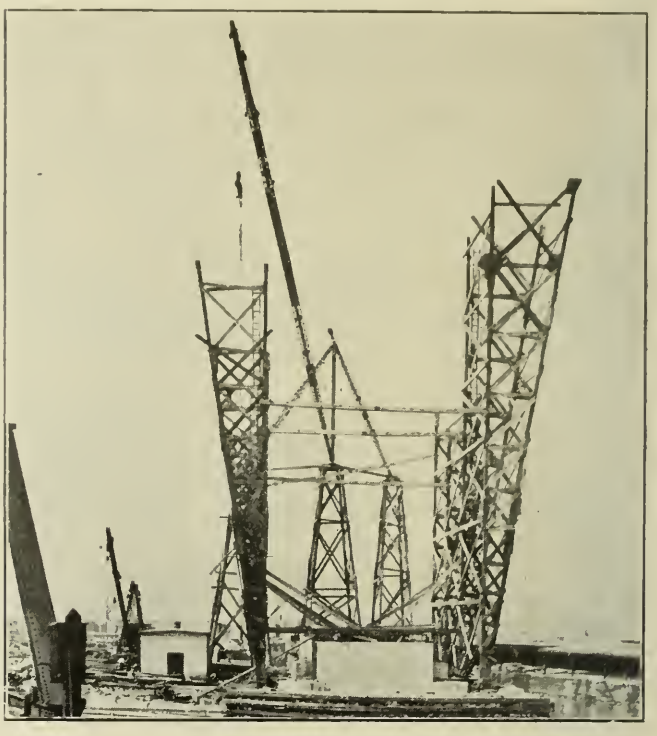
The superstructure consists of a through Warren truss double track movable span, with subdivided panels and inclined top chords, 260 ft. long between end bearings designed for Cooper's E60 loading, and a 58-ft. counter-weight fixed tower span, all in accordance with the Illinois Central standard specifications. The principles of counterbalancing and operation are much the same as in other bridges of this type. The counterbalancing is effected by a pair of concrete slabs, termed "wing counterweights," such as were used in the North Western three-track bascule bridge over the north branch of the Chicago river at Deering (described in the *Railway Age-Gazette* of August 11, 1916, page 233). For large bridges these are found more economical than the single block of counterweight often used on account of the increase in leverage thus gained. They are 5 ft. 7 in. thick, 60 ft. high and 37 ft. wide, and are built around the structural steel members of the counterweight trusses which support them, and are reinforced in vertical planes with ¾-in. round rods and in horizontal planes with ½ in. square rods. In addition, 3-in. expanded metal is placed 2 in. from the outer faces of the concrete. Each concrete counterweight weighs approximately 885 tons, at 148 lb. per cu. ft. The rectangular apertures showing in the face of the counterweight are for the purpose of adding adjustment blocks to obtain the exact required weight. The calculations were based on half of the number of these apertures being filled when the bridge is in equilibrium. The total weight of the blocks equals 7 per cent of the total counterweight.



Erection View—Moving Leaf Nearing Completion; Stiff-Leg Derrick Dismantling the Traveler

As the bridge opens the counterweights move entirely outside of railroad clearance and outside of the lower portion of the supporting tower. When fully opened their lowest point is eight feet below the base of rail. To accomplish this the counterweight trusses are located in planes five feet outside the planes of the moving leaf and tower trusses, the counterweight trunnions being supported on supplemental vertical and inclined tower posts carried by deep portal girders extending beyond the main posts. The distance from the counterweight trunnion to the concrete counterweight is such that the latter swings below the overhanging portion of the tower.

The two counterweight links, which are structural members connecting the forward points of the counterweight trusses with the hips of the moving leaf trusses, are each offset 5 ft. in their length of 85 ft. 8 in. The resulting lateral component of the stress in these members due to this offset is taken care of by lateral bracing between them. The location of the above parts can be seen by reference to the general drawing and the photographs. Below the track level the retaining walls between piers 2 and 3 and the concrete trestle approach hold the earth fill from interference with the counterweights.



Method of Erecting the Traveler

Operation

The bridge is opened or closed in 1¾ min., being operated in the usual manner characteristic of this type by means of straight racks bolted to a pair of operating struts, one pivoted to the end posts of each truss and engaged by operating pinions located in the portal of the counterweight tower. The bridge is electrically operated, and current from a 12,000-volt public utility circuit is brought underground to a sub-station at the bridge site, where it is stepped down to 440 volts through three 75-kva. transformers. The operating machinery is located in a fireproof house in the counterweight tower frame and above the tracks. This house contains gearing, motors, engine, air and water tanks, switchboard, controllers and other operating devices.

The pinions are actuated through an equalizer and reduction gears by two Westinghouse motors of 150-hp. capacity, each working on a 440-volt, 3-phase, 60-cycle circuit and capable of developing a maximum torque of 3,080 lb. (each) at a one-foot radius. Each motor is equipped with a solenoid brake, adjusted for braking 100 per cent of normal running torque of the motor. These motors are controlled

by the Cutler-Hammer magnet type control, consisting of four reversing contactors and five accellerating contactors for each motor. The master controller for these contactors is mounted on a stand and interlocked with the lock motor in such a way that neither can be operated out of proper sequence. The operations of the lift and lock motors are in turn interlocked with the signal interlocking machine. In opening, all track signals must be set at "stop" indication before the motor controllers are released.

The auxiliary power consists of a four-cylinder 62-hp. gasoline engine operating at a speed of 1,000 r. p. m. The engine is provided with a self-starter operated from a storage battery. The engine was made by the Wisconsin Motor Manufacturing Company.

On account of the unprecedented size of this bridge it was considered advisable to use an air buffer on the operating strut in addition to the oak bumping blocks ordinarily em-

The Completed Bridge in the Open Position

ployed. This is a new feature in bridges of this kind and comes into play when the bridge reaches the nearly-open position. It consists of an air cylinder with 15-in. bore and 23½-in. stroke secured to the top of each strut near the moving leaf end with a piston rod 4 in. in diameter and 6 ft. 3 in. long, normally held in its extended position by a pair of coiled springs. When the bridge nears the limit of its opening the extended piston rods come into contact with a short I-beam bumping girder secured to the inclined post of the counterweight tower just above the path of the operating strut, and the compression of the air in the cylinder gradually arrests any further movement of the bridge after the power has been cut off and the motor brakes applied. A similar air buffer is located underneath the front end of the leaf which comes into play when the bridge closes, the piston rod coming into contact with the bridge seat of the rest pier.

The bridge is locked in the closed position by motor-driven latch bars moving in guides in the bottom chords of the main trusses and engaging the end shoes. These locks are operated by a five-hp. squirrel-cage motor of the high-resistance type. Both lock motor and main lifting motors are controlled through limit switches at the ends of their respective travels. The main line contactors for the lifting motors, located on the control panel, are tripped out when the moving span is within 15 deg. of the fully closed position; to close it the remaining distance a foot switch is provided for releasing the brakes and a push switch for closing the circuit through the contactors, thus short-circuiting the limit switch. The motors may then be started by the master controller. In case the line contactors go out, due to overload or short circuits, the controller handle must be brought to the neutral position before a new start can be made.

An emergency brake is also provided, acting on each operating strut incorporated with the operation strut guide. These brakes are operated by single action compressed air cylinders in line with the strut secured to flanges on the bottom of the guide. The pistons of the cylinders are connected by means of connecting levers and eccentrics to eight brake shoes—four each for the top and bottom flanges of the strut. The operator applies the brakes by admitting compressed air into the cylinders, a control valve being located in the operator's cabin immediately adjacent to the leaf motor controllers.

Air is supplied to the strut brakes and also to a warning whistle at 125-lb. pressure by a General Electric 25 cu. ft. direct-connected, motor driven, air compressor with automatic governor and unloader. The storage capacity consists of one 65 cu. ft. tank, located on platform outside of operating house.

The warning and indicating signals on this bridge are most complete. In addition to the usual channel warning lights required by the government, a wig-wag warning to river traffic has been introduced as a signal to vessels in event of failure of motive power for the bridge. The wig-wags are located in the center of the bridge on the lower chord and can easily be seen from the river. They are controlled by a snap switch on the controller stand.

The Substructure

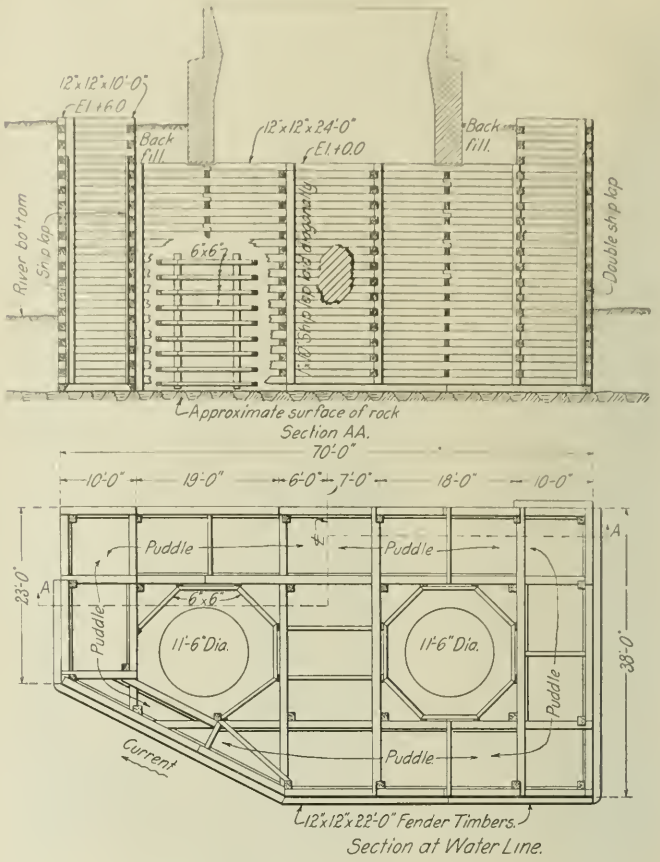
The substructure for the pivot end of the span is the conventional form for this type of movable span, comprising four cylindrical piers, to carry the four posts of the counterweight tower, the two forward ones also supporting the pivot ends of the movable leaf. These piers are connected by walls which function at once as ties, struts and retaining walls for the filling that supports the tracks in the space enclosed by four walls. The rest pier is of similar design, consisting of two piers connected by a concrete diaphragm. These are concrete trestle approaches to the rear of the piers on both sides of the river, this type of construction being adopted primarily to avoid the building of abutments to resist the earth pressure close to the river. On the west side the trestle was especially applicable because of a slip adjoining the bridge immediately to the north, which would have necessitated an expensive retaining wall along that side had an embankment been used. The trestle for the north track is 98 ft. long, while that for the south track is only 42 ft., so that for a length of 56 ft. the embankment for the south track slopes out underneath the trestle for the north track. The seeming inconsistency of using a retained fill within the pier structure is explained by the fact that the tie walls connecting the piers were necessary in any event, and were made to serve also as retaining walls at very little increase in expense.

The foundation conditions are more favorable at this

point than at most other bridge sites in the city. Rock was encountered at elevation 28.0, borings for a depth of 11 ft. into the rock establishing the security of this material beyond any reasonable doubt. The east substructure and the southwest pier of the west substructure were far enough behind the existing dock line to permit of the successful use of the "Chicago" method of open-well excavation, but the northwest pier on the west side was so close to the private slip that a puddled coffer dam was required. This was constructed with wooden sheet piling on the outside and steel sheet piling on the inside.

It was the two east piers on the west side of the river that imposed the real problem in foundation work. The lack of a sufficient earth cover over the rock made it impossible to hold sheet piling effectively and precluded the use of a coffer dam. As a consequence a design of cellular crib was developed, as shown in the drawing. This consists of 12-in. by 12-in. timbers, with a double layer of shiplap on the interior, arranged so as to provide for a puddle wall surrounding two interior cells on the sites of the two piers. This puddle proved sufficiently tight to enable the water level within to be lowered to a depth of 10 or 12 ft. In the spaces thus partially unwatered steel sheet piling was driven in circles of the near sizes of the piers. To accomplish this wooden forms or cages were built in the shape of segmental centers, disposed horizontally with vertical guides to connect them. The space within the circles of sheet piling were pumped out and excavated to a depth of about two or three feet into the rock and filled with concrete. The cages were taken out piecemeal as the concrete was brought up. The wooden crib was built to a height of four or five feet on ways in the slip adjoining the bridge, launched and then completed while floating and finally towed into position. Because of the impracticability of holding piles in front of the piers, this crib will remain in place permanently as a fender to protect the pier and superstructure against navigation.

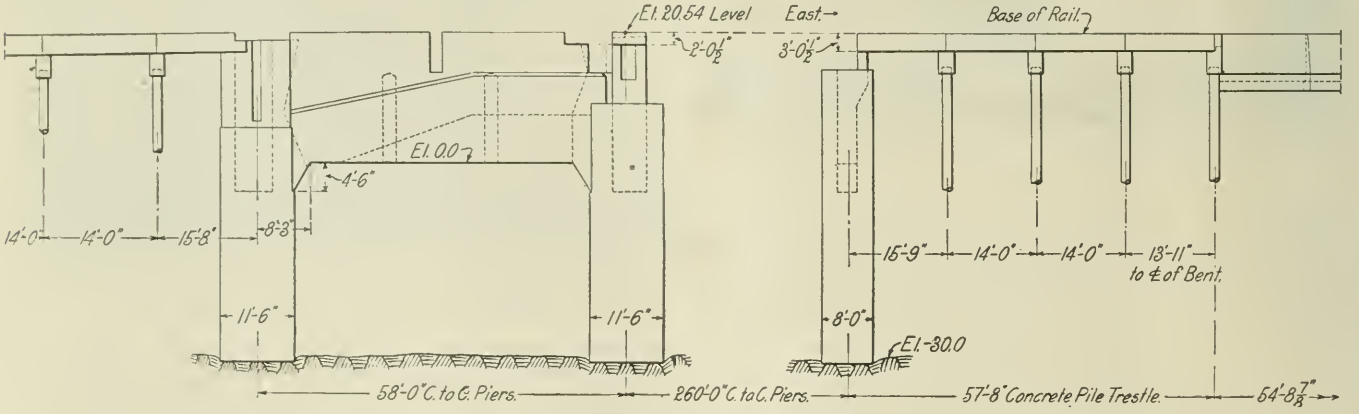
Because of the presence of the slip a timber bulkhead was driven along the north side of the west substructure, which is supported in part by tie rods from a row of piles along the south side. The entire substructure contains 2,000 cu. yd. of concrete, including the concrete trestle approach. The trestle conforms to Illinois Central standards, with concrete piles of the pre-cast and drive type. The superstructure



Details of the Cellular Crib Used for the Construction of the West Abutment

outer end was elevated some 265 ft. above the track level, or about as high as a 22-story building. Obviously this entailed something more than ordinary erection methods.

The tower and counterweight trusses were erected first with the aid of a gantry traveler, composed of four gallows-frame bents 168 ft. high above a traveler track built along each side of the bridge at a level about 14 ft. below the bridge track level. The north traveler track was supported on the bulkhead and the south one on a row of piles, including those used as backstays for the bulkhead. This traveler was set up first by a stiff leg derrick mounted on a three-legged tower with a 100-ft. boom. The gantry frame carried a row of longitudinal girders on each side, each of which carried two sets of fall lines operated by a hoisting engine,



Outline Elevation of the Masonry

was built by the Foundation Company of New York during the winter of 1917-18, one of the severest in local history.

Erection

In conformity with common practice in such structures, the bridge was erected in the raised or open position. Owing to the great length of the span this meant that the extreme

set on the ground to the rear of the bridge. As the traveler was tall enough to cover the highest part of the tower and counterweight trusses, these fall lines were readily used to set all members of the structure. The heaviest one wos the rear section of the bottom chord of the counterweight truss, weighing 70 tons. In doing this portion of the erection the traveler was first used in a forward position to erect the tower, then moved back 40 ft. to erect the counterweight trusses and again moved forward to erect the moving leaf to the height of the hip verticals.

The rest of the moving leaf was erected by a method more nearly comparable to that used in the erection of tall steel frame buildings than steel bridges, namely, by means of a

The West Abutment

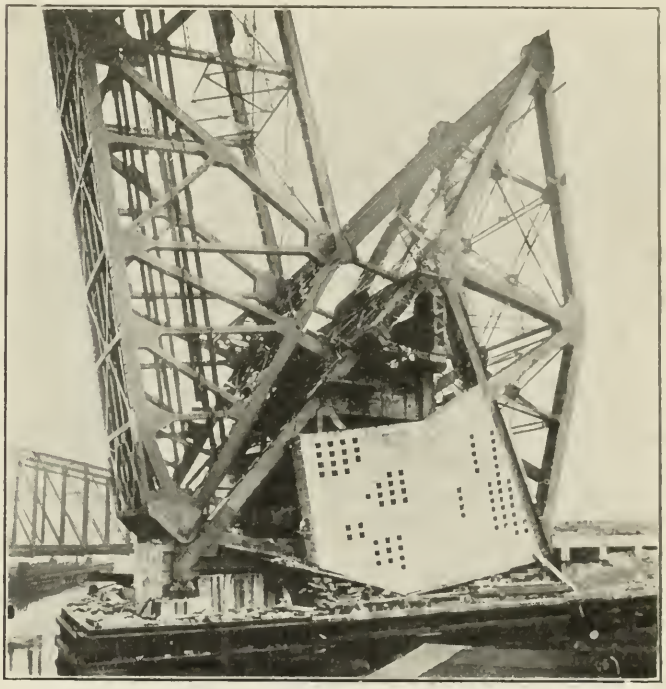
derrick that was used from time to time as the work progressed. The manner in which this was carried is particularly interesting.

The span in its vertical position may be considered as forming an enormous elevator shaft in which the erection equipment is comparable with the elevator. As in an actual elevator, a guide was provided along each side, in the form of two lines of heavy timbers bolted to the web members of the trusses. These guides were somewhat closer to the bottom chords than to the top chords and were parallel with the former. The derrick, which moved upward with the aid of these guides, consisted of a vertical A-frame made of two 12-in. by 12-in. timbers and standing on a girder composed of four 8-in. by 16-in. stringers spanning crosswide from guide to guide. This girder, reinforced by a shallow truss underneath, carried the load of two booms mounted at the center on opposite sides of the A-frame, so that one boom was used to erect the bottom chords and floor system, while the other one was engaged in setting the top chords, top laterals, etc. The weight of this derrick and the loads it lifted was carried on two columns of 12-in. by 12-in. timbers set up under the ends of the A-frame and held in place by bolting to the guide timbers. This derrick was raised from time to time by lines lashed to members that had been erected to some considerable elevation above the position of the derrick.

The steel for the bridge was unloaded in a yard north of the slip, from which it was brought to the work partially on barges and partially on cars. During the erection of the span the gantry traveler was taken down with the aid of a stiff-leg derrick mounted on the outside of the span at the level of the second panel point above the hip. This was facilitated by moving the traveler forward as it was taken down, one gallows-frame at a time.

The construction of the bridge was concerned to a certain extent with the plans of the Chicago Railway Terminal Commission for straightening the Chicago river which provide for a new river channel about 400 ft. westerly from the present channel. The designers of the type of bridge finally adopted have proposed a plan for revolving the superstructure of the new bridge intact on a circular track and rollers to the new site. No provision has been made in the substructure as yet for the prosecution of such a plan.

The bridge was built by the Illinois Central under the direction of A. S. Baldwin, formerly chief engineer and now vice-president of the corporation, and F. L. Thompson, chief engineer. Maro Johnson, assistant engineer, assumed direct charge during the construction of the sub and superstructure. The Strauss Bascule Bridge Company, Chicago, acted as consulting engineers. The Foundation Company, New York, built the substructure, beginning construction in October, 1917, and completing it in August, 1918. The American Bridge Company (Gary plant) fabricated the steel and machinery, which was erected by the Ferro-Construction Company of Chicago, which began work in October, 1918, but was interrupted by delays in receipt of material in November, resuming operations in February, 1919, and completing the erection with minor interruptions in August, 1919. C. H. Norwood of Chicago furnished and installed all air and



The Counterweights, the Counterweight Trusses and the Tower

electrical equipment and the auxiliary gas engine drive. The structural steel weighs 1,544 tons and the trunnion pins and operating machinery 166 tons. The main trunnions are 25 in. in diameter, the counterweight trunnions 46 in. and the first and second link pins 20½ in. and 31 in., respectively.

Number of Locomotives on Japanese Railways.—There are in operation on the Imperial Government Railways of Japan the following locomotives: 1,182 tank engines, 600 of which are of British make, 308 American, 171 German, and 103 Japanese. There are 8 light railway locomotives, 4 of German manufacture and 4 of unknown make; 1,778 tenders, 711 of which are Japanese, 671 American, 336 British, and 60 German. The electric locomotives number 13, of which 12 are German and 1 Japanese. Although these figures give a considerable number of Japanese types of both tanks and tenders, the most of the parts and equipment of these engines have been purchased either in America or England and assembled in Japan.

Investigation of Plumb Charges Demanded

Representatives of the Plum Plan League were given a brief hearing before the Rules Committee of the House of Representatives on October 10 for the purpose of urging the passage of the resolution introduced in the House by Representative Huddleston of Alabama, providing for an investigation by a Congressional committee of the charges of railroad financial manipulation, and that the railroads seek legalization of a fraudulent property investment as a basis of valuation, made by Glenn E. Plumb, counsel for the organized railroad employees. Representative Huddleston introduced the speakers, saying they were prepared to prove that eight or nine billion dollars of the railroad capitalization is "pure water." He declared that an investigation of elements affecting the valuation of the railroads was especially important because of its bearing on the level of rates, and he declared that the railroad interests were seeking to prevent the investigation. As evidence of this, he stated that the financial journals and the *Railway Age* have been very "abusive" of the railroad labor organizations.

Warren S. Stone, grand chief of the Brotherhood of Locomotive Engineers and president of the Plumb Plan League, said it was the unanimous wish of the employees that the resolution be reported out by the committee and the investigation made, because the employees were prepared to prove in detail every charge that Mr. Plumb had made.

Chairman Campbell asked what would be added by such an investigation to what the Interstate Commerce Commission is doing in connection with its valuation of the railroads. Mr. Stone replied that the commission's work will not bring out many of the facts charged because of differences of opinion as to what the commission ought to do. He said some people think they ought to ascertain the "cost price" of the railroads, while the railroads say they ought to ascertain the cost of reproduction. He also referred to "abuse" by the *Railway Age* and the New York Times, but said it ought to be taken as a compliment because these papers never had an idea that was not dominated by Wall Street.

A member of the committee suggested that as the hearing was to be brief, it would be well to have some of the facts charged put into the record, whereupon Mr. Stone gave way to F. J. Warne, a statistician representing the railway employees, who began a long statement attacking the property investment accounts and the financial management of the railroads, using material from previous investigations by the commission, which are the source of most of the facts stated by Mr. Plumb in his charges, and also making quotations from statements by the Interstate Commerce Commission regarding the unreliability of the property investment accounts.

Mr. Warne declared that government regulation has been as "dismal a failure" as was ever the unregulated private management before 1888. That fact, he said, presents only the alternatives of government ownership and operation and some compromise on a plan of "industrial democracy" as represented in the Plumb plan. Mr. Plumb's charges, he said, were based on the fundamental idea of the failure of government regulation. In answer to the statements that the Plumb charges are old, he said that was no reason why they should not be investigated now because Congress has never done anything about them and there is no law to prevent a repetition of the financial manipulations that were practiced in the past. Mr. Warne did not finish his statement, and Representative Huddleston asked for another hearing for that purpose and also to allow Mr. Plumb to appear, as he was unable to be present.

Benjamin C. Marsh, secretary of the Farmers' National Committee on Transportation of the Farmers' National Council, also urged the passage of the resolution, saying the farmers were confident that such an investigation, "if fearlessly and thoroughly conducted," will reveal the methods of the financial interests and show that they are detrimental to the best interests of the farmers and the people of the entire country. He said an effort was being made to jam legislation through Congress to "secure a system of valuation which would add about eight billion dollars to the present capitalization" of the railroads, and that the railroads are making every effort to prevent an investigation of Mr. Plumb's charges.

Chairman Campbell of the committee said he had not heard of any effort on the part of the railroads to prevent the investigation, but Mr. Marsh said he had newspaper clippings which showed the efforts the railroads are making.

Alfred P. Thom, counsel for the Association of Railway Executives, at the request of Chairman Esch of the House committee on interstate and foreign commerce, has filed statements with the committee for each railroad referred to in Mr. Plumb's charge that various railroads had given bonuses to their stockholders or had issued new stock for less than its market value. Each statement gave the circumstances under which the stock was issued, and Mr. Thom stated that it appears that no stock was issued by any of the companies named during the period mentioned at less than par. In some circumstances stock was issued by a company to its own stockholders at par when it was selling in the market at a higher figure, but the laws of many states require any new stock to be offered to existing stockholders at par before any of it is disposed of to the public. Mr. Thom also gave an explanation of the reasons for such a rule, showing that where there has been an issue of stock to the public at a greater value than par, but at less than the market value, it can never be expected that a large issue of new stock can be disposed of at the market value of the similar amount outstanding.

Common Use of Coal Cars

The regional director, Central Western region, has announced that beginning December 13, as a temporary measure to insure an adequate supply of cars in the Central bituminous field with the re-opening of the mines, it has been decided to make effective the common use of coal loading equipment belonging to the principal coal-shipping railroads in that coal field. D. I. Forsyth, with headquarters at 547 West Jackson boulevard, Chicago, is appointed manager of Coal Car Distribution, Western Lines, and will supervise and direct the distribution of coal loading equipment between the roads named.

The roads in the Central Western Region whose cars are included in this arrangement are the Atchison, Topeka & Santa Fe, the Chicago & Alton, the Chicago & Eastern Illinois, the Chicago, Burlington & Quincy, the Chicago, Peoria & St. Louis, the Chicago, Rock Island & Pacific, the Chicago, Terre Haute & South Eastern, the Evansville & Indianapolis, the Peoria & Pekin Union, the Peoria Railroad Terminals and the Wabash; the roads in the Northwestern region included are the Belt Railroad of Chicago, the Chicago Great Western, the Chicago Junction, the Chicago, Milwaukee & St. Paul, the Chicago River & Indiana, the Chicago & North Western, the Chicago & Western Indiana, the Elgin, Joliet & Eastern, the Indiana Harbor Belt, the Minneapolis & St. Louis, and the Minneapolis, St. Paul & Sault Ste. Marie. There is also included one road in the Southern Region, the Illinois Central.

Scientific Development of the Steam Locomotive*

Factors Affecting the Cost of Maintenance and Operation Analyzed and Improvements Suggested

By John E. Muhlfeld

PART I

MARKED PROGRESS has been made in the development of the steam locomotive as the result of superior engineering ability, and the results have in many respects been exceedingly effective. This progress, however, has been confined largely to an increase in size, weight, evaporating capacity and hauling power, and while the general use of superheaters and firebox baffle walls during the past ten years has substantially assisted in improving sustained boiler capacity and increasing thermal efficiency as well as in keeping the steam locomotive in advance of the electric locomotive, the opportunity for further improvement in thermal and machine efficiency and to reduce smoke, cinders, sparks and noise is untold.

The desiderata in a steam locomotive may be summed up as: a reasonable first cost; maximum capacity for the service within roadway weight, curvature and clearance requirements; ability to handle the heaviest gross tonnage practicable at the highest permissible speed; positive control of mechanical operation; economy as regards fuel and water consumption and repairs; minimum manual labor for road and terminal handling; construction of the least number of parts, and capacity to perform continuous mileage without failure.

Modern types of steam locomotives fulfill quite satisfactorily all of these requirements, with the exception of wastefulness in fuel, water and steam consumption, as may be gathered from the fact that the thermal efficiencies now obtained are only from 50 to 65 per cent at the boiler, from 60 to 75 per cent for the combined boiler and superheater, and from 4 to 6 per cent at the drawbar. These as compared with thermal efficiencies of from 3 to 5 per cent at the drawbar of an electric locomotive, 18 to 19 per cent at the switchboard of a modern steam-electric central power station, 25 to 30 per cent for internal-combustion engines, and 40 to 45 per cent as claimed for the full range of from one-quarter to full load for combination internal-combustion and steam motors.

The increase in the first cost and in the cost for labor, fuel, material and supplies for operation and maintenance of the steam locomotive has been most marked during the past ten years, particularly since the war. It is now being operated and maintained by highly paid enginemen and mechanics, with high-priced materials and supplies, and the machine and its performance must be brought up to a more respectable basis of engineering efficiency if it is to be perpetuated.

The supporting data of this paper, which apply to the United States, present the reasons why the general improvement of the steam locomotive should embrace the following changes which are now being embodied in the construction of a new type of locomotive, the first of which it is planned to have in regular service in 1920: *a*, steam at a pressure of about 350 lb. to be employed, superheated about 300 deg. F.; *b*, improved boiler, furnace and front-end design and appliances; *c*, greater percentage of adhesive to total weight, and a lower factor of adhesion; *d*, more efficient methods of combustion; *e*, use of exhaust-steam heater and flue-gas economizer for boiler feedwater; *f*, better steam distribution and utilization; *g*, reduced cylinder clearances and back pressure; *h*, lighter and properly balanced reciprocating and revolving parts; *i*, lower heat, frictional and wind-resistance losses; *j*, improved safety and time, fuel and labor-saving devices.

*Abstract of a paper presented at the annual meeting of the American Society of Mechanical Engineers, December 5, 1919. Owing to the length of Mr. Muhlfeld's paper, it is not possible to publish it in full in this issue. The sections dealing with the generation and utilization of steam will appear in next week's issue.

Reasons for Perpetuation of the Steam Locomotive

Much more has been said and written during the last few years about the electrification of the steam roads of the United States for the purpose of fuel and labor saving and conservation, but practically nothing has been set forth as to the possibilities to accomplish much greater results per dollar of investment and operating cost by a scientific development of the steam locomotive.

As the average use of power at any considerable load factor is for only 8 hours per day, and as there is more or less irregularity in the demand, due to the small use on Sundays and holidays, the available water power would be used only about 2,400 out of a possible 8,760 hours per annum, or about 27 per cent of the time, so that the remaining 73 per cent would be wasted. Therefore, where continuous water power is available it should be diverted to the special requirements of large and regular amounts, such as in electrochemical and metallurgical processes, in order to reduce this waste to a minimum.

The methods at present employed for generating electric power from fuel in large modern central power stations represent from 18 to 19 per cent thermal efficiency, and as the investment cost for a steam plant is from one-third to one-quarter of that for a water-power development, the same total investment would produce from three to four times as much power from a steam as from a hydroelectric plant.

Complete electrification of some portions of the large transcontinental trunk lines has been effected, all of which are representative of progressive engineering skill, but reliable reports and statistics available have not proven the actual operating economies predicted, and with the present unsettled state of the electrical art numerous objections present themselves, among which may be noted: *a*, prohibitive capital and non-productive cost per mile for road, equipment and facilities; *b*, non-interchangeable equipment adaptable to certain electric zones only; *c*, entire operation dependent upon single power plants and transmission systems; *d*, widely varying load factors—dependent upon business conditions—requiring enormous outlay to meet uncertain peak movement and emergency conditions; *e*, complication and congestion of road and terminal trackage with transmission and contact lines; *f*, first cost from five to ten times, and operating cost from two to three times that of steam; *g*, liability for complete tie-ups due to storms, snow, sleet, rain and short-circuits.

Any general plan to electrify the steam roads to meet other than terminal and trunk-line congestion conditions, at an absurd cost, would mean lack of efficiency and prohibitive

financing, which would result in bankruptcy for most of the railroads affected and in a further burden upon the public. In fact, it would be a source of real danger to the rehabilitation of these transportation systems, as to discard steam locomotives where coal or oil is available and can be burned with efficiency, comfort and economy represents absolute waste.

Proposed Order of Development of the Steam Locomotive

The opportunity for steam locomotives to produce economy by increasing train loads, reducing transportation and mechanical delays and saving fuel and labor, is enormous.

The principal parts of a steam locomotive assembly are the boiler, engine, running gear, tender and special appliances, and the functioning of these parts in operation, jointly or independently, will involve particular factors that are capable of scientific development, viz.:

1 Design, Material and Workmanship.
2 Adhesive Weight, Tractive Power and Factor of Adhesion
3 Tracking, Curving and Riding.
4 Boiler Feedwater
5 Boiler-Feedwater Purifying
6 Fuel
7 Combustion.
8 Boiler-Water Circulation.
9 Heat Radiation, Convection and Conduction.
10 Steam Generation.
11 Steam-Pressure Increase.
12 Steam Superheating.
13 Steam Distribution and Utilization.
14 Waste-Heat Distribution and Utilization
15 Friction and Resistance
16 Acceleration
17 Deceleration.
18 Lubrication
19 Insulation
20 Safety Appliances
21 Special Appliances.
22 Power for Accessories.
23 Time Saving.
24 Fuel Saving
25 Labor Saving

The supporting data relating to the improvement of these factors are presented below:

Design, Material and Workmanship

Only by greater refinement in construction can requisite operating results be produced to offset the increased cost of equipment, supplies and labor. Therefore the designing should now be done along more scientific lines through the substitution of boiler, cylinder and drawbar horsepower and drawbar pull calculations for tractive power; thermal efficiency for evaporation results; distributed for centralized thrusts, strains and stresses; light, high-grade alloy and high-carbon steels and other metals for heavy, low-grade plates, forgings and castings; and in the more general use of high-grade engineering practice in lieu of rule-of-thumb methods.

In the modern high capacity locomotive it is necessary that certain parts be made as light as possible. On the other hand, the items of fatigue and shock of metals due to continued vibrations and impact as well as of inherent combinations of weakening chemical and physical characteristics, are responsible for many sudden failures of staybolts, plates, springs, axles, crankpins, tires, piston and main rods, frames and like parts that are subject to reversal of stress or to hundreds of thousands of repeated and localized loads. As it has been found that the elastic limit is not necessarily representative of the fatigue strength, these factors require that further careful research and study be made for the purpose of determining upon a reliable quick test that will insure against unsuitable material entering into the construction.

The same degree of refinement applies equally to workmanship for construction and upkeep, which should be brought up to the same standard as obtains in other machinery that is producing more efficient and economical power for other modes of travel.

Adhesive Weight, Tractive Power and Factor of Adhesion

Adhesive Weight. In the ideal locomotive all of the weight is carried on the driving wheels for utilization as tractive power. The extended use of non-productive trailing wheels and the four-wheel leading truck has become an expensive fashion in that it has greatly reduced the percentage of total engine weight on drivers for adhesive purposes. For example, where a modern Mikado type locomotive will average 75 per cent adhesive to total engine weight, a modern Consolidation will run as high as 92 per cent, thereby utilizing much more of its weight to produce drawbar pull, hauling power and earning capacity.

Boiler design and weight distribution should be so correlated to the running gear as to make the use of trailer wheels unnecessary except where required by wheel load limitations, and with the more recent improvement in constant resistance leading truck designs any four-wheel arrangement, except for high-speed passenger service, should be entirely satisfactory.

Tractive Power. In calculating tractive power the usual practice is to use 85 per cent of the indicated boiler pressure in lb. per sq. in. for two and three-cylinder single expansion, and 52 per cent for two and four-cylinder compound engines. However, for a superheated steam locomotive the use of a higher percentage of the indicated boiler pressure should receive due consideration when making tonnage rating schedules before the train load is finally determined upon, as dynamometer tests have indicated that as high as 92 per cent for two-cylinder single expansion locomotives is permissible for train-loading purposes.

Factor of Adhesion. In the same way that the leading and trailing truck type of locomotive has reduced the percentage of adhesive weight, so also has it increased the factor or ratio of adhesion, due to the "bridging effect" thus obtained over the driving wheels, tending to release the weight on the latter. Whereas many successful Consolidation types of locomotives are now operating with factors of adhesion of from 3.55 to 4.0, the Mikado types will usually range from 4.0 to 4.5. The co-efficient of static friction or adhesion between driving wheel tires and very dry, clean rails reaches a maximum of about 0.35, and for moist, muddy, greasy and frosty rails a minimum of from 0.15 to 0.20, giving factors ranging from 2.85 to 6.65.

In general, the factor of adhesion should be as low as practicable in order that the maximum power will always be available to start trains that can be easily handled when in motion and should about equal the ratio between the limiting friction in pounds and the weight on driving wheels in pounds, which for average dry rails is from 3.5 to 4.

Tracking, Curving and Riding

With the increased length, higher center of gravity, extended front and back overhang, and smaller proportion of spring-borne weight there have been many difficulties to overcome in order to maintain proper tracking, curving and riding qualities in locomotives of great power, and in the majority of cases these have been met with unusually satisfactory results.

Certain changes can be made, however, that will bring about a general betterment in the way of reduced rolling, oscillation, nosing and pounding, namely, reduced spread of cylinders; more uniform distribution and equalization of weight over driving and truck wheels; maximum permissible diameter of driving wheels; reduction in weight of revolving and reciprocating parts and counterbalance and proper distribution between wheels; improvement in constant-resistance lateral-motion devices; more uniform cylinder pressures when using steam and drifting; and greater refinement

in control of end play, wheel and rail clearances, and tire-tread coning.

As the centrifugal power force of surplus counterbalance, the swinging movement of spring-borne weight and the rotative force on the crankpins are constantly changing in combination with speed and cut-off, the importance of giving particular attention to all of the foregoing cannot be overestimated.

Friction

Friction. Friction due to oscillation, concussion, rolling, wheel flanges and treads, journals, cylinders, valves, valve gear, crossheads, center and side bearings, coupler side play and the like absorbs a considerable percentage of the power developed by the steam.

Maximum machine efficiency, or ratio of drawbar to indicated horsepower, is usually obtained at speeds of from 25 to 50 miles per hour and ranges from 80 to 85 per cent, above which speeds, due to increased friction, it gradually decreases to about 70 per cent at 75 miles per hour. For example, with a locomotive developing about 2,000 i.hp. at a speed of 30 miles per hour, about 325 hp. would be lost in internal or machine friction.

During the past ten years the increased rigid wheelbase and axle loads, greater lateral rigidity, larger cylinders, valves and revolving and sliding bearings, substitution of grease for oil lubrication, and greater number of frictional parts, have tended to increase the machine friction and consequently the horsepower, drawbar pull, and steam and fuel losses.

All of these are factors that should receive proper consideration in new designs.

Resistance

Resistance. Other than the resistance resulting from machine friction, the locomotive is subject to those due to grades, curves, weather, wind and head air, which latter is more particularly affected by the general design. As the horsepower required to overcome front air pressure increases with the cube of the speed plus the resistance due to the "air in motion," reduction of transverse flat surfaces, smoothing off of projections, vestibuling of openings and use of general curves parallel to the natural flow of the air should be carefully considered in high speed locomotives, particularly in view of the high fuel consumption and machine friction and the relatively small proportion of drawbar pull available for hauling trains at high velocities.

While the complicated design of a steam locomotive, particularly as regards the application of its accessories, makes the use of relatively smooth outside surfaces generally impracticable, still much has been done along this line on some of the European railroads that can be adopted by us to good advantage.

Acceleration

As the train resistance increases and the drawbar pull of the locomotive decreases due to speed, acceleration rapidly becomes a diminishing quantity. Therefore in order to expedite train movement locomotives should be designed and adjusted so as to permit of the highest possible rate of acceleration in the shortest distance after starting, in order that the maximum desired running speeds can be reached in the minimum of time during which the greatest evaporating capacity of the boiler is available. In locomotives designed with trailer wheels a great deal of otherwise available adhesive power, particularly for starting and acceleration purposes, is being wasted and the utilization of this lost adhesive weight by the elimination of trailer wheels, or by the application of an independent means of power for their propulsion, would accomplish a great deal in the way of starting and accelerating trains to speeds of from 15 to 20 miles per hour.

Deceleration

Deceleration is as much a factor in expediting train movements as acceleration, particularly with long and heavy trains and grades, and improved brake-shoe design, material, flexibility and bearing area in combination with clasp types of brakes for all wheels would do much toward providing greater stopping control over large and high speed steam locomotives and thereby avoid the necessity for resorting to the use of the engine cylinder back pressure to produce adequate braking power without liability for skidding and flattening the driving wheels.

Lubrication

Valve Oil. The usual method of feeding valve oil is through a steam-condensing lubricator. However, this method gives an irregular feed of oil to engine valves and cylinders if no change is made in the adjustment of the sight feeds when the locomotive is at rest, working with a light or a full throttle, or drifting. With high steam pressures and superheat a suitable automatic force-feed lubricator, located near the steam chests, with individual feeds to engine valves and cylinders and adjusted to insure a positive and uniform feed of 50 per cent of the oil to each of the valves and cylinders at all times when the locomotive is moving, will unquestionably give better results.

Piston and valve rods equipped with a suitable aluminum-zinc lead alloy metallic packing should not require lubricators or swabs except on roads where a high percentage of drifting obtains.

Superheat valve oil is unnecessary, as carbonization of oil is due to air admission to engine valve chests and cylinders when their temperature is greater than the finish point of the oil used and is also aggravated by the induction of gas and cinders through the exhaust nozzle.

The results of tests made to determine the respective coefficients of friction of oil and grease-lubricated journals show the former to be about 0.02 and the latter about 0.03. Therefore, while the internal or machine friction of the modern locomotive has been considerably increased due to the use of solid lubricants in combination with relatively high bearing pressures, and the wear on these frictional surfaces has been materially increased, grease has nevertheless protected bearings that would otherwise have heated, and its use will no doubt be continued until a satisfactory automatic force-feed method of oil lubrication is devised.

Machinery Oil. This is the ideal lubricant for wearing parts not subjected to excessive concentrated pressures and temperatures, and should be employed wherever a better distribution of the work, proportion of parts, or method of application will permit of its use. There is opportunity for much to be accomplished in the development of a more satisfactory and automatic means for its application.

Insulation

The loss of heat through radiation justifies a considerable expenditure for its prevention, and the most practical method for reducing this waste is to first design and locate the heat-transmitting parts so that they will be the least exposed to the surrounding atmosphere and to then make use of a good non-conducting lagging, properly applied.

With the available non-corrosive heat-insulating materials that can now be readily molded into sectional blocks to any form and size desired for ready application and removal, and which will withstand the disintegrating effects of heat, vibrations and concussions incident to modern locomotive operation, there is no good reason why boilers, fireboxes, steam pipes, valve chests, cylinders and heads, air pumps

and other heat-radiating accessories or parts should be left exposed in the way they generally are, with the resultant steam and fuel losses.

Safety Appliances

While the annual reports of the Interstate Commerce Commission on personal injury accidents chargeable to locomotive equipment indicate that considerable remains to be done to improve safety with respect to boiler fireboxes, staybolts, flues, tubes, plugs, studs, blow-off cocks, water gages and grate shakers; injectors and connections; lubricators; squirt hose; reverse gears; main and side rods, and draft gear, a great deal in this direction has been accomplished during the past seven years through the co-operation of the railroads and the locomotive and equipment builders with the Interstate Commerce Commission inspectors.

Special Appliances

Tender Trucks. The present use of staggered instead of square rail joints in track laying results in considerable vibration and surging of tenders when first-class track surface and alignment are wanting. This derailing action necessitates the use of a flexible type of tender truck, such as will make it possible for each wheel to always follow and remain on the rail with which it is in contact without regard to any other wheel in the truck, if liability to derailment is to be avoided.

Truck Wheels. According to the reports of the Interstate Commerce Commission there were 954 derailments on the steam railroads during the year 1917 that were due to broken flanges and broken and burst wheels; these caused damage to railroad property amounting to $1,132,030, and resulted in the killing of 16 and the injury of 72 persons. While these reports apply to both locomotives and cars, still they indicate the urgency for improvement.

With increasing wheel loads and speeds and higher and longer braking pressures the chilled-iron and cast and forged steel wheels must not only be of the best design, material and construction to meet the most severe requirements with a proper degree of safety, but the weights should be reduced to an economical maintenance and operating basis. Chilled iron and forged steel wheels have become particularly notorious with respect to non-productive deadweight resulting from unsuitable or surplus metal, or both, and necessity will now demand an early betterment.

Mechanical Stokers. Reports indicate that stoker-fired locomotives burn from 10 to 40 per cent more coal than those hand fired, which includes the additional coal used for operating the stoker equipment, and that the cost for stoker repairs ranges from 2 to 4 cents per locomotive mile. Also that failures occur due to broken stoker parts, foreign matter in coal and wet coal. The kind and preparation of fuel are also items of importance, particularly as relating to low-volatile bituminous and anthracite coal.

It is doubtful whether any considerable progress in efficiency or economy will be made in the stoker firing of locomotives in combination with the limitations now imposed by burning coal on grates or in retorts with forced draft, and this is a matter of the greatest concern in the economic development of the steam locomotive.

Air Compressors. Compressed air is one of the most expensive mediums for producing power, particularly when the compressing is done by the single-stage system which is still in use on the majority of locomotives. As the steam is used at long cut-off and the heat of compression is dissipated and represents lost work, an average of from 70 to 85 lb. of saturated steam at 200 lb. pressure is required per 100 cu. ft. of free air compressed to from 100 to 130 lb. pressure.

For air pressures of 100 lb. and over a cross-compound steam and two-stage air compressor with intercooler between the air cylinders should be used. This will easily give an equivalent compressed-air production on from one-third to one-fourth of the steam consumption, which result can be further improved by the use of superheated steam.

Main-Driving-Axle Boxes. These are the seat of one of the serious deficiencies in locomotives of great power. As any change in the alignment of the main driving axle or an accumulation of lost motion therein immediately affects the movement of the directly or indirectly connected main and inside rods, valves and pistons, it is most important that this axle be kept in close adjustment at all times. Increasing the length of driving boxes and the various means devised for applying and adjusting the crown bearings, hub plates and shoes and wedges have not yet produced the required result, and considerable opportunity for improvement still remains.

Lateral-Motion Devices. Restricting the lateral movement over leading and trailing truck and driving wheels as well as in tender trucks has been responsible for many derailments and much wheel-flange and rail resistance and wear, particularly with modern designs of locomotives of long wheelbase and high center of gravity. Promising results have obtained from the development of constant-resistance lateral-motion devices, but further improvement is needed along these same lines to meet the more extended rigid-wheelbase conditions.

Throttle Valves. These should be removed from the boiler where they are now an obstruction to making boiler inspections and are inaccessible for inspection, adjustments and repairs.

Power for Accessories

The steam locomotive must not only produce superheated steam for the development of drawbar pull, but also supply saturated steam to various accessories of its own and for train operation. Not only has the use of compressed air been found to be most expensive for the working of these accessories, but the reserve supply for train braking has been frequently drawn upon for their operation. As power reverse gears, fire doors, water scoops, coal pushers, ashpan doors and like devices can be equipped for steam operation, such substitution offers possibilities for less drain on the boiler and much needed economy in the cost for this auxiliary power production. Moreover, as all of this power for accessories is produced by saturated steam, some means for substituting the use of superheated-steam for those purposes where it is more suitable and economical should be given due consideration.

Time Saving

The principal time-saving factors other than speed reductions and stops necessary to take on and set off business and to meet roadway, train-despatching and operating requirements, may be stated as: *a,* acceleration; *b,* deceleration; *c,* mechanical road delays; *d,* mechanical terminal delays; *e,* fueling; *f,* watering.

Acceleration and Deceleration. These factors have already been considered in preceding paragraphs, and it is only necessary to add that much time is to be gained in quickening the starting and stopping of locomotives. Any engineer who has noted the length of time usually taken to get a passenger, freight or switching locomotive, either light or loaded, under headway and to reduce the speed for a stop, will appreciate what this may amount to.

Mechanical Road Delays. These may be classed as due to engine, fuel, water and man causes.

With the adaptation of locomotives best suited for regional requirements and with proper improvements in design, material, construction, inspection, testing and upkeep, "engine causes" can practically be eliminated.

Through the installation of modern fuel-preparing facili-

ties, provision for adequate tender capacity, adaptation of locomotives to utilize the most inferior and cheapest fuels available, use of simplified manual means of firing, and particularly by reducing the consumption required per boiler horsepower developed, the "fuel causes" can be substantially reduced.

The proper systems and time for washing out boilers and the supplying of suitable, treated if necessary, boiler water to adequate tender tanks will dispose of "water causes."

"Man causes" can best be avoided through the employment of competent men, the inauguration of proper systems for education and instruction, and by equipping locomotives so that they will require the least amount of arduous work in order that the engineer and fireman can devote their time to the observation of train rules and signals and to the proper regulation of the time, fuel, steam, water and labor-saving mechanical appliances that should be efficiently and economically utilized at all times during operation.

Mechanical Terminal Delays. These are due principally to sanding, ashpan and fire cleaning, fire building, boiler washing, firebox, flue and smokebox cleaning, inspection, testing, machinery cleaning and repairs. Of these delays those due to ashpan, fire, firebox, flue and smokebox cleaning are the most prolonged and non-productive and can be reduced only by improved methods of firing, reduced fuel consumption per unit of work performed, and substitution of mechanical appliances for arduous labor, so that upon arrival at terminals locomotives can be run directly into the enginehouse instead of being held outside for this class of work and delaying upkeep attention.

Fueling. Many facilities for fueling locomotives, either with coal or oil, are obsolete, inadequate and uneconomical. Fuel should be prepared ready for firing before being placed on tenders, and with modern facilities practically no time should be lost in supplying, either on the road or at terminals.

Fuel Saving

The problem of locomotive fuel saving has never received more intelligent thought and attention from a supervising standpoint than during the past two years. This has been due to the war-time necessity for the conservation of both the fuel and the labor required for its production and to the fuel cost reflecting a constantly increasing percentage of the total expense for railroad operation.

While the furnishing of coal or oil of a proper kind and preparation by an intelligent, trained and careful fireman to a locomotive in good working order and properly operated should result in effective and economical performance, the vast difference in the amount of fuel actually used by different train despatchers, engineers, firemen and locomotives to produce the same ton-mile movement under like transportation conditions indicates the necessity for reducing the amount of fuel to be fired per ton-mile by effective mechanical means and methods instead of depending upon the directly involved and responsible human element for equivalent results.

There is no questioning the fact that avoidable low boiler and mean-effective cylinder pressures, saturated steam, indifferent boiler circulation, excessive firebox draft, clogged grates and boiler and superheated tubes, forced combustion, high smokebox temperatures, unnecessary non-adhesive weight and generally indifferent steam generation, distribution and utilization factors, for which the engineer and fireman are not responsible, have more to do with high fuel and water rates than those factors within their control. Therefore the proper procedure, particularly in view of the relatively small increase in cost for the improved locomotive equipment as compared with the otherwise total locomotive cost and the annually reduced expense for its upkeep and operation, is to design and equip the modern steam locomotive so that it will, through its self-contained mechanical operation, more fully utilize the thermal heat value of the fuel fired and thereby not be so dependent upon manual control to bring the fuel used for equivalent productive work within the proper limitations.

Making initial capital and continual upkeep and operating expenditures in order to provide well-known inefficient and uneconomical mechanical means for handling, firing and wasting greater quantities of fuel than are within the easy range of one-man hand firing, in preference to diverting an equivalent amount of money for capacity increasing and fuel and water-saving appliances, represents a policy that is not at all consistent with existing and future labor and fuel costs if the railroads are to be continued on an investment basis.

Labor Saving

The labor now required for the upkeep, terminal handling and operation of the steam locomotive is divided into three classes, i. e., shop and enginehouse men, hostlers, cleaners and supply men, and enginemen.

The item of maintenance is distributed between general and running inspection, testing and repairs and is taken care of at the shops and enginehouses, respectively. During the past fifteen years a great deal of attention has been given in the planning of these facilities to provide labor-saving tools and machinery for dismantling, repairing and assembling locomotives and appurtenances, and there are today many conspicuous examples of modern railroad shops and enginehouses, even though many more are needed on railroads that have not given proper consideration to this important factor in their operation.

Great progress has been made in the establishing of adequate and suitable terminal handling, cleaning and supplying facilities which now include power-operated coal, sand and ash handling plants and turntables, high capacity water cranes, hot water boiler washing and locomotive cleaning systems, steam and compressed air stack and flue blowers and similar appliances. The cleaning and dumping of fires, ashpans and front ends and the rebuilding of fires is, with the increasing size of locomotives and the use of inferior coal, becoming a matter of great concern, delay and expense in the terminal handling, particularly during congested traffic and cold-weather periods, and a satisfactory solution of this problem still remains to be provided.

In the operation of locomotives the hours of service law established the general practice of pooling locomotives and crews, which system until that time had been adopted by only a few of the railroads. The divorcing of the engineers and firemen from regularly assigned locomotives, in combination with the increasing size of the latter, resulted in relieving the enginemen of work which was transferred to the enginehouse forces, such as: detailed inspection, adjustment of driving-box wedges and main and side rod brasses, repacking boiler head fittings and journal cellars, filling grease cups, cleaning head, cab and marker lamps and various other equipment and parts, filling lubricators, looking after tools and supplies, hostlering at terminals, and similar detailed attention which in combination with the more extended use of power-operated brakes, reverse gears, ashpans, grates, stokers, coal pushers, water scoops, fire doors, bell ringers, cylinder cocks and like devices have practically eliminated arduous manual operation on locomotives of great power.

The mechanical requirements and status of the engineer and fireman on the large steam locomotive having been substantially changed through relief from long hours on the road, work at terminals and by means of these labor-saving devices on the road, there should now be a resulting higher standard of operation, efficiency and economy.

Garfield Resigns As Fuel Administrator

Dr. H. A. Garfield has tendered to the President his resignation as United States Fuel Administrator because of dissatisfaction with the method adopted for the settlement of the coal strike as proposed by the President and accepted by the United Mine Workers. Dr. Garfield, in proposing a 14 per cent increase in wages, which has been allowed the miners pending a permanent adjustment, insisted that the price of coal as fixed by the government should not be increased. The President's plan, which was announced without consulting Dr. Garfield, provides for a commission to determine both wages and prices. It was announced at the White House that the resignation would be accepted and that Walker D. Hines, director general of railroads, would continue to exercise the functions of allocating and distributing coal under the powers of the Fuel Administration which were delegated to him at the time the strike went into effect.

Bituminous coal operators of Central Pennsylvania, operating 700 mines and producing approximately 60,000,000 tons annually—approximately 12 per cent of the entire output of the United States—on December 12 issued the following statement, declaring that "settlement of the bituminous coal strike under the plan accepted by the mine workers officials at Indianapolis, is no settlement whatever of principles at stake in the controversy. It is merely a postponement of the showdown which, in our opinion, is bound to come.

"The miners' strike was in direct violation of a wage contract approved by the government and to continue until April 1, 1920, or until the declaration of peace, if prior to that date," the statement continued. "The miners violated that contract. They are left free to violate any other contract they may make to take its place. There is no restraining influence upon them. The public, under the form of settlement adopted, may be subjected again at any time to the discomfort and distress through which it is now passing. Organized labor has the say as to when this shall occur.

"The method proposed by Dr. Garfield for settlement of the strike was interfered with by government officials who knew little of the situation. The problem was taken out of his hands. The operators and the public, as a result, have been delivered into the hands of the United Mine Workers of America. The operators in their resolution earnestly protest against this sham settlement of a controversy which will arise again to plague the American people—a controversy which will not down until it is permanently and finally settled.

"There can be no dodging of the issue. It will arise again. It must be met. It has not been met by the coal strike settlement, and until it is met the country is at the mercy of organized labor, whose leaders have been congratulated for their patriotism by government officials."

Resolutions were adopted by unanimous vote by the operators of the Central Pennsylvania district, stating that, "in accepting this method of settling the wage controversy, the operators of Central Pennsylvania earnestly protest against the form of the commission and its powers. They demand that a representative commission, similar to that which settled the anthracite strike in 1902, be appointed and empowered to investigate by public hearings the facts which the American people have a right to know, and the principles upon which depend the future peace and prosperity of this country, and the safety of our democratic institutions. To neglect this duty is to surrender this industry and other basic industries to an overbearing group that has welded coal labor interests into a weapon for use against American freedom, and the principle of majority-rule upon which this republic was founded."

Fuel Restrictions Modified

Restrictions as to the use of coal for light, heat and power, ordered by the Railroad Administration, as the agent of the Fuel Administration on December 8, were authorized on December 12 to be lifted by the regional directors in accordance with the local conditions in their territories. It was expected that relief orders would be issued at once in the eastern regions and by the first of the following week in others.

Director General Hines authorized the following:

"The conservation order of December 8, 1919, restricting the use of heat, light and power generated or produced from bituminous coal or coke was issued to make uniform in all parts of the country the restrictions which had already been adopted in many parts of the country and to save coal and coke. Until the production of bituminous coal becomes normal, it is vitally necessary that it be conserved in every way possible and even after production reaches normal, it will be necessary to continue to conserve coal because of the loss in production of between thirty and thirty-five million tons during the coal strike. It is important, therefore, that the public exercise the greatest caution in the consumption of coal.

"It being the desire to remove restrictions just as rapidly as possible, the conservation order of December 8 has been modified today to permit the resumption as conditions warrant of the supplying of light, heat and power restricted by this order. Coal is now being moved and will continue to be moved from the East to the West in as large quantities as the relative situation in the two sections permits. The first increase in production that has resulted from the termination of the strike of the coal miners has been in the East where already the bulk of the production was being obtained. Conditions in the several regions differ and accordingly the order of December 8 will be modified on recommendation of the regional directors as their respective situations may permit.

"Regional directors have been instructed today to restore all train service removed or curtailed because of the strike situation as soon as the general coal supply in their respective regions justifies in their judgment doing so, subject to such exceptions as may be ordered by the Railroad Administration in Washington."

The new instructions did not affect the priority regulations previously put into effect governing the delivery of coal.

A Shed of Maize at Durban Harbor, South Africa, Waiting Shipment

Academy of Political Science on Railroad Problems

Relation Between the Railroads and the Shippers, the Investors, the Government, Labor and the Public

THE thirty-ninth annual meeting of the Academy of Political Science in the City of New York was held Friday and Saturday, November 21 and 22 at the Hotel Astor, New York. Samuel McCune Linsay, president of the board of trustees, opened the meeting, calling attention to two charts prepared by Richard Waterman of the United States Chamber of Commerce, showing a summary of the principal plans which have been proposed for legislation, to take the railroads out of the hands of the government and to restore the credit of the private owning corporations. The charts were distributed and then Professor T. W. Van Meter of Columbia University took the chair for the morning session.

Opening Address of T. W. Van Meter

The chairman in his opening address said that it was formally customary for railroads and shippers to look on each other in the light of their being natural enemies, and unfortunately, in some quarters, that feeling still persists to a certain extent. One of the most healthy conditions which shows itself in our present railroad problem is the apparent willingness of representatives of the shipping interests and of the railroad interests to get together in the discussion of the railroad problem. The relation between the railroads and the shippers was the subject of the morning session. The first speaker on the program was Frank Haigh Dixon, professor of railway economics at Princeton University.

The Shippers and the Railroads

By Frank Haigh Dixon

Prof. Frank Haigh Dixon spoke in part as follows: "The railroad problem from the standpoint of the shipper is in the last analysis the same problem as from the standpoint of the public. It may be assumed that private railroad corporations, rather than the government, will operate the railroads, because I have been able to discover little evidence of a desire in this country at present for railroad nationalization.

"What the shipper requires may all be summed up in the one word, service. Frequently this demand is embodied in the words 'efficient service at reasonable rates,' but I have intentionally omitted this letter requirement because I question whether, by and large, the shippers are seriously concerned as to whether the rate structure as a whole is high or low. Where the shipper's interests in rates does appear, is in such matters as equalization of the burden upon different commodities, and the equalization of market opportunities for different sections of the country. The shipper, to obtain service, needs a greater unification of the facilities of transportation, and a greater unity in the agencies that regulate the operation of these facilities. Efficiency in service, demands a smooth running machine all the time, and this can only be attained through unified regulation in the hands of a central body.

"Equitableness in rates requires that the units of transportation shall be thrown into larger systems, and regardless of how many such systems there are, they should follow well-established lines of traffic, and should be guided in their construction by commercial rather than geographical considerations. Regional grouping would have no economic justification. I venture the opinion that voluntary consolidation would not succeed, and sooner or later compulsion would have to be resorted to. I do not personally think that competition should be eliminated, although there may come a time when such competition will no longer be of importance.

"Adequate oversight of these systems would assist in giving to the federal commission powers sufficient in addition to what it now possesses to insure the most complete utilization of equipment and terminals without regard to private corporate ownership. The federal commission also should have the power to prescribe minimum rates. It is vital to the solution of the entire problem that a railroad corporation should be prevented from demoralizing the rate structure by a policy of rate reductions. The shippers should demand, also, a greater utilization of water ways. Physical connections between the water ways and the railways should be encouraged.

"Turning to the other side of the question, what have the railroad corporations a right to require of the public? Private capital invested in railroads has a right to require a return on its investment in the property devoted to public service, that shall be sufficient (1) to cover cost of operation efficiently extended, together with taxes and other public obligations; (2) to cover the interest of obligations, the proceeds of which have actually been invested in the property; (3) to cover a dividend on an honest stock capitalization, at a rate high enough to insure that the capital needed for developments can be obtained, which means not alone enough to pay a dividend in any one year, but in addition, the accumulation of a sufficient reserve to satisfy the public that its dividends will be continuous, and (4) to accumulate a surplus sufficient to keep its property up to the standard of service demanded by the public, such surplus to remain uncapitalized.

"To insure an adequate return to capital, it is proposed that Congress should adopt a rule of rate making, as a guide to the Interstate Commerce Commission, the object of which would be to make clear that the discussion of the commission embraces a consideration of the general financial condition of the carrier. The commission would become the protector and promotor of transportation service as a whole.

"A second proposal is that a government guarantee should be given for a minimum return on railroad investments. Railroad executives have opposed this, because it would remove all incentive to efficiency, but my own conviction is that a government guarantee will be found to be necessary, and I see no reason why such a guarantee cannot be made sufficiently elastic to prevent the destruction of private initiative."

Legislative Program of Interstate Commerce Commission

By Balthasar H. Meyer

Interstate Commerce Commissioner Meyer's paper was read, since the commissioner was unable to be present. The paper was in part as follows:

"There is no such thing as a permanent solution of the railroad problem. The problem is permanent, not the solu-

Note—All of the papers abstracted herein and all others presented at the meeting will be printed in full by the Academy of Political Science, Columbia University, New York City. In the above report of the meeting, no attempt is made to cover all the papers read.

tion. The railway itself as we now know it may not prove to be as permanent an institution as we are accustomed to think it to be. Even though time should demonstrate it to be such, it does not follow that legislation governing the use of the railroad and prescribing relations between owners and users and workers can be permanent. Perhaps no lesson in history has been more forcefully and repeatedly brought home to every thinking man than the changing character of our institutions. One of the highest functions of the legislator and the administrator is to adapt these institutions to the conditions of time, place and circumsance. Having accomplished this adaptation, all has been done that can be done. This applies to railways and the railway program as much as it applies to taxation, education, suffrage, police regulations and all other matters governing or affecting the conduct and well-being of citizens.

"When we contemplate questions of rates and service we see that which is ever-changing and ever-present. No matter what legislative and administrative changes are made, questions of rates and service remain. In general and in principle they are always the same.

"Responsive to a request of the Committee of Interstate Commerce of the Senate, the commission submitted a statement outlining our views. These views were predicated upon the continuance of private ownership and operation under regulation, and were approved by every member of the commission as it was then constituted except one. These views are indicated as follows:

> If the policy of private ownership and operation under regulation is continued, the following subjects will require legislative consideration: (1) Revision of limitations upon united or cooperative activities among common carriers by rail or by water; (2) emancipation of railway operation from financial dictation; (3) regulation of issues of securities; (4) establishment of a relationship between federal and state authority which will eliminate the twilight zone of jurisdiction and under which a harmonious rate structure and adequate service can be secured, state and interstate; (5) restrictions governing the treatment of competitive as compared with non-competitive traffic; (6) the most efficient utilization of equipment and provision for distributing the burden of furnishing equipment on an equitable basis among the respective carriers; (7) a more liberal use of terminal facilities in the interest of free movement of commerce; and (8) limitations within which common carrier facilities and services may be furnished by shippers or receivers of freight.

"First of all, our recommendations are based upon experience and past development. They have grown out of that which has been, and therefore have their roots in the past. To illustrate, from the beginning of railway history individual lines have been extended through construction, purchase or lease into systems; and through a continuing process of construction and consolidation great systems have been developed. We favor a continuance of that character of development within the limits and under the guidance of the statute, whereas in the past that development has taken place largely outside of the law.

"We have not deemed it necessary to work out special regulatory provisions relating to the so-called poor or weak roads as contrasted with the so-called strong or affluent roads. Railroads have in the past earned varying rates of profit. We see no reason why they should not continue to do so in the future. In view of well understood imperfections in the investment in property accounts of carriers it has been generally impossible to know just what different carriers' earnings have been on the real investment. When the necessary facts are available I expect they will show that in some, if not in many, cases the so-called weak road is actually making more money on such business as it does than many of the strong or supposedly affluent roads. This feature of the railroad situation has been practically ignored.

"Our recommendations do not lead to a hybrid system of railroads in the United States. There will result from them no such linking of private and public finance and accounts that it will be difficult to know what is public and what is private and what the true results of operation may be from the standpoint of both public and private interest. Personally, I have a strong aversion toward all plans that propose to weave together public and private interests in such a way that a clear-cut accounting representing either is practically impossible. Rather than accept some of these plans I should deem it the part of wisdom to enter upon government ownership and operation outright. I do not believe the time has come for this country to enter upon public ownership of railroads. I believe that what we have recommended will meet the present situation much more effectively and with less danger of failure than government ownership. However, if the country should be driven into government ownership it will undertake it with courage and vision and make it a success. It can be done. I do not wish to see it forced upon the country at this time.

"We have not asked to be relieved of so-called "prosecutor" functions of the commission. We have been criticized with great persistence for performing the functions both of the prosecutor and the judge. This is a purely captious and theoretical criticism. Any one at all familiar with the conduct of our work will realize how impossible it is as a practical matter to have these so-called prosecuting functions influence the members of the commission in arriving at a judgment in rate questions. The records of the courts will show that not only have railroad officials and employees been indicted, fined and imprisoned as a result of investigations made by us, but shippers have been indicted, fined and imprisoned because of matters brought to the attention of the respective courts by our agents assisting United States attorneys. During certain periods, the number of shippers thus punished has been greater than the number of railroad officials similarly punished, yet I have never heard any one complain that the commission could not be fair to shippers because it is instrumental in prosecuting shippers for defrauding the railroads.

"Suggestions have been made for a commission of from 15 to 25 or 30 members. Such a commission is an impossibility. It could not be a commission in the sense in which a body of five or seven men is a commission. It would be a convention of men. Three men are sufficient to dispose of the less important matters and matters which merely follow previous decisions of a larger body. Five men generally afford all the points of view and deliberative judgment which important questions require. Seven men certainly furnish it; and seven is to my mind the maximum number of commissioners who, acting as a whole, can constitute an efficient administrative and regulatory body. One of the problems of the future relating to our internal organization therefore is the problem of reducing the number of things which the entire commission of 11 or more members must consider sitting as a body, and increasing the volume of business which may be handled by a subdivision.

"I cannot refrain from referring to one element of regulation as it unfolds itself in the future, which is entirely new. Two years of federal control have initiated into the public service a great body of men who otherwise had been accustomed to take only the point of view of private officials of private companies. With their peculiar experiences and traditions behind them, these men assumed the duties and responsibilities of public officials with the advent of federal control. They have been compelled to consider not only the private company standpoint but also the public point of view. They have been obliged to act as judges between conflicting public and private interests. They have come to appreciate the position of a distinterested party in controversies affecting such conflicting interests. When these men return

to private employment with their respective companies they will be different men from what they were before federal control. Their recent experiences and observations should make them much more efficient in handling the public aspect of their companies' business and without sacrificing legitimate private interests they will contribute a point of view and lend a support to the work of the Interstate Commerce Commission which would have been impossible otherwise."

Inadequacy of Facilities

By Frank Noxon

Frank Noxon, secretary of the Railway Business Association, spoke under the ten-minute rule, in part as follows:

"Let us compare the background from which Dr. Dixon speaks and that from which Interstate Commissioner Meyer speaks. I wonder if there is any one who, at any point in that discussion, admirable and competent as it was, could detect the slightest anxiety whether facilities were to be adequate in the future. You noticed that in the enumerated list of recommendations made by the commission, there was something about adequacy of facilities; you heard no statement to the effect that facilities has been inadequate, and least of all, did you hear any acknowledgement that one factor in the restoration of railroad development must be the government and its policy.

"What does the House bill mean to do? A court, in considering what was intended to be done by the legislature, will always give very great weight to a provision introduced but rejected. If a legislative body refused to do a thing which was asked of it, the court will usually hold that the legislature did not mean to do that thing at least. Two sentences were contained in the bill as it came from the house committee as follows: 'The commission shall be charged with the duty and the responsibility of observing and keeping informed as to the transportation needs and the transportation facilities and service of the ocuntry, and as to the operating revenues necessary to the adequacy and efficiency of such transportation facilities and service. In reaching its conclusions as to the justness and reasonableness of any rate the commission shall take into consideration the interests of the public, the shippers, the reasonableness of the cost of maintenance and operation, including the wages of labor, materials and taxes, and a fair return upon the value of the property used or held for the service of transportation.'

"Last Saturday the House cut these two sentences out. I have studied this bill from beginning to end. I can find no other place where the idea involved in those two sentences stands. The House of Representatives bill goes to conference without having said those two things.

"The court would also consider debate, and when the bill was brought in, there was a statement prepared by C. C. McChord of the Interstate Commerce Commission, the general tenor of which was that while there was a decline in railroad credit, there was no remissness on the part of the government in its policy, and no need for a change in policy.

"In the Senate bill there is a provision which explicity recognizes that a return must be made upon railroad securities. In the debates and reports on the Senate bill, there is the explicit acknowledgement by the full Senate committee that "the regulatory system has failed in the past because it has not recognized that one of the essential elements and one of the essential aims of government regulation of rates is to attract capital.

"I wish to submit to you a sentence or two which Congress, it seems to me, ought to embody in substance in any legislations it passes. 'To supplement the present federal policy by which the term of the law is wholly one of restriction, by enacting that rates shall be such as to yield revenue sufficient in the average year to provide necessary expenses and the credit basis so that the average railway may secure adequate improvements and extensions.' Some of those concerned will tell you that the commission would do that anyway. Then why not say it?

"To require that the regulatory authorities from time to time investigate and estimate for a reasonable period in advance, the transportation needs of the country and report to Congress or to the public, their findings as to such needs, and their estimate of the amount of revenue that will in the average year, assure approximate accomplishment of such necessary developments.

"If you put into the bill a prescribed rate of return which is to be permitted, you should also say that the commission is authorized and required to permit not only that minimum rate but such additional rate as may prove by experience necessary to attract capital for improvements and extensions."

More Extended Use of Waterways

By R. A. Hiscano

R. A. Hiscano, general manager of the Catskill and New York Steamboat Company, Ltd., spoke in part as follows:

"The railroads of the country cannot entirely take care of the country's traffic, and extensions of railroad systems is not possible in the more densely settled sections of the United States. A more intensive use of the rivers, lakes and canals of the United States is necessary. The bulk of the tonnage of the country sixty years ago was shipped by water, but gradually the railroads have extended, and with their extension, the water lines declined. The most important reason for this was the smaller scale on which a navigation company was operated. This condition still exists today. A second reason for the decline was the unceasing warfare waged by the railroads. The problem of today is to restore to our rivers and canals, the service which is required, and to do so, Congress should be discouraged from enacting additional legislation tending to drive water lines from business. Congress should pass legislation to compel a railroad company to extend to a connecting water carrier the same division of through rates or terminal facilities, or share of unrouted traffic as is given to a connecting railroad.

"Financial and banking interests can assist materially in the movement to revive the use of our inland waterways by helping to finance legitimate and sound proposals put forward by navigation companies. The splendid New York State barge canal cost $150,000,000 and has a capacity of 10,000,000 tons a year, and last year barely 1,000,000 tons were shipped through it due entirely to the lack of navigation companies."

General Discussion

The meeting was thrown open to general discussion and H. H. Winkler spoke briefly. He said that from his own personal observation as an investor, and representing people who invest in railroad securities, he felt that the attitude of Commissioner McChord was more instrumental in destroying railroad credit than that of any other man on the commission since 1899.

Charles Whiting Baker said that he thought that there was a side to the Interstate Commerce Commission's case which ought in fairness to be presented. Prior to 1907 the Interstate Commerce Commission law did not have teeth in it. In the years from 1900 to 1907, the total payments on railroad capital in the United States were about $250,000,000 to $300,000,000. In the years after 1907, they went up and up until the average payments in the years 1915, 1916 and 1917 were 40 per cent in excess of any three-year period previous to that. That is, under Interstate Commerce Commis-

sion regulation you will find a much larger percentage of stock was paying dividends and higher rates of dividends than it did before the Interstate Commerce Commission law had teeth in it.

With the war entered an entirely different factor. The cost of living of the railroads has more than doubled since 1914, and the price of the product which they manufacture —transportation—increased only 25 per cent. Now the railroads are in a very serious financial condition. Mr. Baker after saying this in defense of the Interstate Commerce Commission said that frankly, he thought that the time was past when the commission could meet the present situation. It was organized from the wrong point of view.

Pierpont V. Davis of the National City Bank of New York, discussed the question from the point of view of the bond salesman, laying emphasis on the indisputable fact that railroad bonds are not now as readily saleable as are industrial bonds.

S. E. Heberling of the Switchmen's Union of North America, spoke in part as follows: "Mr. Warfield said that the association which he represented, owned the railroads. Then why didn't they discharge the management of these railroads that wrecked the number of railroads that the gentleman stood up here and spoke about this forenoon. Mr. Davis, a banker, gives the earnings of the railroads to 1910, but he says nothing of the additional capitalization of these properties since 1910. If I owned a property and the earnings on that property up to 1910 was 5½ per cent, and I double the capitalization, whose fault is it? Is it the fault of the good people of the United States or the government? Oh no! Look at the Union Pacific. Go back 25 years when it went through the receivership, and on down the line to the present day. A few men in this city of New York are responsible for this misery that you are talking about in the transportation systems. It makes no difference how well I manage a railroad. I have seen managers of railroads whose ability could not be questioned, yet their property was wrecked. It was wrecked by the credit system, so called, by inflating or depreciating the value of securities on the market.

"The Rock Island—most of you ought to know the history of it—and your New Haven, your pet road here in this elite east—you ought to know the history of that. I am going to make this prediction. These people who are being pointed to in this country today as Americans who are not patriotic, are not going to be bilked in this country for any decade for the sake of credit. The men who are running these railroads today, who are actually running them, can run them, and run them cheaper than they are being run now, if they were left to do it."

The House Bill

By Congressman Merritt

Senator Cummins was to have spoken at the banquet in the evening but was unable to be present, and Congressman Merritt, who was an active member of the House Committee on Interstate Commerce, spoke in part as follows: "Those of you who are old enough, not many I think, will remember that when a conservative deacon in the church of Henry Ward Beecher reproached him for something startling which he had said in a sermon, Beecher replied: 'If you only knew some of the things I didn't say, you would praise me instead of blaming me,' and so I think that whatever you may consider concerning the bill which we (The Esch Committee) have passed, you will at least praise us for some things that we have not passed.

"You will agree that we did well in not putting anything into the bill which even looked toward public ownership. The committee became convinced that in all the states which had public ownership, such for example as Australia and France, where the conditions were not different from our's, that the service was poor, was more expensive and was tainted by politics; nor was the committee—I won't say attracted—but certainly not much influenced by the very long and able presentation of the plan called the Plumb plan. The Plumb plan would not be the embodiment of democracy in ownership, because of the bills for buying the railroads, amounting to some eighteen or twenty billions of dollars, would be footed by the public, but when it comes to the control, it would be vested under that plan in fifteen directors, two-thirds of whom are to be elected in one way or another by approximately two million employees of the railroads. That seems to me to be a case of introducing into this country the soviet on a large scale, because you have two million people, something less than two per cent of the population, electing the directors to run the property which is bought by somebody else, and that property controls the entire industrial life of this country. The Plumb plan in a large way was a plan for two per cent of the population to elect a board of fifteen men to control the industrial life of this country, and secondly, a plan to drive brains out of running the railroads. I say that last, because you can see what a tremendous amount of wire-pulling and politics would occur at once among the two million men on these roads, to elect people to run them.

"The bill which is passed by the House of Representatives, takes up three phrases of the matter—the actual return of the roads, the necessary period of re-establishing of personal and ordinary operation of the roads under their owners, and the question of the continued operation. The committee felt bound to take into account the reasons why the present problem exists. They could not take up the problem as if the roads were in the hands of the government by negotiation, or through their own will, but the problem as it existed, which was and is, that the roads were taken over without their consent by operation of the law. The House bill takes care of the transition period by providing for funding the debts incurred under government operation. The Cummins bill of the Senate is more generous to the roads, and perhaps when the bill finally passes the Senate and comes to Congress, that may be modified.

"Now as to continued operation. The creation of a transportation board, approximately a state commerce commission, was strongly urged before both the House and Senate committees. Such a board is provided for in the Senate bill, but not in the House bill. The House committee has been, and is adverse to adding to the great number of boards and committees now in Washington transacting the business of the United States. A board created by Congress differs from almost everything else created by man. You all know that in most human affairs, when things are created, the great difficulty is to keep them alive, but when you create a board in Washington, the great thing is to make it die.

"It was urged by a large body of gentlemen that rules should be established to produce a definite percentage of return on the value of the property used in transportation. Each committee felt, and the House acted on this recognition, that if that were done, it would go far toward removing incentive and the necessity of economy. We thought further, that if after a road by good management had made a certain percentage, it would certainly not be any incentive to take away from it what it had earned by its economy and good judgment and foresight.

"The labor provision, which the committee reported to the House had not much teeth. It was a mild form of compulsory arbitration, but that was defeated, and the present clause put in the bill during the haste of a debate under the five-minute rule. I cannot help feeling that if the provision which was in the bill could have been debated and understood, it would hardly have passed. This bill on its

face would look like a bill for conciliation and arbitration, but if it is examined carefully, it will be found that disputes which arise, if they are not settled by certain boards—if it comes to a point where the men cannot agree with the carriers—the only way to get that dispute before the final board of appeals is by the consent of the officers of the Brotherhood. In other words, it is compulsory arbitration if the brotherhoods want it. It is nothing if they do not want it. There is no possible way for the roads to get any of the disputes before these boards without the consent of the brotherhood.

"All thinking people in this country must view this railroad question in a broad light and must see to it that men in Congress and elsewhere are impressed with the importance, not of criticizing what has been done in the past, not trying to make this generation suffer for the sins of the past generation, but considering facts as they are, and doing all we can to help this great transportation system, because if that is prosperous, the whole country will and must be prosperous."

Reconstruction of Railroad Credit

By John E. Oldham

The following is an abstract of the paper read by John E. Oldham of Merrill, Oldham & Co., bankers, of Boston, Mass.:

As the railroad problem is primarily a problem of finance, its solution must be sought along lines which recognize the need for corporations of sound credit and for corporations also with ability to raise new capital both readily and economically.

For the purpose of determining the relative number and importance of the railroads whose credit has been affected by each of several unfavorable conditions, the railroads of the country have been divided into three groups.

The first contains the larger railroads which have paid regular dividends for many years. In this group are included 32 system, with a total gross operating income amounting to approximately 60 per cent of the gross operating income of all the railroads in the United States.

The second group contains the larger non-dividend paying roads. In this group are all of the railroads with a gross operating income of upwards of $10,000,000 each, few of which have paid any dividends in recent years. It includes 24 systems with a total gross operating income amounting to approximately 30 per cent of the aggregate earnings of the railroads of the United States.

The third group contains the remaining systems, the small roads. It includes approximately 100 Class 1 roads, with earnings of less than $10,000,000, and it also includes upwards of 250 Class II roads, with earnings of less than $1,000,000 and more than $100,000. The group is made up of more than 350 individual roads, but the aggregate gross operating income is only 10 per cent of the total of the country.

As dividend-paying railroads in the first group have demonstrated their ability to compete with each other under the same rates, it is fair to assume that the credit of these roads would be restored if rates were adequate to provide a satisfactory margin over dividends and investors had confidence that rates would be permanently maintained on such a basis.

A comparison of the statistics relating to the operation of the dividend-paying roads in the first group with the non-dividend-paying roads in the second, covering what is called the "test period"—the three years ended June 30, 1915, to 1917—clearly indicates that the average traffic conditions are much the same in each case. The general character of the business is the same. It is made up of substantially the same proportion of passenger and freight traffic. There is a similarity of tonnage, products of mines, forests, agriculture, manufactures and other commodities representing about the same proportionate part of the total. The rate per ton per mile and the rate per passenger per mile are approximately the same. With maintenance adjusted to a uniform basis the cost of operation is relatively the same. Inasmuch as a similar volume of traffic handled at the same rates produces substantially the same operating income, it may be assumed that the plant facilities required to handle the business—track, equipment and terminals—are likewise much alike in quantity and character. In view of the fact that the cost of operation is not materially different in the two cases—

Per Cent Which Roads in This Comparison Bear to Whole in Southern and Western Districts

	Per cent mileage	Per cent Gross earnings
Group I	58.8	63.5
Group II	29.5	27.
Total of Groups I and II	88.3	90.5

Per Cent Gross Operating Income Distributed

	Group I (16 roads)	Group II (16 roads)
Operating expenses and taxes	41.9	44.5
Maintenance (uniform) (adjusted to uniform basis)	28.3	28.3
Net earnings	29.8	27.2
Other income	1.5*	1.5
Total net earnings	31.3	28.7
Fixer charges	12.3	20.8
Dividends	10.5	1.1
Total fixed charges and dividends	22.8*	21.9
Surplus	8.5	6.8

* Allowance has been made for the difference in receipts from outside income by reducing the amount of outside income of the Group I roads from 6.2 to 1.5 to compare with the amount received by the Group II roads, and deducting a corresponding amount from the amount of charges and dividends proportionally divided between the two.

Per Cent of Gross Revenue

Passenger revenue	21.2	20.9
Freight revenue	69.5	69.3
Miscellaneous revenue	9.2	9.8
Passenger rate per mile	$0.02040	$0.02280
Freight rate per mile	.00806	.00840
Tons per train	503	413
Gross earnings per mile	$11,309	$9,591

Classification of Tonnage

Products of	%	%
Agriculture	20	17.1
Animals	4	3.4
Mines	39.8	39.4
Forests	14.5	16
Manufactures	14.3	17
Miscellaneous commodities	2.2	2.5
L. C. L. Goods	5.2	4.6
	100.0	100.0

Figures for operation cover test period, June 30, 1915, to 1917.
Figures for tonnage cover year ended June 30, 1916.

if the capitalization were proportionate to earnings—the return on capital would necessarily be substantially the same. It may be said further that the relative value of individual properties arrived at by using the market value of securities, under normal conditions, will be found to very closely approximate results obtained by capitalizing earnings.

In the absence of definite information in regard to the value of the railroads of the country a valuation, therefore, based on earnings or market value of securities, where traffic conditions are similar, appears to offer a better gage of the relative value of individual properties than the property investment accounts of these companies, even though the aggregate of these accounts may be accepted as representing the best basis of value for the railroads considered collectively for rate-making purposes.

The average conditions under which the railroads in these two groups operate are substantially alike; from a traffic standpoint neither group is "more favorably situated" or "less favorably situated." The difference is largely the amount and form of capitalization, and this difference is reflected in the statistics especially relating to fixed charges and dividend payments. Using, for example, figures which cover the Western and Southern districts only, the railroads in the first group required on an average a sum equivalent

to approximately 23 per cent of gross earnings to pay fixed charges and to maintain dividends. This total was apportioned approximately 12 per cent for fixed charges and 11 per cent for dividends. The railroads in the second group, on the other hand, while paying out substantially the same proportionate part of gross earnings for fixed charges and dividends—the sum being equal to 22 per cent—nevertheless required 21 per cent for fixed charges, leaving only 1 per cent for dividends.

For the purpose of illustration these statements have been reduced to figures in a comparison of the dividend and non-dividend-paying roads in the Western and Southern districts. The roads in the Eastern district are not included, but similar comparisons produce similar results.

As the railroads in the two groups operating under the same rates, with a valuation or capitalization based on earnings, would earn substantially the same return on their investment or capitalization, it might be expected that each would be entitled to the same credit if the capitalization were similarly divided between stocks and obligations. With adequate rates and some adjustment of capitalization on the part of the railroads in the second group, the credit of the railroads, representing approximately 90 per cent of the railroad business of the country, would therefore be placed on the same credit basis and on such a basis that the securities of the larger systems should command confidence and be attractive to investors.

The Strong and Weak Road Problem

To establish the credit of upwards of 350 small roads by any method of rate-making presents a difficult if not impossible problem if the roads are to continue to operate independently. These roads for the most part are at a disadvantage from a traffic standpoint with the larger systems and may be termed properly "less advantageously situated." They occupy a less favorable field for operation, and yet are obliged to handle their business on a basis of rates made more largely with a view to the conditions surrounding the more favorably situated roads. Attention has frequently been called to the fact that rates cannot be made with a view to the specific conditions surrounding the less favorably situated railroads, which represent but a small part of the transportation systems of the country, without providing too generous a return for the large majority of roads which are more favorably situated. This has frequently been referred to as the problem of the "weak" and "strong" roads, and the different methods of meeting this difficulty have been an essential feature of most of the plans which have undertaken to deal with the railroad problem. It may be said further that even if rates could be made which would enable these small companies to make a satisfactory financial showing, their securities would have such a narrow market that financing would be difficult and expensive, if not impossible, in many cases.

The proposal made in some of the plans, and which has met with some favor, to make advance to weak roads from a fund accumulated from the surplus earnings of the more favorably situated systems is in itself an acknowledgement that these roads are not expected to be placed in a position to maintain themselves in independent operation.

The most practical plan which has been suggested for taking care of these roads in such a way that the territory which they serve will be assured of adequate railroad facilities is by merging the smaller with the larger system with which they have natural traffic relations.

Consolidation with the strong systems may also provide the surest and most effective way of meeting the problem of the roads whose credit is poor because of the form of their capitalization. Consolidations would facilitate the reorganization and adjustment of the capitalization of these companies and put them in a position to obtain the capital necessary to meet the requirements of the territories which they serve. It may be assumed that these mergers would take place on a basis which would represent fair relative values, and in the process of consolidation capitalization would be so adjusted that the credit of the strong systems would not be impaired.

A brief statement covering the number of existing railroad systems which operate independently will show that a substantial part of the railroad business of the country is already concentrated within a relatively few systems, and if the existing large systems were used as a basis for such further consolidations as might be desired the result would be accomplished without seriously disturbing present relations. The railroads of the United States have been classified by the Interstate Commerce Commission as Class I and Class II roads. The Class I roads include all the railroads, 177 in number, whose gross operating income equals or exceeds $1,000,000 annually. The roads represent approximately 97 per cent of the railroad business of the country. The Class II roads include all the railroads whose gross operating income is over $100,000 but less than $1,000,000 and, while large in number, they represent only 3 per cent of the business. Eighty-seven of the 177 Class I roads are controlled through stock ownership by 45 systems. The earnings of the 45 systems, together with the earnings of the controlled roads, amount to $3,210,256,842, or 96 per cent of the total earnings of the Class I roads, and 92.8 per cent of the mileage.

The problem of further consolidation would thus narrow down to the means of absorbing the numerous small systems and such further mergers as might be desirable and necessary among the 45 systems.

A careful consideration of all the circumstances which are involved in meeting the large financial requirements of the railroads leads to the conclusion that railroad credit as a whole will be established on a safer and more satisfactory basis, and capital will be made more certainly available and at less cost by consolidating existing railroad companies into a few large competing systems along the lines proposed by the Cummins bill. This method has received the endorsement of the Transportation Conference, representing the United States Chamber of Commerce, and the principle was approved by the counsel of the Association of Railway Executives in his testimony before the House Committee on Interstate and Foreign Commerce.

A policy of railroad consolidation along these lines is not a new policy; it is a policy consistent with the practices which have been followed in developing the transportation systems of the country in their present form. All the large railroad systems represent the merging of many railroads, some strong and some weak, with the result that these systems represent average conditions and, where they compete in the same territory, show average operating results. The consolidations which have taken place in the past, for the most part, have been an advantage to all interests concerned. By this means railroad service has been extended and improved and financing has been more economical than if the various railroads constituting these systems had remained in independent operation and each had been obliged to finance its own requirements.

Whatever difference of opinion there may be as to methods, no plan will prove a success which does not further strengthen the credit of the strong roads and establish credit for the roads heretofore weak financially, whether the weakness is the outcome of unfavorable operating conditions or a failure to observe sound standards of capitalization. On no other basis will the railroads individually and as a whole be able to meet the requirements of the country for adequate transportation.

Cummins Railroad Bill Encounters Opposition

Senators La Follette and McKellar Speak Against It; Senators Show Little Interest

WASHINGTON, D. C.

OPPOSITION to the passage of the Cummins bill for the reorganization of the railroads and of the system of railroad regulation has occupied most of the time of the Senate during the past week. The opposition thus far has consisted principally of Senator LaFollette of Wisconsin and Senator McKellar of Tennessee. Senator LaFollette, who objects to nearly all the provisions of the bill and who is advocating continuation of federal control of the railroads for five years, has had control of the floor and has been making one of his characteristic long distance speeches. He has been interrupted only by the routine business of the Senate, but has yielded the floor at times to Senator McKellar, who objects to the bill, but who desires the railroads returned under a temporary guaranty with a minimum of change in the system of regulation. The discussion of the bill is attracting very little interest in the Senate and the attendance has been very small, only a minority of the committee on interstate commerce having been present most of the time.

On December 11 an effort was made to displace the bill to permit of consideration of the bill to continue the government control of sugar, but it was defeated by a vote of 27 to 33. Senator Cummins opposed the proposal, saying that it would be a desertion of duty to lay aside the railroad bill for the purpose of taking up any other legislation that is on the calendar. He said he intended to do all he could to keep the bill before the Senate until it is disposed of. Senator Underwood also objected to a displacement of the railroad bill, saying the country could pay a high price for sugar without affecting the cost of living except as to that one item, while the railroad bill involves the cost of living in every item of human life and human endeavor. He did not agree with all features of the bill, but thought that on the whole it is a very good bill, which will meet a situation that must be met at an early day, or disaster will follow. He said he did not know whether the President would return the railroads on January 1, regardless of legislation, or not, but he had generally found that when the President said he was going to do a thing he did it. He said the bill affects the entire industrial life of the United States, and that if the Republican party dares to adjourn this Congress without an honest attempt to pass either this bill or some other bill to meet the conditions that confront the country, the American people will repudiate them in every state in the union.

Senator McKellar suggested that the reason why no more interest is being taken in the bill by the Senate is because senators are so dissatisfied with it that they have no desire to do anything to expedite its passage.

Senator Myers urged his amendment to take out of the bill the provision that would put representatives of the employees and of the public on the board of directors of each railroad. This proposal he characterized as "rank paternalism" from which nothing was to be gained. Senator Cummins said it was somewhat discouraging to argue a question of this character in the presence of so few senators, but he briefly opposed the amendment as attacking provisions which are indispensable parts of the general arrangement which the bill contemplates respecting the relations between employer and employee. A vote on the amendment was postponed by the effort to take up the sugar bill, which was allowed to be passed on the following day before the discussion of the railroad bill was taken up.

Senator LaFollette declared that the enactment of the bill would constitute the greatest stain on legislation in the history of the American nation, and that there is nowhere in the bill one clause in the interest of the people. He said the measure sought to validate "all the chicanery of 70 years of railroad jugglery," and in arguing for a continuation of government control he laid great stress on the fact that since July the Railroad Administration has been able to earn a small surplus above the guaranteed return.

Senator McKellar, before beginning his speech, submitted a resolution proposing that the Cummins bill be recommitted to the committee with instructions to strike out all after the enacting clause and to report back a brief bill providing for the termination of federal control and "the restoration of the railroads to their owners in a manner by which active competition and service may be restored and maintained." For the purpose of enabling carriers properly to serve the public during the transition period, he proposed a plan of loans to the railroads under the direction of the Interstate Commerce Commission, with a temporary guarantee or present income for a period of not longer than six months. He also proposed to give to the commission increased powers, including a supervisory jurisdiction over the arbitration of labor troubles, the issuance of railroad securities and the chartering of additional lines, all dealings between railroads and their employees of subjects arising out of federal control, refunding the carriers' indebtedness and the establishment of minimum as well as maximum rates. He also proposed that the existing rates shall be continued in effect with full power in the Interstate Commerce Commission to increase them "to the end that the railroads and the public shall be fairly treated and that each well and efficiently and economically managed railroad shall have a fair chance to earn a reasonbale and just income."

Senator McKellar said that practically no interest has been taken in the bill. Senators have absented themselves during the entire discussion. If they feel any interest in it they do not indicate it either by their presence in the Senate or by talking about it. It is the most important measure affecting the interests and prosperity of this country that was ever before Congress, and yet it has been allowed to pass along practically without any comment in the newspapers and practically without notice on the part of the public. About one senator in four or five apparently has looked over the bill, and the country itself seems almost oblivious to the fact that it is pending. He was greatly disappointed in the bill as reported by the committee, and thought it was wholly opposed to sound business principles. In a large sense, he said, it is as bolshevistic as the Plumb plan. "Under the Plumb plan the railroads are to be paid for by the government and turned over to the brotherhoods. Under the proposed measure the railroads are put in a trust and turned over to the security holders. The government holds the bag under both plans."

Senator McKellar insisted that the bill provides practically for a guarantee of 5½ per cent upon the investment of the railroads because the Interstate Commerce Commission would be required to fix the rates for 1920 without opportunity to find the valuation. He objected to the idea of a guarantee rather than to the rate and to the proposal to take away a part of the earnings of the most efficient roads. He referred to the opinion rendered by Charles E. Hughes that such a plan would be unconstitutional.

Senator Underwood said the bill had been amended to get around the objections made by Mr. Hughes in that the bill does not take earnings from one railroad for the benefit of another, but puts them in a contingent fund for common railroad purposes.

Senator Cummins suggested that it would be well to take into consideration the fact that Mr. Hughes was employed by the railway executives to render an opinion on the constitutionality of the bill, while Elihu Root was employed by the security owners' association to render an opinion on the other side. "Notwithstanding some things that have been said in this chamber," he said, "the railway executives are opposed to this bill and are doing everything in their power to defeat it, and in order to help it they employed ex-Justice Hughes to render an opinion for them with regard to this feature of the bill. The securities association, representing in a general way the bonds of the railway companies, employed ex-Senator Root to render an opinion with regard to a feature in their plan that required the taking of excess earnings—not the same plan we have here, but a plan that would present the same legal questions. I want the country and the Senate to know that these opinions, coming indeed from distinguished men and lawyers, are the opinions of advocates of their respective interests, advocates of the two sides of that question. They are honest men and they are great lawyers, but they cannot both be right upon this proposition, inasmuch as they are diametrically opposed to each other."

Senator McKellar said that the bill proposed a guarantee of 5½ per cent to the railroads, that it is not compensation for services done. Instead of requiring service of the railroads, he said, a premium is put upon a lack of service. The well-managed and prosperous road is penalized while the poorly managed road is rewarded, and he would never vote to take away the just earnings of a railroad that is well managed, that gives the public an efficient service and turns those earnings in part over to another railroad that is not well managed and that does not give the public a good service. He did not object to the railroads earning 5½ per cent. He hoped they would all earn that or more. "Five and one-half per cent is not unreasonable. That is not my objection to this bill," he said. "I am against the guarantee."

Senator Cummins pointed out that the difference between a strong road and a weak road is not always entirely due to the difference in management. The difference, he said, is usually attributable to the conditions over which neither road has any control whatsoever, and that rates made with reference to the railroads as a whole or any group will necessarily give the better-situated road an excessive earning as compared with their competitors.

When Senator McKellar declared that the railroads have been earning a profit since August, Senator King of Utah interrupted to say his information was quite the reverse. "It is possible the books may show some profit," he said. "but I assert that the Railroad Administration is not maintaining the roads as they ought to be maintained and that they are taking money from the maintenance column and crediting it to profit. I know of roads in this country that have deteriorated very greatly under the Railroad Administration, and I have no doubt that the statement of the Senator from Iowa is true, that there will be claims against the government for millions and tens of millions of dollars, which it may take years to decide, for unliquidated damages because of deterioration of the roads through the maladministration of the Railroad Administration."

Senator McKellar also opposed the labor provisions of the bill providing for decision on wage questions by the transportation board in the event of a failure of the wage boards to agree. He said that in case of a demand of the employees for a big increase in wages, the board will naturally take the line of least resistance. "Which will be the easiest horn of the dilemma for them to take?" he asked. "They will do just what the Congress did in the case of the Adamson law. They will say 'All right, we will just let your wages be raised $50,000,000, and we will certify the matter to the Interstate Commerce Commission and let them raise the rates of the public to pay for it.' The railroads are not interested in whether wages are high or low. They are guaranteed their 5½ per cent whatever the wages may be.

"If this bill were recommitted to the committee," he said in conclusion, "with instructions to prepare a bill along those lines (referring to his resolution) it would be for the manifest benefit of the American public and the railroads themselves. In turning the railroads back—and we ought to have done it long ago—we ought to make the terms fair and just toward all. We should not put any theoretical plan on the statute books. We must not let the government continue to hold the bag."

The North and South Trans-Continental of Australia*

THE MUCH DISCUSSED North and South Australian transcontinental railway project is again coming to the front after having been shelved for five years on account of the war.

A recent cablegram from Australia stated that Timms & Kidman, railway contractors, of Adelaide, had offered to build a line from Adelaide to Port Darwin within three years at a cost of £8,000,000, payable in government bonds. The undertaking would provide work for 5,000 men.

It is likely that the offer referred to the gap of rather over 1,000 miles between Oodnadatta—the northern terminus of the South Australian system—and Katherine river, where the railway from Port Darwin ends. For the most part the line would traverse semi-desert country, suitable only for sheep ranges. Apart from the strategic value of a railway connecting the settled portions of Australia with Port Darwin its principal merit would be that it would eventually form a link in the quickest route from Europe to Australia. That route—involving the extension of the Bagdad railway across Persia to a junction with the Indian system and the linking up of the Indian Burmese, and Siamese railways—would be via Paris, Constantinople, Bagdad, Calcutta, Mandalay, and Bangkok to Singapore.

When the linking up of the existing gaps has been effected, which may be within the next 15 years, it will be possible to travel from London to Sydney in less than three weeks. By that time, if the Channel tunnel has been completed and the Bosphorus bridged or tunnelled, travellers should be able to reach Singapore with only two changes—at the junction of the 4-ft. 8½-in. European gage with the Indian 5-ft. 6-in. gage, somewhere in Persia, and at the junction of the Indian broad gage lines with the metre gage system in use in Siam and the Federated Malay States. From Singapore to Port Darwin the distance is rather over 1,900 miles, which could be traversed by fast steamers in four days. From Port Darwin it should be possible to reach any of the Australian State capitals in from two and a half to five days.

Rival Routes

The route of the proposed railway to connect Port Darwin with the Australian railway system has been the subject of controversy in the Commonwealth for many years. At the beginning of the century, before the Northern Territory was transferred from the control of the South Australian State Government to that of the Commonwealth, the South Australian authorities contemplated bridging the gap between

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Oodnadatta and Port Darwin. After the transfer of the Northern Territory took place the Commonwealth Territory became responsible for carrying out the project, but the greater urgency of the now completed east and west line from Port Augusta to Kalgoorlie led to the shelving of the north and south line for the time being.

For many reasons it would be preferable to connect Port Darwin with the south-east by utilizing the "Great Western Railway" of Queensland, the construction of which has long been authorized by the Queensland Parliament. This line is to connect Camooweal, on the border of Queensland and the Northern Territory, with Tobermory, about 250 miles north-west of Bourke, the terminus of a branch of the New South Wales system. It will pass through much more fertile country than the proposed Port Darwin-Oodnadatta line. It will also link up the four principal east and west lines in Queensland and will, therefore, carry a considerable local traffic. From Camooweal to Katherine river, the present terminus of the railway from Port Darwin, is about 550 miles in a direct line. The route from Katherine river to Bourke would be longer than that from Katherine river to Oodnadatta, but it would be a more useful line in most respects. It remains to be seen which project will be adopted, but the probabilities

The Principal Railways of Australia and the Proposed New Lines

are that the Commonwealth Government will favor the Oodnadatta route for reasons connected with the breaks of gage which are the curse of the Australian railway systems.

Evil of Broken Gages

These gage difficulties can be best illustrated by pointing out that the journey from Perth to Brisbane under present conditions involves no fewer than five unavoidable changes of carriage. From Perth to Kalgoorlie, where the Commonwealth Trans-Continental begins, the gage is 3 ft. 6 in. The Trans-Continental is a standard-gage (4 ft. 8½ in.) line. This ends at Port Augusta, where 3-ft. 6-in. portion of the South Australian system begins and continues to Terowie. From Terowie *via* Adelaide and Melbourne to Albury on the New South Wales border the gage is 5 ft. 3 in. At Albury a change is made to the New South Wales 4-ft. 8½-in. system, which continues to the Queensland border. There the gage reverts to 3 ft. 6 in. It is, therefore, necessary to change carriages at Kalgoorlie, Port Augusta, Terowie, Albury, and Wallangarra, the New South Wales-Queensland border station. In actual practice eight changes are necessary, since Sydney, Adelaide and Melbourne are terminal stations.

To provide a through route connecting the state capitals (with the exception of Adelaide and Melbourne), by a 4-ft. 8½-in. system the construction of various lines has been proposed.

The conversion of the section from Port Augusta to Terowie (now 3 ft. 6 in.) to 4 ft. 8½ in. and the construction of a standard-gage line from Terowie, *via* Morgan to Hay, where it would connect with an existing line of the same gage to Sydney, would provide a through standard-gage route from Kalgoorlie to Sydney. The line from Fremantle *via* Perth to Kalgoorlie would have to be relaid to 4-ft. 8½-in. gage or a new line built to extend the standard-gage system to the Western Australian capital and the chief port, Fremantle.

Another project is the connection of Deniliquin, at the end of a 5-ft. 3-in. line from Melbourne, with Hay, and the construction of a new standard-gage line from Hay *via* Nyngan and Moree to Warwick and Brisbane. If these lines were built, Perth, Sydney, and Brisbane would be connected by standard-gage lines, while Melbourne and Adelaide would be in direct touch with one another by the existing 5-ft. 3-in. line and would be joined by 5-ft. 3-in. lines to the standard interstate route. It would not be difficult to lay a third rail on these connecting lines so that through standard gage trains could be run between all the capitals.

Standard Inter-State System

It is clear that the Oodnadatta route would fit in better with the scheme for a standard-gage inter-state system than the utilization of the authorized Queensland Great Western 3-ft 6-in. route as a means of connecting Port Darwin by rail with the rest of the continent. The existing sections from Port Augusta to Oodnadatta and from Port Darwin to Katherine river would have to be relaid to standard gage, but this would probably be worth while, since the north and south line is likely to be at no very distant date a link in the railway route from London to Sydney.

The muddle of the gages in Australia places serious difficulties in the way of interstate traffic. It will be remedied to some extent by the completion of the various standard gage lines projected by the Commonwealth Government, but nothing short of a most expensive wholesale sonversion of gages can undo all the harm that has been done by the lack of foresight of past generations of state politicians. In 1912 the cost of converting all the existing Australian lines to standard 4-ft. 8½-in. gage was estimated at £37,164,000. The cost of a more limited scheme, involving only the main trunk lines and some of the more important branches, was set down at £12,-142,000. Since then, in May, 1916, the laying of a third rail on the more important sections was discussed by a Premier's Conference. This matter again came up for discussion in May, 1918. In August last a report was drawn up by a conference of engineers of the Commonwealth and State railways.

The present cost of conversion would in all probability be at least double the 1912 estimate. At that rate the more limited scheme would involve the expenditure of some £25,000,000. So large a sum is unlikely to be forthcoming in the near future, so that there is little likelihood of any speedy elimination of the present disadvantages. Probably the most practical course would be to convert by degrees the Victorian and South Australian 5-ft. 3-in. lines to standard gage, and to extend the standard gage system to Fremantle and Brisbane. This would leave alone the bulk of the Queensland and Western Australian systems at their extremity of the main network, but less inconvenience would be caused by such a policy than by any other short of complete conversion. For example, the reduction of gage in Victoria and South Australia would involve little alteration to the road bed apart from relaying track, whereas where 3-ft. 6-in. track has to be widened much work in opening

out curves, strengthening bridges, and culverts, and altering track layouts is necessary.

Loss Due to Breaks of Gage

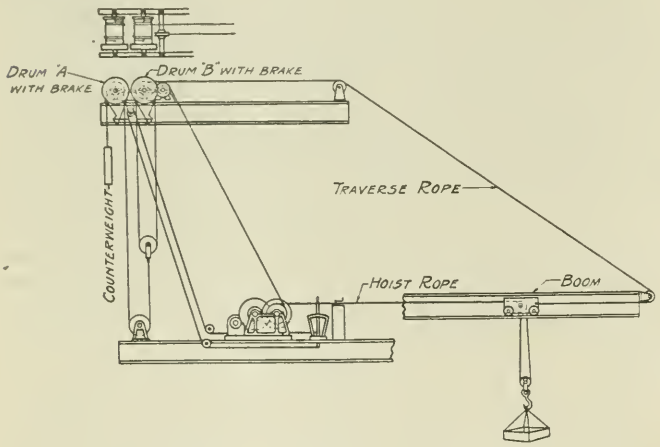
What the loss through breaks of gage amounts to in the aggregate may be judged from the fact that the transhipment of goods at Albury—where the Victorian and New South Wales systems exchange traiffs—costs from 1s. 6d. to 2s. 6d. per ton. This goes on at Kalgoorlie, Port Augusta, Terowie, Albury, and Wallangarra, not to mention various local stations in South Australia where 3-ft. 6-in. feeder lines meet the 5-ft. 3-in. main routes.

If the Imperial Government had exercised a little persuasive guidance in the early days of railway building much of the present gage muddle in various parts of the Empire might have been avoided. Now that the linking up of the Indian and European systems is likely to be undertaken at no very distant date, the unwisdom of adopting the 5-ft. 6-in. gage in India is becoming apparent.

New Developments in Hoisting Machinery

THE ABNORMAL CONDITIONS which have obtained for the past few years have been especially conducive to the development of labor-saving devices of all kinds. This has been particularly true of transportation facilities in terminals and ports where promptness in handling materials is directly reflected in the degree of efficiency of the transportation system as a whole.

Among the recent developments along this line are two improvements in hoisting equipment which are applicable to installations where the hoisting and horizontal movement of loads are required. The first is the so-called balanced hoist and transporter in which a single drum is used for these two movements in place of the customary two drums,



The Balanced Hoist and Transporter

the shift between the vertical and the horizontal motion being accomplished by means of a lever which controls a pair of rope grips.

This new type of balanced hoist and transfer is adaptable for use on all hoisting apparatus in which there is a free hoist and a horizontal movement of the load. An important feature of this apparatus is that during the hoisting operation the entire dead load of the skip is balanced by a counterweight which enables the size of the hoist and the motor to be reduced and also effects an important saving in the amount of power required as compared with other types of apparatus in which no counterweight is used. During the operation of lowering, the motor is working to raise the counterweight, thus obtaining a control somewhat similar in effect to dynamic braking. As the hoist drum is rigidly keyed to its shaft, no friction clutch is required.

In connection with the balanced hoist, another improvement consists of an extension boom which is especially suited for use on cranes for loading and unloading vessels. The boom may be extended or withdrawn in the direction of its own length. An important feature in the design is the means adopted for paying out the ropes supporting the outer end of the boom at a predetermined varying rate. When used in combination with the balanced hoist equipment the hoisting apparatus is operative at all points of extension of the boom as the slack rope resulting from the drawing in of the boom is taken up by a counterweight.

The balanced hoists and the extensible boom have been placed on the market recently by N. B. Payne & Co., New York.

Increasing the Capacity of Hand Trucks

THE TWO-WHEEL HAND TRUCK is very largely used for handling the average run of package at freight houses because of its adaptability, but it is not well suited for handling heavy loads. To increase its capacity there has been developed a device known as the Rysco Third Wheel Truck Attachment, which has been placed on the market by the Pierce Company, Chicago. The third wheel

A Two-Wheel Truck Equipped with the Three Wheels

attachment consists of a frame, one end of which is attached to the axle of the truck, while the other carries a small castor, giving a wheel base of 22½ in. Mounted on the top of the frame is a standard for supporting the truck, which can be adjusted to hold the truck platform at an angle of about 30 deg., or practically horizontal as desired.

It is claimed for this attachment that a truck equipped with it has every loading and unloading convenience of a two-wheel truck, combined with the hauling capacity of a four-wheel truck. It requires less space than a four-wheel truck, and since the third wheel is equipped with a ball-bearing swivel caster it can be turned in a very short radius. Trucks so equipped can be used as trailers for storage battery trucks if desired. It is stated that by taking the load off the handle, which the trucker must ordinarily sustain, the capacity is greatly increased and the cost of heavy trucking is reduced as much as 75 per cent.

"GIVE THE RAILROADS BACK and give them a chance to live!" should be the slogan of every man in the country who has good sense and who desires that the business of the country should get to a normal basis.—*Syracuse Post-Standard.*

Progress Made by the Railroad Y. M. C. A.

Also a Report of the Transportation Bureau of the National War Work Council.

THE ACTIVITIES of the Railroad Department of the Young Men's Christian Association, as covered in the report of the International Committee at the fortieth international convention of the Y. M. C. A. at Detroit, Mich., November 19-23, are of unusual interest. The report is as follows:

"In the exigencies of war days when transportation was vital to military operations the Railroad Department in the very maintenance of its regular work rendered a war service of untold value. The approximately 2,000,000 railroad employees in North America constituted a strategic force. Adequate provision for their social, physical, educational and moral welfare, together with wholesome provision for their leisure and lay-over hours, was of advantage alike to them, to the corporations they served and to the nation in a time of stress. Among the striking developments and marks of progress the following may be indicated:

"Railroad associations are now established at 287 points, as compared with 252 in 1916, a gain of 35.

"During the two years of government control new buildings, additions or enlargements were authorized at more than 70 different points, totaling in cost above $2,000,000.

"Coincident with material extension has come a striking growth in membership. In 1916 the total membership of railroad associations was 85,287. In that year all railroad associations united in the first continental membership week, securing 40,000 new members and bringing the total membership up to 120,000. Retrenchment owing to war conditions reduced the railroad working force, with the result that the membership fell to 105,000. In May, 1919, in a second membership effort 49,000 new members were secured, making the membership at present approximately 150,000, or 65,000 in excess of that at the time of the Cleveland convention.

An advanced program of activities, in which all railroad associations will unite, has been carefully planned, and definite weeks selected for continent-wide organization and promotion as follows: Religious work, boys' work, educational work, citizenship and social, health and happiness, thrift, membership.

"The Bureau of Transportation of the War Work Council, while reported in detail elsewhere, needs mention here, for this bureau was practically the Railroad Department at war service. Both the Railroad Department and the Bureau of Transportation were under the same general administration. The bureau's departmental leaders were almost without exception railroad secretaries, and the great service rendered throughout the war by secretaries on troop trains became possible because of the initial demonstration made by volunteer railroad secretaries on draft trains early in the war. In all nearly 10,000 troop trains were accompanied and served by association representatives.

"For various war work financial campaigns the department also released several of its most efficient international secretaries. Local railroad secretaries served on transports carrying soldiers overseas, while others rendered invaluable service in camps at home and abroad.

"During the past three years Railroad Summer Schoools, now six in number, have had a tonic effect upon the associations. Although during the war attendance was relatively small, during the summer of 1919 about 150 railroad secretaries and assistants were in attendance.

"During the past three years the department has continued to give attention to visiting foreign railroad officials. Occasional luncheons have been tendered them, usually in a Railroad Association building. They have been shown the work in New York and other cities, and courtesies have been extended and services rendered them. The seed sown will in time bring forth abundant harvest.

"Mention should be made of the generous attitude of the United States Railroad Administration. At the outset careful thought was devoted to submitting to it full information regarding the scope, character and extent of our movement. The result was gratifying, for the administration, whenever it could consistently do so, has cordially endorsed building projects and approved appropriations for maintenance.

"The most pressing and important problems of this department are the following:

"*The Present Unsettled Railroad Conditions.*—For some time the future has been so uncertain as to make the Washington administration and individual operating heads fearful of expenditure, action or precedent. Needed association enterprises have been deferred, and not until the situation is clear will associations be free from embarrassment and delay. Strikes and threatened strikes are also keeping the railroad world in suspense. Misunderstandings between capital and labor react upon the associations and aggravate a difficult situation.

"*The New Membership.*—How successfully to conserve the striking results of two fruitful continental membership campaigns, assimilating the thousands of new members and transforming them from mere members into an aggressive working force, is a large and hitherto baffling problem.

"*The Unoccupied Field.*—A recent investigation demonstrated that there were 250 division and terminal points in Canada and the United States where Railroad Associations would be of great benefit. Many are large centers, but more are small isolated points where the need is marked.

"*Railroad Boys.*—Many Railroad Associations are established in small communities where the boy problem is pressing. Its solution will require a railroad boys' work secretary and additions to many buildings. The field is ripe, but owing to present limitations cannot be harvested.

"*Street Car Employees.*—Only a beginning has been made in work for street car men. The handful of street railway associations now in successful operation would doubtless be enlarged were not the present staff of supervisory secretaries so wholly occupied with steam railroad responsibilities as to make impossible giving attention to this inviting field.

"*Construction and Maintenance-of-Way Employees.*—The large number of negroes employed in various capacities on railroads in the South, the Mexicans in the Southwest and the Japanese in the Far West call for thought, planning and service.

"*The Merchant Marine.*—An investigation has been made at a selected number of inland and seaboard ports with the object of ascertaining the need for merchant marine work by the association. A report of this investigation has been submitted to the International Committee for consideration.

The Recommendations Were Approved at Detroit

"Points of policy which call for special emphasis are the following: To make the most of the opportunity for extension that will come with the adjustment of the railroad ques-

tion by Congress; to make of the seventh-week united advanced program a telling success; to point out to the entire brotherhood through this intensive effort a plan which may be adopted by other groups of associations; to enlarge the work for street railway employees; to develop work among boys in railroad communities, and find the way for service to the negroes, Mexicans and Japanese employed in so-called menial labor."

Transportation Bureau

The report of the work of the Transportation Bureau on the activities of the association was included in the report of the National War Work Council of Young Men's Christian Associations, and is as follows:

"The Transportation Bureau required the services of 598 secretaries to fill in the gaps between the work of the local associations and the various camp Y. M. C. A. activities at home and overseas. The work of the bureau was conducted on troop trains, at transfer centers, at embarkation and debarkation points, on ocean transports, on cargo ships and at debarkation piers in receiving troops returning from overseas.

"This service was inaugurated July, 1917, and from that time up to September 1, 1919, 8,901 troop trains, carrying 4,450,400 soldiers and covering a total distance in excess of 8,900,000 miles, have had on them association representatives serving soldiers in every possible way and distributing without cost millions of bars of chocolate, packages of gum, cigarettes, etc. During July alone 840 such troop trains had Y. M. C. A. secretaries on board.

"At the more important transfer centers, as, for instance, Chicago, Pittsburgh, Denver and Cincinnati, the bureau had representatives, and in co-operation with the local associations served the many thousands of soldiers and sailors in daily transit. At St. Louis two huts were operated in conjunction with the Railroad Young Men's Christian Association and rendered unusual service. Over one and a half millions of men en route through St. Louis were served either in the yards, in the passenger station or in the huts.

"At Hoboken, the greatest home port of embarkation and debarkation, five rented buildings and a sixth owned building (the largest hut of its character in America) were at the disposal of the men. These buildings during a single month served 276,100 men. An average of 4,500 were served daily in the two cafeterias. One hundred and seventy-six thousand pieces of writing material were used, and over 52,000 soldiers and sailors attended 183 different social, educational and religious gatherings during a single month. At Newport News a hut, costing approximately $50,000, was opened early in 1919. More than 500,000 men have already paid over one and a half millions of visits to this building. At Boston, Mass., Charleston, S. C., and Philadelphia, Pa., the men were served by Transportation Bureau representatives on the piers before departing for camps; while in San Francisco the troops en route to and from Siberia were served by the Transportation Bureau in co-operation with the Western Department.

"Ocean transport service was inaugurated March 4, 1918, from which date to June 6, 1919, when it ceased, a total of 1,512 secretaries served on 1,102 different sailings, carrying a total of 3,173,200 soldiers. The cost of free equipment placed on transports, exclusive of salaries and traveling expenses of secretaries, and distributed absolutely without cost to soldiers and sailors, was $951,396. Among the items were 20,085,442 cigarettes, 1,009,097 bars of chocolate and 25,333,880 pieces of stationery. Each ship also carried moving picture machines, music boxes, athletic equipment, etc. From March 4, 1918, until the signing of the armistice, our Transportation Bureau representatives were the only welfare representatives assigned to ocean transports.

"The bureau also had representatives on ships carrying soldiers from America to Siberia to render similar service. Here also the association was the only agency represented.

"The thousands of men constituting the cargo ship force of the overseas cruiser and transport service were not overlooked. While it was not feasible to assign secretaries to these smaller vessels, nevertheless, equipment, consisting of victrola, athletic supplies, etc., was placed on 1,081 cargo vessels for the use of the crew at a cost exceeding $81,075.

"At Hoboken, Boston, Philadelphia and Charleston "Flying Squadrons" of Transportation Bureau secretaries were organized to meet all ships upon arrival, and in addition to greeting the men served them without cost with chocolate, chewing gum, newspapers, postcards, telegraph blanks, etc. Secretaries also accompanied these men on their journeys from ships to debarkation camps. At Hoboken alone thirty-five secretaries were kept busy in meeting ships, and on a single day rendered definite service to 26,417 men."

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Winter "Gets on the Job" in Chicago

Carl R. Gray

CARL R. GRAY, chairman of the board and president of the Western Maryland and formerly director of the division of operation of the United States Railroad Administration, has been elected president of the Union Pacific. Before the roads were taken over by the government E. E. Calvin was president of the Union Pacific, C. B. Seger was vice-president and comptroller, and Judge Robert S. Lovett was chairman of the executive committee. When the government took over the road Mr. Calvin became federal manager, Judge Lovett went with the Railroad Administration, and Mr. Seger became president of the corporation. Not long ago Judge Lovett resigned from the Railroad Administration and returned to the Union Pacific as president, Mr. Seger having resigned to become president of the United States Rubber Company. Judge Lovett has again been elected chairman of the executive committee and Carl Gray now becomes operating executive of the Union Pacific, and Mr. Calvin will be vice-president when the road is returned to the private corporation.

Presumably Judge Lovett and Mr. Gray worked closely together during the last two years while they were members of the Railroad Administration. Carl Gray is a Western man brought East in 1914 by John D. Rockefeller and his associates to pull the Western Maryland out of the slough of despond in which it had gotten after the Connellsville extension to a connection with the Pittsburgh & Lake Erie had proved a failure in so far as making the Western Maryland the Atlantic seaboard outlet for a considerable part of New York Central's west of Buffalo traffic.

Mr. Gray began railroad work as a telegraph operator, but after four years became a clerk in the traffic department, and for eleven years was in a subordinate position in the St. Louis & San Francisco traffic department. In 1897 he was made a division superintendent of the St. Louis & San Francisco. From that time on his rise has been rapid and his experiences unusually broad and varied. In 1904 he was made general manager of the St. Louis & San Francisco. This was about the time of the mis-alliance between the Frisco and the Rock Island. Mr. Gray was after a few months made vice-president and had become senior vice-president by 1909. This covered the period of the Frisco-Rock Island merger, with the rivalries, quarrels, stock manipulations and hopeless struggle against the Yoakum-Reid-Moore control of Rock Island-Frisco lines.

The position of chief operating officer on the Frisco during this period must have been a peculiarly trying one. In some ways Mr. Gray probably went through as an unwilling subordinate with a fairly large number of what-not-to-do's-in-the-proper-management-of-a-railroad. It is a difficult thing for a railroad officer to build up a loyal, ambitious organization when his board of directors is taken up primarily with rivalries and stock speculation. A personality which can gain the loyalty and respect of subordinates under such circumstances is an unusual one.

Mr. Gray is a large man, mentally and physically. He gives the impression of freedom from conventionality, open-handedness and a lack of suspicion which we associate with the best traditions of the West. With his hearty non-conventional manner, however, Mr. Gray has a keen sensitiveness of the feelings of others and a consideration both in his manner and his actions toward subordinates that is not always found in the operating officer who has driven his way upward through the rough experiences which railroading in the Southwest entails.

In 1911 Louis Hill invited Mr. Gray to become president of the Great Northern. He thus stepped from a position of having to inaugurate and defend his own operating methods and to apply in so far as he could scientific principles to railroad operation in the face of indifference or actual opposition on the part of his board, to responsibility for the operation of a great transcontinental system where the minutest details of scientific railroad operation had been worked out under the personal supervision of James J. Hill. As an experience in railroad operation the presidency of the Great Northern was of the greatest value to Mr. Gray.

Carl R. Gray

When he became president of the Western Maryland he acted also as advisor to the Rockefeller interests in the affairs of other railroads in which they had investments. It was a remarkable opportunity for a man who had spent all his life on Western roads and who came fresh from the management of the Great Northern to take hold of a comparatively small coal road in the management of which about every mistake that could have been made had been made. It was not a surprise to any one who had followed Mr. Gray's work to see what he, with the aid of M. C. Beyers and S. Ennis, did with the property; if a statistician were to study the operating results which were obtained in the few years that Mr. Gray was there, without any knowledge of the personalities involved, it would resemble a miracle in railroad transformation.

As to his work for the Railroad Administration, the fact that Judge Lovett, who was closely associated with him, should now choose him as president of the Union Pacific speaks for itself. He had the universal liking and respect of both federal and corporation officers.

THE LEHIGH & SOUTHERN RAILROAD COMPANY has applied to the Public Utilities Commission of Illinois for authority to lay out and build its railroad in the county of Kankakee. A supplemental petition was filed by the same company to complete the construction of a track from the end of its present tracks in a southerly direction to the right-of-way of the Illinois Central in Kankakee.

A Study of the Treatment of Water for Locomotives*

The Solution of the Problem Imposed by Each Water Supply Requires Individual Investigation

By William M. Barr
Consulting Chemist, Union Pacific System, Omaha, Neb.

WATER SUPPLY was merely an incident in railway operation only a few years ago. The nearest ample supply of water, regardless of quality, was developed for use in locomotives. It was many years before railway officers came to realize fully that some of these waters which were easily obtained in ample quantity were costing the railroads large sums of money. It is hardly necessary here for me to point out the various conditions resulting from the use of bad waters that made the use of these waters expensive.

I have noted that the American Railway Engineering Association has tried to reduce the saving to figures showing that every pound of scale forming ingredients removed from any water results in a saving of 7 cents. This has been recalculated to meet present price and wage conditions and has been given as 11 cents. My personal belief is that no matter how competent the men may be who have collected the data and reduced the saving to cents per pound, the figures at which they have arriced can only be an approximation. It is safe to assume, however, that the figure given is small enough as the error usually results from the omission of savings that cannot be reduced to figures. There are so many factors that enter into the saving to be accomplished, some of which cannot be accurately calculated, that it becomes practically impossible to say that a certain definite treatment will save a fixed number of dollars. We, therefore, must content ourselves in a discussion of the treatment of water for locomotives by making the assumption that in general all improved water conditions are profitable to the railroad.

In attacking the railroad water problem one must lay down as a fundamental principle that the primary object of the railroad is to move tonnage that everything that interferes with such movement is bad practice. We may for example, take one of the worst waters that can be found and so treat it that the amount of scale forming solids it contains will be almost negligible, but an engine taking this water might fail before it had covered one-half of its run. It would immediately be concluded by both the operating and mechanical departments that the water treatment, whatever it might be, was wrong, and these departments would be justified in such conclusions.

A water at one station contained 123 grains of dissolved solids per gallon. Other stations on the same district were high in sodium salts. Had this water been treated to remove the incrusting solids, the sodium salts in the treated water would have been approximately 90 grains per gallon. This would have been certain to cause engine failures from foaming. A new supply containing 35 grains of dissolved solids per gallon was obtained at this point and treatment of this water gave good results.

I have frequently said that the first thing to be done on any railroad is to make a thorough survey to determine how many good waters can be developed within a reasonable distance from the line. This seems like a very simple statement and it may be said that this is what any one would do. I will, however, venture the further statement that there are few railroads in this country where thorough field work and a careful study will not develop some good water supplies that have heretofore either been overlooked or ignored.

At a station in the arid region of the southwest the water supply for both town and railroad is brought in by pipe line from springs a distance of two and a half miles. Later geological studies and deep borings show that a deep well at the tank would give an ample supply of soft water which would flow into the tank.

What constitutes a reasonable distance to go from the line for a water supply depends upon the amount of water required at the station to be considered, the character of other water supplies on the district, and the character and quality of water that may be already available at the station. I take the position that in order to avoid a water treatment of any kind the railroad can afford an expenditure entirely out of proportion to the actual cost of water by treatment at the station. The cost of water should not be figured in cents per thousand gallons at a single station, but should be figured as an average cost over the division or, if you please, over the entire line. When all available good supplies have been developed on a district or division it is then time to determine the best method for improving such supplies as may not be satisfactory.

The Use of Boiler Compound

Many statements have been made to the effect that water should not be treated within the boiler or that treatment with boiler compound is irrational and unscientific, and some have gone so far as to denounce it as a fraud. I have heard chemists make the statement that water could not be successfully treated with a boiler compound because enough of it could not be used to react with all the scale forming solids in the water and still maintain successful operation.

It is true that if enough chemicals are put into a boiler to precipitate all of the carbonates of lime and magnesia that exist in many of the waters of the middle west, and then enough soda ash be added to react with all the sulphates of lime and magnesia that exist in many of these waters foaming and priming would certainly take place. It is my judgment that the intelligent and rational use of a property made boiler compound is frequently beneficial. There will probably always be some places on any railroad where compound may be used with benefit. Naturally I prefer to control the composition of any compound used under my direction, as this enables one to judge results more accurately and to modify treatment so as to improve results that may not be satisfactory.

It has been said that the use of boiler compound is an incomplete treatment, and is never sufficient to react chemically with all of the scale forming solids in the original water.

It is obvious that with a large percentage of heavy scale waters encountered in railway operation it would not be practicable to put enough chemicals in the tender or in the boiler to throw out of solution all of the incrusting solids. If this were done the engineer would soon have trouble from foaming and excessive accumulation of mud in the boiler.

In using boiler compound enough chemicals are added to form a soft and somewhat flocculent precipitate. Thus when the other scale forming substances in the water are thrown out by heat, this precipitate already formed will carry down

*Abstracted from a paper presented before the Western Railway Club at Chicago on November 17, 1919.

the bulk of scale in the form of a soft sludge, preventing it from building up on the flues and keeping it in a condition to bs discharged from the boiler by means of the blow-off. The natural result to be expected would be a more frequent washing of boilers. However, this sludge is more easily washed out and any scale that does adhere to the flues is more easily removed than would be the case with the untreated water.

There are many districts where the waters carry a light scale which would not justify a line of treating plants. The use of a compound here would keep the scale soft and with the use of the blow-off would result in improved boiler efficiency, and less shop work.

Water Softening

For a long time the problem of water softening was generally considered to be a treatment of a water outside the boiler, which removed by chemical precipitation the scale forming solids held in solution in natural waters. Those who have studied this problem, both in connection with stationary boilers and locomotives, have come to the conclusion that the problem is much deeper than the mere removal of boiler scale.

In treating water it is important to consider not only the amount of scale to be removed, but other properties of the softened water, which may or may not result from the process of removing the scale forming constituents. One author has very aptly stated the case by saying, "A modern boiler is not merely a basin in which liquid water is converted into gas but a receptacle for the mineral impurities contained, in greater or less quantities, in all natural waters even when softened. The boiler is in reality an autoclave in which chemical solutions are concentrated and partially evaporated at high temperatures and pressure, and should be looked upon as a chemical factory in which various chemicals are produced during the conversion of ordinary water from initial temperatures, of, say 60 deg. F. into steam, often highly superheated."

It would be an ideal situation if we could put nothing but pure water into a boiler, but in practice this is a condition which it is rarely possible to obtain. We must, therefore, study the chemical reactions which take place in the boiler under pressures and temperatures which are not normally found when studying similar reactions in the laboratory.

If the problem of railway water supply involved the handling of but one water in each boiler it would be much simplified and many desirable results could be obtained, which are not within the range of possibility under railroad conditions. Our experience has shown that where an attempt was made to carry a pronounced excess of lime and soda ash in the treated water, engineers experienced trouble from the liming of injectors and branch pipes. If a sufficient excess of soda ash was used the tendency toward foaming was aggravated and on many districts became serious. There may be certain cases where it is possible to carry an excess of caustic soda in a treated water with pronounced improvement in engines as regards corrosion. Such would be the case on a district where it was necessary to treat all waters so that a uniform alkalinity would appear in all waters that entered the boiler. There are, however, few railway districts that have come under my observation where this would be advisable in practice.

An engine district may have eight or more water supplies. The character of these waters may be such that only half of them require treatment for scale removal. If then, an attempt is made to treat these waters so that an excess alkalinity is shown at the softeners it is quite probable that some of this alkaline water is put into a tender which already contains a considerable quantity of untreated water. This water may carry enough bicarbonate to destroy any caustic alkalinity which was carried in the treated water and if this mixture showed alkalinity at all it would be in the form of carbonate, which would defeat the object of the treatment proposed. In most western districts the water in the tender would show no alkalinity after mixing and would contain calcium salts which would incrust the injector.

It may be suggested that all waters on the district should be treated, but unless most of these waters carry enough scale to be injurious it is hardly probable that the saving that could thus be effected in the life of flues and fire boxes would be sufficient to justify the expenditure and increased cost of operating water stations.

In the operation of water softeners there are three conditions that are essential to the success of the treatment: (1) Ample settling space, (2) thorough agitation, (3) careful supervision. Attempts have been made in the construction of many water softeners to limit the capacity in an effort to reduce the initial cost of equipment. This is a common and serious error, in the first place because it allows no margin to provide for the expansion of business, and secondly because the original time allowed is frequently too small at the start. In addition to allowing five hours' reaction time it is good practice to make provision for a reasonable increase of business, which American railway operation has shown to be almost certain on the majority of our transportation lines.

The necessity for agitation is sometimes overlooked in water treatment on the assumption that if the chemical mixture is uniformly distributed throughout the entire volume of water treated reaction must take place and no mixing beyond this point is required. Even though thorough agitation is accomplished and ample settling time allowed, I believe it is always desirable to provide filtration for the treated water, if for no other reason as a safeguard to the removal of any suspended matter that might get through.

The supervision of water softeners has frequently been a weak spot, not only in railway operation, but in the general operation of treating plants. As a rule, the men directly responsible for the operation of the machines are non-technical men and there is a lack of appreciation of the requirements or the performance of these machines. It is, therefore, essential that frequent checking of the treatment by analysis as well as frequent inspection of the machines should be made. To get the best results in this particular it is important that a spirit of co-operation be developed between the chemical staff and the department operating the water softeners. Much depends upon the personality of the men who make the inspections and give instructions to pumpers for the handling of the chemical treatment.

My own practice requires that daily reports be made by the pumper showing: The exact time of operation; the time and amount of each chemical charge; the time of dumping sludge; appearance of water when it leaves the machine; condition of all mechanical parts; amount of chemicals on hand; in case of surface waters, a test on both raw and treated waters showing hardness, alkalinity and causticity; and repairs needed.

A copy of this report is sent to the water service foreman as well as to my own office. Pumpers are also instructed to make telegraphic report of any unusual conditions which may arise. Machines are inspected and water tested by traveling chemists on an average of once in 10 days, and weekly samples are sent to the laboratory for analysis.

In addition to this inspection, men experienced in the use of water in locomotives as well as water treatment make occasional trips with traveling engineers or with the engine men alone, in order to determine whether or not good results are being obtained in the operation of locomotives under existing water conditions. These men also visit round houses and shops, examine flues and fire boxes, conferring freely with foremen and the general boiler inspector.

The work of such men has to do not only with treated

waters, but with general water conditions and use of boiler compounds. If traveling engineers report trouble of any kind arising from the water supply the master mechanic reports promptly to my office and to the superintendent of motive power. One of these men is sent to work with the traveling engineer in order to determine the source of the trouble and correct the condition causing the complaint.

Foaming

Foaming is to the engineer one of the most serious troubles that arises from the use of water, and as this interferes seriously with traffic, it is important that efforts be made to reduce this condition to a minimum. There seems to be some difference of opinion as to the primary cause of foaming. I note that the American Railway Engineering Association has revised the manual to read, "This action is due primarily to the presence of suspended matter in the water. The suspended matter gives a mechanical strength or tenacity to the liquid in the thin films over the steam bubbles, which, rising to the surface, retain their films and collect to produce foam. It is aggravated by the concentration of alkali salts present in the natural waters or added by the process of water softening, which increases the viscosity of the surface films."

I cannot agree with the statement that foaming is primarily due to the presence of suspended matter. If a water is pure insoluble suspended matter will not increase the viscosity of the surface film, and will not in itself produce foaming. On the other hand dissolved solids may be increased to such a point that foaming will result without the presence or assistance of suspended matter. It is true that this condition is greatly aggravated by the presence of suspended matter, and foaming in muddy water or dirty boilers takes place most easily. I would say that foaming is due primarily to the presence of any matter in solution which sufficiently increases the viscosity of the surface film in the boiler and is greatly aggravated by the presence of suspended matter.

In locomotive operation it is difficult to separate the two conditions. All locomotive boilers contain suspended matter in varying amount, therefore, as the dissolved solids are increased by concentration there will be a tendency to foam.

I have under my jurisdiction a district that receives perfectly clear water at all stations. These waters are either filtered or come from deep wells which furnish clear water. About the middle of this district there is a water supply that is high in sodium salts, carrying a rather large amount of sodium carbonate. It is necessary for all engines running on this district to carry a supply of anti-foam compound, which is usually applied when this water is taken. The concentration is also relieved by frequent use of the blow-off. By such means engine failures from foaming are prevented or reduced to a minimum.

As an overtreated water has a tendency to increase foaming troubles it is necessary, particularly on districts where the waters contain excessive amounts of sodium salts, to hold the treatment below the point of excess alkalinity.

Boiler Washing

Water treatment bears such a close relation to boiler washing that some consideration should be given here to this subject. It is frequently recommended that anything should be done that is possible to increase the time between washouts. If this can be done by increasing the purity of the water, the extension of such time within reasonable limits is desirable and profitable. I do not believe, however, that this time should be extended to the limit by artificial means simply because it is possible to keep an engine moving.

Serious foaming trouble is usually accompanied by a dirty boiler and where waters are of such a character that foaming occurs frequently it is necessary to use a compound for safe operation and to avoid failures. In such cases, however, I cannot recommend that engines be operated between washouts for such a time as the use of compound will avoid failure. By doing this the cost of an occasional washout may be saved, but one failure resulting from this policy will compensate for the cost of several boiler washings.

In calculating the saving effected by extending the time between washouts the increased efficiency in operation with clean boilers resulting by the more frequent washouts, if often overlooked, though it is sufficient to deserve consideration. The more frequent washout usually results in a reduction of boiler work.

On a certain district where boiler compound is used for the removal of scale it is possible to run engines 30 days between washouts. Boilers were washed at intervals of four weeks. A thoroughly competent and interested foreman on this district now washes boilers at intervals of two weeks, and owing to the ease with which boilers are washed under this condition there is little difference in his costs for this work resulting from the changed method. At the same time he has shown a saving in flue and fire box work and an increased efficiency in operation as a result of cleaner boilers. With modern equipment for hot water washing these experiences indicate that the time between washouts should not be extended beyond such reasonable limits as this practice would dictate.

Corrosion

Much has been written on the subject of corrosion in boilers and various theories have been proposed to account for it. It still remains the most difficult feature of water treatment for locomotive boilers. The electrolytic theory offers a reasonable explanation for much of the corrosion which takes place, particularly cases of pitting and corrosion around stay bolts. It is beyond question that a segregation of impurities in steel will result in such spots having a different electric potential from that of the main portion of the steel, and in many waters which are good electrolytes would set up galvanic action and start corrosion.

There are, however, corrosive conditions existing in the use of many waters where the action can be explained by reactions that are purely chemical. Owing to the fact that steel is not a homogeneous material there are spots where the metal contains impurities that are attacked first and will corrode more readily than the uniform portion of the metal.

Carbonic acid, either free or combined, is one of the potent factors in accomplishing corrosion in most boilers. It is present in practically all natural waters and being quite soluble, particularly in the cold, it enters the boiler in nearly all feed waters. Waters containing magnesium sulphate and sodium chloride give the same corrosive properties. All of the nitrates found in natural waters behave in the same manner and when the concentration is sufficient are very corrosive. The nitrates are especially active because in the process of corrosion the original nitrate is regenerated or converted to nitrate. While the nitrates and chlorides can be converted to their sodium salts by treatment and by carrying an excess alkalinity the corrosive effect reduced, experience shows that waters containing high chlorides or nitrates are unsatisfactory on account of their corrosive properties even when treated.

Enough has been said here to give some idea of the range of the problem of water treatment for locomotives. It has been pointed out that the water should be studied from the source of supply to the engine washout. One man should follow these problems from beginning to end and should not at any stage turn them over to be handled by another person or department. I believe that the greatest success can only be obtained in railroad water treatment when the responsibility for the entire problem is centered in a single department. This might be accomplished by handling the problem in one of the existing departments of normal railway operation, but this does not seem to me to be advisable.

National Rivers and Harbors Congress

Declaration of Principles to Promote and Increase Facilities of Transportation by Water

THE FIFTEENTH CONVENTION of the National Rivers and Harbors Congress closed its final session at Washington on December 11 with the election of new officers and the transaction of other business. Congressman John A. Small of North Carolina was unanimously elected president to succeed Senator Joseph E. Ransdell of Louisiana, who was made a director for life.

The most important business transacted was the resolution adopted embodying the principles of the organization in its activities to promote and increase the facilities of transportation by water. The resolution was in part as follows:

"The industrial fabric of the country depends upon production and distribution. While these two factors may vary from time to time as the demand increases or diminishes, still the continued growth of the country creates an ever-increasing demand upon the facilities of both production and distribution. At this particular juncture there is a dearth of both. Economists are reiterating the need of greater production whereby the supply may be augmented and the cost of living reduced. From many sections come complaints of inadequate facilities of transportation by rail. Freight cars and engines are either not available or shortage is reported. Even where coal mines are operated there are frequently no cars to move the coal. Embargoes caused by congestion of traffic are frequently announced. The country requires enlarged production and at the same time increased facilities of distribution.

"Distribution may only be accomplished through the facilities of transportation. These agencies are the waterways, the railways and the highways. While this organization is committed primarily to the promotion of transportation by water, it can best effectuate its purpose through a friendly co-operation both with the railways and the highways. We would have the public deal fairly with the owners of the railroads and their securities. While they should be compelled to render equality of service without discrimination against any shipper or section, they should receive a revenue yielding a fair return upon the investment. We observe with gratification the nation-wide activity in the construction of improved highways by the states and local agencies, and we anticipate co-operation with the federal government in the construction of national highways connecting the several states and sections.

"At the same time it is an admitted fact that the railroads and the highways combined are not adequate to meet the demands of distribution. It is a problem in which is involved the continued prosperity of the country. Its wise solution should arrest the attention of every thoughtful citizen.

"Of course the carrying capacity of the railroads may be increased. Double tracks may replace single tracks, rolling stock and engines might be supplied, enlarged terminals insuring quicker movement might be provided, and new lines of roads might be constructed. But all these extensions require very large amounts of new capital and the railroads have neither the revenue nor the credit to obtain the same.

"It is apparent that increased facilities of transportation to meet the ever-enlarging demands of distribution can only be provided through the improvement and utilization of our waterways.

"We would have it understood that the Congress favors only the improvement of such waterways as will be utilized when an adequate channel is provided. Navigable waterways are intended primarily for commerce, and the expenditure of public moneys can only be justified when they are to be used for this purpose. The improved waterway which only offers potential use and thereby coerces lower rates by rail competition with such waterway does not justify its improvement. In this connection, we commend the policy of Congress in the enactment of annual river and harbor bills. This should be considered one of the continuous activities of the government requiring annual budgets and appropriations just as any other essential activity. We commend to the favorable consideration of the federal Congress the wisdom of largely increased appropriations for projects which have been or may hereafter be adopted, to the end that they may be completed and opened to traffic within a reasonable time.

"It has been said that Congress has improved some waterways which have not been utilized, and most of the criticism heretofore directed against river and harbor appropriations have been predicated upon this statement. We may admit that a few waterways have little commerce and have not justified the expenditures for their improvement. We may further admit that some waterways are not adequately used in moving traffic which should ordinarily be carried by water. While the tonnage carried upon the waterways of the country is very large in the aggregate, it may be much greater. It will be interesting to inquire why this condition exists. It is not because of lack of traffic or because the waterways are not needed.

It is not because the railroads are sufficient to meet the traffic demands of the country. It is not because traffic can be moved more efficiently and cheaper than by water. On the other hand, it is because of certain arbitrary conditions which exist and because certain essentials for successful water transportation are lacking.

"a. For many years water carriers were subjected to unfair competition and treatment by competing railroads. Competitive rail rates were unduly reduced. Unfair discrimination was practiced. The boat lines were purchased by the competing railroad and operated in an inefficient manner and finally abandoned. In other and devious ways water competition was destroyed. As a co-ordinate agency of transportation, boat lines are entitled to co-operation and not destruction. We recommend legislation which will assure a readjustment of rail rates, competitive with waterways, and which will require a discontinuance of such unfair practices.

"b. Water carriers have not been permitted to interchange traffic with connecting railroads with through rates and bills of lading. It will be admitted that the system of pro-rating which prevails between the different lines of railroads has been the most potential factor in our system of rail transportation. The cost of movement by water, particularly of bulky products, is less than by rail. Where products are to be carried partly by water and partly by rail between the points of origin and destination the public should have the benefit of the cheaper movement by water in making the joint and proportional rate between the rail and water lines. The amendment to the Commerce Act of 1912 gave the Interstate Commerce Commission jurisdiction to establish interchange of traffic between rail and water lines which has not been effectively enforced. We recommend legislation which will compel such interchange of traffic in all cases where the interests of the shippers will be subserved.

"c. Another amendment to the Commerce Act of 1912,

prohibited the railroads from owning and operating competing boat lines, giving the Interstate Commerce Commission jurisdiction to determine the fact of competition and also a discretion to suspend temporarily the enforcement of the law for sufficient reasons. We submit that this provision of law was wise, and it should not be amended or relaxed. Transportation by water and rail are so essentially different that they should not be held under common ownership where they compete with one another. We respectfully request the federal Congress to resist any efforts to amend the existing law as applicable to any section of the country.

"d. Water terminals are essential to water transportation. Even where the traffic is local and exclusively by water, terminals are most convenient, but they are absolutely essential in the operation of through traffic partly by rail and partly by water. The transfer between the boat and the rail carrier should be effected in the cheapest and most expeditious manner and this can be accomplished only through the medium of an adequate water terminal. At the present time the construction of terminals devolves either upon the boat line and the railroad, separately or combined, or upon the municipality. We submit that ordinarily the construction of such a terminal should be at the expense of the state or municipality, to be maintained and regulated in the interests of the public. We cannot emphasize too strongly the necessity of such terminals. No progressive city located upon a navigable waterway can afford to neglect this imperative obligation.

"e. Another reason why some waterways are inadequately utilized lies in the lack of an intelligent comprehension upon the part of the shippers of the importance of developing water transportation as a co-ordinate part of any transportation system. Frequently the men who control production and distribution are lacking in vision. They accept existing facilities for transportation with all its imperfections and fail to realize that co-operative efforts for the use of the waterways would supply existing edficiencies of movement.

"f. In so far as legislation will remove the arbitrary conditions which have impeded water transportation, we submit that the bills pending in Congress providing for the restoration of railroads to their owners afford an unusual opportunity for removing these impediments and for emancipating water carriers.

"There should be some federal agency clothed at least with recommendatory powers over water transportation. This activity requires not only boat lines, terminals, arrangements for interchange of traffic with railroads and other boat lines, but skilled traffic management. It may not be easy to secure all these essentials within the territory traversed by the boat lines. They need encouragement, assistance and advice. Among all the varied activities of the federal government there is no one to whom the projectors of boat lines can appeal for such expert advice and assistance. We recommend legislation creating a federal agency, qualified to advise as to the appropriate type of boats, as to the location, plans and costs of water terminals, which shall intervene in establishing exchange of traffic with railroads and in other ways assist in the solution of difficult problems. We believe that such a duty should be imposed upon the Department of Commerce and we recommend legislation to that end.

"Under the railroad control bill, the President was authorized in his discretion to utilize canals and waterways and to construct boats and barges for operation on same. Under this authority the President, through the director general of railroads, has constructed or authorized the construction and operation of boats upon the Mississippi river, the Warrior system of rivers, the New York Barge Canal and other waterways. As a part of the pending legislation for the return of railroads to their owners, we recommend that provision be made for the transfer of such boat lines to some other agency of the government, with authority to operate the same for a term of years, to complete all unfulfilled contracts for the construction of boats and to build other boats where necessary, to the end that the experiment which was initiated shall be continued sufficiently long to demonstrate its value and establish traffic upon the said waterways. If it shall appear advisable to discontinue the operation of such boats upon the New York Barge Canals, the sale of such boats and the discontinuance of operation upon such waterways should be effected. We believe that such transfer of authority should be made to the United States Shipping Board or the Department of Commerce.

"The president of this organization several months ago invited a Committee of its members to meet in Washington to consider proposed amendments to the pending railroad bills in the interest of water transportation. Amendments in accordance with the foregoing recommendations were provided and Senator Ransdell was instructed to present same to the Senate Committee while Representative Small was selected to present same to the House committee. This was done and such amendments were printed. Among other amendments was one providing that the absorption by water carrier of the switching terminal or other charge of a rail carrier for service within the limits of a port terminal should not be held to constitute an arrangement for a continuous carriage within the meaning of the act to regulate commerce and should not subject such water carriers to the provisions of such act. We also commend this amendment to the existing law.

"Out of the exigencies of war arose a necessity for creation by the federal government of a large number of ships for over-seas service. At the beginning of the war, less than 10 per cent of our foreign trade was carried in ships of American registry and sailing under the American flag. The government has provided a sufficient number of ships to carry a large proportion of our foreign commerce. We anticipate hopefully the establishment under permanent conditions of an American merchant marine. Whether these ships shall be temporarily held and operated by the government or sold for private operation, we submit that the foundations should be securely laid for the retention and maintenance of a permanent American merchant marine.

"We submit that neither the Interstate Commerce Commission nor any other department of the government should have jurisdiction over port-to-port rates by water, except insofar as may be necessary in effecting interchange of traffic between rail lines and water lines, and we oppose any legislation which seeks to conserve such jurisdiction."

Scenes on the Government's Alaska Railroad. Looking North from Near Mile 99, Turnacain Arm

Reduction in Passenger Train Service

Coal Shortage Forced Railroad Administration to Take Drastic Steps; Orders Have Been Modified

THE UNITED STATES Railroad Administration, having the responsibility of the distribution of coal to all consumers, ordered the regional directors to make a reduction in passenger train mileage by taking off parlor cars and otherwise curtailing service to the extent necessary to make a drastic reduction in the consumption of coal. These reductions in passenger service which the regional directors authorized became effective about December 10, but by Saturday, December 13, the resumption of work by the coal miners was complete enough to permit a modification of the drastice annulment orders, and in the East by Monday, December 15, there had been a return almost to normal service, although the Twentieth Century Limited and the Broadway Limited, the two twenty-hour trains between New York and Chicago, were not restored. Sleeping cars to points south of Washington were again run on the Pennsylvania out of New York. As indicative of the extent of resumption of normal passenger business the New York, New Haven & Hartford, which discontinued a total of 182 trains, restored 72. The New York Central restored 130 trains. The Delaware, Lackawanna & Western announced full restoration of passenger service. As indicative, however, of what can be done on American railroads to meet an emergency, the details of what was done last week are of interest.

Eastern Region

In the Eastern region the discontinuance of trains became effective December 10. The New York Central discontinued ten westbound main line trains, including the Twentieth Century Limited, and nine eastbound main line trains. On the Hudson division five trains each way were discontinued on week days and seven northbound and four southbound trains were discontinued on Sundays. On the Troy and Schenectady branch all Sunday trains were discontinued. On the Auburn division two trains each way on week days were discontinued. On the Buffalo division four trains each way were discontinued. On the Buffalo and Lockport branch one train each way was discontinued. On the Harlem division seven trains each way on week days were discontinued and nine trains each way were discontinued on Sundays. On the Putnam division three trains on the main line northbound and two on the main line southbound were discontinued, and five each way week days on the Yonkers branch. On Sundays two trains each way were discontinued on the main line, and all service on the Yonkers branch was discontinued. On the Ontario division, St. Lawrence division, Cape Vincent branch, Carthage & Adirondack branch, Carthage and Watertown branch, and Ogdensburg & DeKalb branch a total of 12 trains were discontinued, making a total of 121 trains for the New York Central.

The New York, New Haven & Hartford discontinued two trains each way between New York and Boston and operated No. 50 and 51, a train heretofore running between New York and Boston only, between New York and Springfield. There were 13 trains eliminated between New York and New Haven in addition to the New York and Boston trains mentioned above and four New Haven and Springfield trains. Two trains were eliminated between New Haven and Willimantic, four between Amston and Colchester, two between Vernon and Rockville, two between South Norwalk and Danbury, three between Bridgeport and Pittsfield, four between Branchville and Ridgefield, three between Danbury and Brookfield Junction, four week-day trains and four Sunday trains between New Haven and Waterbury, four Sunday trains between Hartford and Waterbury, two Sunday trains between Hartford and Putnam, two trains between Hartford and Poughkeepsie, and two trains between Poughkeepsie and Beacon, and one Saturday and one Sunday train between New York and Pittsfield.

On the lines east of New London and Willimantic on the New York, New Haven & Hartford, 4 round-trip week-day trains and 3 round-trip Sunday trains between Boston and Providence, 2 round-trip week-day trains between Canton Junction and Taunton, one round-trip week-day train between Boston and Providence, 3 round-trip week-day and 3 round-trip Sunday trains between Boston and New Bedford, 2 round-trip daily trains between Boston and Dedham, 2 round-trip daily trains between Boston and Franklin, one week-day and 2 Sunday trains between Boston and Woonsocket, one round-trip daily train on the Needham branch, 5 one-way trains between Boston and South Braintree, 2 round-trip daily trains between Boston and Mattapan, 4 round-trip daily trains between Boston and Greenbush, 2 round-trip trains between Boston and Plymouth, one between North Abington and Hanover, 3 between Boston and Campello, 4 week-day round-trip trains and 5 Sunday round-trip trains between Providence and Worcester, one round-trip daily train between Providence and Willimantic, 2 Sunday round-trip trains and one week-day round-trip train between Providence and Taunton, one week-day round-trip train between Mansfield and Framingham, 2 between New London and Worcester, and one Sunday round-trip train between Putnam and Hartford were discontinued.

Allegheny Region

The following is a statement of the trains and train mileage discontinued in the Allegheny region:

Statement of curtailment of passenger train service, effective 12.01 A. M. December 10, 1919, account coal strike:

Pennsylvania Railroad, Eastern Lines—	Trains	Miles	Miles
Through Service—			
East and West	6	1,457	
New York, Philadelphia and Washington	12	2,530	
Washington-Buffalo	2	756	
Total			4,743
Local Service—			
Western Pennsylvania Division		1,328	
Northern Division		560	
Central Division		1,046	
Eastern Pennsylvania Division		1,806	
New Jersey Division		2,398	
Southern Division		2,332	
Philadelphia Terminal		104	
Total			9,574

Sleeping car service from and to the South was not operated during the daylight hours in both directions between Washington and New York.

	Trains	Miles	Miles
Pennsylvania Railroad, Western Lines—			
Northwestern and Central Systems	39	3,142	
Southwestern and St. Louis Systems	56	2,443	
Total			5,585

	Mileage forwarded
Baltimore & Ohio, Eastern Lines—16 trains	2,201
Baltimore & Ohio, Western Lines—20 trains	1,850
Western Maryland Railroad—12 trains	288
Cumberland Valley Railroad—12 trains	249
Philadelphia & Reading Railroad, Atlantic City Railroad, 86 trains	66,229
Central Railroad of New Jersey—65 trains	32,400
Staten Island Rapid Transit—112 trains	180
Long Island Railroad—8 trains	520
Bessemer & Lake Erie Railroad—8 trains	119
Buffalo & Susquehanna Railroad—2 trains	17
Grand total—mileage	123,955

Southern Region

In the Southern region the details of passenger train reduction were not completed up to the time this paper went to press but the reduction was to have been between 20 and 25 per cent.

Sleeping cars on the Pennsylvania from New York for points south of Washington were discontinued, but were put back in service on December 13.

What Was Done in the West

The coal shortage in the West was, of course, far more acute than in the East. The following tables show the reduction in train service which was put in effect in the Central Western region and on certain lines in the Southwest:

30-33	Little Rock-Hoxie	238.8	
	No. 6 and No. 3 to make local stops between Little Rock and Hoxie.		
105-106	Coffeyville-Little Rock	655.2	
141-142	Little Rock-Spadra	210.0	
143-144	Russellville-Ft. Smith	166.58	
147-144	Little Rock-Epps	368.4	
810-805-804-809	Monroe-Vidalia	244.4	
831-830	Memphis-McGehee	335.8	
231-232	Batesville-Newport	58.6	
849-848	Luna-Crossett	100.6	
304-307	Helena-Poplar Bluff	346.0	
431-434	Cairo-Poplar Bluff	147.8	
			5,387.98
			10,014.82

PASSENGER TRAIN SERVICE CURTAILMENT PROGRAM, MISSOURI, KANSAS & TEXAS LINES.

Effective 12:01 *A. M., Monday, December* 8, 1919.

Main Line Passenger Service to Be Discontinued as Follows:

Trains No. 7, 8, 9 and 10 between St. Louis and Parsons.

Note: For Train No. 9 substitute daily express, St. Louis to Parsons to connect with Train No. 11.

CENTRAL WESTERN REGION

PASSENGER TRAIN REDUCTION DECEMBER 8

	Trains eliminated						Trains added					
Railroad	Daily	Daily except Sunday	Daily except Saturday and Sunday	Sunday only	Daily except Sunday changed to tri-weekly	Daily changed to tri-weekly	Daily	Daily except Sunday	Sunday only	Daily mileage prior to December 8	Average daily mileage saved	Per cent
Atchison, Topeka & Santa Fe	51	14	..	..	..	..	..	..	..	28,086	9,069	32.5
Chicago & Alton	20	11	1	..	..	..	..	..	..	7,863	2,259	28.7
Chicago, Peoria & St. Louis	4	2	..	..	..	..	..	..	..	921	406	44.1
Chicago & Eastern Illinois	10	10	..	..	..	..	..	..	..	6,920	2,102	30.3
Chicago, Terre Haute & Southeastern	2	..	..	..	..	..	..	..	..	703	244	34.6
Chicago, Burlington & Quincy	52	105	..	14	..	..	1	8	3	41,687	12,729	30.5
Toledo, Peoria & Western	3	2	..	6	..	..	..	..	..	1,214	295	24.3
Chicago, Rock Island & Pacific	63	27	..	..	2	..	4	..	..	40,910	12,290	30.0
Colorado & Southern	10	4	..	2	2	..	..	..	..	2,851	1,010	35.4
Ft. Worth & Denver City	8	..	..	..	..	..	..	..	..	2,938	1,134	38.6
Denver & Rio Grande	22	4	..	8	6	4	..	..	..	7,036	1,559	22.2
Denver & Salt Lake	..	..	..	..	..	2	..	..	..	510	291	57.1
El Paso & Southwestern	..	..	..	..	..	..	..	..	..	2,328	None	...
Northwestern Pacific	..	..	..	..	..	..	..	..	..	.....	None—burn oil	
Southern Pacific	..	..	..	..	..	..	..	..	..	.....	None—burn oil	
Union Pacific	22	2	..	..	2	..	..	..	..	26,888	8,041	30.0
Oregon Short Line	22	..	..	..	22	14	..	..	..	8,289	2,854	34.4
Los Angeles & Salt Lake	4	..	..	..	..	..	..	..	..	4,946	1,835	37.1
Western Pacific*	..	..	..	..	..	..	..	..	..	.....	None	...
Wabash	7	12	..	..	..	..	..	..	..	9,205	2,238	24.3
	300	193	1	30	34	20	5	8	3	193,295	58,356	30.2

*Operate but one train each way per day in coal burning territory—these are through trains.

Note—Attention is called to the fact that the percentage reduction is based on average daily mileage saved; where trains other than daily were eliminated or service reduced to tri-weekly the weekly mileage saved is divided by seven.

REDUCTION MISSOURI PACIFIC TRAIN SERVICE

WESTERN LINES

Train numbers	Between	Train mileage	
15-10	St. Louis-Kansas City	566.06	
11-16	St. Louis-Kansas City	566.06	
	Set No. 37 back to leave St. Louis 9:00 a. m., and No. 38 to leave Kansas City 9:00 a. m., No. 12 to make same stops as No. 16.		
206-205-210-209	Kansas City-Joplin	336.00	
107-108	Kansas City-Omaha	400.00	
101-501-502-102	Kansas City-Stockton	596.6	
643-644	Downs-Lenora	167.32	
11-12	Kansas City-Pueblo	1,245.00	
643-644	Union-Lincoln	95.2	
103-104	Kansas City-Coffeyville	393.8	
640-641-642	Versailles-Boonville	87.8	
403-404	Yates Center-Wichita	196.8	
643-644	Jeff. City-Bagnell	90.6	
433-434	Wichita-Kanopolis	204.8	
	496 now connects with 404. Set 495 back to leave Geneseo 7:20 p. m., connecting with 403 to give Kanapolis people connection.		
335-336	St. Louis-Herrin	245.4	
925-926	St. Louis-Riverside	60.0	
	M. R. & B. T. to adjust to connect with No. 30 and No. 31 at Riverside.		
114-115-123-128	St. Louis-Kirkwood	52.0	
		5,303.24	
	45-46 extend between Hoisington and Pueblo or put on local leaving Hoisington and Pueblo at 7:00 a. m.	674.4	
			4,626.84

SOUTHERN LINES

1-2	St. Louis-Texarkana	986.8	
205-208	Memphis-Wynne	92.8	
	Change schedule of 201-202 and run approximately on same schedule as 205-208 and extra Wynne to Little Rock and return		
219-220	Memphis-Hot Springs	403.8	
133-134	Alexandria-Lake Charles	194.6	
103-104	Little Rock-Alexandria	585.4	
847-848	Helena-Brinkley	111.2	
835-836	Little Rock-Gurdon	161.2	
	Hold Camden Br. No. 835 at Gurdon to connect with No. 5.		

Trains No. 27 and 28 between Kansas City and Parsons.
Trains No. 23 and 24 between Parsons and Oklahoma City.
Trains No. 7 and 8 between Parsons and Muskogee.
Trains No. 1 and 2 between Vinita and San Antonio.
Trains No. 8 and 9 between Muskogee and Denison.
Trains No. 9 and 10 between Denison and Dallas.
Trains No. 17 and 18 between Denison and Dallas.
Trains No. 7 and 8 between Dallas and San Antonio.
Trains No. 9 and 10 between Waco and San Antonio.
Trains No. 11 and 12 between Denison and Fort Worth.
Trains No. 5 and 6 between Waco and Houston.
Second section, Trains No. 41 and 42 between Denison and Wichita Falls.

Branch Line Passenger Service to Be Discontinued as Follows:

Train No. 22 between New Franklin and Hannibal.
Train No. 25 between New Franklin and Moberly.
Note: Train No. 24 will be extended through between Moberly and Hannibal.
Trains No. 15 and 16 between Columbia and McBaine.
Trains No. 20 and 21 between Columbia and McBaine.
Trains No. 11 and 12 between Columbia and McBaine.
Trains No. 13 and 14 between Columbia and McBaine.
Trains No. 37 and 38 between Sedalia and Paola.
Note: Handle passenger business on trains No. 95 and 96.
Trains No. 115 and 116 between Parsons and Joplin.
Trains No. 112 and 113 between Parsons and Joplin.
Note: Handle passenger business on Trains No. 93 and 94.
Trains No. 36 and 37—Iola Branch.
Trains No. 21 and 22—Eldorado Branch.
Trains No. 15 and 16 between Atoka and Oklahoma City.
Trains No. 23 and 24 between Muskogee and Osage.
Trains No. 32 and 33—Wilburton Branch.
Note: Handle passenger business on freight trains.
Trains No. 39 and 40—Bonham Branch.
Note: Handle passenger business on Trains No. 58 and 59.
Trains No. 37 and 38—McKinney Branch.
Note: Handle passenger business on Trains No. 88 and 89.
Trains No. 35 and 36 between Greenville and McKinney.
Note: Handle passenger business on Trains No. 93 and 94.
Trains No. 33 and 34 between Greenville and Shreveport.
Note: Handle passenger business on mixed trains.
Trains No. 41 and 42 between Smithville and San Marcos.

All train service on Belton Branch.
Trains No. 1 and 2 between Wichita Falls and Elk City.
Trains No. 7 and 8 between Altus and Wellington.
Note: Handle passenger business on local freight.
Trains No. 3 and 4 between Woodward and Forgan.
Note: Handle passenger business on local freight.
Trains No. 23 and 24 between Wichita Falls and Newcastle.
Note: Handle passenger business on local freight.

The following reductions were made in passenger train service on the St. Louis-San Francisco and the Ft. Worth & Rio Grande Railroad, effective 12:01 a. m. Monday, December 8, 1919:

Local main and branch line service

Trains	Between	Mileage	Total Miles
EASTERN DIVISION			
1274-1279	Cuba and Salem	80	
22-23	Kansas City and Clinton	172	
18-19	Clinton and Springfield	208	460
K. C. C. & S.			
28-29	Clinton and Springfield	198	
26-27	Kansas City and Clinton	150	348
CENTRAL DIVISION			
794-795	Ft. Smith and Mansfield	64	
788-789	Muskogee and Okmulgee	78	
575-576	Hugo and Ardmore	202	
505-506	Hope and Hugo	240	
780-781	Fayetteville and Muskogee	208	
773-772-776-777	Rogers and Grove	104	896
SOUTHWESTERN DIVISION			
410-411	Oklahoma City and Lawton	178	178
WESTERN DIVISION			
612-613	Clinton and Vernon	218	
607-608	Tulsa and Enid	242	460

Trains	Between	Mileage	Total Miles
NORTHERN DIVISION			
127-128	Ft. Scott and Joplin	130	130
SOUTHERN DIVISION			
273-274	Willow Springs and Grandin	162	
950-951-956-957	Aberdeen and Amory	140	
923-924	Memphis and Tupelo	208	
925-926	Amory and Birmingham	246	756
RIVER & CAPE DIVISION			
827-828	Hayti & Cape Giradeau	162	
873-874	Cape Gir. & Poplar Bluff	128	
871-872	Puxico and Hunter	96	
823-824	St. Louis and St. Mary's	150	536
	Total		3,764
Through Main Line Service.			
1-2	St. Louis and Vinita	720	
3-4	St. Louis and Paris	1,170	
305-306	Monett and Wichita	480	
403-404	Monett and Oklahoma City	518	
513-514	Sapulpa and Okmulgee	62	
117-118	Kansas City and Tulsa	522	
105-106	Kansas City and Birmingham	1,476	4,948
	Grand Total		8,712

The following trains were discontinued:

ST. LOUIS SOUTHWESTERN LINES

Trains	Between	Daily Mileage	
3-4	Illmo to Texarkana	990	
431-432	Pine Bluff to Little Rock	109	
401-402	Lewisville to Shreveport	124	
101-102	Mt. Pleasant to Waco	394	
	Total	1,616	
	Total passenger train service using coal as fuel		4,984
	Reduction		32.4%

L. & A. Trains	Between	Daily Mileage	
2	Alexandria to Hope	195	
3	Hope to Winnfield	148	
5	Winnfield to Alexandria	47	
105	Packton to Gena	29	
102	Gena to Packton	29	
107-108	Jonesville to Vidalia	50	
	Total	498	
	Total passenger train service using coal as fuel		1,158
	Reduction		42.9%
	Grand Total mileage—passenger train service using coal as fuel	6,142	
	Total Reduction, both lines	2,113	or 34.4%

On the Kansas City Southern the total daily mileage of coal-burning passenger locomotives was 1,924. No trains were taken off, but 676 train miles per day were saved by the use of oil-burning instead of coal-burning locomotives.

On the Texas & Pacific 984 train miles daily were handled by coal-burning locomotives. A round-trip train between Texarkana and Whitesboro was discontinued, saving 346 miles, but it was planned to restore these trains as soon as oil-burning locomotives could be used in place of coal-burning locomotives.

In all, in the Southwestern region, about 30,471 passenger train miles daily were eliminated, amounting to a saving of 1,500 tons of coal a day.

Northwestern Region

Details of the discontinuance of trains throughout the Northwest region are incomplete, but a daily saving of train mileage was made as follows:

Railroad	Miles
Chicago, Minneapolis & St. Paul	12,071
Duluth, Missabe & Northern	9,720
Duluth & Iron Range	9,570
Duluth, South Shore & Atlantic	1,348
Minneapolis & St. Louis	1,100
Minneapolis, St. Paul & Sious San Marie	(approximately) 2,000
Northern Pacific	500 to 600

A New Grip for a Pneumatic Hammer

THE BOYERGRIP is a device recently brought out by the Chicago Pneumatic Tool Company, Chicago, which combines a convenient hammer grip with an absolutely safe set retainer. As shown in the illustration, it fits over the end of the riveting hammer and enables the operator to secure a firm grip without grasping the heated cylinder. This arrangement makes the operation of the hammer more convenient and allows the workman to drive hot rivets without danger of burning his hands. The device also provides an unobstructed view of the work from all angles. The Boyergrip is made of steel and is practically indestructible. A modified form has also been placed on the market, which is adapted for use on chipping and calking tools.

The Device and Manner of Using It

"LENDING" CARS AND ENGINES.—Would you loan your automobile to a friend and would your friend loan his to you? You would have to be pretty good friends to loan an automobile, because automobiles cost money. Switch engines cost lots of money. Your employer has spent nearly $60,000 for the switch engine he loans you to work with and it is costing him about twenty cents a minute to operate this switch engine. These figures include coal, water, sand, repair parts, wages of shop employees, wages of yard and engine crews and depreciation. It costs our employer not less than $96 to operate a switch engine eight hours. Are you getting $96 worth of work out of this engine and are you getting more than $96 worth of work out of it so that your employer can make money out of the labor you are selling him?—*Duit Wright.*

General News Department

R. M. Calkins, vice-president of the Chicago, Milwaukee & St. Paul Railway Company, has resigned from the standing committee of the Association of Railway Executives, and H. E. Byram, president of that road, has been elected to succeed him.

The Surgical Association of the Minneapolis, St. Paul & Sault Ste. Marie held its twelfth annual meeting at the Radisson Hotel, Minneapolis, Minn., on December 8 and 9, with about 100 of the 176 surgeons of the road present. The officers elected for the ensuing year are: President, Eric P. Quain, Bismarck, N. D.; vice-president, Earnest V. Smith, Fond du Lac, Wis.; secretary-treasurer, John H. Rishmiller, Minneapolis, Minn.

The city of Detroit, Mich., will sell to the Pennsylvania (Railroad) Company a tract of land 30 ft. by 30 ft. at the foot of 24th street. This action was taken recently by the city council, and the land is part of a ten-acre tract which the city has condemned for use as a warehouse for waterborne freight. The city had made an informal agreement to sell this land at the price which it costs, and the amount to be paid by the railroad will be $28,785.

Livestock found running at large on or around railways ought to be impounded. This is the suggestion of the Railway Association of Canada as a means of reducing loss and as a measure of safety to the passengers and trainmen. It is recommended that the railways notify the officers of municipalities, wherein trouble of the kind mentioned is experienced, that the suggested action is contemplated and that the co-operation of such officers is desired. Where there are no pounds the Association suggests that arrangements be made for their establishment.

J. Parke Channing, chairman of Engineering Council, has issued a circular to professional engineers and engineering assistants throughout the United States calling for personal contributions for the maintenance of Engineering Council for the calendar year 1920. The circular states that the increased cost of services and printing are absorbing the Council's income and causing deficits. For the calendar year 1919, member societies have been able to provide $25,000. Including the cost of the National Service Committee's head quarters in Washington, the Council will need not less than $50,000 for the calendar year 1920.

The Chief of Transportation Service of the United States Army, Brig. Gen. Frank T. Hines, recommends the centralization of all matters of military transportation into one service under the War Department. Speaking, in his annual report, of the Motor Transport Corps, he says that it is an independent agency of transportation; and the control of military railroads in the theater of operations is a matter under the control of the chief of engineers. He believes that economy in administration, efficiency in operation, and greater co-ordination justify all transportation for the War Department being combined into one service.

Dr. Charles W. Eliot, summarizing his experiences during his three weeks at the industrial conferences at Washington, tells his Boston friends that the only industrial peace that can be expected from the American Federation of Labor and the railroad brotherhoods is the peace of absolute domination of industry and of the government itself. Speaking before the Economic Club, he characterized the time he spent at the conference as "three unhappy weeks." From the first, he said, the conference was doomed to death as a thing futile and a waste of time. At no time, he added, was any serious effort made to consider the original objective President Wilson set as the goal of the discussions.

The burning of worn-out ties without warming anyone, is the subject of complaints which have been received by the Railway Association of Canada. A circular has been issued by the Association noting these complaints and referring to the existing shortage of fuel. The complainants have been informed that the railways would be glad to give surplus old ties to people who want them, and thereby alleviate the fuel shortage to some extent, provided this can be done without expense to the railways. The Association further suggests that where surplus worn-out ties are available the railways give to notice to municipal officers.

The Bay Point & Clayton has reached a compromise with the Oakland, Antioch & Eastern in proceedings brought by the former company to secure a right-of-way to the bay shore near Bay Point, Cal. As a result of this compromise both roads will use an overhead crossing over the county highway near Bay Point. A petition for authority to build the crossing was filed with the Railroad Commission of California recently. The compromise with the Oakland, Antioch & Eastern will provide passenger transportation facilities to employees of the Bay Point shipyards residing in Clyde and other communities on the Oakland, Antioch & Eastern. The Bay Point & Clayton is used principally to haul cement made at Cowell, Cal., and the bay terminus is needed to enable the company to ship by water from Bay Point. Water transportation is now very necessary because of the shortage of freight cars.

R. J. Clancy, assistant to the general manager of the Southern Pacific finds evidence that carelessness in crossing railroad tracks by occupants of automobiles is slowly yielding to the safety campaign conducted by the press, schools, churches and railroads. In a recent circular he says: "An analysis by months discloses no distinguishing relationship between climatic conditions and crossing accidents; accidents have occurred in like proportion during the summer and the winter months, so that whether curtains are up or down does not appear to matter much. The causes of these accidents appear to narrow down to misjudgment of speed of trains; minds of occupants being distracted by conversation; shifting gears and stalling on tracks; noise of machine interfering with hearing locomotive whistle, or bell or noise of train; inexperience of driver; not looking until about on the track, and inability to stop on account of speed * * *."

Senator Jones introduced in Congress on December 10 a bill to amend the Cummins railroad bill so as to forbid the practice of Canadian lines of cutting rates on bonded freight moving between the East and West and interior points. He would make it unlawful for any United States carrier or carriers by rail or water to participate in the international transportation of passengers or property where the through charge for such transportation, whether by rebate, by absorption of storage charges, wharfage charges, or any other charge or charges, or in any manner whatsoever is less than the through charge by combination of rates between such points on file with the Interstate Commerce Commission or the Shipping Board or the Interstate Commerce Commission and the Shipping Board, applying at such time for like transportation by United States carriers by rail or water or by rail and water. Advocates of this bill point out that "while American transcontinental lines are in dire straits as to finances, so that Congress is called on to bolster them financially, the Canadian Pacific, one of the principal offenders, is paying dividends at the rate of 10 per cent per annum, and its stock is selling in the market around $150 per share. By getting this domestic freight this Canadian road is having practically a balanced traffic, while 45 per cent of the west-

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF OCTOBER, 1919

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses						Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
					Maintenance of										
		Freight.	Passenger.	Total (inc. misc.)	Way and structures.	Equipment.	Traffic.	Transportation.	General.	Total.					
Alabama & Vicksburg	141	$167,456	$63,510	$247,274	$40,882	$36,032	$1,926	$81,473	$9,074	$172,106	69.61	$75,167	$12,121	$62,970	$34,692
Alabama Great Southern	312	661,072	227,391	939,701	140,398	217,189	15,313	286,523	19,170	684,128	72.80	255,573	15,400	240,147	185,614
Ann Arbor	301	362,371	60,037	444,786	47,424	85,889	4,470	187,682	9,972	335,457	75.41	109,328	16,700	92,625	33,082
Arizona Eastern	377	291,707	47,294	362,119	54,148	62,536	3,349	96,805	16,900	236,233	65.23	125,886	16,566	109,234	—6,629
Atchison, Topeka & Santa Fe	8,665	13,136,712	3,813,871	18,025,518	2,110,860	3,782,007	147,990	5,855,071	255,844	12,140,327	67.34	5,885,191	705,764	5,178,090	760,677
Atlanta & West Point	93	121,830	101,922	254,615	33,919	42,793	3,408	91,152	7,506	182,885	71.82	71,730	1,000	70,670	23,790
Atlanta, Birmingham & Atlantic	639	333,976	88,280	455,211	99,924	137,775	7,748	209,130	12,765	467,413	102.68	—12,201	16,000	—28,328	100,863
Atlantic City	177	113,560	147,851	277,564	63,810	33,866	1,917	191,408	1,788	292,896	105.52	—15,332	22,086	—37,424	138,861
Atl. Coast Line	4,874	3,853,234	1,313,770	5,539,216	889,615	1,209,062	61,530	2,215,816	110,061	4,510,780	81.43	1,028,437	200,000	827,822	—111,036
Baltimore & Ohio Chicago Terminal	90	.....	.....	239,444	43,931	44,055	1,121	153,208	7,697	254,669	106.35	—15,225	26,542	—41,931	85,573
Baltimore & Ohio	5,151	15,087,094	2,331,643	18,917,768	2,412,293	4,904,080	146,084	7,481,750	358,909	15,413,104	81.47	3,504,664	464,433	3,037,376	4,902,976
Baltimore, Ches. & Atl	87	98,958	39,222	143,725	16,988	27,402	1,059	83,125	3,468	132,043	91.87	11,681	4,000	7,677	—22,288
Bangor & Aroostook	632	371,797	84,451	482,540	138,826	138,810	3,711	174,678	11,391	475,067	98.45	7,473	22,886	—15,412	—4,676
Beaumont, Sour Lake & W	118	97,222	29,955	134,376	17,416	33,389	1,509	44,004	5,086	101,403	75.46	32,972	2,709	30,256	—2,964
Belt Ry. Co. of Chicago	31	.....	.....	389,627	54,208	58,229	324	198,351	7,769	318,881	81.84	70,746	15,682	55,064	91,824
Bessemer & Lake Erie	217	1,187,875	37,822	1,244,327	141,385	370,491	8,961	373,143	19,866	921,043	74.02	323,284	14,500	308,781	—217,699
Bingham & Garfield	37	157,631	1,953	163,777	31,032	44,129	1,328	35,054	3,620	117,135	71.52	46,642	11,549	35,094	—101,410
Birm. Southern	29	39,343	.....	47,672	4,867	3,877	677	26,299	3,268	38,991	81.79	8,681	1,999	6,646	—48,453
Boston & Maine	2,258	4,675,052	1,854,867	7,224,195	648,520	1,528,173	55,240	3,564,587	196,052	6,028,206	83.44	1,195,989	199,036	996,929	596,343
Buff. & Susq	296	236,218	5,740	245,035	69,218	96,783	1,856	80,067	9,567	257,490	105.09	—12,456	3,261	—15,706	—3,020
Buff., Rochester & Pitts	589	1,359,578	127,981	1,554,132	211,950	576,620	14,171	635,541	31,363	1,472,293	94.76	81,340	27,000	54,325	229,776
Canadian Pacific Lines in Maine	233	114,657	51,147	176,491	56,460	38,325	2,556	89,458	3,245	190,044	107.68	—13,554	11,000	—24,554	35,526
Carolina, Clinchfield & Ohio	282	500,648	35,001	544,392	79,996	140,617	4,013	167,643	13,092	404,937	74.38	139,455	16,300	123,067	79,761
Central of N. E	301	707,925	26,119	765,560	143,129	96,297	4,011	293,525	15,459	552,422	72.15	213,138	16,000	197,125	248,782
Central of Ga	1,918	1,208,079	544,982	1,952,521	442,049	382,848	37,937	805,725	63,120	1,733,564	88.78	218,956	78,080	140,008	87,673
Central R. R. of N. J	685	3,123,536	716,429	4,077,471	512,592	1,178,405	37,215	1,879,913	84,468	3,705,169	90.86	372,303	340,601	31,702	—1,161,238
Central Vermont	411	415,106	99,914	559,887	84,476	141,138	7,118	325,199	19,393	580,058	103.60	—20,171	17,400	—37,579	—58,769
Charleston & W. Carolina	342	229,834	50,546	296,008	53,132	61,268	6,852	167,741	4,997	293,988	99.31	2,020	2,519	—498	—137,607
Chesapeake & Ohio	2,509	5,260,814	1,142,908	6,771,577	1,170,581	2,109,903	34,358	2,685,291	115,084	6,148,292	90.79	623,285	158,400	464,194	—1,761,612
Chicago & Alton	1,050	1,717,201	558,257	2,429,237	442,340	752,100	20,039	983,448	55,220	2,267,795	93.35	161,442	55,500	105,631	—422,099
Chicago & Eastern Ill	1,131	1,988,616	418,710	2,583,423	332,420	834,564	21,125	928,868	47,367	2,174,590	84.17	408,833	56,500	351,866	—99,515
Chicago & Erie	269	793,599	70,810	954,229	87,431	128,342	11,014	444,161	25,806	701,903	73.55	252,326	53,000	199,322	—198,484
Chicago & N. W	8,090	10,003,071	3,030,376	14,252,588	1,954,968	2,843,863	70,430	6,086,096	265,306	11,314,552	79.38	2,938,036	475,000	2,460,350	—914,882
Chicago, Burl. & Quincy	9,371	11,916,151	3,274,379	16,281,562	1,750,446	4,057,927	89,804	5,603,386	358,895	11,984,162	73.61	4,297,400	465,131	3,829,534	292,023
Chicago Great W	1,496	1,605,062	485,951	2,246,306	336,022	449,113	27,921	895,776	47,407	1,768,559	78.73	477,747	54,975	423,740	907,859
Chicago, Indianapolis & Lou	657	920,181	266,779	1,295,341	166,730	384,633	17,004	530,630	27,452	1,139,655	87.98	155,686	47,446	108,196	—106,084
Chicago Junction	12	.....	.....	358,787	57,710	48,724	59	232,772	6,152	345,416	96.27	13,371	2,129	11,241	37,732
Chicago, Milw. & St. Paul	10,648	10,989,789	2,486,220	14,798,637	2,180,810	3,002,637	89,198	6,236,299	369,604	12,018,526	81.21	2,780,110	570,238	2,173,786	2,480,530
Chicago, Peoria & St. L	247	192,436	28,078	231,919	41,750	68,215	2,965	94,835	8,717	216,447	93.32	15,472	6,100	9,372	7,748
Chicago, Rock Island & Gulf	474	415,172	117,692	572,534	52,491	82,279	7,807	204,084	13,111	361,017	63.05	211,517	19,864	191,637	115,262
Chicago, Rock Island & Pac	7,594	7,917,783	2,796,195	11,372,559	2,010,099	2,495,269	104,943	4,453,106	200,593	9,305,529	81.82	2,067,029	364,537	1,701,593	—325,467
Chicago, St. P., Minn. & Omaha	1,749	2,018,753	627,824	2,818,820	368,118	539,473	25,318	1,249,843	62,810	2,261,875	80.24	556,944	122,001	434,529	414,369
Chicago, Terre H. & S. E	374	499,581	20,927	532,395	68,248	186,128	2,158	183,989	9,276	451,637	84.83	80,759	14,500	66,259	—64,560
Cinc., Leb. & Nor	76	112,153	11,147	141,699	8,372	45,507	1,423	76,344	992	132,537	93.53	9,162	6,559	2,603	22,381
Cinc., Ind. & W	321	324,907	56,431	307,127	75,676	106,896	6,626	152,370	12,784	355,404	115.71	—48,277	14,561	—62,838	—44,412
Cinc., N. O. & Tex. Pac	337	1,026,433	276,828	1,382,591	259,729	454,082	26,784	610,537	35,239	1,389,283	100.49	—6,692	35,547	—42,943	—226,105
Cinc. Northern	251	239,927	17,804	268,544	33,670	43,723	2,156	95,120	4,079	178,748	66.56	89,797	13,400	76,394	—1,839
Cleve., Cinc., Chicago & St. L	2,408	5,392,891	1,499,834	7,468,982	793,575	1,303,332	76,172	2,811,291	106,481	5,142,330	68.84	2,326,652	210,000	2,116,232	886,445
Colo. & Southern	1,099	906,519	217,303	1,196,904	206,797	315,136	7,551	413,211	32,573	983,377	82.16	213,527	47,000	166,407	—65,730
Colo. & Wyoming	41	17,457	1,014	57,283	8,053	8,329	149	13,771	3,833	34,136	59.59	25,147	4,000	19,147	2,535
Cumberland Valley	163	423,984	81,548	546,312	91,529	104,334	6,728	177,381	11,114	391,159	71.59	155,153	8,215	146,797	21,779
Delaware & Hudson	875	2,890,078	297,610	3,359,670	450,169	919,993	21,655	1,470,581	106,385	2,999,495	89.27	360,176	87,000	273,176	774,453
Del., Lack. & W	956	4,677,061	1,105,259	6,401,622	824,632	1,371,891	35,831	2,705,947	115,639	5,117,005	79.93	1,284,617	318,427	965,586	—1,062,333
Denver & Rio Grande	2,593	2,624,175	656,382	3,477,549	468,712	715,585	20,172	1,081,716	71,148	2,405,436	69.17	1,072,113	130,000	941,831	326,093
Denver & Salt Lake	255	247,069	35,189	292,154	57,725	128,477	978	138,609	6,141	331,932	113.61	—39,778	9,000	—49,208	12,115
Det. & Mack	381	141,474	41,125	193,524	27,827	39,628	2,038	67,794	4,856	142,028	73.39	51,496	8,439	43,057	45,727
Det. & Toledo Shore Line	61	222,367	.....	225,199	23,521	25,269	1,556	75,628	5,535	131,511	58.39	93,687	7,900	85,787	24,925
Det., Toledo & Ironton	454	401,174	14,792	430,830	102,046	77,017	3,519	176,415	12,978	371,988	86.34	58,842	17,897	40,895	59,058
Duluth & Iron Range	292	540,687	19,375	603,653	102,424	119,475	329	185,030	14,644	422,522	69.99	181,130	29,971	150,926	—404,233
Duluth, Missabe & Northern	412	1,958,799	46,246	2,229,240	179,654	127,956	1,935	430,610	15,622	757,405	33.97	1,471,835	113,439	1,358,396	—624,371
Duluth, South Shore & Atl	598	330,609	101,385	465,744	75,433	73,269	4,822	219,202	8,755	387,817	83.26	77,927	20,000	57,910	—38,393
Duluth, Winnipeg & Pac	178	144,455	29,848	176,270	44,645	39,366	2,823	70,972	9,262	167,112	94.81	9,159	6,061	3,097	2,104
East St. L. Connecting	3	.....	.....	109,587	11,363	27,731	181	93,828	3,091	135,352	123.51	—25,765	2,576	—28,341	—24,659
El Paso & S. W	1,027	907,022	199,073	1,168,007	307,922	216,900	10,130	304,084	25,087	874,210	74.84	293,797	48,364	245,429	98,912
Elgin, Joliet & Eastern	832	1,033,249	5	1,151,891	227,690	471,736	8,292	521,553	25,936	1,255,149	109.96	—103,258	53,250	—156,598	—702,414
Erie	1,989	6,971,352	1,040,855	8,751,988	930,783	2,533,909	64,837	4,114,171	202,581	7,896,005	90.21	855,912	376,000	477,499	—1,234,078
Florida East Coast	764	514,133	198,325	812,119	149,273	159,299	8,189	284,579	17,907	626,758	77.17	185,361	42,547	142,777	140,580
Fonda, Johnstown & Gloversville	88	35,584	63,433	102,590	19,027	9,441	572	39,222	4,908	73,171	71.32	29,419	4,900	24,519	5,632
Ft. Smith & Western	253	167,254	33,876	209,552	33,723	35,519	63,865	62,293	891	142,823	68.15	66,729	5,000	61,685	35,495
Ft. Worth & Denver City	454	660,396	368,318	1,059,221	107,316	194,316	4,668	431,245	26,267	768,365	72.54	290,856	19,557	271,220	39,137

bound car movement on the transcontinental roads of the United States consists of empty cars. In the Alaska trade the inroads of the foreign railroad-owned water carriers operating to a small, but productive part of Alaska, have created a very difficult transportation problem for Alaska as a whole, particularly western and central Alaska, and it is declared that Alaska may be robbed of its American service unless it is protected against the foreign carrier.

A Condensed View

Neither the Cummins bill in the Senate nor the Esch bill in the House is satisfying everybody; in fact, they are satisfying nobody. The final legislation will probably be a mixture of the provisions of both bills. Labor is committed to the Plumb plan so that it is not to be expected that it will accept the more conservative measures. It will not take kindly to legislation forbidding strikes, nor is it enthusiastic over the elaborate machinery provided in the Esch bill. In short, labor desires to be left alone to do as it pleases, according to its own sweet will, and does not favor legislation of any character unless it be of the negative variety, exempting it from provisions of law which apply to the rest of the community. . . .—*New York Commercial.*

Chicago Monuments

The plans for the reconstruction of Chicago's Harbor District, the electrification of the Illinois Central and the Michigan Central Railroads and the construction of new terminal facilities by the Illinois Central on the lake front will necessitate the removal of several historical monuments in the city of Chicago which mark the sites of events in Chicago's early history. The monument at Eighteenth street and Prairie avenue, which marks the site of the Fort Dearborn Massacre and which was presented to the city by George M. Pullman, is among the land marks which must be moved. One of the connections to the new terminal is to cut through the spot where the monument now stands. The Chicago Historical society, the Chicago Plan Commission and other organizations interested in preserving the city's works of art are considering new sites for these land marks. It is planned among other things to dedicate the new ornamental bridges which are to be a part of the improvement to the memory of the early explorers—Joliet, La Salle, Pere Marquette and others.

Culvert Pipe Committee

The Joint Concrete Culvert Pipe Committee, the organization of which was mentioned some months ago, has issued a progress report including a statement of the complete membership, which is as follows: American Concrete Institute, B. S. Pease, American Steel & Wire Company, Chicago, and A. B. Cohen, Delaware, Lackawanna & Western, Hoboken, N. J.; American Association of State Highway Officials, T. R. Agg, Iowa State College, Ames, Iowa, and J. N. Mackall, Maryland State Roads Commission, Baltimore, Md.; American Railway Engineering Association, Job Tuthill, chief engineer, Pere Marquette, Detroit, Mich., and A. F. Robinson, bridge engineer, Atchison, Topeka & Santa Fe, Chicago; American Society for Testing Materials, H. T. Shelley, assistant engineer, sewer construction, Department of Public Works, Philadelphia, Pa., and A. E. Phillips, sanitary engineer, Washington, D. C.; American Society of Civil Engineers, George H. Tinker, bridge engineer, New York, Chicago & St. Louis, Cleveland, Ohio, and T. L. D. Hadwen, engineer of masonry construction, Chicago, Milwaukee & St. Paul, Chicago; American Concrete Pipe Association, Paul Kircher, Massey Concrete Products Corporation, New York, and C. F. Buente, Concrete Products Company of America, Pittsburgh, Pa.; Office of Public Roads, T. H. MacDonald, and A. T. Goldbeck, Office of Public Roads, Department of Agriculture, Washington, D. C. A sub-committee of this association held a meeting at Ames, Iowa, to witness tests made at the Experiment Station of the Iowa State College in conjunction with the Iowa State Highway Commission.

Traffic News

The report of overseas traffic for the week ended December 3 shows 6,648 cars of commercial export freight received at North Atlantic ports during this period as compared with 998 cars for the same week of 1918, an increase of 5,650 cars or 565 per cent. At South Atlantic and Gulf ports as of December 1, 1919, there were 12,490 cars of export freight on hand, as against 11,589 on November 24, 1919, an increase of 901 cars. On December 3, 1919, there were stored in elevators at North Atlantic ports 12,895,824 bushels of grain. There were received during the week 3,082,662 bushels, while 4,793,806 bushels were cleared. The deliveries exceeded the receipts by 1,711,144 bushels. The total amount of grain in storage at these ports represented 65.4 per cent of the total elevator capacity. At South Atlantic and Gulf ports there were stored in elevators on December 3, 1919, 8,671,900 bushels of grain, representing 82.4 per cent of the total elevator capacity.

Exports of Cars in October

The exports of freight cars in October, numbering 4,319, of a value of $9,179,902, were more than double those of September and have been exceeded during but one month so far this year, June, during which 5,055 cars valued at $13,675,186, were exported. The detailed figures for passenger and freight cars exported in October as compiled by the Division of Statistics of the Bureau of Foreign and Domestic Commerce were as follows:

	Passenger		Freight and other	
Countries	Number		Number	
France	..	.....	2,651	$6,222,843
Italy	..	.....	930	1,780,450
Canada	5	$13,950	4	5,510
Mexico	..	.....	31	27,962
Cuba	..	.....	173	197,722
Dominican Republic	..	.....	9	12,000
Brazil	..	.....	135	242,595
China	..	.....	56	142,800
Russia in Asia	..	.....	324	530,800
Australia	..	.....	6	17,220
Total	5	$13,950	4,319	$9,179,902

The Pittsburgh Basing Point System

Hearings before the Federal Trade Commission on the application for abolition of the Pittsburgh single price basing point system were held in Washington on December 1, 3, 5 and 6. John S. Miller, general counsel for the complaining fabricators, declared that the consuming public is taxed $30,000,000 a year through increased prices of manufactured steel products because of the Pittsburgh base system under which rolled steel is sold throughout the United States at the Pittsburgh ruling price plus freight from Pittsburgh to destination. He pointed out that steel rails and rail joints are sold throughout the country at f. o. b. mill prices, whereas other rolled steel products follow the Pittsburgh base price.

Miller produced figures to show that freight rates on a large number of finished steel products are identical with rates on rolled steel. Thus, he said, Eastern fabricators purchasing at Pittsburgh are enabled to place finished products in the Chicago market on a parity with the finished products of competing fabricators in the Chicago district who, while buying of Chicago producers, pay the "fictitious" freight from Pittsburgh. He declared that the Gary producing mills were only operating at 65 per cent capacity prior to the strike.

Miller said those supporting the Pittsburgh base system are "all either producers or beneficiaries of the system." Pittsburgh fabricators, he said, "are to be found supporting the system on which they feed fat." Included among the complaining interests, he pointed out, are the War and Navy Departments, the United States Railroad Administration, and state, municipal and civic organization, as well as steel consumers.

The system was defended by R. V. Lindabury, general counsel for the United States Steel Corporation. He said that any government order interfering with the Pittsburgh base system would

"shackle competition and create an artificial situation," and that "the system which exists is due to the operation of natural laws and the free play of competition." The primacy is with Pittsburgh because of Pittsburgh's predominance in production, and by the operation of natural trade laws Pittsburgh dominates steel prices. Chicago, he said, "will become, primate in steel production in the United States before very long if the operation of natural law is not interfered with. Chicago now produces but 19 per cent of the steel output and only one half of the requirements of the Chicago district. If Chicago producers can only supply one half of the Chicago demand, Pittsburgh, being required to supply the other half, necessarily dominates the price, because there would be no advantage to the Chicago producers in selling at less than the Pittsburgh price when they could not profit by any extra demand so created. Therefore, they naturally sell at what they can get, which is up to the Pittsburgh level."

Abolition of the Pittsburgh base, Mr. Lindabury declared, would prevent the establishment of steel plants in new territory. "There wouldn't be another steel mill established anywhere in the west," he declared. He argued that the discrimination prohibited by the Clayton act, "is not the discrimination resulting from natural laws of trade," and that, therefore, there is no element of discrimination in the Pittsburgh base system.

On Friday, Frank H. Scott, representing the Steel & Tube Company of America, testified. He declared that the 6,000,000 tons produced in the Chicago district could not possibly supply the demand of that district. You can't force investors to supply the extra mills needed to meet Western requirements by governmental edict.

L. A. Manchester representing the Youngstown Sheet & Tube Company, described the Pittsburgh base as being "a unit of measuring prices" and likened it in general to the standards of weight and measures.

C. W. Wickersham, representing the Lackawanna Steel Company, denied the commission's jurisdiction, stating that the basing point system is not a method of competition and is not a practice as between two competitors.

James Bowron, Birmingham, president of the Gulf State Steel Company, spoke against the application to abolish the system, as did Paul Cravath, representing the Bethlehem Steel Corporation.

On Saturday, John S. Miller, in closing rebuttal, declared that the Pittsburgh base price is maintained "by a meeting of minds that is tantamount to agreement." He said the producers were "all taken care of" by the Pittsburgh price and that is was a "happy family." Countering the claim that Pittsburgh dominates because of its excess production, he declared that both the Duluth and Birmingham districts produce in excess of the requirements of their respective territories, but still adhere to the Pittsburgh base price.

John Walsh, counsel for the Petroleum Steel Company, of Sharon, Pa., fabricator of steel tanks, declared that the "entire issue is whether the Pittsburgh base system tends to lesson competition or to create a monopoly." He declared it did not. He said that if the system were abolished, the Petroleum Steel Company "would either have to quit producing at Sharon and locate westward, or operate in both sections."

Anthracite Shipments for November

The shipments of anthracite for November as reported to the Anthracite Bureau of Information, amounted to 5,971,671 gross tons, as compared with 5,276,659 tons for the same month last year, an increase of 695,012 tons, and with 6,560,150 tons with October of this year, a decrease of 588,479 tons. The decrease as compared with the preceding month was due to the fewer working days, there being only 21 full working days. The average daily shipments were 284,365 tons for November, against 262,406 tons for October. The shipments by railroads were as follows:

	November, 1919	November, 1916	Coal year, 1919-1920	Coal year, 1916-1917
P. & R.	1,358,643	1,200,814	9,298,481	8,383,663
L. V.	1,079,266	1,082,453	8,631,660	8,074,729
C. R. R. of N. J.	506,737	546,348	4,291,891	4,254,101
D. L. & W.	860,356	979,607	7,202,048	6,921,568
D. & H. Co.	663,782	628,239	5,394,387	4,776,686
Penna.	406,606	438,869	3,333,221	3,665,338
Erie	620,703	674,261	5,121,336	4,975,491
N. Y. O. & W.	161,385	162,257	1,364,363	1,284,149
L. & N. E.	314,193	280,149	2,334,534	1,749,885
	5,971,671	5,992,997	46,971,921	44,085,610

Commission and Court News

State Commissions

The Railroad Commission of Kentucky now consists of J. Sherman Cooper (chairman), Frank N. Burns and E. C. Kash. The new commissioners entered upon the duties of their office on December 9, taking the places of L. B. Finn, S. T. Douthitt and H. G. Garrett.

Court News

Injury to Passengers—Proof of Negligence

Where the petition of a passenger on the defendant's train averred that a vestibule door was negligently left open, and that as a result of a sudden jar or jolt he was thrown from the car platform onto the tracks, the Missouri Supreme Court holds that proof of the concurring acts of negligence is essential to recovery.—Giles v. Michigan Central (Mo.) 212 S. W. 873.

Recovery From Shipper—Bill of Lading Issued by Mistake

The Maryland Court of Appeals holds that a carrier which signs three bills of lading for three cars, made out by the shipper, but receives only two carloads, and is forced to reimburse a party advancing money on the third bill of lading, may recover the amount so paid from the shipper.—P. B. & W. v. Roberts (Md.) 106 Atl. 615.

Crossing Accident—Contributory Negligence

The Michigan Supreme Court holds that where the driver of an automobile running 10 miles an hour had an unobstructed view while the defendant's on-coming train, running 40 miles an hour, was traversing 225 feet before it reached the crossing, and he failed to look and apply the brakes in time to prevent a collision, the railroad was entitled to a directed verdict.—Pershing v. D. G. H. & M. (Mich.) 172 N. W., 530.

Liability for Defects in Boiler

The Texas Court of Civil Appeals holds that under U. S. Comp. St. § 8631, making it unlawful to use a locomotive in moving interstate traffic unless the boiler and appurtenances are in proper condition, the receivers of a railroad are liable to the widow of a locomotive engineer killed by a boiler explosion due to a defect in the bolts and stays designed to sustain the crown sheet.—Lancaster v. Carroll (Tex.) 211 S. W. 797.

Pullman Car Facilities

The Oklahoma Supreme Court holds that the Oklahoma Corporation Commission is vested with authority to require all reasonable and proper facilities to be furnished by a railroad company, such as Pullman cars, and the fact that an order of the commission requiring such facilities may incidentally affect interstate commerce does not render the order a nullity; but where a railroad company has furnished all proper and reasonable facilities of the character required by the order, the commission has not the power to require the furnishing of additional facilities, where its order will interfere with interstate commerce, or where such additional service can only be furnished at a loss to the railroad company. What is or is not reasonable and adequate must be determined in the light of conditions existing at the time and in relation to all surrounding circumstances.—Atchison, T. & S. F. v. State (Okla.) 176 Pac. 393.

Garnishment of Salaries Under Federal Control

The Tennessee Supreme Court holds that the salary of an employee of a railroad corporation being operated by the federal government under the 1918 act is not subject to garnishment in Tennessee at least. The reason given is that under that act the railroads of the country are merely agencies or instrumentalities of the United States Government and it is the settled policy of the state to hold immune from garnishment all municipalities and other governmental agencies—Dickens v. Realty Co. (Tenn.) 210 S. W. 644.

Excessive Assessment of Railroad Franchise

In granting a railroad relief from an excessive assessment of its franchise, the Kentucky Court of Appeals holds that, under Ky. St. §§ 4079, 4080, the value of a railroad franchise subject to taxation will be determined by deducting from the value of the capital stock fixed by the board of valuation by capitalizing the net income derived from the business in the state, the assessed value of all its tangible property assessed in the state.—Bosworth v. Kentucky Highlands (Ky.) 210 S. W. 671.

Foreign Shipments—Freight Refund

The Texas Court of Civil Appeals holds that a shipment from Texas to France (in this case a shipment of cotton) is subject to the tariff, regulations and rules of the Interstate Commerce Commission. In such a case the carrier was not required to refund to the shipper the amount paid for freight from the points of origin to the point of concentration (Hillsboro, Tex.) under order of the Railroad Commission of Texas, though the goods had not been sold at the time of concentration:—St. Louis Southwestern v. White, Jackson & Co. (Tex.) 211 S. W. 315.

Safety Appliance Act—Buffers

In an action for injuries received in uncoupling a car the Kansas Supreme Court points out that there appears to be no federal decision or rule requiring buffers or bumpers on cars for the protection of brakemen in coupling or uncoupling cars.—George v. Atchison, T. & S. F. (Kan.) 178 Pac. 403.

Same—Sufficient Compliance with Act

The Oklahoma Supreme Court holds that where it is shown that a sufficient number of cars in a train have been equipped with power brakes, and the locomotive was equipped with power driving-wheel brakes and appliances for operating the train brake system, as required by the act, the mere fact that the air brake connections became uncoupled furnishes no proof whatever of a violation of the statute.—Rock Island v. Guthridge (Okla.) 179 Pac. 590.

Expert Evidence as to Space Required to Stop Train

The New Hampshire Supreme Court holds, in an action for damage to an automobile at a crossing, that it is not such a matter of common knowledge that a modern locomotive, running 25 miles an hour on a descending grade of one-fifth to one-half per cent, can be stopped in less than 30 rods, that counsel can argue or the jury decide it without any evidence. The only case found by the court where the precise question was passed upon was Union Pacific v. Shannon, 33 Kan. 446, 6 Pac. 564, where cattle were killed at a crossing. There the jury disregarded the undisputed testimony of the engineer that the train, going at 45 miles an hour, was stopped in about 300 yards, and that this was the quickest a train of that kind, going at that speed, could be stopped, and found without any evidence whatever that it could have been stopped in from 350 to 375 feet. This, it was held, they had no right to do, and that to determine how long it takes to stop an engine or train requires experience in the running of trains and in checking their speed. Verdict for the plaintiff was set aside and a new trial granted.—Chellis Realty Co. v. Boston & Maine (N. H.) 106 Atl. 742.

Foreign Railway News

Australian Firemen Want Increased Wages.—The engine drivers and firemen on the Australian Trans-Continental Railway, according to despatches, flouted the Arbitration Court and recently struck for increased wages.

Hungarian Railways to Be Handed to the British.—The Vossische Zeitung recently contained a report from Budapest that the Hungarian Cabinet and the British Commissioner had concluded an agreement stipulating that the whole Hungarian railway system will pass into British hands.

The Jugo-Slav government intends sometime in the near future to send an official commission to this country in the hope of raising a loan here to facilitate reconstruction, including building and repairing railways, etc. The idea of sending such a commission has been in hand for some time, but cablegrams from the American minister at Belgrade on December 2 indicated that the visit has been postponed for a few weeks.

Southern Nigeria Railroad Completed

It is announced that the railway in Southern Nigeria from Port Harcourt to the Udi coalfields has been completed, and that large quantities of coal are being obtained.

Standardization of Railways for Brazil

A commission has been appointed by the Minister of Communications and Public Works in Brazil to make a study and prepare a report for standardization on the State-owned railways. (Engineer).

Arica-La Paz Railroad Leased

Commerce Reports, issued by the Bureau of Foreign and Domestic Commerce, reports the receipt of a cablegram from La Paz, Bolivia, to the effect that the Arica-La Paz line, owned by the Chilean Government, has been leased by the Antofagasta & Bolivia Railway.

Demand for Machinery in Morocco

LONDON.

The London Times Trade Supplement says that there is an increasing demand for machinery in Morocco. The principal demand is for milling machinery, gas and petrol engines, and electric light plants. In 1913 France supplied 51 per cent, Germany 22 per cent and Great Britain 21 per cent of the total imports of machinery.

Proposed Sales of German Railways

A proposal to sell the German State Railways to the United States has recently been the subject of lively discussion in the German press. According to the Berlin correspondent of the National Tidende the proposal was put forward by a well-known financier in Germania, Herr Erzberger's principal organ, on the plea that all other attempts to obtain foreign credit had failed. The writer estimates the present calue of the railways as at least 90 to 100 billion marks.

Japan to Build Submarine Tunnel

Several months ago announcement was made that the Imperial Government Railways of Japan intended to build a tunnel under the Shimonoseki Strait. Two years are to be spent in studying the geological formation of the sea bed in the strait and in drafting of the general plan of work in preparation for the actual undertaking of tunneling, so that the real work will not commence until 1921. Engineers and

workmen will be sent to America and Europe to make a study of what has been achieved in these countries in the way of tunnel engineering. The line is to be 7 miles long, one mile of which will be entirely under the sea. The approximate cost of the undertaking will be about $10,000,000, and the work is expected to be completed in 1928.

Electrification of the Central of Brazil Railway

In accordance with recommendations from the director of the Central of Brazil Railway, says Commerce Reports, the Minister of Communications and Public Works of Brazil has named Hector Lyra da Silva as assistant technical engineer for the special work of undertaking the necessary studies for the electrification of the line from Barra do Pirahy. He has instructions to prepare the estimates and the tenders for public bids. Further details, continues Commerce Reports, may be obtained from the commercial attache at Rio de Janeiro. (Refer to file No. L. A. 21 for financial interests connected with project.)

Exports of Locomotives in October

The exports of locomotives during October, totaling 170, valued at $5,284,019, were the greatest for any month thus far in 1919, the best previous month being May, when 97 locomotives, valued at $4,040,551, were exported. Of the October exports nearly half were consigned to Italy. The detailed figures as compiled by the Division of Statistics of the Bureau of Foreign and Domestic Commerce were as follows:

Countries	Number	Dollars
Finland	15	375,000
France	1	4,100
Italy	75	2,372,000
Norway	12	405,754
Canada	1	13,500
Honduras	1	14,650
Mexico	1	35,000
Barbados	1	11,200
Cuba	9	151,392
Brazil	6	122,800
Peru	1	5,748
China	17	842,500
Japanese China	2	104,200
Chosen	3	129,500
British India	1	29,280
Straits Settlements	6	170,700
Japan	6	37,500
Russia in Asia	8	403,995
Australia	4	55,200
Total	170	5,284,019

Tunnel Project in Colombia

American contracting companies may be interested, says a recent issue of Commerce Reports, in bidding on a tunnel project on the Antioquia Railway, in Colombia. The tunnel, which is to extend through the La Quiebra Mountain, will be 3,760 meters, or approximately 12,250 feet in length, with the cost estimated by the department of Antioquia engineers at $2,000,000 gold. More recent information regarding developments can be secured through the American consular agent at Medellin, or the name of the engineer in charge may be obtained from the Bureau by referring to file No. 40802a. Correspondence with this official should be in Spanish and all figures in the metric system.

A 24-Hour Clock at Waterloo Station, London

Considerable interest is now being taken in England in the idea of timing trains on the 24-hour system. This method is general on the continent, and is regarded as having the important advantage of rendering more clear the actual arrival and departure times of trains. Difficulties with regard to a. m. and p. m. are altogether surmounted, and on long distance bookings it is a very simple matter to ascertain whether one will get to any point during the day or in the night. With this in mind a 24-hour clock has recently been installed at the Waterloo station of the London & South-Western, London, with a view to putting English "timings" into line with continental. The clock has the usual dial with Roman numerals, the figures 13 to 24 being placed in smaller Arabic numerals inside opposite their respective Roman numerals. Most of the time-tables of continental bookings now printed in England now use the 24-hour system.

Exports of Car Wheels and Axles in October

The exports of car wheels and axles during October totaled $962,351, as compared with a total of exports during September of $1,013,440. The detailed October figures as compiled by the Division of Statistics of the Bureau of Foreign and Domestic Commerce were as follows:

Countries	Dollars
Finland	366,460
France	290,133
Italy	102,785
Netherlands	1,785
Spain	2,750
Canada	12,267
Honduras	575
Mexico	16,739
Cuba	11,291
French West Indies	1,525
Dominican Republic	11
Argentina	4,347
Brazil	20,385
Chile	292
Colombia	179
Ecuador	488
Peru	8,583
Chosen	2,250
Dutch East Indies	11,935
Japan	86,805
Russia in Asia	19,600
Australia	908
New Zealand	246
Philippine Islands	12
Total	962,351

Wage Questions in Western Australia

A deputation representing the staff of the state-owned and state-controlled railways of Western Australia recently waited on the Minister of Railways to express what was described as "the unanimous desire of the railway employees" for a wages board for the adjustment of differences between the railway authorities and the staff.

The spokesman of the deputation stated that "the railwaymen were dissatisfied with the decision of the Arbitration Court (a legally constituted tribunal for the settlement of industrial disputes generally), and urged the creation of a board consisting of salaried railway service representatives, with an independent chairman." He urged the government, as the owners and controllers of the railways, to "take action before the men got out of hand and did something desperate." The Minister promised to appoint a committee to advise the government on the matter, and the deputation undertook to nominate a representative on the proposed committee.

The Institute of Transport

There has been formed in London a society, which bids fair to become prominent not only in England but throughout the world, called the Institute of Transport. As the name implies, it is to cover the entire field of transport, including railways, waterways, tramways and roads. It is supported by eminent persons well known in the transport field in England and is to start its career with none other than Sir Eric Geddes, the Minister of Transport, as its first president. For many years past suggestions for the formation of such a society have been made but no concerted action could be obtained towards the fruition of this idea. With the formation of the Ministry of Transport, however, by which the government took control of all transport facilities, a new impetus was given to the formation of this society.

At a luncheon given on November 3 by Sir Albert H. Stanley, the head of the London Underground Railway combine, to which were invited representative members of the Ministry of Transport, representatives of the railways, municipal tramways, company owned tramways and motor vehicles, passenger and goods transport undertakings, this institute was formed "to promote and encourage knowledge of the traffic science and of the art of transport in all its branches and the means and appliances connected therewith to provide facilities for the study of and the exchange of information on ideas of traffic problems and of means and methods of transport, and to raise the status of those engaged in

traffic and transport." Meetings are to be held between October and June of each year, presumably monthly, at which subjects on traffic and transport will be read and discussed.

In addition to this the institute is to provide for lectures, exhibitions of appliances or systems of transport, to compile and publish "the proceedings and reports of the institute or any paper, communications, works or treatises on traffic and transportation, to form a library of works relating to traffic and transport," etc.

Exports of Railway Track Material in October

The exports of steel rails during October totaled 43,730 tons, valued at $2,479,648; of spikes, 2,899,162 lb., valued at $130,941, and of switches, frogs, splice bars, etc., valued at $533,246. With the exception of the last figure these totals were not as great as those for September. The October figures in detail as compiled by the Division of Statistics of the Bureau of Foreign and Domestic Commerce were as follows:

Countries	Spike		Steel rails		Switches, frogs, splice bars etc
	Pounds	Dollars	Tons	Dollars	Dollars
Belgium	.....	.....	92	5,740	.....
Denmark	.....	.....	.....	.....	143
France	.....	.....	1,726	111,215	38,019
Italy	.....	.....	1,343	78,064	640
Norway	7,000	246	31	2,300	680
Portugal	.....	.....	384	26,216	185
Spain	.....	.....	30	1,300	.....
England	.....	.....	838	48,604	4,635
Canada	4,719	228	543	32,226	13,257
Costa Rica	1,200	68	.....	.....	252
Guatemala	11,000	409	.....	.....	1,200
Honduras	74,800	2,798	597	31,704	5,377
Panama	.....	.....	89	3,724	121
Salvador	1,200	63	313	14,238	1,257
Mexico	65,373	2,417	642	26,995	16,558
Newfoundland and Labrador	10	1	.....	.....	.....
Jamaica	.....	.....	12	795	510
Trinidad and Tobago	.....	.....	6	418	44
Other British West Indies	1,600	80	.....	.....	.....
Cuba	1,202,760	44,711	6,454	348,692	70,947
French West Indies	600	28	194	10,066	817
Haiti	.....	.....	.....	.....	250
Dominican Republic	11,300	737	.....	.....	8,650
Argentina	.....	.....	10	940	.....
Brazil	248,393	10,211	2,700	131,035	133,283
Chile	619,095	42,928	1,916	115,502	5,731
Colombia	6,720	336	.....	.....	1,602
British Guiana	1,400	59	.....	.....	.....
Paraguay	44,800	2,000	400	20,839	1,900
Peru	89,800	4,188	419	23,861	19,351
Venezuela	1,000	52	78	3,867	234
China	.....	.....	661	45,064	.....
Chosen	4,000	226	.....	.....	.....
British India	.....	.....	1,149	76,439	3,289
Straits Settlements	.....	.....	154	10,433	418
Dutch East Indies	82,174	5,540	3,221	160,287	91,557
Hongkong	.....	.....	225	18,195	4,130
Japan	197,138	6,202	13,505	766,542	59,823
Australia	.....	.....	.....	.....	3,038
Other British Oceania	480	24	.....	.....	.....
Philippine Islands	222,600	7,389	2,845	153,068	4,074
Belgian Kongo	.....	.....	.....	.....	220
British South Africa	.....	.....	3,153	211,279	41,054
Total	2,899,162	130,941	43,730	2,479,648	533,246

Railway Construction in Africa

London.

The Times Trade Supplement says that the Portuguese Government's sanction has been obtained for the modification of the original concession for the construction of the Beira-Zambesi railway. This line will form a portion of a great trunk route, which will be an alternative means of travel to the Congo route, between Cape Town and Cairo. To complete this route it will be necessary to extend the Shire Highlands railway to the southern end of Lake Nyasa, the construction of a connecting line between Lakes Nyasa and Tanganyika and the building of the proposed Tabora-Mwansa branch of the Central Railway. All these lines it is expected will be commenced during the next decade. The number of changes from train to boat and vice versa will be 10 in both cases between Cape Town and Cairo. The new line will be about 170 miles long and will be owned and operated by a separate company which is to be known as the Trans-Zambezia Railway Company. It is hoped that the railway will be completed in about two years.

Railway Officers

Railroad Administration

Regional

Frank E. Clarity, whose appointment as transportation assistant to the regional director of the Central Western region was announced in the *Railway Age* Emergency Bulletin of November 6 (page 673), succeeding B. B. Greer, resigned, was born at Sauk Centre, Minn., on September 10, 1877. He entered railway service in September, 1894, as a car checker on the Great Northern at Superior, Wis., and later held various positions in the local freight offices of this road at Superior, Minn., and Duluth. From 1902 to 1904 he was car distributor for the Lake district of the same road and from November, 1904, to August, 1907, he was consecutively assistant chief clerk and chief clerk to the general superintendent of transportation, with headquarters at St. Paul, Minn. In 1907 he was appointed traveling car agent and in 1911 was made chief clerk to the general superintendent of the Western district, with office at Seattle, Wash., later being transferred to Spokane, Wash. In 1912 he was appointed inspector of transportation on the Denver & Rio Grande and in 1913 was promoted to superintendent of transportation. In 1917 he was promoted to assistant general manager of the Denver & Rio Grande, which position he held until July 1, 1918, when he was appointed transportation assistant to the regional director of the Central Western region.

Traffic

J. W. Karns, division passenger agent on the Pere Marquette, with headquarters at Detroit, Mich., has resigned and the position has been abolished.

F. A. Young, division passenger agent of the Pere Marquette, with headquarters at Saginaw, Mich., has been appointed to the newly created position of general agent of the passenger department with office at Detroit, Mich. **E. L. Niles** has been appointed to succeed Mr. Young at Saginaw.

A. C. Johnson, whose appointment as traffic manager of the Chicago & North Western, with headquarters at Chicago, was announced in the *Railway Age* of October 3 page 720 was born in 1861. He entered railway service in 1894 as a special agent of the Chicago & North Western. In March, 1899, he was appointed general agent with jurisdiction over the state of South Dakota and from February 1900, to May 1910, he was transferred to Winona, Minn., at the same time being general freight and passenger agent of the Pierre, Rapid City & Northwestern. From May 1, 1910, to May 26, 1916, he was passenger traffic manager of the North Western with headquarters at Chicago. In June, 1916, he was appointed general traffic manager with the same headquarters. In 1917 he became chairman of the Freight Traffic Committee of the Northwestern, Southwestern and Central Western regions, which position he held until his recent appointment.

Engineering and Rolling Stock

Carl Tombo, principal assistant valuation engineer of the Philadelphia & Reading and the Central of New Jersey with headquarters at Philadelphia, Pa., has resigned and taken up private practise of engineering in the West, with headquarters at Placerville, Cal.

T. M. Price, master mechanic of the Seaboard Air Line at Hamlet, N. C., has been transferred to the Virginia division, with headquarters at Raleigh, N. C., succeeding **F. L. Stockwell,** resigned; **G. W. Gilleland,** master mechanic of the East Carolina division at Andrews, N. C., has been appointed Mr. Price's successor and **J. B. Brown,** general foreman of the car department at Raleigh, N. C., has succeeded Mr. Gilleland.

Railway Age

EDITORIAL

Table of Contents will be found on Page 5 of the Advertising Section.

The uses of the word credit in the discussions of the railroad question which are now going on are liable to be confusing to the man who thinks of credit only as ability to borrow money. The railroads need something more than ability to go on piling up their funded debt. Credit in this sense might be achieved by the assurance of a fixed rate of return guaranteed directly or indirectly by the government. At least, such credit would permit of borrowing so long as the fixed rate was as high or higher than the current market rate and as long as those who have money to lend felt absolute confidence in the good faith and stability of the government. Most of those who have discussed the railroad problem in the light of long experience, thorough study and a knowledge of economics and finance, are inclined to the belief that it is not desirable to continue to finance railroads entirely through the sale of bonds; in other words, through borrowing. This means that credit, in the sense of making partnership in earnings attractive enough to offset the possibility of loss, will have to be established. Even a Senator La Follette knows perfectly well in his own business transactions that if he is invited to put money into a business as a partner, the only incentive which is strong enough to offset the risk of loss is the expectation of profits—not a fair return on capital invested. A Senator La Follette would be as quick as Samuel Rea to tell a man who asked him to come into partnership with the expectation of a 4½ per cent on his investment that he could get that much interest from a savings bank. Credit to borrow money is one thing, an expectation of profits is quite another thing, and an expectation of profits is the only incentive which will permit the sale of railroad stock representing partnership—risks as well as gains—in railroad corporations or in other corporations.

Partnership Not Creditorship

The *Railway Age* has commented at length on the unnecessarily expensive passenger service maintained for competitive purposes when the roads were under private management. When, however, an emergency arises, such as that of the coal strike, where it becomes necessary not only to cut off passenger service maintained for competitive reasons, but also every train that is not absolutely essential to the transportation of all whose business necessitates their travelling, we get some realization of the quality of passenger service which was developed on American railroads under private operation. Had the private railroads desired to give just as little to the public as they possibly could, few, if any, of the trains which are now cut off, in the Eastern region at least, where the reduction in service was about 10 per cent, would have ever been established. In other words, this 10 per cent of passenger service represents business which is largely only indirectly profitable. The taking off of 10 per cent of the trains will presumably cut down revenues only to a very small extent. All who need to make a journey can take trains other than those discontinued, and those who may be deferred from traveling because they cannot get a luxurious through fast train are so few that their number may be disregarded. Especially in commutation service, the trains taken off represent almost entirely service which is for the convenience of the people in suburban communities and profitable only in helping to build up these communities by making them attractive through comfortable accessibility. Take for instance the Harlem division of the New York Central, which serves Westchester county. There are seven northbound trains cancelled; an 11 a. m. express to White Plains, which is a convenient train for people going out to take luncheon and spend the afternoon with friends in the country; a 12:55 p. m. train, with a small average number of passengers; a 10:30 p. m. train, which is convenient for people living in Westchester county, who take dinner in the city but do not stay for the theater; an 11:35 a. m. local train, the discontinuance of which simply spreads hourly service to two-hourly service, and the same with a 2:35 p. m. train; the other two trains are local expresses, skipping nine stops, and followed by locals making all the stops. It is easy to make the accusation that the railroads under private ownership took all they could get, but a practical demonstration like the present makes it easier to realize how much of only indirectly profitable good service has been developed.

Service Only Indirectly Profitable

It appears probable that the government will give the employees of the British railways some voice in the management. The government under recent legislation is to operate the railways two years more; and it is announced that it has offered to permit "three (labor) union executives to join the Railway Executive Committee with co-equal powers to the general managers." The actual operation of the railways ever since they were taken over by the government in 1914 has been in charge of a large committee of the general managers of the roads. In addition, it is proposed to create, first, a joint board composed of five general managers and five representatives of unions to deal with conditions of employment; second, a board of twelve (four from the employees, four from the railway companies and four from the public, with an independent chairman) to which will be referred questions on which the joint board fails to agree; and, third, bodies set up locally with equal representation of management and men to deal with grievances. It should be borne in mind that under the existing law the Minister of Transport, who is at present Sir Eric Geddes, has final authority regarding railroad matters, the Railway Executive Committee, which is in direct charge of operation, being subordinate to him. However, the appointment of three representatives of the labor unions to membership on the Railway Executive Committee would be a substantial concession to the demand of the employees that they be permitted to participate in the management. The joint board to deal with conditions of employment would be similar to the Board of Railroad Wages and Working Conditions which has existed under the Railroad Administration in this country. The board of twelve, composed equally of representatives of the employees, the

British Railway Employees in the Management

railway companies and the public, would be similar in its constitution to the arbitration boards to which the railway companies in this country have contended that labor disputes should be appealed but which the railway employees have refused to accept. If the plan outlined is adopted by the British government in its operation of the railways the results will be followed with interest in the United States.

Railway Traingram Service

TRAINGRAM SERVICE, in general, does not seem to have proved as successful as some of its advocates would like it to be, nor has it been sufficiently reliable, efficient or safe to cause the average railway officer to feel that communications which require expeditious handling should be transmitted in that manner. The question is not as to whether there is a need for such service, for it is quite generally conceded that the demand exists for an efficient and safe scheme of transmission which will be less expensive than the telegraph.

Some roads have used the traingram for at least a small part of their business for many years. Various schemes have been tried to expedite such message traffic, but the results have been far from satisfactory. However, there are two general schemes of handling traingrams in use today which seem to have possibilities that are worth developing. Briefly, one scheme provides that each department of a railroad shall traingram its own messages, whereby the communications are handled as train mail; while the other concentrates the traingram service under the control of the telegraph department with special messenger service. The advocates of the first plan claim that its success depends upon proper supervision. The advocates of the second scheme can hardly claim less, because the control of the service is placed in the hands of a particular department. If proper supervision is the desirable feature in the first scheme, the question resolves itself into that of centralizing the supervision, otherwise there will be no supervision; so that ultimately both schemes are essentially the same, except that in the second plan the supervision has already been centralized in a single department, with the mail and baggage departments co-operating. At the recent meeting of the Telegraph and Telephone Division of the American Railroad Association a committee on message traffic presented a report on traingram service which advocated the centralization of control of such service in the telegraph department.

The volume of railroad business which can be handled economically by traingram service depends to some extent upon local conditions on each individual road, including the locations of the various large offices and the intermediate train service. It is quite generally true that the bulk of the railroad business handled by message traffic reaches the telegraph department in large offices late in the afternoon; consequently, at least a portion of it cannot be transmitted to the receiving offices along the road before their closing times. It is practical, therefore, to convert some of the messages into traingrams, which are sealed under a special cover provided for the purpose and properly addressed; then despatched by messenger to the proper train, and delivered to the train baggageman, who in turn exercises special care in handling and delivering them to employees of the telegraph department at the designated stations, who make the final distribution in the same manner as telegrams. If, under the traingram system messages were despatched as promptly as they could be to the trains and delivered as promptly as telegrams are after reaching their destinations, and if mailgrams were confined to that part of railway business which might otherwise be considered as requiring telegraph service, it is quite likely that railway officers would appreciate the importance of traingram service and feel safe in permitting a relatively large portion of their business to be handled by that system at a large saving in cost of transmission.

A Personnel Department for the Railways

ODIUS CONTRASTS between the efficiency of railway organizations and those of large industrial plants, to the disadvantage of the former, are usually made without any thought as to the obstacles imposed on the roads in the administration of their widely scattered forces. To be truly comparable, the industry set up as a standard for comparison should have its manufacturing functions scattered in small units over a wide territory and under the direction of sub-foremen who see their superiors but once or twice daily on a passing train or during a weekly or fortnightly visit. In other words, the conditions with which the railroads are confronted in an endeavor to perfect a thoroughly efficient organization are far more severe than those imposed on most other lines of endeavor conducted for profit.

But to point out the difficulties of the problem is not to solve it, and this question is now one of utmost importance on the eve of the return of the railroads to private management. For some time employment on railroads has been considered entirely in terms of the prerogatives and rights of groups or common masses, but fortunately there are those who still insist that some consideration should be given to the individual who shows superior initiative, industry and reliability, and in the last analysis the success of any undertaking involving the employment of men in large numbers is largely dependent on the proper selection of the natural leaders. After two years of concerted effort to magnify the importance of the group, is it not time to give more recognition to the individual?

This problem has two phases, namely, the selection of the workmen best suited for a given class of employment and the discovery of likely material for the development of officers. The one is about as important as the other, and neither has received the recognition it deserves. The first is left largely in the hands of subalterns of each department; the other falls upon the higher officer to be disposed of as his individual ideas may dictate. This course has a certain amount of justification from the fact that leadership is founded primarily on an ability to know men, and that therefore great leaders are adept in selecting men to serve their lieutenants.

On the other hand, advanced thought in industrial management points to the shortcomings of this system. It fails to develop the latent possibilities of those men who, under this hit-or-miss plan, lack opportunity to assert themselves and, becoming discouraged, seek other forms of employment which seem to offer more opportunities for recognition. This system tends also to engender a one-sided organization. We find some roads on which nearly all executive officers are graduate train despatchers, others where they are for the most part engineers, etc. Like begets like. Most executives are inclined to the opinion that his own particular line of training was best suited to develop the most efficient and the broadest general manager. The effect of this is that one department looms much larger in the eyes of the management than any other and produces a poorly balanced property.

The cure for this condition implies both scientific selection and broad training, so as to insure not only a supply of good material, but also a graduated, diversified training that will develop the qualities of leadership, afford broader expe-

rience and serve to weed out the defectives. The first of these requirements, selection, has received insufficient attention from the railroads. The second, training, has been accorded more consideration, as, for instance, through special apprenticeship systems and plans for rotation of officers. It is also commonly practiced individually by many a railway executive who, having hit upon some promising yardmaster or chief clerk, pushes him around from one job to another, so that the protege is given opportunities for broadening his experience, while his sponsor is also afforded an opportunity to determine his real worth.

The opportunity for improvement does not imply the use of new methods, but the doing through a preconceived, thoroughly organized system for the entire scope of employment, what is now being done through unorganized individual efforts. Presumably this should be carried on by an employment service or personnel department. Marked advancements have been made along this line by the industries, but owing to the peculiar conditions surrounding all classes of railway employment, with the possible exception of the shop crafts, the exact nature of such an organization for the railroads can only be determined after very careful study and experimentation.

To obtain real results from such an undertaking implies no little sacrifice. Non-revenue-producing bureaus entail considerable expense, while the benefits derived are not readily identified on the ledger. Courses of training involving the shifting of individuals from one department to another will result in considerable seeming waste, since training in one department does not necessarily fit one for effective output in another. The man's time is occupied partly in learning and partly in producing. This raises the question as to some pecuniary sacrifice on the part of the individual beneficiary of such a system. These are only a few of the problems to be considered in establishing a personnel department, but, after all, if it has been found profitable and necessary to maintain separate branches of the railway organization for the purchase and care of inanimate materials, why should it not be equally necessary to provide a separate department for the procurement and selection of the human material?

The Influence of Variations in Traffic on Maintenance Expenditures

THE EXTENT to which maintenance of way expenditures should vary with fluctuations in traffic is assuming new importance at the present time. It is evident that an increase in the tonnage passing over a given track will result in accelerated deterioration of that track, which must be made good by more maintenance work. It is likewise recognized that an increase in traffic does not necessarily give rise to an equivalent expenditure for upkeep. The problem is to determine the relation between traffic and the wear and tear on the property. Its solution is of special importance at the present time because of the radical readjustment of traffic which has resulted from its wholesale diversion from one line to another during the two years of federal control and the obligation of the government to return the roads to their owners in as good condition as when turned over. Since it is generally conceded that three has been a certain deficit in the maintenance of the properties as a whole, the problem is to fix this amount.

Certain expenditures for maintenance of way are independent of traffic. Typical of these are the repair of fences and highway crossings, the mowing of the right-of-way, the clearing of snow from the switches and station platforms, etc. Other expenses, such as the renewal of ties, are influenced to a limited degree by variations in traffic, while still others, such as the renewal of rails, are affected directly.

This is not a new prbolem. It has been discussed for years. It has been considered by committees of the American Railway Engineering Association from time to time without tangible results. More recently a special committee has been working on it with officers of the maintenance of way section of the Division of Operation of the Railroad Administration. While this committee has not reached any definite decision, it is to be hoped that its work will be prosecuted to a point where some basis of comparison may be arrived at.

So many elements which are more or less intangible in character enter into the maintenance of tracks that it is exceedingly difficult if not impossible to determine whether a particular line has been maintained to a given standard during the period of federal control. The indefinite nature of such units of measurements as are now available will lead to much difficulty and possible controversy in arriving at an ultimate settlement. However, the value of a comparative unit such as this is not limited to the present, for the same question confronts the officer in charge of the maintenance of a considerable mileage of line in distributing his appropriations over various divisions with different traffic densities.

Railroads Are Still Incurring a Deficit

STATEMENTS BEING ISSUED by the Railroad Administration are adapted to give the impression that before the coal strike came the railways had ceased to incur a deficit. It has been indicated in these statements that in the months of July, August, September and October the traffic of the railways had approached normal; that during these months they more than earned the government guarantees to them; and that the very large deficit incurred in the earlier part of the year was due to the comparatively small amount of traffic during that part of the year.

These statements of the Railroad Administration, while doubtless not intended to be misleading, are adapted to give the public a false impression regarding the existing railroad situation. The way in which the Railroad Administration arrives at its conclusion that the railways have ceased to incur a deficit is very simple. The government guarantees amount to an *average* of about $75,000,000 a month. Therefore, when the railroads earn more than this amount of net operating income in a month the Railroad Administration announces that they have earned a surplus. But the railroads always have earned more net operating income in the last six months than in the first six months of each year. The government guarantees are based on the average amount earned under private operation during the three years ended on June 30, 1917; and if we are to know how well the railways are really doing under government operation we must compare their actual results month by month under govern-

	Average net operating income in test period			Net operating income earned Nov. 1918 to Oct. 1919, inclusive	Loss or gain
November ..	$83,536,000	November ...	1918	$57,123,000	—$26,413,000
December ..	73,282,000	December ...	1918	28,237,000	—45,045,000
January	56,613,000	January	1919	18,784,000	—37,829,000
February ...	47,934,000	February	1919	10,106,000	—37,828,000
March	68,251,000	March	1919	10,843,000	—57,408,000
April	67,289,000	April	1919	26,115,000	—41,174,000
May	77,385,000	May	1919	39,462,000	—37,923,000
June	82,550,000	June	1919	52,271,000	—30,279,000
July	75,341,000	July	1919	77,177,000	+ 1,836,000
August	86,860,000	August	1919	92,397,000	+ 5,537,000
September ..	91,273,000	September ..	1919	77,763,000	—13,510,000
October	94,333,000	October	1919	76,397,000	17,936,000
	$904,657,000			$566,675,000	—$337,972,000

ment operation with the actual results obtained by them in the *same months* of the test period.

The foregoing table gives the average net operating income earned month by month by the Class I railways in the test period, the average net operating income actually earned by them in the 12 months November, 1918, to October, 1919, inclusive, and the increase or decrease in net operating income during the year ended October 31 as compared with the test period.

This table shows that the only two months of the entire 12 in which the net operating income earned was as great as the average amount earned in the corresponding months of the test period were July and August, 1919. The net loss for the entire 12 months as compared with the test period was $337,972,000. The most interesting and important figures in the table are those for the months July to October, 1919, inclusive. These are the months during which it has been stated that railway traffic had become about as large as it was in 1918 and that a surplus was earned instead of a deficit being incurred. The traffic handled in these four months actually was about as large as in the same four months of 1918, which is practically the same as saying that it was almost equal to the largest traffic ever handled. The total earnings also were about the same as in the corresponding months of 1918, being $1,955,613,000 in these four months of 1918 and $1,935,572,000 in 1919. The table shows, however, that in spite of the fact that the traffic and total earnings in these four months of 1919 were almost the largest in history, the railways made a gain of only $7,373,000 in net operating income in the months of July and August and made a loss of $31,446,000 in September and October as compared with the test period, making a net loss for these four months of $24,073,000.

The facts regarding the deficit being incurred are even worse than the statistics given in our table indicate. The government is not only guaranteeing to the railways the average net operating income earned in the three years ended June 30, 1917, but, in addition, interest must be paid on the new investment which has been made in the railroads under government control, which now amounts to approximately $850,000,000. The interest on this additional investment, which must be paid by the government directly or indirectly although its amount cannot be accurately stated, must now be running at the rate of about $42,500,000 a year, or about $3,500,000 a month. The total deficit, including this interest, incurred in the year ending with October was close to $375,000,000, and the deficit for the four months ending with October, including this interest, must have been about $38,000,000. The deficit in October itself, in which it has been stated a surplus was earned, must have been, including this additional interest, about $22,000,000; and the ratio of operating expenses to total earnings was 80 per cent.

It is necessary to emphasize the fact that the government when the coal strike came, although it was handling almost all the business the railroads could move, was still incurring a large deficit because otherwise the shippers and the public may get the idea that the railways can be safely returned to private operation without an advance in rates. The facts show that the railroads under the most favorable conditions have been unable to earn the guarantees under government operation, and undoubtedly the coal strike will have an effect upon both earnings and expenses which will largely increase the deficit. The October, 1919, figures afford us as good a test as we have had of the financial results that the railroads can produce with existing prices, wages and rates, and they show that to continue the existing rates, if government operation were continued, would be to go on incurring a big deficit, while to continue them after the railways were returned to private operation would be to throw a large part of the railways into bankruptcy.

Letters to the Editor

Hand-Motion Signals in South Africa and United States.

Hartford, Conn.

To the Editor:

Your discussion of fundamental principles of train operation in a recent issue awakens interest in a good many questions which might be profitably considered from that standpoint, rather than in our usual superficial way. For example, look at the circumstances of the collision of passenger trains at McGriff, Ga., reported that same issue (November 28, page 1072), where an engineman, presumably of long experience, moved forward, on a dark night, on a hand signal which he was not sure was intended for his train.

One of the fundamental principles of giving hand signals is, or should be, to give them where they cannot be seen by any engineman except the one for whom they are intended. It would appear in this case that the brakeman, being in front of the northbound train to which he was motioning, might just as well have stood in such a position that his body would have hidden his lantern from the southbound engineman, who made the mistake. Why do we not conform our every-day practice to this simple fundamental principle?

This point is particularly important where a hand signal is given by a man who is in front of the engine which is to be moved on the signal. In making a rule that the same motion shall always mean "move forward" we have deprived ourselves of the important principle that the natural way to give a hand signal to another person is to tell him to move either *toward* you or *from* you. That principle applied in the old days; but we have grown to be so scientific nowadays that we cannot endure anything so simple. I remember reading some years ago in the rules of the railroads of South Africa—or perhaps it was Australia—that what we call the go-ahead signal was there defined to mean "move from the person giving the signal," and the signal which we use to move backward meant "move toward the person giving the signal."

Sometimes it is necessary to go to the other side of the globe to learn very simple things which we ought to learn at home.

E. S. A.

Scenes on the Government's Alaska Railroad. Grading at Mile 208

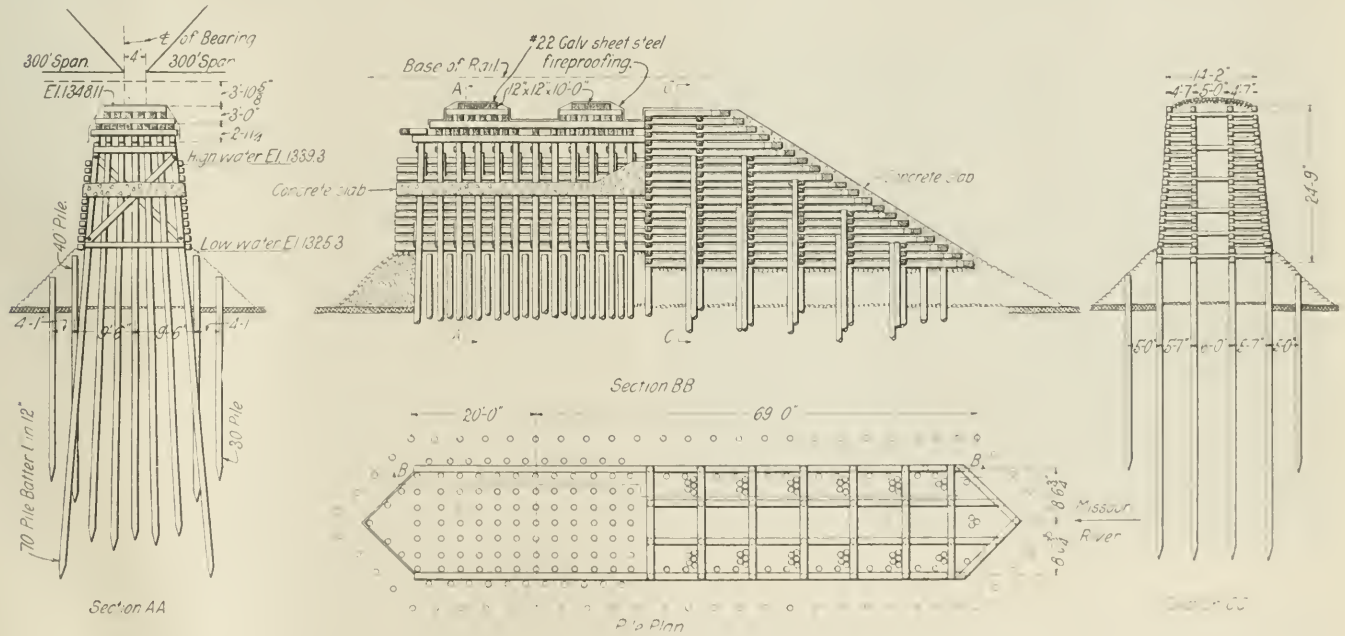
Two 300-ft. Spans on Pile Piers

An Unusual Design for a Missouri River Bridge

Wartime Conditions Enforce Use of Unique Piers Under Heavy Trusses of C. M. & St. P. Structure

ONE OF THE BEST illustrations of engineering practices under war-time conditions is to be found in the recently completed bridge of the Chicago, Milwaukee & St. Paul over the Missouri river at Chamberlain, S. D. Not only does this embody the extraordinary use of pile piers as supports for 300-ft. steel truss spans, but it also involves an interesting combination of reinforced concrete and timber construction as the most effective solution of a difficult engineering problem.

This crossing of the Missouri river serves the Black Hill's division of the St. Paul, a light traffic line extending 219 miles west to Rapid City, S. D. Built in 1905 and 1906 through an undeveloped territory, the line did not have promise of sufficient traffic to warrant the outlay necessary for a permanent bridge at the start. The original structure consisted of 1,770 ft. of pile trestle, with a pontoon barge 366 ft. long to meet government requirements for a draw opening for the river traffic. In the years subsequent to the completion of this bridge studies were made from time to time for a suitable permanent structure for this crossing. These considerations were responsible for the purchase, in 1917 from the Kansas City Terminal, of two 300-ft. single-track, through truss spans released from a bridge over the Kaw river, but plans for a new structure were brought to a head suddenly in the spring of 1918 when the pontoon, which had seen 13 years of severe service, developed leaks which caused it to be withdrawn from service. Traffic was restored in a short time by the use of some second-hand girders to form a temporary swing span, which afforded a



Plan and Sections of One of the Pile Piers and Its Ice Breaker

50-ft. channel opening, while the remaining draw opening was closed by a pile trestle.

While the maintenance of a temporary structure had been the source of no little trouble to the railroad because of periodic floods of protracted duration, the construction of a permanent bridge was open to serious objection, not only because of the established war policy of the government—and particularly the Railroad Administration—to discourage any undertaking that would interfere with the directing of

all national energies to the winning of the war, but also because the bridge site is in many ways unfavorable to permanent construction. Foundation conditions are such as to require a very expensive substructure, entailing large expenditures both in money and in labor and a long construction period. The location of the crossing is also subject to objections. Certain characteristics of the river upstream from the bridge indicated the desirability of a better location for a permanent structure, and the change of line which this would involve was out of the question under war conditions. As a consequence, it was highly desirable to avoid the use of masonry piers if a substitute construction could be designed that would meet the requirements imposed by the unfavorable characteristics of the Missouri river.

The bottom of the river is a deep bed of alluvial silt over sand and gravel. This material is so light that the increase in the velocity of the current during flood periods results in a marked lowering of the river bottom, so that the increased volume of water is accommodated by the enlargement of the channel thus obtained as well as by the raising of the flood level. This condition, of course, introduced no little conjecture as to the security of any substructure not founded on bed rock. Another serious matter is the prevalence of ice floes during the spring breakup, which are capable of exerting enormous pressures against any structure interposed in the river channel. The problem then was to develop pile piers that could be made safe against scouring and capable of resisting the ice pressures.

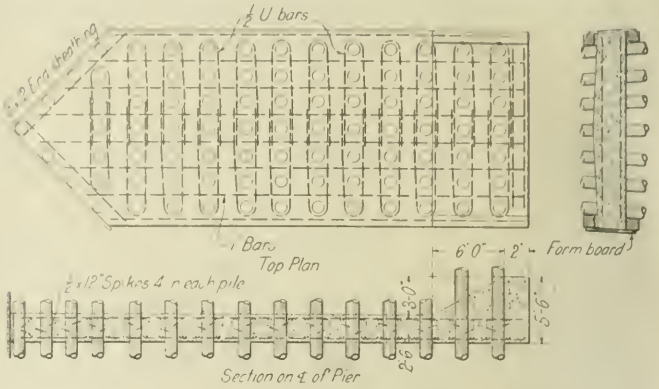
The manner of accomplishing this may be learned from a study of the detailed drawing of one of the piers as built. The construction consists essentially of a combination of a pile pier supporting the superstructure with a rock-filled ice breaker of timber cribbing protected against scour by

Weaving the Willow Mattress

willow mattresses and rip-rap. The vertical load imposed on the pier is carried by 70-ft. piles, capped by a grillage of crossed timbers. It was the intention to provide a bridge seat in the form of a concrete slab 3 ft. thick, but this was abandoned in favor of a top grillage of 3 tiers of 12-in. by 12-in. timbers because of lack of sufficient time to place the concrete in position for the steel work before the spring breakup.

Each side of the pile pier is protected by 12-in. by 12-in. timbers bolted to the outside piles, with 3-in. open joints between. These ties are long enough to extend upstream and form the outer walls of the ice breaker, the sides of which extend 49 ft. 6 in. beyond the upstream end of the pier. The ice breaker also has two interior longitudinal walls as well as cross walls spaced 8 ft. center to center. The upstream end is pointed and slopes back at an angle of 30 deg. with the horizontal. The crib was erected on piles driven at the intersections of the longitudinal and cross walls, while other piles driven in groups of five next to the cross walls serve as a measure of resistance against the ice thrust.

The application of concrete to this construction serves primarily to increase its effectiveness in resisting the ice floes. The most natural development was the provision for



Details of Reinforcing Slab for the Pier

a concrete armor over the nose of the crib. This has a minimum thickness of 1 ft. and is reinforced by 1-in. bars placed longitudinally at 1-ft. centers and transversely (horizontally) at 2-ft. intervals in elevation. The edge of the nose is protected by a relayer rail adequately anchored into the concrete. This construction forms a strong, smooth surface to lift and break the ice as it is carried against the pier by the current of the river.

The other concrete feature, while not of as obvious utility, is equally important. This is a horizontal diaphragm or slab of concrete 2 ft. 6 in. thick, covering the entire area of the pier and surrounding the pier piles at a level slightly below high water. The slab increases in thickness at its upstream end so as to present a face 5 ft. 6 in. high against the upstream end of the crib. Thus the slab is designed to receive the thrust of the ice pressure and transmit it uniformly to all the piles in the pier. This slab is supported against sliding down the piles by four ½-in. by 12-in spikes driven part way into each pile, so that the exposed portions were in the concrete when the slab was cast. Both upper and lower faces of the slab were reinforced with 1-in. bars.

Rip-rap was placed in the crib to fill it to the top, while in the pier the space around the piles was filled with rock to the low water level. As the walls of the pier and crib have their bottoms at about the low water level, or slightly below, the rock spreads out below this level on a natural slope all around the structure. Additional piles driven outside of the pier and ice breaker tend to stabilize the rock slopes thus formed.

To protect the piers against scour the plan called for willow mattresses 150 ft. by 220 ft. in area surrounding each pier and built according to standard methods of mattress construction and sunk by weighting with rock.

Construction

As the project involved the use of a large number of piles, the pile driving was a major feature of the construction work. The work was started in July, 1918. All piles coming underneath the existing pile trestle were driven by track drivers, one fitted with a No. 1 Union Iron Works steam

hammer and the other with a 4,000-lb. drop hammer. All other piles required were driven by a steam hammer mounted on a 40-ft. by 60-ft. power barge that had been used to operate the old pontoon bridge. A water jet was used with each pile. The power boat was also fitted up to supply the water for jetting. A 7-in. by 12-in. by 7-in. steam pump with a 6-in. discharge was installed for this purpose, using 1¼-in. pipes as nozzles for the jets. The driving downstream from the existing structure was handled readily by controlling the position of the scow with lines from the bridge, but upstream from the bridge the position of the

End View of the Bridge Showing One of the Ice Breakers With Its Concrete Covered Nose

boat had to be maintained by means of an anchor placed in the river about 500 ft. upstream. A 3,000-lb. drop hammer was first employed for this purpose, but it was not heavy enough, and it was reinforced with a concrete block weighing about 4,000 lb.

Further difficulty was encountered when it came to driving the piles for the north end of the west pier, where a sand bar had formed at a level of 5 ft. above that of the water in the river. To get the scow up to the pier a portion of this sand bar was removed by sand pumps set up on the scow. While the barge was being advanced into the sand bar in this manner, a dike was thrown up behind it, so that when the pumping was finished the scow was entirely surrounded by the sand bar. This protected it from the current of the river, and was also of advantage when it came to placing the lower sheathing for the pier, since it was possible to pump out the water within the bar and place the sheathing with the top 2 ft. below the prevailing stage of water in the river. The piles in the piers were 60 to 75 ft. long and were driven to refusal, some of them reaching bed rock, while others stopped in gravel and boulders after penetrating 30 to 40 ft. of sand and gravel.

The design for the new structure included a 262-ft. pontoon to replace the original one. The construction of this pontoon formed an important part of the work. This entailed a large amount of heavy woodwork, which was facilitated by the use of power equipment. Much of the framing was done on a band saw, all holes were bored by air tools and bolts were driven with pneumatic hammers. Another feature of the work in which power equipment proved a great labor saver was in the construction of the three longitudinal bulkheads, consisting of 8-in. by 16-in. timbers laid flat and separated ¾ in. by the use of Howe truss packing washers 6 in. in diameter, with rims 3 in. thick. These washers were counter-sunk into the timber, and as there were over 2,000 of them a large amount of special recessing was required. As no tool could be found on the market to cut these recesses a local machinist finally made one from design prepared in the field office which was operated by a Little Giant reversible drill. This was found to work very satisfactorily.

All sheathing was beveled for caulking, and each spike through the bottom and side sheathing was wrapped with oakum before driving. The bottom and sides were caulked with one thread of cotton and two of oakum. The first three threads were hawsed up before the last two threads were driven. The last two threads were placed and caulking strips were extended to cover the seams. The deck of the pontoon was caulked with one thread of cotton and two of oakum and the seams then filled with pitch, 10 per cent of tallow being added to make it more pliable.

Work on the pontoon was started on December 5, 1918, and the pontoon was ready for launching on March 1, 1919, although this did not take place until April 7 on account of low water.

This work was done under the general direction of C. F.

Type of Barge Driver Used for All Piles That Could Not Be Driven from the Trestle

Loweth, chief engineer of the Chicago, Milwaukee & St. Paul. The design was under the immediate supervision of H. C. Lotholz, engineer of design, while the construction was under the direction of A. Daniels, district engineer, with the aid of W. E. Duckett, assistant engineer.

Precept and Practice.—When I started my railroad career I studied the Book of Rules just enough to let me slide by in the examination. My next move was to find out what I didn't have to do. I got more information from the fellows regarding what I didn't have to do than I did on the book of rules. Well, it wasn't very long until I told the yardmaster that I didn't have to do something and he moved those below me one notch higher on the seniority list. I didn't approve of this. I was discharged. I was away for more than a year and I had plenty of time to think the matter over. The more I thought about it the more I agreed with the yardmaster and I have thanked him since for teaching me this lesson. He gave me enough rope and I hung myself. Each time you study the schedule study the Book of Rules and before long you will know them both.—*Duit Wright*

National Park Travel in 1919

SOME INTERESTING FIGURES showing the amount of travel to the national parks during 1919 are contained in the annual report of the Secretary of the Interior, from which the following extracts have been taken:

The tremendous popularity of our national parks was fully attested by the unprecedently large number of visitors during the 1919 season, which closed about the middle of September. Freed from the restrictions against war-time travel, which had been a war necessity, the appeal of the great natural attractions of the parks was irresistible and the response spontaneous. The national parks became the cynosure of the eyes of a war-weary and hard-worked people, bent on taking a holiday where they could derive the greatest benefits. There the refreshing atmosphere of the great out of doors, the soothing diversion of the natural scenery, and the specific qualities of the fresh air brought mental and physical relief to hundreds of thousands. When one considers that travel to our national parks and monuments exceeded 810,000 visitors—over 755,000 to the parks and over 55,000 to the monuments—it is evident that the recreative value of the parks is a tremendous factor in the health, wealth, and contentment of the nation.

The following tables will give an itemized review of the travel:

VISITORS TO THE NATIONAL PARKS IN 1919

Hot Springs	[1]160,490
Yellowstone	62,261
Sequoia	30,443
Yosemite	58,564
General Grant	21,574
Mount Rainier	55,232
Crater Lake	16,645
Wind Cave	26,312
Platt	[1]25,000
Sullys Hill	4,026
Mesa Verde	2,287
Glacier	18,956
Rocky Mountain	169,492
Lassen Volcanic	12,500
Hawaii	([2])
Mount McKinley	([2])
Grand Canyon	37,745
Lafayette	[1]64,000
Total	755,527

[1]Estimated. [2]No Record.

VISITORS TO SOME OF THE NATIONAL MONUMENTS IN 1919[1]

Capulin Mountain (New Mexico)	[2]1,500
Casa Grande (Arizona)	3,795
Colorado (Colorado)	[2]3,000
Muir Woods (California)	[2]43,200
Petrified Forest (Arizona)	[2]3,000
Zion (Utah)	1,814
Total	55,309

[1]No records for other 17 national monuments. [2]Estimated.

An analysis of these figures shows that the travel in 1919 was 67 per cent over that of 1918 and 54 per cent more than that of the previous high-water mark in park travel of 1917. An astounding increase occurred also in motor travel to the national parks. The increase of the number of cars, 95,140 in 1919 over that of 55,296 in the record year 1917, is 72 per cent. While no accurate general record is kept in all the parks of the number tourists entering in motor cars, in Yellowstone it is found that they average about four to the car, as will be seen from the following tables for the past three years:

Year	Number of private cars	Number of tourists
1917	5,703	21,268
1918	4,734	17,317
1919	10,773	40,986

With this average in mind it is estimated that about 400,000 visitors entered the parks and monuments by motor. The travelers came from every state in the Union and from foreign countries, and the motorists from every corner of the country and from Canada and Mexico. Some of the motorists visited all of the national parks of the continental west and others toured from two to five. More than half carried their own supplies and camp equipment, and they enjoyed the playgrounds in their own way.

In these large travel figures the influence of the activities of the United States Railroad Administration is also reflected. During the war travel was discouraged. Soon after the cessation of hostilities, however, the administration changed to a stand just the opposite to the former policy, and by judicious advertising and educating of those of its employees who come in direct contact with the tourists, stimulated the patronage of the winter resorts in the South and West to unusually gratifying proportions. Later, through its passenger traffic committee, it directed its efforts toward the summer resorts of the country with special emphasis on the national parks. The promotion of park travel, of course, fell naturally to the western committee of the railroads and to the Bureau of Service, National Parks and Monuments, with headquarters at Chicago. This latter bureau was well organized and prepared to perform its functions without delays when the restrictions were raised. By attractively designed and well-written national park booklets they presented a feature of their campaign that offered at once the most important inducement to travel in the parks that has appeared since the publication of the National Parks Portfolio some three years ago. The very satisfying result achieved by this bureau testifies to its great importance and the extreme desirability of its surviving as one of the institutions of the Railroad Administration whenever the railroads are turned over to private operation.

At this writing restrictions against overseas travel have also been removed. The competition of Europe for tourist travel will begin with renewed activity. We have in this country scenery that is the peer and in most instances the superior of that found abroad, but the value of tourist travel as an industry has hardly been recognized in this country. Various industries of the United States are protected as a matter of course, but what protection will the great resorts of this country have from the greatest campaign for tourist travel in the foreign lands that will ever have been waged? As a nation we have failed to grasp the significance and value of the tourist industry. Every dollar of revenue received from it stays here. Before the war Americans spent in England alone about $200,000,000 a year, and in France and Switzerland $400,000,000. We should develop this industry, as other countries are doing, into one of our biggest economic assets.

To properly develop this the establishment of a touring agency is a present national necessity. It is vitally important to the nation, and, as there is no other agency of the government that is so interested or so closely in touch with the traveling public as the National Park Service, the agency should be established there. Such an activity could co-operate closely with the resorts of the United States, the railroads, automobile associations, highway associations, mountaineering clubs,, etc. Promotive literature bearing the stamp of approval of the department and of the National Park Service would most effectively stimulate and maintain travel in the United States because its data would not be selfish or exaggerated and would have the confidence of everybody using it.

SPAIN HAS TOO MUCH COAL.—Spain, in common with most European countries, has a coal problem, but its situation is diametrically opposite to that of its neighbors; that is, it has a supply greater than the demand. Piled up at the heads and in the coal ports of Asturias lies a stock estimated at from 750,000 to 1,000,000 metric tons (metric ton equals 2,204.6 pounds), and the problem of the moment is how to dispose of this surplus.—*N. Y. Tribune.*

Railroad Legislation as Developed up to Date*

Neither the Esch Bill Nor the Cummins Provides a Means for the Restoration of Railroad Credit

By R. S. Lovett
Chairman, Union Pacific System.

IT SEEMS USEFUL to take stock at this time of the progress made by the present Congress during its first session toward the enactment of legislation necessary to meet the railroad emergency. The controlling necessity for additional railroad legislation is to re-establish railroad credit, which failed even before the war under the system of regulation in force, and to save from bankruptcy and ruin many, and perhaps most, of the railroads of the country because of the extraordinary increases in wages and in prices of fuel and other materials during federal control. Unless railroad credit is re-established, it will be impossible for the railroads to reasonably keep pace with the growth of the country or to finance any substantial part of their requirements for extensions and betterments, generally estimated at one billion dollars annually. Let us therefore examine what Congress has proposed to date, and determine how far it meets this fundamental necessity, and what the country faces if these proposals are really as far as Congress means to go in solving the railroad problem.

Both the Senate Committee on Interstate Commerce, of which Senator Cummins is chairman, and the House Committee, of which Mr. Esch is chairman have presented bills designed to embrace all the legislation they deem necessary upon the subject. The Esch bill, after many amendments in open session of the House, was passed by that body and has gone to the Senate. The Senate did not consider either bill during the first session, but has taken up the subject in the session which has just convened. If the usual course is followed, it will substitute its own bill for the House bill, and after extended debate and probably amendments, it will pass its bill, and the differences between the two measures will be worked out in conference.

The Esch Bill in the House

The Esch bill as amended and passed by the House contains the following discouraging features:

1. The first and fundamental objection is that it bases its whole scheme of relief upon the Interstate Commerce Commission. It imposes upon the already overburdened commission the performance of many new duties and the administration of many new regulations. It creates no new agencies to assist the commission in rate matters, such as regional commissions; and it leaves the commission still burdened with the administration of the Car Service Act, the Act Relating to the Construction and Operation of Switch and Sidetrack Connections, the Act of August 24, 1912, the Safety Appliance Acts of March 2, 1893, the Act of May 6, 1910, relating to Railroad Accidents, the Safety Act of February 23, 1905, the Hours of Service Act of March 4, 1907, the Safety Act of May 30, 1908, the Act Relating to the Transportation of Explosives, approved March 4, 1909, the Boiler Inspection Act of February 17, 1911, the Act Relating to Block Signal Systems and Appliances, approved June 30, 1906, and many other duties of an administrative character having nothing to do with rates, which could be better performed by a smaller board—leaving the commission free to devote its time and talents to the making of rates and to the hearing and determining of rate cases and other important controversies. The bill adds two new members to the commission, it is true, making the membership eleven instead of nine, as at present. But it is still a single commission. And though its membership be increased and it divide itself into sections, it remains a single body, governed by the same semi-judicial rules of procedure and methods, and with the same diffused and all-embracing duties, many of which are in no wise related and require wholly different experience and talents and methods for their correct solution. It is obvious that the commission must employ subordinates, not merely to assist, but actually to decide and dispose of many of its important duties; and the bill authorizes it to do this and the commission has been doing it heretofore of necessity, even with its present duties. This is one of its defects. It is not right to put the practical decision of questions of such vast public importance upon subordinates of the commission who are unknown, who get no credit or recognition for what they do, who hold their places at the pleasure of the commission, and who receive salaries insufficient, without any certainty of tenure of office, to command the ability and experience that ought to be brought to bear in the decision of such questions. No reflection upon the subordinates of the commission is intended, for I believe them to be, individually and as a class, quite equal in ability and character to any other men in similar lines of work. But my point is that the system is not calculated to produce the wisest decisions, and that decisions by even the best of men in such subordinate, precarious, underpaid and unrecognized positions would be unsatisfactory as a rule.

All experience suggests that regional commissions and administrative boards for administrative duties, composed of members appointed by the President and confirmed by the Senate, for definite terms, and receiving fixed salaries, would be better suited to decide and dispose, subject to review by the main commission in rate cases, all these important questions, and be more in keeping with our traditions and ideals. The Interstate Commerce Commission must either leave wholly and entirely to subordinates the final decision and disposition of a great multitude of important matters, or it must devote to the review and revision of the conclusions of its subordinates an amount of time that will be seriously needed for rate questions and controversies, and its more important work. Delay in rate making and revision and in the decision of rate questions is deadly to railroad and commercial interests alike. It has been a great evil in the performances of the Interstate Commerce Commission in the past, and with the additional duties imposed by the Esch bill, it will, in my judgment, become intolerable.

2. The Esch bill, as introduced and as amended and passed by the House, recognizes that the revenues from existing rates remaining after the payment of wages and other operating expenses will be insufficient, due to conditions arising during federal control and still existing, to save many of the railroads from bankruptcy and to conserve the credit of the others. It therefore provides a guaranty for a period of six months after federal control. But this "guaranty" is illusory if not worthless. It does not provide, as one would suppose, that one-half of the "standard return" for twelve

*An article printed by the author for distribution among those interested in the railroad question.

months now paid shall be guaranteed the companies for the period of six months, but provides instead that the guaranty to each company shall be the average of the corresponding periods of six months during the test period. That is to say, assuming that federal control terminates December 31, as now believed, the bill provides that the average net earnings during the test period for the six months from January to June inclusive, rather than one half of the earnings for the whole year, shall be taken. Now we know that the first six months of the calendar year are the worst for the railroads. The crops have been moved and the traffic is light, and during the three winter months of January, February and March, the snows are heaviest, the weather generally is the worst, and the operating difficulties are the greatest of the year, while in the Spring months of April, May and June, the maintenance work is actively resumed to repair the ravages of winter and to prepare for the heavy traffic of the late summer and autumn. As a result many railroads have deficits for the first six months of the year. Hence I say the "guaranty" tendered by the Esch bill as passed by the House, fails to meet the emergency which it recognizes and assumes to provide for.

3. The provision of the Esch bill as amended by the House with respect to the funding of amounts charged by the Government to the railroad companies for additions and betterments made during federal control is a serious menace to the credit of companies without great financial resources and strength. It requires that the amount due from the government to any company, even for rental, shall be set off against amounts incurred for additions and betterments made during federal control and chargeable to capital account, to the extent permitted under the standard contract between such company and the United States relative to deductions from compensation. Any balance due by the company with respect to additions and betterments may be funded into not exceeding ten equal amounts, one of such amounts to be payable annually beginning at the expiration of five years from the termination of federal control, with interest at the rate of six per cent per annum from date, subject to the right of the carrier to pay before maturity. Any other indebtedness existing at final settlement shall be evidenced by notes payable on demand with interest at the rate of six per cent per annum and secured by such collateral as the government may require. No progressive railroad company in a growing country such as ours, can pay for its additions and betterments out of earnings, as this act thus requires. Such expenditures are for capital account, and as such must, to a great extent if not entirely, be provided for by the issue of capital securities. Furthermore, the bill provides that even the balance which the government cannot collect by setting off the rental because of the restrictions in the standard contract, shall be founded for only five years and shall be thereafter payable in annual instalments, provided the company is able to give good security, which many of them cannot do. Funding for five years, it is true, allows a breathing spell, but the requirements that the amounts shall be paid in ten annual instalments thereafter, is a method which only financially strong companies can avail of; and such payments probably will have to be taken care of out of current income.

When it is considered that the additions and betterments were ordered by the government, and many of them to meet the emergencies of the war, and especially when there is considered the very liberal treatment accorded by the government to war industries with respect to improvements, it would seem not unreasonable to allow the railroads which need the indulgence a long term in which to pay the capital expenditures charged against them by the government while under federal control. The provision leaves the railroad companies without a dollar of working capital, with a large indebtedness to the government for equipment and for additions and betterments ordered and made by the government during federal control, with an increased pay roll of over a billion dollars a year added during federal control, confronting a scale of prices for fuel and other materials comparable with the increased cost of living for individuals, and with a rate increase insufficient to save the government itself from a huge deficit in its own operation of the railroads. Such a refunding provision certainly does not tend to the enhancement and re-establishment of railroad credit.

4. But the most amazing provision of the Esch bill as amended by the House is that with respect to labor. It effectually perpetuates every wage increase and every working rule or regulation made by the railroad administration under the stress of the world war and the abnormal conditions resulting therefrom, no matter how radically conditions may change nor how soon normal conditions of living may be restored. As reported by the committee, the bill contained an elaborate provision for a "Railway Labor Adjustment Board" and a "Railway Board of Labor Appeals" for hearing labor disputes, but no means were provided for enforcing such decisions. Where a *contract* existed, it was provided that the railroad company and the unions respectively and members advising should be liable in damages and civil actions for violation of such contract. But this would simply discourage or prevent the making of wage contracts. Strikes and lockouts were not made unlawful, and no penalties were prescribed therefor. But even this "milk and water" provision called forth the usual denunciation from the union leaders, and when the bill came up in the House, a strictly union labor amendment was adopted by a vote of 161 for to 108 against. The bill as thus amended and passed recognizes the various railroad brotherhoods and unions by name and provides for boards of adjustment composed equally of representatives of such unions and of the railroad companies, but makes no provision for enforcement of the decisions of such boards or for the decision of cases, of which there must be many, where the equally divided board cannot agree; and it does not prohibit or in any wise discourage strikes. But the most remarkable provision is that the act as thus amended makes every decision of the United States railroad administration or of the commission of eight permanent, for it says all such decisions

> "affecting questions of wages, hours of service or conditions of employment are hereby confirmed and shall apply to all carrier lines subject to this act. Decisions which have been rendered by the United States railroad administration and which apply to the individual carriers subject to the provisions of this act shall remain in effect until superseded by mutual agreement between the carrier and the employes or by decision"—

of one of the adjustment boards created by the act. Of course this provision means that no change can ever be made except in the way of further wage increases, since the requisite "mutual consent" to a reduction or modification will not be given by the unions, and will not be "superseded" by the adjustment boards, since under the act the unions have one-half the membership of each board. The same provision exists with respect to the Adamson eight-hour law. I am not advocating a reduction of wages at this time or any change in working rules and regulations, although some of them are absurdly unjust to the railroads and to the people who pay the freight bills.

But it is almost unbelievable that the House realized that by adopting this amendment it would saddle upon the country by law the railroad wage scales and working rules established under the stress of war and at a time when the cost of living and the profits of labor both were above anything known for generations, and enforce the same by the penalties prescribed in the act, while prescribing no penalties for strikes. Legislation of this sort is not likely to attract investors to railroad securities or to inspire much con-

fidence in the future provision of the transportation facilities which the country will need.

The Esch bill as passed by the House contains other provisions that will not be helpful though less objectionable; some that seem merely formal and of no particular consequence; and some that undoubtedly are wise, as for, example, giving the federal government exclusive regulation of the issue of railroad securities. But I comment only on those which in my judgment tend to defeat what I conceive to be the main object and reason for any legislation by Congress at this time, namely, the re-establishment of railroad credit to the extent necessary to enable the railroads to obtain the means required to provide the transportation facilities which the country must have.

The Cummins Bill

The bill introduced by Senator Cummins and reported by the Senate committee has the merit at least of recognizing the facts of the railroad situation and the courage of grappling with them in an honest attempt to solve the problem. It recognizes that the Interstate Commerce Commission is overburdened now with duties that interfere with its more important work of making and revising rates and deciding rate controversies. The bill, therefore, relieves the commission of various administrative duties with respect to other matters which can be as well or better performed by some other board, and confers upon it additional duties of a much more important character and provides it with the assistance necessary for the proper performance thereof. The bill also recognizes for the first time in our Congressional legislation the responsibility of the federal government to create some agency charged with the duty of promoting the establishment of adequate railroad facilities requiring it to keep an eye on transportation service and find out what is necessary to provide that which is needed, and cooperate with the railroads and the commission in bringing it about. The bill creates a transportation board composed of five members to be appointed by the President with the consent of the Senate, and charges it with the duties just mentioned, and transfers to it the various administrative duties with which the Interstate Commerce Commission is now burdened with respect to the Car Service Act, the Safety Appliance acts, the Railroad Accident act, the Hours of Service act, the Act Relating to the Transportation of Explosives, the Boiler Inspection act, the Automatic Signal act, and other acts referred to above. The bill also recognizes the danger to the whole people in the power of four men, whoever they may be and however wise, who lead the trainmen's brotherhoods, armed with a strike vote given merely to support them in negotiations, to tie up the railroad transportation of the country and to throttle the life of the nation. The bill therefore provides means for promoting the just settlement of all railroad labor disputes through tribunals created by the bill; and, this done, it prohibits strikes under severe penalties by provisions that are undoubtedly consistent with the constitution. The Association of Railway Executives has taken no position upon this question, because it relates to disputes between the companies and their employes, and it is for the public to determine what measures it will take, and how far it should go, in protecting itself against the results of such disputes, in the form of strikes or otherwise.

The Cummins bill also contains rather elaborate provisions with reference to the merger or consolidation of the railroads of the country into from twenty to thirty-five competing systems—voluntarily for seven years, and thereafter compulsorily. I do not believe the plan is workable, but as its operation is not immediate and as experience and time will demonstrate its defects before the plan becomes obligatory, it need not be discussed here.

The bill contains many other provisions of a wise and far-seeing nature, and in my judgment it would go a long way in solving the railroad problem, but for one feature, which I believe would be fatal:

The bill proposes that for the first time in the history of this country, Congress shall declare that railroad owners shall not be entitled to the earnings they may be able to save out of rates which the Government itself prescribes. Hitherto it was supposed that the duty and power of the Government were to determine the rates which the carrier should be entitled to charge and the shipper required to pay. With the rates once fixed by the Government, it was supposed that all carriers in the district could seek the business and each would be entitled to all that it could make and save through ability, enterprise, efficiency, economy and otherwise. But the Cummins bill makes a novel and radical departure by providing that no railroad company shall retain out of the earnings it my save under rates which the Government itself authorizes or approves in the manner provided in the act, more than "a reasonable return on its *property investment.*" It then proceeds to declare in effect that 5½ per cent on the "value" of the property as determined by the commission is a "reasonable" return, and confiscates all in excess of 6 per cent upon such value. But it allows the company to retain one-half of its savings between 6 and 7 per cent and one-fourth of its savings in excess of 7 per cent, to be put in a "reserve fund" until the reserve funds amounts to 5 per cent of the value of the property—the reserve fund to be drawn upon for dividends or interest in years when the savings amount to less than 6 per cent. After such reserve fund amounts to 5 per cent of the value of the property, the carrier is allowed one-third of its earnings in excess of 6 per cent.

Except these fractions, all earnings and savings of the company in excess of 6 per cent on the value of its property as fixed by the commission, are to be paid over by the company to the government within four months after the end of each year, to be used by the government.

> "in furtherance of the public interest in railway transportation by carriers subject to the act to regulate commerce, and avoiding congestions, interruptions or hindrances to railway service * * * or in furthering the public service rendered by them, either by way of purchase, lease or rental of transportation equipment and facilities * * * or by way of loans to such carriers," etc.

whatever such clause may mean.

Whether the "value" referred to in such limitation of return is the "book value" or the value which the commission is already engaged in making is not clear. In one paragraph the provision is that no carrier shall retain more than a reasonable return upon its *"property investment,"* which undoubtedly means the investment, whether good or bad, wise or foolish, and regardless of real, intrinsic or earning value. In another paragraph the provision is that the "commission shall from time to time determine the value of the property in each district and rate making group." A literal construction of these two paragraphs means that for rate making purposes by groups, the commission should determine the value, but that for limitation of earnings of individual roads, the "book value" should be the guide.

But the most extraordinary provision is that commanding that the Interstate Commerce Commission

> "shall, so far as practicable, adjust rates, fares, charges and classifications that the net operating income of the several carriers shall bear the same relation to the value of their respective properties."

That is to say, that the commission shall disregard earnings, efficiency, ability of management, economy, wise expenditures in development, location of line, volume of business, and every other consideration entering into and ordinarily

controlling relative values of properties in the every day, common sense transactions of men, and shall instead observe a rule which is never observed by anybody. To the extent of "property investment" or to the extent of "value" as determined by the commission (which, according to the tentative valuations thus far filed by the commission, means "junk" value—as so many second hand ties, rails, bridges, structures, engines, cars, etc.—and not a going *railroad*) it shall be the lawful duty of the commission under this provision to manipulate "rates, fares, charges and classifications" so that the value of a low grade, highly efficient, first located line, and the value of another line in the same group but located well up toward the top of the Rocky Mountains, with steep grades and high costs shall be equalized; and that the value of every modern and highly efficient railroad shall be equalized with the most inefficient and unprofitable railroad in the same territory! Obviously this equalization can be accomplished only in one of two ways—either by raising the value of the inefficient or reducing the value of the efficient lines. The value of the inefficient can be raised only by raising the rates to a point where sufficient net is realized or by giving them in some form a share of the savings of the efficient lines. In any case, the inevitable effect of such provision, if it be possible for the courts to regard it seriously, will be to ruin the credit of the railroads by which the great bulk of the business of the country is and must be transported. I am as confident as one can be of a legal proposition that the courts will annul the provision as confiscation prohibited by the fifth amendment of the federal constitution. But the damage to railroad credit from the willingness of Congress to enact such legislation will be irreparable.

But that is not all. The same section provides that in 1925 and in every fifth year thereafter, the commission shall determine what, under conditions then existing, constitutes a fair return, and that it may "increase or decrease the five and one-half per centum basis herein prescribed or the basis for the determination of excess income." So that the commission at such periods hereafter is at liberty under the bill to determine that 6 per cent upon the value is too high a rate, and that 5 per cent, or 4 per cent, or a lower rate is enough for a railroad investor, and that all net earnings in excess of such lower rate should be forfeited to the Government.

Is it conceivable that the money necessary to provide the railroad facilities which this growing country needs—generally estimated at not less than one billion dollars per annum—will be obtainable from investors under legislation of this sort? The whole world is borrowing—governments, municipalities, railroads, steamships, industries, mines and enterprises of every kind. The rest of the world realizes as never before that credit—fidelity to financial obligations—is something that every people must sacredly guard at all times in order to obtain means in emergencies. Opportunities for safe and profitable investments are almost unlimited and are bound to continue so for many years. Profits on industrial, commercial, financial, mining and other enterprises in our own country are unrestricted and most attractive to our investors. It is with such competition as this that railroad executives must contend for the money necessary to maintain and increase our transportation facilities. The best railroads, under the legislation proposed, could offer a return of only only six per cent on the value of their property, and even that return only in case it is earned, for, mind you, the bill does not propose that the Government shall guarantee the return. As a matter of fact, money everywhere is today worth more than 6 per cent, and the strongest railroad companies cannot sell their securities now on a 6 per cent basis. It is in the face of these facts that the bill proposes to confiscate all the company earns in excess of 6 per cent. Thus a measure designed to reassure investors and attract new capital to railroad enterprises defeats itself by discriminating against investments in the railroad business by confiscating all the rewards of wisdom in investing and efficiency in operations.

As part of the plan the same section 6 of the bill provides that

> "The commission shall initiate, modify, or adjust rates, fares, charges, and classifications, as nearly as may be, so that the railway carriers as a whole allotted to each district and subject to this act shall earn an aggregate annual net railway operating income equal, as nearly as may be, to 5½ per centum upon the aggregate value, as determined in accordance with the provisions hereof, of the railway property of such carriers in the district held for and used in the service of transportation."

Of course this includes the railroad that operates at a loss as well as the railroad that earns a surplus, the road that should never have been built as well as the most useful line, the badly managed as well as the best managed railroad, for all in the district or group must be included and rates made sufficient to yield the specified return on the "aggregate value" in the rate group. I have already pointed out that the "property investment" in one sentence of the bill is taken as the basis for limiting the return, and that in another sentence in the same section, the commission is empowered —without any guide—to determine the "value" of the railroad property. As indicated by the tentative valuation reports thus far filed by the commission, that body takes the estimated reproduction cost of the elements entering into the railroad, such as rails, ties, bridges, buildings and other structures, cuts, fills, etc., less depreciation—or what I have called a "junk" value, rather than the value as a going railroad—as its guide of value; and according to that method an unwisely built and improperly located railroad operating at a perpetual loss might be valued even higher than a wisely built and profitably operated line. But if "property investment" is to be taken as the guide, the more overcapitalized a railroad has been, the greater would be its value, for, until the bookkeeping rule was changed by the commission in very recent years, all securities issued were carried in the property investment account by most companies at par, regardless of the price received for them. It certainly will be a number of years before the commission can complete the valuation work upon which it is already engaged; and advocates of this scheme outside of Congress urge property investment as the basis of such value.

The promoters of this scheme, before it was incorporated in the Senate bill recognized that it would involve a very substantial increase in rates, and in order to lull the people into submission, they devised the plan of confiscating, in the manner and to the extent above described, the net earning of the wisely built and developed and well managed railroads in excess of 6 per cent. They assumed apparently that the controlling objection on the part of the people to an increase in rates was that some roads would be able to save more from such rates than others and more than a moderate profit. But what will it profit the shippers for the Government to confiscate the earnings in excess of 6 per cent, as proposed by this bill?

The amount is not returned to the shippers. It in no wise reduces the rates they pay. It goes into a fund for the very vague railroad purposes indicated by the provision hereinbefore quoted from the bill. The leading advocate vehemently denies that the amount is for the benefit of the weak lines. The shippers are to go on paying the high freight rates in order that the so-called "weak" lines, however inefficiently managed or improperly built, may get increased revenue in that way, but are expected to be lulled into acquiescence by the delightful reflection that the inherently

valuable and efficient railroads shall not be allowed to retain the benefit they get from the increased charges.

This assumption involves two fundamental mistakes: The first is that the people are willing to pay more than a reasonable rate in order to reward improvidence or mistakes or misfortune in locating and building railroads, or possible inefficiency in management and operation (for all the risk of these is put upon the public by the bill in dealing with *net* earnings); and the second is that the people of this country are unwilling to reward wisdom in construction and development, and efficiency in management and operation of railroads —the property in the success of which the public at large is more interested than in any other class of property existing.

I deny that our people are in favor of confiscating the net earnings of a railroad company saved by it out of reasonable rates established or approved by the Government itself. The people are interested in the rates they pay—not in what the carrier by economy, efficiency, wise foresight or otherwise, is able to save out of such rates. Our people view with complacency, and indeed approval, large earnings by well managed banks, manufacturing industries, commercial institutions and enterprises of various kinds, out of prices and rates fixed by themselves—free from regulation by the Government. How preposterous then that the people should object because some railroad companies by wise foresight and good management in competition with others should be able to make out of rates made—not by themselves but prescribed by the Government itself—a profit much less than that commonly made in other lines of business. That, too, when the people are enormously interested in the maintenance and development and increased efficiency of railroad transportation, which is a necessity for all—whereas the success or failure of the other enterprises are not matters of such vital public concern. The cloud of fiction and prejudice which has so long befogged this aspect of the railroad question is vanishing and the people are learning that, if private capital is to supply railroad facilities, it must receive as fair treatment as that employed in other and much less necessary enterprises.

It is not the weak roads that transport the country's commerce. It is not the weak roads on which the traffic becomes congested. Many of the "weak" roads are weak because they serve territories which, for various reasons, afford little traffic. But they are giving the service which the traffic justifies and requires. Some are weak because they are in competitive territory, and their rivals, through more fortunate location, or accessibility to industries, or for other good reasons, are more convenient and satisfactory to shippers and therefore able to get the business. Others are weak as a result of mistakes in policy, unsound financing or bad management; and others are weak because building in the first instance never was justified by the traffic obtainable, and was merely a speculative effort.

It has seemed almost impossible to attract sufficient attention in this connection to the supremely important fact that the country's transportation service is performed by the "strong" lines and not by the "weak." The industries are located on the strong lines; and such lines, by location and otherwise, are best adapted to the business. Their growth and development have been more in conformity with the needs of the traffic. They serve better the convenience and requirements of the people. It is the strong lines to which traffic inevitably flows, and upon which congestions occur. The congestion of traffic in 1917-1918 did not occur on the weak roads, but on the strong. Very few of the weak lines were taxed except with the overflow of traffic in excess of what the strong lines could handle. This was because the bulk of the traffic is normally on the strong lines; and this tends to make them strong. The most prominent exceptions to this are certain of the New England lines and certain large bituminous coal carriers.

Without speaking definitely from statistics, I feel safe in asserting that not less than 80 per cent of the railroad traffic of the United States in transported by railroad companies which regularly pay dividends. Their credit depends upon the continuance of such dividends. Their stocks are held by hundreds of thousands of individuals—many representing the savings of almost a lifetime. Unless such dividends are continued—and indeed practically assured—it will be impossible for these companies, so situated as to be called upon to handle the great bulk of commerce of the country, to obtain the money for improvements and development required to meet the needs of our growing commerce. It was the commission's policy of stationary and inflexible rates in the face of increasing wages and other operating costs, and the conflicting regulations of the various states, that made investors anxious about the stability and continuance of dividends, and deterred many of the strong railroads from making the improvements, additions and extensions which all now know to be necessary. The fact undoubtedly is that it is the strong roads upon which the bulk of the business naturally falls that need the additional facilities, and it is the strong roads whose credit must be conserved if such facilities are to be provided.

Hence I protest against the confiscatory provisions of section 6 of the Senate bill, as not only failing to provide for the transportation emergency confronting the country, but as making it infinitely worse by attacking for the first time in the history of this Government—not the transportation rates to be charged the shipper (which the Government may and ought to prescribe) but the *net* saved out of such rates, which is as much the private property of the stockholders as the money and assets in the treasury, and by seeking to bring the valuable and the worthless, the important and the unimportant, and the efficient and inefficient railroads to a dead level.

To base rates upon "property investment," as advocated by representatives of some of the "weak" lines, or upon the separate appraisement of the different elements entering into the construction and making up the physical structure, as seems to be the method thus far adopted by the commission in its valuable work, undoubtedly will require radical changes in the rate structure and the rate relations now existing, which represent growth and commercial needs for generations, and to which commerce is adjusted. And it is a false and wholly arbitrary basis.

Further increases of freight rates undoubtedly are necessary, as the Government's own experience with the railroad shows. No well informed person expects railroad wages to be materially reduced under existing conditions; and the prospect of material reductions in the prices of fuel and other supplies for many months is certainly not encouraging. Added to this must be the expense of traffic organization and soliciting agencies incident to a restoration of competitive conditions, which were not necessary during federal control. Hence large deficits from operations—like those suffered by the Government—confront nearly all the railroad companies unless freight rates are further increased very substantially.

The practice and only effective method of making such increases is to take the rates as they exist and base upon them such increases and adjustments as may be necessary to meet the increased wages of labor, the increased cost of material and other operating expenses and taxes, and provide a return on the new capital that has been put into the properties in such enormous amounts and which must be provided for the future. The commission should be left free to consider new rates from time to time, so as to adjust the revenue to the changing expense of operation, the rise and fall of wages and prices, and the expenditure for new capital. So far as it becomes necessary to consider the value of the railroads: the average earnings during a series of years, taking into

account the conditions then existing, plus a fair return on the new capital expended for betterments, additions, equipment and extensions, is economically and in sound common sense the rule that ought to be followed.

A railroad is legitimately worth nothing to its owners except what it can earn and pay in the way of interest and dividends. True, earnings depend in large measure upon the rates a carrier is allowed to charge, and these rates in turn may be fixed by the government so long as they are not confiscatory. But our railroad rates have been under Congressional regulation since the creation of the Interstate Commerce Commission in 1887. Since 1906 at least, the commission has had power and has effectually exercised it, to reduce rates when found too high, and railroad earnings have been open to the commission and the public. No one can justly claim that our railroad rates as a whole, or in any substantial territory, or on any important line, have been too high. The fact is that they have been too low. Under this system, railroad values have worked themselves out. Railroads that could earn net returns have demonstrated their ability, and those that had little earning capacity have been disclosed—all under rates for which the government is responsible. The securities of all these roads have been bought and sold at prices based upon their demonstrated earning capacity, and are today held by those who bought at such prices. The prices of these securities are the evidence of popular judgment of the relative value of these railroads—as one compared with another—and these values were based upon net earnings made under rates that the roads were allowed by law to charge. The government should not, and consistently with fair dealing cannot, question the value of the railroads as demonstrated through many years by rates established by or under the regulation of its own agencies. New money has been put into the properties by investors for additions, betterments and equipment, thus increasing the transportation facilities—which it would be the duty of the government itself to provide, if not furnished by private capital; and much of this capital has been too recently invested to be yet reflected in increased earnings. It is upon such considerations as these, with the values established under earnings from rates prescribed or sanctioned by law for years, that rates should be based, and not upon "property investment" or upon the value of so many second-hand ties, so many second-hand rails, bridges, structures, etc., etc.

One point more: Both the Senate bill and the House bill recognize the obvious necessity for increases in railroad rates, and contemplate immediate application therefor by the carriers to the Interstate Commerce Commission, in the meantime continuing to a greater or less extent—as already pointed out—the present guaranty for five or six months, within which it is assumed such increases may become effective. But both bills carefully refrain from preventing any state railroad commission or legislature from immediately reducing state rates, thereby depriving the carrier of revenue which the government itself has been collecting during federal control. More than that, such changes in state rates generally affect interstate rates and often disturb a wide and important interstate rate structure. Often a railroad company will not dare to increase an interstate rate unless it knows that a corresponding increase will be made in a competitive state rate. How will the railroads be able to carry out the increases which both these bills contemplate until they know what will be done by the state commissions with respect to state rates?

True, both bills give the Interstate Commission the power to review all state rates which affect interstate rates. But the Senate bill provides that before the commission shall hear or dispose of any such issue, it shall cause the state to be notified of the proceeding; it requires that the commission "shall confer with the authorities of any state having regulatory jurisdiction," etc., with respect to the relation between rates, fares, charges, classifications, regulations or practices of carriers, etc.; and also "to hold joint hearings with any such state regulatory bodies on any matters wherein the commission is empowered to act where the rate making authority of the state may be affected by the action of the commission." It is only "after full hearing" that the commission may make any order removing interference of the state rate. It is obvious that the delay in the adjustment of such differences under the provisions of this bill would be disastrous to railroads suffering for revenue. The provision of the Esch bill upon the subject is much to the same effect, but admits of more prompt action with respect to the matter by the Interstate Commerce Commission than is possible under the provisions of the Senate bill.

Foremen in Mechanical Department Classed as Officers

Because of the exceptional importance of the work of supervisory foremen in the mechanical departments, and the fact that economical and efficient shop operation depends so largely upon their efforts and co-operation, W. T. Tyler, director of the Division of Operation, has issued a circular letter to the regional directors stating that it is desired that their classification, working conditions and privileges be made definite and uniform.

To that end the director general directs that general foremen, roundhouse foremen, departmental formen and assistants will be classified as officers and will be given consideration and advantages attaching to officers of similar rank in other departments, as follows:

(A) Reasonable period of time lost on account of sickness without loss of pay.

(B) Two days off each month for all salaried foremen whose tour of duty consists of seven days per week.

(C) Two weeks vacation a year with pay for all salaried foremen who have acted as officials continuously for one year or more.

(D) Privilege of resigning instead of being shown as discharged or dismissed.

(E) When charged with an offense likely to result in dismissal, a hearing to be given by a superior officer other than the immediate superior, at which hearing the foreman in question may be represented or assisted by any other foreman whom he may select for that purpose.

(F) Card transportation to be granted to all salaried foremen, the extent of such transportation to be based on the general practice for other division officers and the importance of the position the foreman occupies.

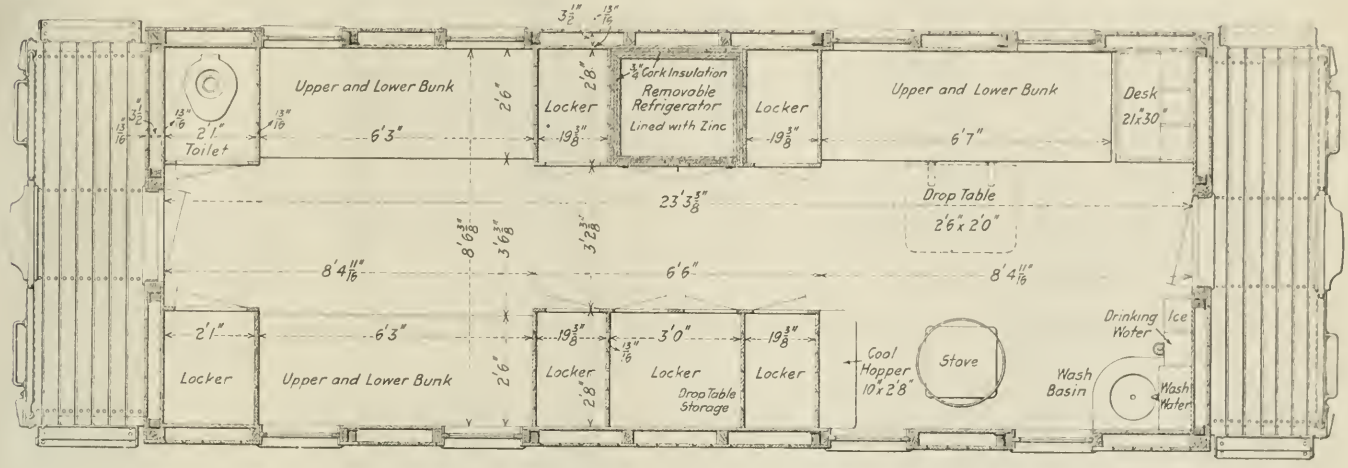
The letter says: "It is not possible to lay down a definite seniority rule because ability and merit are of paramount importance in this highly responsible work and, in any event, must govern, but where the ability and merit of two men are equal, the choice of positions on a division should, as far as practicable, be determined upon the basis of seniority. I am sure that the uniformity brought about by the above rules will result in more loyal and efficient service by the foremen affected and will reduce complaints to a minimum. Will you please take necessary action to have this put in effect in your region at once."

The California Railroad Commission has extended to October 1, 1920, the time in which the San Diego Electric Railway may dispose of the bond issue of $4,478,000 authorized by the Commission in October, 1914.

Approved Standard Design for Caboose Cars

Railroad Administration Issues General Drawings for Caboose Cars of the Composite Type

A STANDARD DESIGN for railroad caboose cars has been prepared and is recommended by the Railroad Administration for general use in the future construction of such cars in the United States. The laws of the various states, many of them conflicting regarding the construction of caboose cars, make it desirable to have a standard design that will meet the legal requirements of any of them. The proposed design is offered by the Railroad Administration in the hope that the railroads will conform to a general design and thus gradually eliminate cabooses of weak construction or faulty design. The proposed design is a 24-ft. caboose of the composite type, having a steel underframe and superstructure, with wood outside sheathing and interior finish.

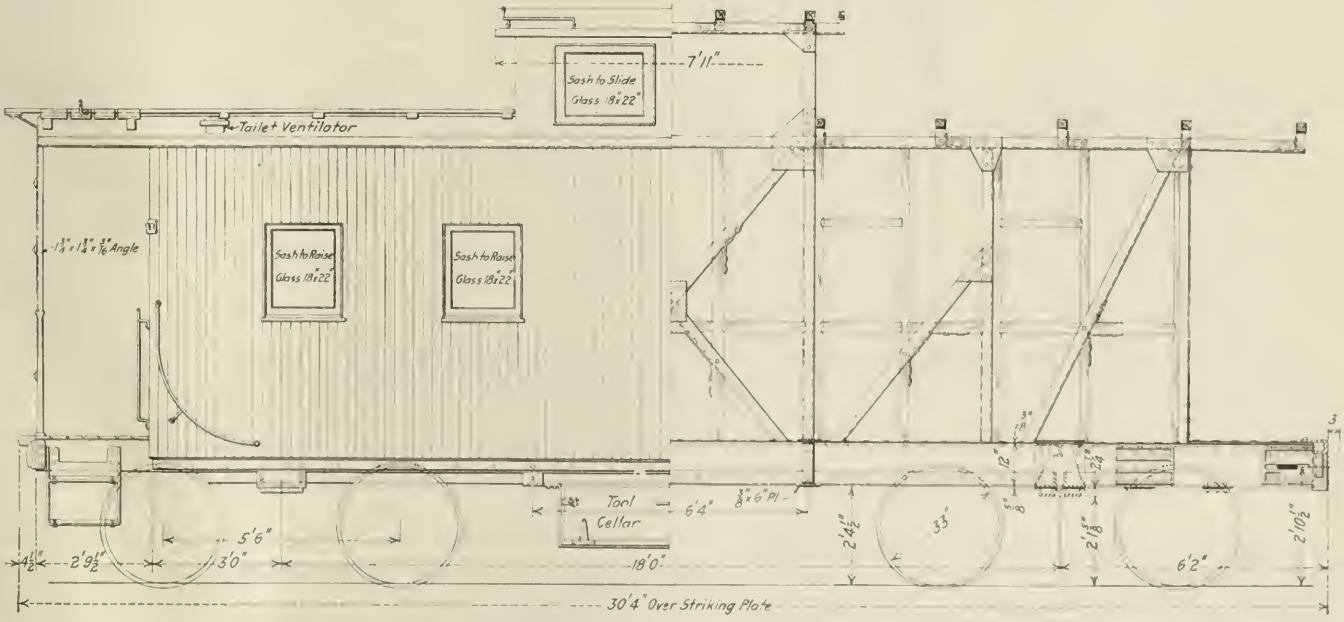


Floor Plan of Proposed U. S. R. A. Standard Caboose Car.

The body framing is built up of 3-in. by 3-in. by 5/16-in. angles, the side and end posts being adequately braced by angles of the same size and with gussets of ¼-in. steel plate securely riveted at the side sills and top plates and at intermediate points on the side posts.

The Superstructure

The carlines are of the composite type, with 2½-in. by 2½-in. by 5/16-in. angles, formed to a 24-ft. radius and secured by rivets to the side top plates. The cupola frame is constructed of 3-in. by 3-in. by 5/16-in. angles, with the same type of carline that is used on the main body framing. The roof may be a canvas or plastic covering over roof boards secured to the carlines. Wooden filler posts and plates are secured to the angle iron frame, and to these the 13/16-in. inside and outside sheathing is secured.



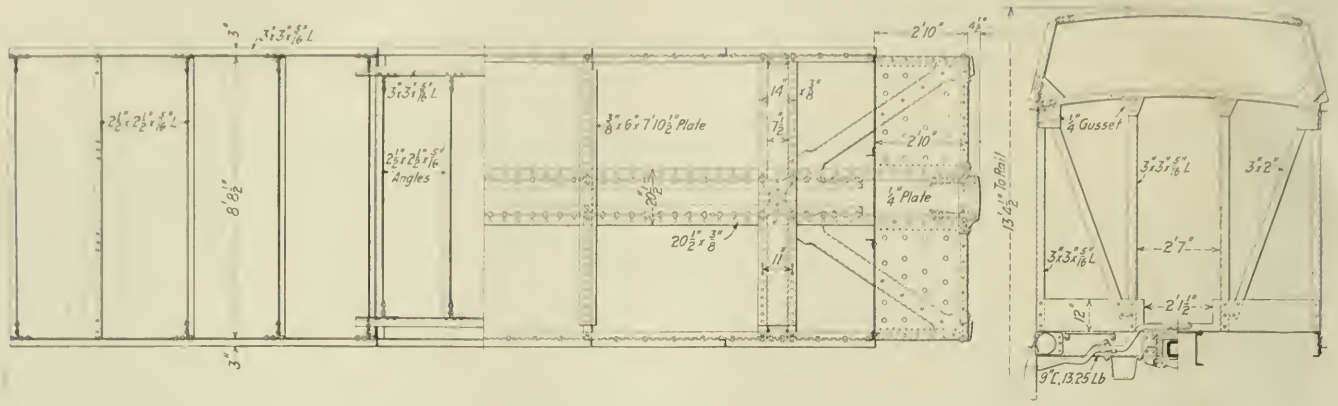
Side Elevation of U. S. R. A. Standard Caboose Car.

The floor space is 23 ft. by 33⅛ in. by 8 ft. 63⅛ in. inside of the sheathing, with a clear space of 3 ft. 23⅛ in. at the closest

point in the aisle between the interior fittings. Two upper and two lower bunks, 6 ft. 3 in. by 2 ft. 6 in., and one upper and one lower bunk 6 ft. 7 in. by 2 ft. 6 in. are conveniently located. The upper bunks fold upward against the car-lines, giving ample headroom above the fixed lower bunks, which can be used as seats when not in use for sleeping purposes. The conductor's valve, train indicator and air gage are located in the cupola, and seats are provided in each side of the cupola for observation purposes. The headroom in the main body of the car is 7 ft. and in the cupola 9 ft. 2 in. A desk is provided, so located that one end of a whistle at both ends of the car. The uncoupling apparatus is connected by a chain to the platform rail, so that the car may be uncoupled without leaving the platform.

The Underframe

In order to withstand the severe service in which many cabooses are used, where there are heavy grades and pusher service, the underframe is of unusually strong construction. The center sill is built up of 12-in. 34.2-lb. shipbuilding channel, with a 3½-in. by 4-in. by 7/16-in. angle riveted to the bottom inside edge of the channel for the entire length



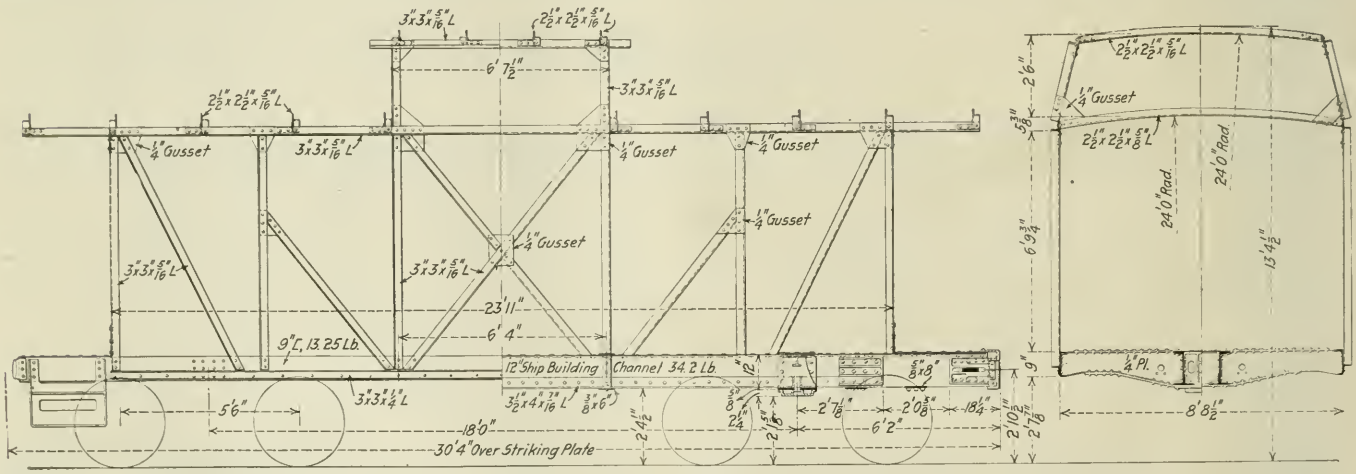
Plan of Underframe and Plan and End View of Body Framing of U. S. R. A. Standard Caboose Car

lower bunk serves as a seat. The tank for wash water, the wash basin and a drinking water tank are conveniently arranged in one corner of the caboose. A refrigerator, numerous lockers and drop tables, a toilet and a coal stove for heating the car complete the equipment.

There are four windows in each side of the car (18 in. by 22 in. glass) which may be raised; there is a window having a glass area of 10 in. by 28 in., with an upper drop sash, in the door at each end, and four windows with sliding sash having glass 18 in. by 22 in. in the cupola. The floor consists of 1⅜-in. rough flooring, a half-inch layer of cork covered with a waterproof paper, and a 13-16-in. top flooring. A platform of ample width, formed of ¼-in. steel plate with wooden cleats laid crosswise of the car, is provided at each end. The roof canopies over the platform, thus giving some protection from the weather. Handholders, ladders and steps are placed in the most convenient locations. A ratchet hand brake is applied and provision made for the application of a back-up signal

of the sill. The top cover plate is of ⅜-in. steel plate 20½ in. wide. The side sills and end sills are made of 9-in. 13.25-lb. channel section, the side sills being reinforced on the outside with a 3-in. by 3-in. by ¼-in. angle, which also serves as a support for the side nailing strips. The body bolster diaphragms are formed of ¼-in. pressed steel plate, with a 3-in. flange. The top bolster cover plate is of ⅜-in. and the bottom cover plate of ⅝-in. steel plate, both 14 in. wide. The two intermediate crossbearers are of ¼-in. pressed steel plate, with a ⅜-in. steel top and bottom cover plate 6 in. wide. Diagonal braces at each end give additional rigidity to the underframe, and it should meet the requirements of the most severe service. The draft sills are designed to permit the application of any of the standard draft gears. A tool cellar of ample size is secured to the underframe.

The car trucks recommended by the Railroad Administration are of the four-wheel type, with cast steel bolsters and side frames, and have a 5-ft. 6-in. wheel base. The



Side Elevation and Cross Section of Steel Frame for U. S. R. A. Standard Caboose Car

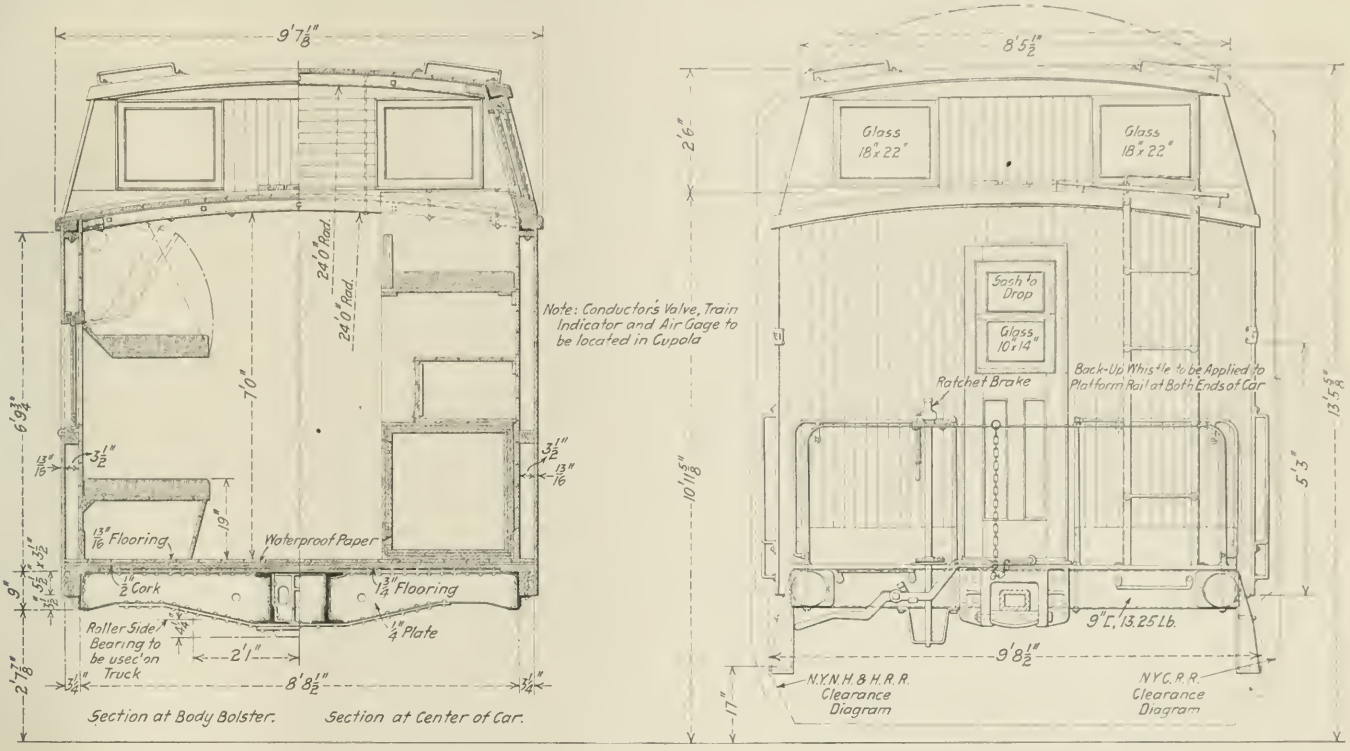
wheels are 33 in. in diameter, mounted on axles having a 4¼-in. by 8-in. M. C. B. journal.

General Data

Length over striking plates	30 ft. 4 in.
Length over body framing	24 ft. 0 in.
Width over body framing	9 ft. 2½ in.
Width over side sills	8 ft. 8½ in.
Height from rail to top of main roof	11 ft. 1 in.
Height from rail to top of cupola roof	13 ft. 4½ in.
Diameter of truck wheels	33 in.
Wheel base	5 ft. 6 in.
Distance center to center of trucks	18 ft. 0 in.

This design is made to conform to the laws of all of the states except those of Missouri, which differ radically from those of the other states. It is intended to prevent the agitation of railway employees for state laws which, if adopted, might make it impossible in such states to use cabooses that are lawful in other states and would result in the poorest cabooses collecting in those states having no stringent laws on the subject.

No attempt has been made by the Railroad Administration to specify all of the details of construction, but only to provide a general design for common use by the various railroads.



End Elevation and Cross Sections of Steel Frame for U. S. R. A. Standard Caboose Car

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Economic Resources of Poland.—The first number of the Polish Economic Bulletin, which is being issued by the Commission Internationale de Ravitaulement, gives a large amount of information as to the economic resources of Poland, from which it appears that in 1913 the yearly production of the oil industry was 1,632,000 tons. The output of coal was 58,006,000 tons, and that of manufactured iron was nearly 1,600,000 tons.

The California Railroad Commission, in its annual report, recently issued, says that steam railroads earned approximately $135,620,000 in California during 1918, as compared with $125,250,000 in 1917. In 1918 they paid out in operating expenses, exclusive of taxes, approximately $104,920,000 in California, as compared with $81,400,000 in 1917. The net operating revenues in 1918 is reported at about $30,700,000, as compared with $43,850,000 in 1917. Annual financial reports of 62 steam railroads were filed with the Commission during the year.

Weekly Traffic Report

According to a report on traffic conditions for the week ended December 8, 1919, made to Walker D. Hines, director general of railroads, the revenue freight loadings and receipts from connections for the various regions were as follows:

Eastern region—Revenue freight loaded, 180,085 cars, as compared with 177,612 for corresponding period last year; receipts from connections, 229,759, as against 227,108 in 1918. Allegheny region—Revenue freight loaded, 163,965, as compared with 171,068 in 1918; revenue freight received from connections, 149,295, as against 160,736 in 1918. Pocahontas region—Revenue freight loaded, 39,507 for the week ended December 4, 1919, an increase of 1,770 over preceding week; received from connections, 16,051, a decrease of 104 cars over last week. Southern region—Revenue freight loaded, 107,573, an increase of 2,556 over last week; received from connections, 77,087, an increase of 9,077 over last week. Northwestern region—Revenue freight loaded, 104,350, a decrease of 39,289 under last week; received from connections, 65,503, a decrease of 2,227 over last year. Central Western region—Revenue freight loaded showed a 5 per cent decrease as compared with last year; receipts from connections, 60,762, an increase of 8 per cent over last year. Southwestern region—Revenue freight loaded, 54,251, as against 46,093 last year; receipts from connections, 49,308, an increase of 9,557 over last year.

A summary of the report follows:

Eastern region—Freight traffic has begun to be affected to a considerable extent by the coal situation, which has already interfered with the improvement that has been going on in traffic to and from iron and steel industries. Reports from Chicago and Chicago junctions show the Eastern region received 81,522 cars coming from the East during the month of November, compared with 63,069 November, 1918; 95,671 loaded cars forwarded to the East, compared with 95,794 last year. In view of the bunker coal situation traffic control managers have been instructed that export freight

only is to be transported in vessels of the United States registry. Total carloads of export freight at New York other than bulk grain and coal, 11,532; about 1,500,000 bushels of grain in elevators or boats and about 525,000 in cars. Arrangements have been made for considerable cut in passenger train and car service, but it is, of course, impossible to say as yet what the effect will be in the amount of travel.

Allegheny Region—Conditions with respect to the coal distribution have changed in the past week, which should permit of a greater run of empty equipment through the Pittsburgh gateway. Blast furnaces in the region during the week ending November 29 had 107 stacks in blast, 84 being out of blast, an increase of 2 as compared with last week. The strike of bituminous coal miners continues, and there is noted a falling off in the production as compared with the preceding week. Full car supply has been maintained the entire week in the anthracite and bituminous fields. Coal dumped at tidewater piers decreased 94,312 tons, and there is a reduction of 243 cars under load in terminals. Coal dumped at lake ports reflected an increase of 21,228 tons, with a reduction of 140 cars held under load. During the week ending November 29, which covered the Thanksgiving period, passenger travel was exceedingly heavy.

Pocahontas Region—Tidewater coal dumping decreased 2,071 tons under last week. General movement increased 3 per cent over last week and 8 per cent over same period last year. The movement of coal and coke continues above normal, although the increase over previous week is not so pronounced or in the same ratio as the increases of the past few weeks. Loaded cars from connections also show some improvement. All in all, the past week was generally satisfactory and car supply was ample, Passenger travel normal; earnings, however, show a considerable decrease over November, 1918, figures.

Southern Region — The total number of cars handled shows a decrease of 10,487 cars under last week's figures. Grain and grain products decreased 14 per cent, live stock 13 per cent, coal and coke 41 per cent, ore 2 per cent. As compared with last week, grain and grain products decreased 17 per cent, live stock 20 per cent, ore 16 per cent, and miscellaneous traffic 10 per cent, while coal and coke increased 14 per cent. There was some increase in the number of furnaces in blast in the Gadsden district. The cotton mills are operating on full time and receipts are largely in excess of those of last year for the same period. Passenger travel has been very good for the week. Tourist travel increasing. There has been some reduction in the volume of passenger travel, due to restricted service and the apparent disposition on the part of some to avoid travel during the coal shortage. The total, however, shows a slight increase over last year.

Northwestern Region—The reduction in loading by non-essential industries was responsible for a decrease in revenue loading, which, while below that of last week, was a slight increase over same period last year. General business conditions continue good, but the coal strike and severe weather conditions during the past week have curtailed movement somewhat. So far few industries have had to restrict their operations on account of shortage of coal, but it is expected that a large number may be affected the coming week. Merchandise movement continues in good volume, while Christmas stock is moving in large quantities. With the exception of refrigerators, for which there is a heavy demand throughout the region, the car situation shows some improvement. During the week 11,451 cars of coal were loaded, all of which consisted of dock coal. Cars are being furnished for this loading in preference. The light movement of iron ore represents the season's clean-up, and the few vessels now loading will take all that is in the docks.

Central Western Region—The week ending December 2 shows a heavy decrease in coal and ore loading, which resulted in a 5 per cent decrease in the loading of all freight as compared with last year's figures for same period. Coal production in the region, about 23 per cent of the output of November last year. No change from the previous week is noted in the supply of empty equipment, but cold weather and storm conditions will tend somewhat to slow up the movement of empty cars. The wheat acreage sown in New Mexico this year is reported as being 35 per cent greater than last year. From present indications the total citrus crop to be moved from California this season will amount to over 40,000 cars. Passenger travel for the past week has been very heavy, and considerable extra equipment was required during the Thanksgiving day period. The heavy movement to California continues, necessitating the running of double sections on nearly all trains.

Southwestern Region — Considerable improvement has been made in moving sugar from Louisiana, and the accumulation due to light car supply during the first few days the refineries were in operation is being rapidly disposed of. With the exception of the usual movement of lignite coal from Texas mines which has not been interfered with, coal mining is practically at a standstill. Some coal is, however, being taken out of strip pits in the Pittsburgh district of Kansas by volunteer miners. During the week railroads in this region have been working under instructions to furnish 75 per cent car supply for movement of cotton from compresses and, due to the necessity for affording further relief, instructions have now been issued to furnish 100 per cent. Refrigerator equipment is being provided to protect the winter vegetable movement, which will increase from now on. Regular passenger travel was heavy during the week; adequate equipment was in all cases provided. There is in prospect very heavy travel during the Christmas holidays, and arrangements are being made with a view to giving the operating department advance notice of the traffic to be moved, so that adequate equipment can be provided.

Fuel Situation—The decreased production over last week owing to the Thanksgiving holidays, combined with the increased requirements of certain industries, made necessary further restrictions in the distribution of coal, so that now distribution is strictly confined to very essential industries. All foreign flag bunkering has been discontinued, while the bunkering of American flag ships is by license. In the West the situation is more complicated because of the long haul in transporting coal from the Allegheny and Pocahontas regions. Car supply is excellent, the weak spots heretofore noted in this respect having been overcome.

Photo Copyright by Kadel & Herbert.

The Morristown & Erie Uses a Motor Bus on Rails Between Essex Fells, N. J., and Morristown

The Senate Debate on the Cummins Railroad Bill

The Senators Show a Marked Interest in Learning the Sources of Various Propaganda

Washington, D. C.

Debate on the Cummins railroad bill was resumed in the Senate on Monday, December 15, with a plan for holding night sessions in an effort to expedite the passage of the bill during the week and under a notice served by Republican leaders that unless a vote is taken on the bill during the week it will be necessary to postpone the holiday recess proposed to begin on December 20. An unexpected amount of opposition to the bill had developed during the preceding week which raised some doubts in the minds of those who were trying to pass it as to whether the bill will be approved by the Senate unless it is radically modified, but efforts have been made to induce those advocating amendments to permit the bill to be passed in order that the differences may be threshed out by the conferees who will be appointed to reconcile the differences between the Senate and House bills and it was believed that the fear of losing the holiday recess might bring about a favorable vote on the bill. A very large number of amendments touching almost all phases of the bill have been submitted.

Senator LaFollette on Saturday resumed and concluded his speech in opposition to the bill, which had continued with some interruptions throughout the week, after which Senator Norris of Nebraska created a diversion by demanding an investigation of alleged propaganda on behalf of the railroads to bring about the passage of the bill. Senator Norris referred to the plan which has been announced by the Association of Railway Executives for a campaign of national advertising to begin shortly for the purpose of placing fundamental facts regarding the railroad situation before the public, but he interpreted it as being designed to promote the passage of the Cummins bill, notwithstanding the fact that a large number of the railway executives are strongly opposed to the bill. He presented a resolution, which was referred to the committee on interstate commerce, instructing that it make an investigation "for the purpose of ascertaining to what extent there has been organized in the country a propaganda to influence Congress in the passage of S. 3,288 * * * and particularly to ascertain the amount of money that has been expended and that it is contemplated to expend for such purposes by the Association of Railway Executives and to what extent such associations or others representing other railroads, or directly or indirectly representing the security holders, are using the newspapers of the country in an advertising propaganda for the purpose of bringing about the passage of said bill."

Senator Pomerene demanded that the scope of the resolution be broadened when it comes before the committee to include the propaganda being conducted by the Plumb Plan League against the bill. Senator Norris said that if any one thought that any other propaganda in connection with the bill should be investigated he would be glad to see the resolution amended to that end.

"I have reached the conclusion," Senator Norris said, "that there is quite a propaganda going on at the present time in the country with reference to the pending railroad bill. While I am not complaining of that and while I fully concede that all citizens or any group of citizens interested either for or against this or any other legislation have a perfect right to pursue any honorable means to advance their interests and have them placed on the statute books if possible, I think when such propaganda is apparent that the people ought to know just what is being done, how it is being done and, if possible, what it costs. I am offering the resolution and saying what little I shall say in connection with its presentation in that kind of a spirit. I am not complaining that the propaganda is wrong or that it is illegal, but I think the people of the country ought to know, if possible, who is behind it, who is interested in it and what it is costing."

Senator Norris then read from a copy of what purported to be an advertisement, signed by Thomas De Witt Cuyler, chairman, and a list of members of the Association of Railway Executives, headed as follows:

"To the American People:

"It is the declared purpose of the United States Government to restore the railroads at an early date to the control of their owners.

"The Association of Railway Executives represents those upon whom at that time responsibility will again rest for the prompt and succesful movement of the country's commerce.

"Those constituting this association are keenly conscious of their accountability to the public.

"They have accordingly determined to present as fully as they can the fundamental facts and considerations which they themselves must face in their efforts to provide satisfactory railroad service.

"It is hoped to engage the interest of the whole American people, whose welfare is so vitally dependent upon adequate transportation.

"The country can grow only as the railroads grow. The railroad problem must be solved—and solved rightly and soon—if our country is to prosper.

"It is to promote that prosperity—permanently and in the interest of the whole people—that railroad executives will present to the public the situation as they see it."

"I think that is a fair and honorable statement," said Senator Norris, "and I am not finding fault with what is said. I do not want any one to get that idea. I think, however, that the propaganda will go much further and that its indirect influences will be much greater than is outlined by the plan suggested in the paper which I have read. I take it that it is an advertisement that is going into the newspapers of the country."

He also read from an article by Frederick M. Kirby, which said that the railroads are about to spend a million dollars in six weeks "to educate the people and all the legislative and governmental officials of the United States" and "to inspire legislation favorable to private operation," and that the million would be spent before the end of December. He also read a resolution said to have been adopted at a conference of farmer and labor delegates at Chicago on November 21 and 22 stating that the authors of the resolution were reliably informed that the railway security holders have urged an active propaganda campaign through the press to cost over "ten million dollars" to secure the enactment by Congress of legislation to put into effect "the security holders' plan for the return of the railroads." The resolution did not state whether or not this plan had any connection with the million dollars to be spent by the railway executives.

Senator Norris also presented a statement by Benjamin C. Marsh, secretary and director of legislation of the Farmers' National Council, that he had been shown a quarter page copy of an advertisement to be issued by the Associa-

tion of Railway Executives and informed that the contracts for placing the advertisements were in the hands of Thomas F. Logan & Co., New York City, and that if he desired to get any advertisements for the Farmers' Open Forum he should communicate with that agency. Mr Marsh was informed that the railroad executives were planning to spend "hundreds of thousands and perhaps millions of dollars" in this advertising "to educate the people of America on the railroad situation." He had also been informed of contracts for these advertisements having been signed with the Newspaper Enterprise Association, but it had not yet received its copy of the advertisements. Senator Norris then called attention to the fact that Thomas F. Logan had testified during an investigation conducted by the Senate Agricultural Committee about a year ago to having received large sums from the packers and other large corporations for services in connection with advertising and publicity work.

Senator Pomerene said he had no objection to the resolution, but he would go a little further and would like to know the source of the propaganda against the bill as well as that for it. "I think," he said, "there has been some propaganda in favor of certain other proposed legislation which probably have been more satisfactory to the security interests, but when the so-called Plumb plan was presented it was heralded throughout the country that a fund of four million dollars was to be raised to defeat this legislation and to promote the so-called Plumb plan and secure its enactment. It seems to me that fairness to the public requires that there should be an investigation on both sides so that we may know who it is that is back of a proposition which requires the purchase of all the railroads of the country at the public expense, to be turned over to a certain class of employees."

Senator Norris said he had not heard of such propaganda but would join with the Senator in amending the resolution or helping to pass any other resolution to cover any other propaganda with relation to the bill.

"I recognize the fact that there is certain propaganda for or against any legislation that comes up before the Senate," said Senator Pomerene. "I am constantly receiving, as no doubt the Senator is, communications by wire and by letter demanding in the interest of the public that I vote either for or against certain legislation, all of which is inspired by lobbyists here in the city of Washington. I like to know what is going on and I like to see the wheels going around when it comes to propaganda either for or against any legislation. It is very interesting."

Senator King remarked that he had received many thousands of petitions and statements "demanding" that he shall vote for the Plumb plan, but that he had received only perhaps 10 or 15 in favor of either the Cummins bill or the Esch bill.

The amendment offered by Senator Myers to strike out the provisions for representation of the employees and of the public on railroad boards of directors was rejected on December 15.

An amendment offered by Senator Poindexter was adopted providing that where no agreement has been made by a carrier with the government for compensation, the President shall pay to such carrier the total amount of the standard return in all cases where such amount may be necessary to pay the interest upon bonds or other indebtedness of such carrier and such payment shall not deprive the carrier of the right to present its claim for additional compensation, to be determined as provided in the act.

Senator Thomas offered an amendment which was adopted providing that if any part of the bill shall for any reason be adjudged by any court of competent jurisdiction to be invalid, such judgment shall not effect, impair or invalidate the remainder of the act.

Senator Spencer of Missouri offered an amendment which was adopted after some discussion, providing for the creation of a special board of adjustment to pass on differences between subordinate officials and railroad companies concerning complaints, grievances and disputes, including questions of discipline and controversies arising in ordinary operation. The board would be composed of four members representing subordinate officials and four representing the carriers, organized in the same manner as the boards proposed for the adjustment of controversies with employees. The term "subordinate officials" is defined to mean those heretofore classified as such by the Railroad Administration which, Senator Spencer said, includes train despatchers, traveling auditors, yardmasters, claim adjusters and investigators, roadmasters, storekeepers and others of that class. Senator Cummins said the committee would assent to that amendment because, while it had intended to make the provisions of the bill applicable to all classes of employees, the language probably would not be construed to include the subordinate officials.

Discussion as to Return of Roads

The question of whether the railroads ought to be returned on January 1 aroused a lively discussion in the Senate on December 15 after Senator Lenroot had made a speech advocating his plan for a single railroad corporation not directly owned by the government, but under federal control and opposing the anti-strike provision of the Cummins bill. He said the railroads ought not to be returned until April or May and that if they were retained for that period the Senate would have more opportunity to consider the question. He said it did not seem possible that the President would take any such responsibility as that of driving the major portion of the railroads into bankruptcy, but he did not know what the President might do. Senator Smith of Georgia, said he had heard quite a number of senators say they are not satisfied with the bill and not ready to vote on it. He believed they would vote against it at the present time and he thought that a more satisfactory conclusion could be reached if the bill were allowed to go over until January. Senator Cummins pointed out that the Senate committee has been studying the railroad question for at least two years and that this bill was reported on October 23.

"The Senate will never be in a better position to consider the railroad question than now," he said. "The members do not usually give close, undivided study to a subject until it is imminent. I am sure that senators all have opinions with regard to it and to the general subject. It is of the highest concern that the bill be disposed of very soon for if it is not disposed of this week nothing will excuse senators, I think, from staying here and considering it during the holidays. I cannot with complacency think of having the disposition of this bill, or any other bill upon the subject, go over until after the first of January. If the bill were laid aside senators would lay aside the subject and would not take it up again until the bill came before the Senate."

Senator Smith said that, of course, if the railroads are to be turned back to their owners on the first of January without any legislation the situation would be very bad, but he could not think that possible. He thought the railroads ought not to be turned back before the middle of the spring.

Senator Watson said that some months ago the President had stated in unequivocal terms that he expected to return the railroads on the first of January. Since then there has emanated from the White House no statement to show that the President has altered his purpose or changed his intention. He thought it was incumbent upon the Senate to enact such legislation as will save the railroads from conditions that will inevitably result if they are turned back without legislation. Senator Smith retorted that he did not think

the Senate responsible for the situation which the railroads are in. He thought those upon the committee might well communicate with the President and "let him understand the labor of this work which is put upon Congress without any help from those who put it upon Congress."

Senator Watson replied that in company with Senator Kellogg he had visited the director general of railroads and asked him what the President intended to do about the railroads, whether they would be returned on the first day of January with or without legislation. Mr. Hines responded, he said, that he had placed the matter before the President, that he had made a report as the President had requested and that he had offered a suggestion, although he did not volunteer to state what the suggestion was, and that as soon as the President signified what his intention was he would let the senators know. They returned four or five days later and sought to ascertain whether or not he had received an answer, in order that Congress and the railroads might know precisely what the intention of the President is, but there had been no response.

Inasmuch as there has been nothing to negative the assertion that the President made some time ago, Senator Watson thought the Senate was warranted in believing that they will be returned whether legislation is passed or not. Senator Smith pointed out that the President had given no formal announcement by proclamation of the time the roads would be returned. Senator Cummins referred to a letter written by Mr. Hines to himself and to Chairman Esch of the House committee saying that it was impossible for the government to continue in the operation of the railroads unless Congress were willing to fix a definite time in which it would be sure that government operation would continue and to make the necessary appropriations.

"The director general," he said, "cannot make contracts, or hesitates to make contracts that must be made for supplies for the coming year. There must be millions of ties bought and they ought to be bought now, because they should be taken out of the woods in the winter."

Senator Smith asked whether the railroads are making such contracts.

"Certainly not," replied Senator Cummins. "The railroads cannot make such contracts. They neither have the money with which to pay for supplies nor do they know when the railroads are going to be returned to their owners. The railroads are utterly powerless to do anything. There ought to be 20,000 refrigerator cars ordered now in order to get them next summer, when they will be absolutely needed. The director general does not feel that he ought to put that burden upon the carriers if the property goes back immediately and the carriers are utterly incapable of doing it for themselves. There has been no contract made for rail replacements. Everyone knows that it is necessary to have a large volume of rails for use during the coming year. They cannot be had unless they are ordered months in advance and there is nobody to order them. The situation is really most distressing. I cannot understand how senators are willing to postpone the passage of some kind of legislation for a single day."

Senator Smith asked if the railroads ought not to have a formal notice before the railroads are returned and if it is not also true that they are not ready to take their property back on January 1. Senator Cummins replied that if a railroad bill has passed at that time or if it is reasonably certain that within a month after the first of January a railroad bill will become a law, the roads can be turned back with perfect safety and there will not be a jar. "If, however, they are turned back without any prospective legislation and with the known habit of Congress to delay everything until the necessity becomes obvious to even the most indifferent mind, then there will be paralysis. There will be chaos."

Senator Watson quoted from the President's message to Congress on May 20, in which he said: "'The railroads will be turned over to their owners at the end of the calendar year; if I were in immediate contact with the administrative questions which must govern the re-transfer of the telegraph and telephone lines I could name the exact date for their return also.'"

"There," he said, "is a straight, square, unconditional assertion that the railroads will be handed back to their owners at the end of the year. The President has never stated anything to the contrary and yet the railroads have not been in any position to prepare themselves for receiving their property because they have not known whether the roads would be turned back, inasmuch as there were certain statements emanating from the Railroad Administration which led the railroad men to believe that the roads would not be turned back on the first of January."

Senator Cummins interjected that the Senate is not responsible for the Railroad Administration nor for the President. "I assume," he said, "that each of those functions will perform its duty according to the way it sees its duty. What we have to do is to perform the duties of Congress so far as the Senate takes a part in legislation. Now we have a duty.

I supposed it was the desire of a very large majority of the Senate and of the Congress, too, and I know of the people of the United States, to relieve the Railroad Administration of the operation of the railroads. If there is any one thing upon which the people of this country are united, it is that the railroads ought to be returned to private management and operation. If there is any dissent from that opinion except among certain employees of the government, I have not heard it now.

Now, our duty is to put the railroads back in private management if we believe they ought to be in private management and that is what this bill does. This bill does not wait upon the President or the director general to determine when government operation shall cease. This bill declares that it shall cease at the end of the month in which the bill becomes a law and if I understand the temper of the people of this country, that is what they want. They want the roads returned and the management of the railway corporations regulated by the laws, but we cannot return them and answer that sentiment of the people of the country until we pass some such bill to protect not only the interests of the carriers but the interests of the public as well, for if the roads should be returned without effective legislation they could exist about a month and then they would fall into hopeless confusion and two-thirds of them would be in the hands of receivers."

At the evening session on December 15 a number of minor amendments to the bill were adopted. Senator Curtis of Kansas, offered an amendment providing for a guarantee to short line railroads taken over by the Railroad Administration and subsequently relinquished to the extent of any actual operating deficit that may have been incurred since January 1, 1918. He said he had in mind particularly the Kansas City & Northern, which had made a net profit of $17,000 a year before it was taken over, but that the administration took over the road, handled it for a time, refused to make a contract, took possession of and retained its terminals, directed the movement of its cars, took its coal and diverted its freight, with the result that the road finds itself in debt from $300,000 to $400,000 and has ceased operation. This led to considerable discussion of the short line situation in which Senator Kellogg argued against opening the door to every railroad that was taken over and then turned back again. He said the bill proposes to give such roads the same six months' guarantee as is given to other roads, but that to extend the guarantee back to 1918 would make it necessary for Congress to take care of a large number of roads that have not been particularly affected by government operation.

The amendment was allowed to be printed and held over for further consideration.

Amendments

Senator Walsh of Montana offered an amendment which was adopted, providing that any railroad proposing to undertake any work of new construction may apply to the transportation board and be granted permission to retain for not over 10 years all or any part of its earnings from such new construction instead of being required to contribute to the general railroad contingent fund. The senator said this amendment was offered in the conviction that the bill as reported does not offer sufficient inducement to hold out the hope that there will be any further railroad construction. He would not believe that anyone would be quite willing to put money into new railroad construction being assured beforehand that the only return which can be secured is the equivalent of 6 per cent with an additional one-half per cent on earnings between 6 and 7, and one-third of earnings over 7 per cent. He said it would be better to buy Liberty bonds at their present depreciated price.

Senator Stanley of Kentucky proposed an amendment to strike out the provision of the bill relating to labor and wages, and spoke for two hours on the question, but had not concluded when an adjournment was taken to the following day, and Senator Stanley withdrew his amendment.

Senator Jones of Washington offered a series of amendments, which were adopted, reducing the jurisdiction of the Interstate Commerce Commission over waterways for the purpose, he said, of avoiding interference with the jurisdiction of the Shipping Board. One amendment provided that the act shall not be construed to affect, diminish or interfere with the power or jurisdiction of the United States Shipping Board over water transportation or otherwise. Senator Jones said he did not want to give the Interstate Commerce Commission power to regulate the rates of water carriers on the inland waterways. They ought to be perfectly free. The other amendment proposed by Senator Jones inserted the word "inland" before waterways in the section directing the transportation board to inquire into water transportation facilities, etc.

Senator Watson offered a series of amendments which were adopted, to exempt street, suburban and interurban electric railways which are not operated as a part or parts of a general steam railroad system of transportation from the proposed plan of consolidation. The language of the bill exempted "street railways and interurban railways whose chief business is the transportation of passengers."

Senator Spencer of Missouri offered an amendment which was adopted, providing that the restriction against the commissions requiring a railroad to embrace in a through route substantially less than its entire length shall not operate to hinder or prevent the commission establishing or maintaining a through route where one of the carriers is a water line.

Senator Gay of Louisiana offered an amendment providing that the proposed consolidation of carriers and the rule for the adjustment of rates shall not be construed to apply to or affect belt line railroads and terminal facilities owned, exclusively and operated and controlled by any state or political subdivision thereof, but after some discussion it was withdrawn for the purpose of perfecting it.

Senator Calder offered an amendment which was agreed to, making it unlawful for a carrier to provide a shorter period for giving notice of claims than 90 days, for the filing of claims than four months, and for the institution of suits than two years, to be computed from the day that notice in writing is given by the carrier that it has disallowed a claim.

Senator Sheppard of Texas offered an amendment which was adopted, to provide that nothing in the act shall change or limit the present liability of common carriers as it exists under common law and by statute.

Senator Jones also secured the adoption of an amendment exempting water carriers from the provision relating to regulation of security issues. Senator Poindexter offered an amendment to the long and short haul clauses to omit the provision for relief on the authority of the Interstate Commerce Commission, which was allowed to go over until the following day.

An amendment by Senator Kenyon, intended to make it clear that claims for reparation and for unjust and unreasonable charges during federal control shall be filed with the commission and that the commission shall continue to have the same jurisdiction which it has had heretofore in that respect, was adopted without discussion.

Senator France of Maryland offered an amendment which was rejected, prohibiting a railroad from refusing to furnish equal and identical rights, accomodations and privileges in interstate transportation on account of "race, color or previous condition of servitude."

An amendment by Senator Calder of New York to extend the jurisdiction of the Interstate Commerce Commission to the transportation of natural gas was rejected. The senator urged the amendment on the ground that cities in New York had no control over the gas supply which came from Pennsylvania and that if they attempted to reduce the rates the gas companies could refuse to send the supply into New York and he wanted some tribunal to have control over the situation. Senator Cummins and others pointed out that the commission could only regulate the transportation of the gas through the pipe lines and not its price, but the senator thought it would be useful to have somebody exert some control.

Agreement with Brotherhoods on Time and one-Half for Overtime

THE PRINCIPLE of time and one-half for overtime in road freight service, which was demanded by the brotherhoods in 1916, waived in the negotiations preceding the passage of the Adamson eight-hour law and since reiterated in connection with the demands made by the brotherhoods upon the Railroad Administration, has finally been conceded by the Railroad Administration with some modifications and offsets by way of concessions made by the brotherhoods and has been made effective as to slow freight service as of December 1.

On November 15 announcement was made that the Railroad Administration, in discharging its responsibility to make readjustments necessary to avoid unjust inequalities in compensation of different classes of railroad employees, had proposed to the four brotherhoods representing the train and enginemen that, in order to give additional measure of compensation to the train service employees in the slow freight service, time and one-half would be paid for time required to make runs in excess of what would be required if an average speed of 12½ miles per hour were maintained, provided, however, that arbitraries and special allowances previously paid in various forms of freight train service are eliminated for the railroads as a whole. At the same time it was announced that the proposal thus made had been taken under consideration by the representatives of the train and enginemen's organization with a view to consideration and further discussion.

Following the consideration of this proposal by the representatives of the train and enginemen's organizations, conferences have been held between such representatives and the representatives of the Railroad Administration with the result that a final agreement has now been reached. Under this agreement, which was announced on December 15, time

and one-half for overtime will be put into effect as of December first affecting employees in slow freight service. Under the settlement all arbitraries and special allowances formerly applicable between terminals are eliminated. Special allowances for switching and similar work at initial terminals are preserved but at the former rates. Allowances for switching and delays at the final terminals are preserved payable at the former rates where the work is performed prior to the overtime period. These allowances have been agreed to in the past for relieving men of work which has not been considered a part of their regular duties and correspondingly it is felt that the same conditions existed in connection with the payment of time and one-half for overtime.

The former announcement stated that it had been estimated that the proposed rule would add about $36,000,000 a year to the payroll unless it was possible to reduce the amount by reducing the overtime.

Representatives of the brotherhoods stated that the proposed elimination of arbitraries and special allowances would largely offset the money value of the time and one-half rule and after a conference of their committeemen at Cleveland, a committee including the officers of the four brotherhoods came to Washington for a further conference with Mr. Hines to ask for a further interpretation of his proposal regarding the elimination of arbitraries and special allowances. After several conferences with the director general and members of his staff a compromise has been reached as outlined above.

Progress of Alaskan Railroad

In his annual report to the President Franklin K Lane, secretary of the interior, discusses the progress made in the government railroad in Alaska in part as follows:

"One of the first recommendations made by me in my report of seven years ago was that the Government build a railroad from Seward to Fairbanks in Alaska. Five years ago you intrusted to me the direction of this work. The road is now more than two-thirds built and Congress at this session after exhaustively examining into the work has authorized an additional appropriation sufficient for its completion. The showing made before Congress was that the road had been built without graft; every dollar has gone into actual work or material. It has been built without giving profits to any large contractors, for it has been constructed entirely by small contractors or by day's labor. It has been built without touch of politics; every man on the road has been chosen exclusively for ability and experience. It has been well and solidly built as a permanent road, not an exploiting road. It has been built for as little money as private parties could have built it, as all competent independent engineers who have seen the road advise.

"The road has not been built as soon as expected because each year we have exhausted our appropriation before the work contemplated had been done. We could not say in October of one year what the cost of anything a year or more later would be, and we ran out of money earlier than anticipated. It has not been built as cheaply as expected because it has been built on a rising market for everything that went into its construction from labor, lumber, food supplies, machinery, and steel to rail and ocean transportation. I believe, however, it can safely be said that no other piece of government construction or private construction done during the war will show a less percentage of increase over a cost that was estimated more than four years ago.

"The men have been well housed and well fed. Their wages have been good and promptly paid; there has been but one strike and that was four years ago and was settled by department of labor experts fixing the scale of wages. The men have had the benefit of a system of compensation for damages like that in the reclamation service and Panama canal. They have had excellent hospital service, and our camps and towns have been free of typhoid fever and malaria. That the men like the work is testified by the fact that hundreds who came out the past two years, attracted by the high wages of war industries, are now anxious to return to Alaska.

"There has been but one setback in the construction and that was the washing out of 12 miles of tracks along the Nenana river. This is a glacial stream which, when the snows melt, comes down at times with irresistible force. In this instance it abandoned its long accustomed way and cut into a new bed and through trees that had been standing for several generations, tearing out part of the track which had been laid.

"The work of locating and constructing the road has been left in the hands of the engineers appointed by yourself. The only instruction which they received from me was that they should build the road as if they were working for a private concern, selecting the best men for the work irrespective of politics or pressure of any kind. As a result, we have a force that has been gathered from the construction camps of the western railroads, made up of men of experience and proved capacity. That they have done their work efficiently, honestly, and at reasonable cost is my belief.

"It is not possible during the construction of a railroad to tell what it costs per mile because all the foundation work, the construction of bases from which to work, the equipment for construction, and much of the material is a charge which must be spread over the entire completed line. The best estimate that can be made today as to the newly constructed road is that it has cost between $70,000 and $80,000 per main-line mile, or between $60,000 and $70,000 per mile of track.

"This cost per mile includes the building of the most difficult and expensive stretch of line along the entire route from Seward to Fairbanks—that running along Turnagain Arm, which is sheer rock rising precipitously from the sea for nearly 30 miles. There are miles of this road which have cost $200,000 per mile. Even to blast a mule trail in one portion of this route cost $25,000 a mile.

"The only government-built railroad — that across the Isthmus of Panama—cost $221,052 per mile. The only two recently built railroads in the United States are the Virginian, built by H. H. Rogers, which cost exclusive of equipment $151,000 per mile, with labor at from $1.35 to $1.75 per day and all machinery, fuel, rails, supplies at its door, and the Milwaukee line to Puget Sound, which is estimated as having cost $130,000 per mile exclusive of equipment.

"The work has been conducted with its main base at Anchorage, which is at the head of Cook's Inlet. This point was chosen as the nearest point from which to construct a railroad into the Matanuska coal fields. That was the primary objective of the railroad, to get at the Matanuska coal. From Anchorage it was also intended to drive farther north through the Susitna Valley and across Broad Pass, and to the south along Turnagain Arm toward the Alaska Northern track. To secure coal for Alaska was the first need. So in addition to Anchorage as a base, one was also started at Nenana on the Tanana river from which to reach the Nenana coal fields lying to the south. If these two fields were open, one would supply the coast of Alaska and one the interior. This program has been acted upon, with the result that the Matanuska field is open to tidewater with a down grade road all the way. The Nenana road has been pushed far enough south to touch a coal mine near the track, which may obviate the immediate necessity for reaching into the Nenana field proper.

"There is an open stretch across Broad Pass to connect

the Susitna Valley with the road coming down from Nenana. This gap closed, there will be through connection between Seward and Fairbanks."

The report of the Alaskan Engineering Commission says:

During the fiscal year ending June 30, 1919, the following work on the Alaska Railroad was accomplished:

Considerable rehabilitation work on the old Alaska Northern Railway, from Seward (mile 0) to mile 70.

Thirty-eight miles of grading between mile 227 and mile 265 was practically completed; also the greater part of the grading for the 36 miles between mile 417 and mile 453 was completed.

Seventeen miles of rail were laid between mile 74 and mile 91; also 26 miles between mile 365 and mile 391; also 3 miles between mile 414 and mile 417; also 6 miles between mile 453 and mile 459—a total of 52 miles.

Location surveys were continued between mile 265 and mile 365 over the Broad Pass region.

The bridge over the Talkeetna river at mile 227 was completed.

Approach to dock in Anchorage harbor was practically completed.

Necessary maintenance of sections of the line in operation was attended to.

Fifty-five thousand three hundred and ninety tons of coal were mined at the two government mines in the Matanuska field.

During the year work was seriously hampered through lack of funds caused by the delay in the passage of the deficiency and sundry civil bills until July. Such a handicap is not expected to recur, as the bill authorizing the appropriation of $17,000,000 (in addition to the $35,000,000 originally appropriated) for the completion of the government railroad was passed by Congress in October. Six million dollars of this amount has been appropriated for the fiscal year ending June 30, 1920, and it is expected that the balance of the $11,000,000 will be appropriated as it may be needed.

Since June 30, 1919, and prior to the time that this report went to press, grading has been completed and track laid from mile 417 to mile 453, thus connecting Nenana and Fairbanks; also about 10 miles of rail has been laid north from Talkeetna at mile 227; also such progress in the construction of the dock at Anchorage has been made that the largest steamers now dock there.

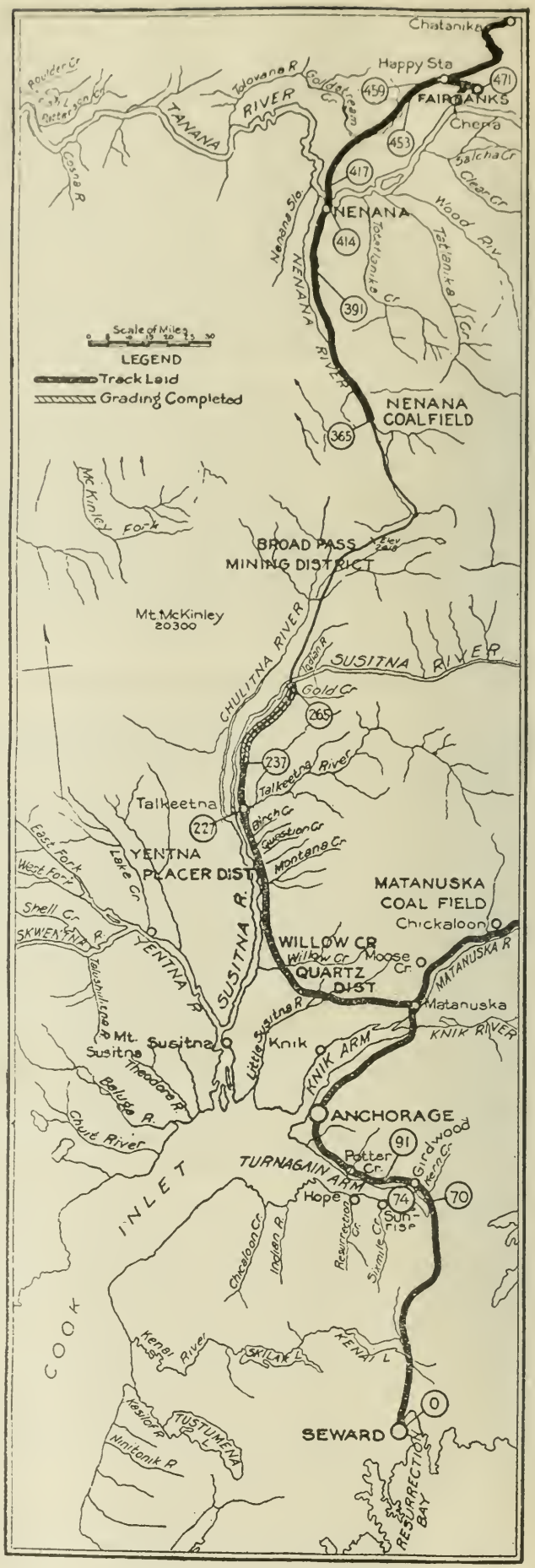
The work which remains to be done includes the following:

Completion of the rehabilitation of the Alaska Northern Railway, including construction of snowsheds and enlarging of tunnels.

Construction of line from mile 237, ten miles north of Talkeetna, to mile 365, five miles north of Nenana Canyon. This is now the only gap in the line from Seward (mile 0) to Fairbanks, mile 471, with the exception of the bridge at Nenana, crossing the Tanana river, and a permanent bridge at mile 373 over the Nenana river. Completion of the dock at Anchorage.

Col. Frederick Mears, shortly after his return from France in July, was appointed chairman and chief engineer of the Alaskan Engineering Commission. Wm. C. Edes has been appointed consulting engineer.

"Devil's Basin," near Roundup, Mont., on the line of the Chicago, Milwaukee & St. Paul, is the locality from which comes the latest report of prospectors striking oil, and a rush of oil seekers has already set in. But whether or not the new development is a large one or merely a small pool, is a point on which the owner of the "basin" has not yet given out information which can in any way be considered satisfactory.



Progress of Work on Government Railroad in Alaska, 1919

Scientific Development of the Steam Locomotive*

Means of Securing Higher Efficiency in the Generation, Distribution and Utilization of Steam

By John E. Muhlfeld

Part II

In relation to boiler feedwater observations and experiments indicate that any scale porous to water has little effect on boiler economy. However, such scale when dried out or hardened next to the metal by the expulsion of the carbonic acid, as usually occurs when boilers are forced, will not only become an excellent heat insulator and cause a heat loss of about 10 per cent when ⅛ in. thick, but it exposes the sheets and staybolts to overheating and "mud burning," with resulting leakage and shopping for repairs and cleaning.

In the preparation of recent data on the expense resulting from bad water supplied to steam locomotives on eight divisions of a large Eastern trunk line, the cost averaged $1,000 per locomotive per annum for fuel, repairs, time out of service and boiler washing, with specific cases of mud burning costing as high as $400 for repairs and time out of service only.

In view of the increasing size of locomotive boilers and the high ratings to which they are subjected, the importance of purifying unsuitable water to prevent incrustation, corrosion, leakage and burning, as well as to eliminate delays and cost for cleaning, repairing and extra fuel consumed, cannot be overestimated, and until the many existing conditions of this kind are corrected, neither the existing nor improved steam locomotives can be expected to render satisfactory and economical service.

Boiler Feedwater Purifying

When an adequate and suitable supply of boiler feedwater cannot be obtained from the usual sources, then the proper treatment of the available unsuitable water becomes necessary by settling; filtration; chemical treatment in treating plants, supply tanks or tenders; or, in the case of suspended matter and carbonates, by partial purification in a combination open and closed type of exhaust-steam feedwater heater on the locomotive.

While the supplying of suitable natural or treated boiler water to the locomotive tender is the most satisfactory and economical method, in the absence of such the tender treatment or feedwater-purification method will be an improvement over feeding the raw water into the boiler without treatment, or attempting to treat it in the boiler.

Fuel

The principal fuels now used in steam locomotives are the commercial grades of bituminous and anthracite coal and fuel oil. While millions of tons of the by-products of anthracite and bituminous coal mining are available, as yet practically no progress has been made in their utilization although satisfactory means and methods are now developed. This applies as well to the enormous deposits of sub-bituminous coal and lignite that are only awaiting mining operations to come into effective and economical use as locomotive fuel.

Regardless of the kind of fuel now used by steam locomotives, more general attention is being given to its proper preparation for the class of service to be performed and the method of firing to be followed, before it is supplied to tenders. However, the factors of kind and size of coal and method of firing must each be carefully considered and co-ordinated in order to insure the best results.

With the cost for locomotive fuel on tenders practically doubled during the past two years, and next to labor the largest single item of railway operating expense, the best methods for its use will now begin to receive the consideration that this large item of operating cost justifies.

Combustion

The locomotive fuel bill for the year 1918 was approximately $750,000,000, and while full recognition is given to the fact that from 25 to 50 per cent of the available energy in the fuel is still needlessly wasted and that present methods of mechanically firing, as compared with the average hand firing, and burning coal on grates or in retorts increase this waste, but little has been accomplished in regulating combustion so that this loss may be reduced.

The capacity of the average steam-locomotive boiler is dependent upon the activity, temperature and radiation of combustion, which in turn are usually controlled by the limitations of combustion when fuel is burned on grates, the furnace volume and evaporating surfaces, the length of the boiler flues, tubes and bafflewall arrangement, and the draft, and not so much upon the inability of the evaporating and superheating surfaces to absorb the heat.

Table 1. Consumption of Dry Bituminous Coal by Locomotive with the Best Hand Firing.

Total indicated horsepower of locomotive.	Dry coal per i. hp.-hr.
500	2.8
750	2.7
1000	2.6
1250	2.5
1500	2.6
1750	2.8
2000	3.0
2250	3.2
2500	3.4

The combustion rate generally follows the increase in draft until about 100 lb. of bituminous and about 50 lb. of anthracite coal are burned per square foot of grate area. After this the additional coal supplied is not effectively consumed due to the difficulty in supplying sufficient air, uniformly distributed, through the grates and fuel bed to oxidize the fixed carbon and volatile matter in process of combustion without a large excess of air such as obtains when forcing takes place, and it becomes necessary to open the fire door so that combustion can be completed by the admission of air above the fuel bed.

The greatest loss in heat is that due to the heat carried off in the stack gases, sparks and cinders, which usually results in a smokebox temperature of from 500 to 750 deg. F. for the best practice. Adding to this the heat losses due to combustible in ash, vapors of combustion, carbon monoxide and otherwise, leaves an average of from 25 to 40 per cent of the heat in the fuel as fired unabsorbed by the boiler and superheater.

Where locomotives are worked at from 25 to 35 per cent cut-off and hand-fired, with a thermal efficiency of about 65 per cent for the combined boiler and superheater,

*The first section of Mr. Muhlfeld's paper, which was presented at the annual meeting of the American Society of Engineers, appeared in the *Railway Age* of December 12, page 1139.

the heat balance will be approximately as shown in the following table.

However, at high rates of boiler capacity and draft, when stoker-fired coal is burned on grates the front-end and stack cinder and spark losses will run as high as from 12 to 25 per cent, the carbon monoxide from 2 to 7 per cent, and the unburned fuel from 10 to 35 per cent. With the best hand firing, when using dry bituminous coal averaging 14,400 B.t.u. and 60 per cent fixed carbon, 32 per cent volatile and 8 per cent ash, the fuel rates in Table 1 will usually obtain.

	Per cent
Heat absorbed by boiler	55
Heat absorbed by superheater	10
Heat loss in smokebox gases	14
Heat loss in cinders	8
Heat loss in vapors of combustion	4
Heat loss in combustible in ash	3
Heat loss in carbon monoxide	2
Heat loss in radiation and unaccounted for	4
Total	100

As compared with hand firing, stoker firing will result in an increase of from 10 to 25 per cent in the fuel fired, while if the same coal be pulverized and burned in suspension there will be a decrease of from 15 to 25 per cent in the amount of fuel fired.

As the locomotive firebox, which in the best practice represents only from 7 to 10 per cent of the total boiler evaporating surface, must generate all and absorb from 30 to 40 per cent of the heat energy that is converted into drawbar horsepower, the fuel effectively consumed, not fired, is the measure of work done. Therefore the largest permissible combination of fire box and combustion-chamber volume, heating surface and grate area should be provided and equipped with an arrangement of firebrick baffle walls placed on water-circulating supports in a manner to produce long flame travel, high firebox temperature and the maximum radiant heat for absorption by the surrounding water.

With the usual limitations in firebox volume, too much importance cannot be placed on the arrangement of heat-absorbing and radiating walls for the purpose of flame and radiant-heat propagation. Carefully conducted tests have shown that the best results are obtained from solid firebrick baffle walls and that the unburned-gas, coal-dust, spark, cinder and smoke losses are reduced with an increase in their length and gas-passage arrangement, and a saving of from 10 to 15 per cent in bituminous coal as fired is effected.

The greatest difficulty in controlling combustion occurs at high horsepowers and long cut-offs, where grates are used, and for the best results the air openings should be equal to about 50 per cent and those in the ashpans to about 15 per cent of the total grate area so that firebox temperatures of from 2,000 to 2,500 deg. F. can be obtained and the unburned solid fuel, carbon monoxide and excess air over the fuel bed reduced to the minimum.

Other important factors influencing combustion, as well as evaporation and superheating, that should receive consideration are: ratios of length to diameter of boiler flues and tubes and the spacing between them; distribution of gas area between boiler flues and tubes; the effect of closed superheater dampers on firebox draft when locomotive is not using steam; free passage of gases through front end by elimination of unnecessary baffles, steam pipes and superheater parts; arrangement of exhaust stand and nozzle to change form of exhaust jet and produce greater entrainment of gases and improved co-ordination of exhaust jet and stack.

As with any pulverized coal of 12,430 B.t.u. value, an average boiler efficiency of 69.2 per cent at 1080 boiler hp., and an average combined boiler and superheater efficiency of 78.1 per cent at 1220 boiler hp., with an equivalent evaporation averaging 42,100 lb. of water per hour from and at 212 deg. F., has already been obtained on a Mikado simple-cylinder type of locomotive hauling fast freight trains over a 113-mile division, the possibilities for reducing the steam-locomotive fuel consumption are practically unlimited and much remains to be done in this direction by good hand firing, through a combination of the fireman's eyes, brain and brawn, provided the thermal efficiency of the modern locomotive at the drawbar is brought up to where it should be.

Boiler Water Circulation

Water is practically a non-conductor of heat but expands when heated above 39 deg. F. and rises due to its relatively lower specific gravity. Unimpeded circulation will therefore increase its ability to take up heat, maintain greater uniformity of temperature throughout the boiler, and decrease the liability of incrustation of heat-absorbing surfaces and of priming.

In designing a boiler it is extremely desirable to secure the most rapid circulation practicable, as with high combustion rates and temperatures and the abnormal state and behavior of the water film in contact with the heating surfaces, the load on the firebox sheets is very intense, the conduction rate averaging from 75,000 to 100,000 B.t.u. per square foot of evaporating surface per hour.

Therefore, in order to avoid resistance to heat transfer, with resultant overheating of metal and reduced efficiency, a relatively high velocity of circulation and at least a rate of 125 ft. per min. in the most sluggish locality is very essential.

The average locomotive boiler, with its combination of cylindrical and box shell, water legs, staybolts and rods, flues, tubes and generally irregular design of water spaces does not present ideal water-circulation possibilities, but the enlarging of contracted spaces, increasing of water-leg, flue and tube clearances, and provision of suitable outlets from choked water pockets will not only reduce the resistance to the "slip" of the steam bubbles through the water, but will enable the accelerated action of the former to increase the velocity of the latter and thereby improve general circulation and heat-transfer results.

Heat Radiation, Convection and Conduction

The transmission of the heat of combustion produced in a locomotive boiler is by means of radiation and convection to the firebox, flue, tube and superheater heating surfaces, by conduction to the water in the boiler and the steam in the superheater, and by convection through the boiler water and the superheater-steam mass. In addition there are the direct radiation losses, which in many instances are considerable.

Heat Radiation. In a locomotive boiler the efficiency of combustion heat transfer through the firebox plates and boiler flues and tubes is from 20 to 25 per cent greater as applying to those heating surfaces directly affected when subjected to the radiant effect of the incandescent combustible and non-combustible particles which have passed through the minimum distance, than the heat-transfer efficiency when convection only is available. For example, when coal is hand or stoker-fired and burned on grates or in retorts the radiant heat is at a minimum and applies only to the heat-absorbing surfaces adjacent to the fire bed while the heat of convection is at a maximum; whereas when the coal is burned in pulverized form in suspension this condition is reversed, as is evidenced by the intense incandescent flame which obtains not only in the furnace and combustion chambers of the firebox proper, but well into the boiler flues and tubes. The locomotive boiler of the future will undoubtedly depend more largely on radiant heat.

With respect to the loss of power through radiation to the atmosphere from all parts of locomotive boilers and machinery that are generators and containers of heat and pres-

sure—to prevent which rather indifferent efforts have as yet been put forth, as the rate at which this loss of heat extends will depend upon the difference between the temperature of the body emitting the heat and the temperature and velocity of the surrounding atmosphere, there is sufficient justification for completely and properly lagging the boiler, firebox, cylinders and heads, steam chests and all other radiating surfaces, as well as for polishing certain machinery parts, in order to reduce the dissipation of heat that now takes place through these parts from the existing steam pressures and superheat.

Heat Convection. In the locomotive boiler convection acts particularly in the transfer and diffusion of the heat in the products of combustion throughout the firebox, flues, tubes and superheater by means of the smokebox draft and in the carrying of the heat through the boiler-water mass by the currents produced by circulation. In the present locomotive boiler by far the greatest proportion of the heat is imparted to the evaporating and superheater surfaces by convection.

To secure the fullest benefit from heat convection the combustion volumes and gas areas must be so co-ordinated as to establish a "velocity pressure" or "frictional" action between the gases and the heat-absorbing plates and tubes in order to increase the rate of heat transmission. Likewise must the boiler circulation be expedited in order to quickly disengage and release the steam bubbles from the water side of the same plates and tubes in the final heat transfer. The possibilities for improving heat transmission by convection in the locomotive boiler with its high water rate, *i. e.,* a boiler horsepower for an average of less than two square feet of total evaporating surface, fully justifies additional study.

Heat Conduction. In the locomotive boiler heat conduction is principally associated with the thermal conductivity of the firebox, flue, tube and superheater materials and with the accumulation of soot and scale on the fire and water or steam sides, respectively. Any increase in the rate of external conductivity, considering the present kinds and thickness of firebox, flue and tube materials as practically fixed, must be through an increase in the rate of flow of the heated gases, and this in turn means the expenditure of a greater amount of energy to pull these gases through the boiler.

However, questions as to the proper gas areas, rate of flow of gases, best sizes of flues and tubes for the maximum rate of heat transfer, and relating to like factors should be carefully analyzed in order that the highest absorptive efficiency may be obtained, not only with the high but also with the low gas temperatures. While there is no difficulty in now obtaining a boiler horsepower from each 1½ to 2 sq. ft. of total evaporating surface, whatever further improvement can be made in this direction will provide just that much more margin of boiler over cylinder horsepower requirements and produce a corresponding gain in efficiency.

Steam Generation

Efficient absorption of heat for the generation of steam in the modern locomotive boiler can be more readily provided for than can suitable feedwater, effective boiler-water circulation, efficient combustion or the maximum pounds of dry saturated steam per hour, which latter is a fundamental requirement.

In present locomotive operation the quality of the steam, *i. e.,* the percentage of vapor in a mixture of vapor and water, is one of the most important and least-referred-to factors in road and laboratory test reports, particularly as the average modern locomotive boiler is notorious for delivering saturated steam to the superheater or to the steam pipes with a high percentage of entrained moisture. This is due largely to the relatively small steam space in the boiler, the close proximity of the water level to the throttle valve and the backlash due to the firebox tube sheet, and also to the fact that the most rapid movement of the steam is next to the throttle valve so that any water coming near it is immediately entrained due to the high velocity.

Road tests recently conducted on modern Mikado types of locomotives showed an average quality of from 94.7 to 96.3 per cent for the saturated steam as delivered to the superheater, indicating from 5.3 to 4.7 per cent of moisture, which is valueless so far as its power for doing work is concerned but which greatly increases the work to be performed by the superheater by throwing upon it work which should properly be done in the boiler.

The delivery of dry saturated steam from the boiler is an item that has been given but little consideration in steam-locomotive practice, the principal idea having been to produce evaporating capacity and depend upon the superheater to perform auxiliary boiler functions. Many changes can and should be made to improve this condition.

Steam Pressure Increase

One of the greatest and simplest improvements to be made in the steam locomotive can be effected by an increase in the boiler pressure in combination with greater quantity and better quality of saturated-steam production, higher and more uniform superheat, and compounding.

While the loss in steam pressure between the boiler and the valve chests of saturated-steam locomotives is considerable, this loss is substantially increased in a superheated-steam locomotive. Tests have indicated that the loss in boiler pressure at the valve chests when working at low rates of speed and cut-off will be about 5 per cent, at medium rates about 10 per cent, and at high rates about 15 per cent.

During recent years stationary-boiler engineers have not only determined upon their efficiency but have inaugurated the use of relatively high steam pressures, and with the urgent necessity for keeping the cylinders as small in diameter and the reciprocating and revolving parts as light as practicable, there would appear to be no good reason for not now utilizing saturated steam of 350 lb. pressure, which, in combination with 300 deg. F. of superheat, should provide, in addition to the many other advantages, a much greater opportunity for economy in power generation.

Steam Superheating

The use of superheated steam has done more to increase sustained hauling power, reduce fuel and water consumption and increase thermal efficiency than any of the other means and methods that have been generally adopted on the steam locomotive since its introduction, either singly or in combination. Sustained hauling capacity is increased due to the longer cut-off possible at comparative speeds and fuel and water economy result from the elimination of cylinder condensation, the increase in efficiency being progressive and in proportion to the amount of superheat up to the point at which the exhaust steam begins to show superheat.

With the average superheat now used, from 175 to 250 deg. F., the drawbar pull at a speed of 20 miles per hour is increased about 15 per cent; and at 50 miles per hour about 40 per cent; and due to the combination of superheat, larger diameter of cylinders and reduced cylinder back pressure, resulting from the use of superheated steam, it is possible to increase train tonnage about 30 per cent at speeds of about 30 miles per hour.

In the best existing steam-locomotive practice the superheat generally increases with the cut-off up to 50 per cent cut off, beyond which there is usually a falling off in the superheat. Furthermore, with short cut-off a fair water rate, *i. e.,* about 19 lb. per i.hp., can be maintained; but if the cut-off at the same speed is increased to over 50 per cent the superheat must be increased to about 300 deg. F. in order to maintain the same water rate, or otherwise, for example,

at 67 per cent cut-off, the steam consumption will increase to 21 lb. or more per i.hp. This for the reason that as the amount of superheat is increased the range of temperature in the cylinder during the stroke of the piston is decreased, until with sufficient superheat the changes in temperature cease entirely.

While the increased superheat results in a greater number of B.t.u. being exhausted from the cylinder, any such loss of a marked degree is more than offset by the smaller amount of heat exhausted per stroke, due to the fewer B.t.u. admitted to the cylinder per stroke at a given cut-off.

The use of highly superheated steam results in a saving of about 35 per cent of the total water evaporation per unit of power and in from 10 to 45 per cent saving in fuel, when using steam, depending upon the power output.

Existing fire-tube superheaters produce the maximum superheat only when the locomotive is forced to its boiler capacity, whereas the maximum economy is more desirable when the locomotive is working under average conditions at economical cut-offs and when the superheater should give as nearly as possible a uniform degree of high superheat under all conditions of working, regardless of the boiler evaporation. For example, if the degree of superheat obtainable at speeds of 50 miles per hour with 50 per cent cut-off could be obtained at 25 per cent cut-off, a water rate of considerably less than 15 lb. could be obtained as compared with existing rates of about 19 lb. Therefore, as the present limitation in the hauling power of the modern superheated-steam locomotive is the capacity of the boiler to produce continuously sufficient dry saturated steam of high pressure and of the superheater to maintain a uniform high degree of superheat, the possibility of improving it by means of average higher boiler pressures and superheat temperatures and better utilization of fuel, steam and waste heat, in combination with radical changes in the design and arrangement of the boiler and superheater equipment and in the saturated- and superheater-steam connections, offers one of the greatest opportunities to increase efficiency and economy. This applies particularly to the larger locomotives, many of which consume more fuel and water and do less work than the small locomotives of the same general design and equipment.

The proposed changes, while applying especially to the production of greater efficiency at economical cut-offs for maximum power and speed, would also improve the maintenance and operation of superheaters, boilers, flues, front ends, valves, cylinders, and exhaust nozzles and provide for the better equalization of a lower draft through the flues and tubes, lower front-end temperatures, less throwing of smoke, sparks and cinders, and lower cylinder back pressure, all of which would reduce loss of power, fuel consumption and wear and tear on machinery.

Some of the particular troubles reflected in both maintenance and operation, due to the existing, generally used boiler and superheater equipment, may be stated as follows: *a* Air leaks around outside steam pipes where they pass through the front ends, resulting in steam failures, burning out of front ends, reduction in the size of exhaust nozzles for the purpose of making engines steam, and increased water and fuel consumption. *b* Joints between superheater units and the saturated and superheated chambers of the headers leaking, and the cutting out of the units at the neck, between the ball joint and the tube *c* Too little water and steam space over top of firebox and combustion-chamber sheets and flues, particularly on grades and curves, contributing to lower superheat temperature and cylinder efficiency, and to superheater-unit tubes distorting due to entrained water being carried over with the saturated steam from the boiler to the superheater, causing obstructions in and damage to superheater tubes and obstructions at the header. *d* Extreme losses in steam pressure between boiler and steam chests: *e* Boiler flues clogging, due to ash and cinders packing in around return bends and centering clamps and tubes.

While the superheater has generally been considered as a part of the boiler, particularly as regards its evaporation of entrained moisture in the saturated steam it has no relation whatsoever thereto insofar as its individual functioning is concerned, and the more that the saturated-steam-conducting and superheated-steam-delivering conduits, as well as the superheater equipment in itself, can be divorced from the boiler and front-end connections and their proper functions without introducing separately fired apparatus, the better will be the general results from the standpoint of efficiency, maintenance, operation and economy of the locomotive as a whole.

Some of the points to be considered in correcting existing deficiencies may be stated as follows:

Steam Temperatures. The steam temperature should be uniform for the variable speeds and capacities of operation. At the present time high temperatures obtain only at high speeds and capacities. A minimum temperature of 650 deg. F. quickly after starting, and of 700 deg. at maximum power and speed, would be much more effective and economical. For example, a locomotive equipped for generating 350 lb. steam pressure and 300 deg. superheat, representing a total temperature of about 736.4 deg. F., will, as compared with one using 200 lb. steam pressure and 300 deg. superheat—representing a total temperature of about 687.9 deg. F., require an increase of only 18 B.t.u., or 1.3 per cent in total heat in the steam, and an increase of only 48.5 deg., or 7.05 per cent in the temperature of the steam to produce an increase of 150 lb. or 75 per cent in the steam pressure.

Dome or Steam Outlet. This should be fitted with baffles for the purpose of reducing liability of priming and entrainment of water with saturated steam.

Saturated-Steam Delivery Pipe. This should be located outside of the boiler and be of adequate cross-sectional area to reduce steam-pressure losses.

Steam Trap or Separator. A steam trap or separator should be installed between the saturated-steam delivery pipe and the superheated saturated-steam chamber for the purpose of further eliminating moisture and condensation from the superheated units and also as a re-evaporation chamber.

Superheated Header or Saturated- and Superheated-Steam Chambers should be removed from the interior of the front end.

Superheated Units should consist of not more than two tubes per boiler flue and should be of such design and arrangement as will admit of location close to the top of the flue, in order to permit free passage for cinder and ash and cleaning of flues.

Unit Joints to Saturated- and Superheated-Steam Chambers. Unit joints should be removed from the direct path of gases and cinders so as to avoid cutting out, and should be supported in a positive, equalized and flexibly yielding manner to prevent leakage due to the loosening of one joint causing the loosening of another and so that the joint bolts can be tightened at the top of the header castings.

Superheated Dampers. These should be kept in good operating condition so that when the steam ceases to flow through the superheated units the products of combustion will stop flowing through the superheated flues, particularly when drifting at high speeds.

Steam Delivery Pipes from the Superheated-Steam Chamber should be made of adequate cross-sectional area to reduce steam-pressure losses and removed from the interior of the front end so that no joint where they pass through the front end will be necessary.

Automatic Saturated-Steam Supply When Drifting. This is essential to eliminate the human element and insure a

proper supply of saturated steam with the superheated steam just before the throttle closes and continuously thereafter. A jet of saturated steam should also be supplied to the exhaust nozzle to neutralize the gases ordinarily drawn through the same into the valve chests and cylinders.

Modern types of locomotives have developed at low speed 3,000 i.hp. and at high speed 3,200 i.hp., and comparative average water rates through the complete range of the effective capacity of the locomotive, with piston speeds of from 600 to 1,000 ft. per min., have been obtained as shown in Table 2. At piston speeds of less than 600 ft. per min. the water rate of the double-expansion saturated-steam locomotive will approximate that of the single-expansion superheated-steam locomotive.

Table 2—Comparative Water Rates of Locomotives When Using Saturated and Superheated Steam

Cylinders	Steam	Water rate per i.hp.-hr., lb.
Single-expansion	Superheated	16 to 20
Single-expansion	Saturated	24 to 29
Double-expansion	Superheated	15 to 18
Double-expansion	Saturated	19 to 22

Compounding. With the exception of the Mallet articulated type of compounding, the multiple-expansion system of steam utilization, which has been so successful in marine and stationary practice, has not made the progress in this country that it has in Europe.

The failure of various types of cross, four-cylinder, four-cylinder balanced and tandem double-expansion locomotives, introduced from 25 to 15 years ago, to produce the predicted economy was due largely to factors of indifferent design, low boiler pressure, excessive condensation, lack of proper maintenance and operation, poor fuel and road failures. Clearance limitations also restricted the size and arrangement of the low-pressure cylinders, while at the same time the single-expansion-cylinder superheated-steam locomotives gave opportunity for greater hauling capacity and economy.

The three-cylinder compound has frequently been advocated owing to the allowable reduced cylinder diameters and piston thrusts and a more uniform turning movement, but its use has been deferred owing to central main-rod and axle complications.

There is no doubt but that a properly designed superheated cross-compound locomotive embodies many advantageous features such as greater starting and hauling capacity per unit of weight, less evaporating surface per indicated horsepower, reduced fuel and water consumption and less boiler repairs, and that it will return to favor for freight service in combination with higher boiler pressures and superheat, due to the necessity for greater drawbar pull and horsepower and for utilizing all superheat before its final exhaust.

The Walschaerts gear, as well as other outside valve gears now generally used, is accessibly located outside of the frames and driving wheels and driven from both the crosshead and an eccentric crank, but they all have the disadvantage of a constant lead and of being affected by the vertical displacement of the axle.

By eliminating the disadvantages of the outside valve gears now in use and adding certain improvements for the purpose of increasing the ratio of expansion and shortening the ratio of compression, the tractive effort can be increased at least 10 per cent at all points of cut-off and the fuel consumption reduced 5 per cent through ability to develop the same drawbar pull with a shorter cut-off. Such a change will add greatly to the efficiency of the steam locomotive.

Where compound cylinders are used a steam expansion regulator should be incorporated with the motion gear to effect the automatic independent adjustment of the cut-off for each of the high and low-pressure cylinders for the purpose of obtaining certain cylinder ratios, and at the same time bring the cut-off in harmony at the center of the quadrant. By this means the ratio between the high and low-pressure cylinders, which, for example, should properly be 1 to 3 at starting, can be brought to 1 to 4 at cut-off, thereby insuring easy exit of the exhaust steam from the low-pressure cylinder and at the same time automatically distributing the work properly between the two cylinders at speed. In this way a compound locomotive of the Mallet articulated type can be made to develop at least 55 per cent of its rated tractive power at a speed of from 8 to 10 miles per hour, when operating at 25 miles per hour, and there will be a gain in tractive power of about 15 per cent at 25, and of about 10 per cent at 30 miles per hour. In fact, a drop in the drawbar pull in a Mallet articulated compound locomotive on account of speed should not materially increase beyond that of a single-expansion engine.

Cylinder Clearance. The inauguration of the use of the inside-admission piston valve and of superheated steam has brought with it the wasteful effects of larger cylinder clearance, due principally to the use of a valve of too large diaameter and an indifferent design of valve chest and ports in combination with the cylinder castings. To somewhat overcome this trouble the piston valves were increased in length, with subsequent breakage of castings through the vertical ports, particularly as the result of water from condensation and unstayed flat surfaces.

The use of smaller-diameter piston valves located close to the cylinder and connected with properly designed expanding steam ports will, in combination with improved material and workmanship, correct these generally existing deficiencies.

Cylinder Back Pressure. About 75 per cent of the cylinder back pressure is due to the use of the exhaust steam to produce draft for combustion, evaporation and superheat. Assuming that for every 100 hp. in steam used only 60 per cent is utilized in producing actual tractive power, then 40 per cent is wasted through the exhaust, of which 75 per cent is chargeable to steam and superheat generation.

Much remains to be done in the way of enlarging exhaust-steam openings from the cylinder to the atmosphere and in reducing existing sharp turns, cramped passages and obstructions to the free passage of steam through them; and also in the development of an exhaust stand and nozzle that will combine the advantages of the single and double types. It has been found that by enlarging a 5½-in. diameter exhaust nozzle to 5¾ in., or about 9.3 per cent in area, fuel consumptions have decreased from 15 to 20 per cent, depending upon fuel and weather conditions, and that the locomotive efficiency has been increased from 10 to 15 per cent, depending upon cut-off and speed.

Valves and Cylinders. Inside-admission piston valves, although inherently deficient with respect to water and compression-relieving capacity, have many advantages, particularly for superheated steam, and the application of double-ported valves for low-pressure cylinders has worked out satisfactorily.

Various tests and many years' experience have demonstrated through the better use of steam and the resulting reduction of jerking, pulling and stresses on valve stem and gear, unbalanced pressure, frictional contact, valve and bushing wear, leakage and lubrication, the practical advantages of a minimum diameter and weight of valve with the circumference no greater than the length of a slide-valve port and with every inch of bushing port made effective and designed in conformity with the well-known principles governing the flow of gases so as to eliminate eddies and baffling in the steam flow between valve and cylinder.

In addition to reducing the weight of a valve by reducing its diameter, it can be further lightened by using a smaller spool, as experience has proven that with simple cylinders an area of opening through the valve body equal to one-half

the area of a single exhaust nozzle orifice is sufficient to obviate the hammering of the exhaust steam on the valve ends. With cross-compound cylinders the conditions are even more favorable, due to the receiver pressure. Furthermore, there is still a possibility of considerably reducing weight in bull-ring and follower designs, which will further reduce the stresses in valve rods and gears that have been found to increase with the speed, cut-off and weight of valve.

There is also considerable opportunity to improve packing rings by locking and putting them in absolute steam balance, preventing exhaust rings from collapsing under compression or being forced from grooves into ports between bridges, and stopping leakage of live steam to the exhaust side of the valve. Extended rods and carriers for the front ends of both valves and pistons have also been found essential to the best results. Two refined-gray-iron packing rings should be sufficient for all pistons, and two-piece one-ring piston and valve-rod packing of a suitable aluminum alloy should be satisfactory. Wherever possible the center line of each cylinder, under normal working condition, should be in horizontal alinement with the centers of the driving axles. All cylinders should be equipped with suitable bypass valves.

Piston Speeds. Frequent errors have been made in not properly proportioning the driver-wheel diameter and stroke of the piston. Slow speed and high ratios of expansion are factors particularly favorable to superheated steam, and piston speeds of from 700 to 1,000 ft. per min. will insure the best results.

General. With superheated steam too much attention cannot be given to the foregoing and other details in valve and cylinder design and material, as the waste of steam, heat and power at these points has much to do with keeping down the thermal efficiency of the locomotive as a whole.

Waste-Heat Distribution and Utilization

As a reasonable estimate would show that 40 per cent of the heat in the steam and in the products of combustion is exhausted from the stack, any considerable part of this heat that can be reclaimed for preheating boiler feedwater will add greatly to the overall efficiency of the locomotive and to the saving in fuel. The principal means through which to accomplish this saving, in a practical way, are exhaust-steam heaters and flue-gas economizers, both of which can be readily adapted to a modern steam locomotive.

Exhaust-Steam Heaters. With the many steam-using auxiliaries, such as those for air compressing, boiler feeding, valve-gear operating and electric lighting, which operate when the locomotive is standing, drifting or working, a combination open and closed type of feedwater heater and purifier for the utilization of the exhaust steam from these auxiliaries, supplemented if necessary by steam from the main engine's exhaust, should receive prompt consideration.

From actual service tests of closed types of heaters, made on modern superheated-steam locomotives, using a portion of the main-engine exhaust steam only, it has been found that a feedwater temperature approximating 240 deg. F., or within 15 deg. of the exhaust-steam temperature, can be obtained without interfering with the draft required for maximum steam and superheat generation.

Flue-Gas Economizers. Owing to the high rate of combustion and evaporation and in the process of superheating much heat is usually wasted, as the gases from which the steam receives its heat must be hotter than the steam itself. The higher the steam pressure the less is the average difference in temperature between the gases of combustion and the contents of the boiler, therefore the slower the transmission of heat the greater the work of the economizer may be. Likewise the lower the efficiency of the boiler will be if it is not supplemented by an economizer.

An economizer will heat the feedwater to a higher temperature than an exhaust-steam heater and will recover most of the waste heat resulting from high steam pressure and high superheat, as it is able to recover low-temperature heat that has escaped from the boiler evaporating or superheater surfaces because the average temperature of the feedwater within the economizer, which should, if practicable, be brought up to the boiler evaporating temperature, is much lower than the temperature of the water in the boiler.

As locomotive smokebox superheaters, now obsolete, have demonstrated that 50 deg. of superheat may be obtained from flue gases at 600 deg. F., there should be no difficulty in devising a locomotive economizer that will produce very effective results, in combination with high boiler pressures, superheat and draft, without baffling the boiler draft and evaporating capacity. In fact, with an average boiler efficiency of 60 per cent and an economizer efficiency of 50 per cent the possibility of recovering from 25 to 50 per cent of the stack gas losses and increasing the thermal efficiency of the entire unit, is within the limits of possibility.

General. Another factor favoring the use of combination exhaust-steam heaters and flue-gas economizers is the opportunity to reduce the noise and nuisance now created by the steam exhausting from the main and auxiliary engines through the muffling of the exhausts.

Discussion

F. J. Cole (American Locomotive Company) took issue with many of Mr. Muhlfeld's statements. He cited the fact that a modern locomotive will produce a horsepower hour on less than two pounds of coal to prove that the locomotive is an economical power plant. He stated that the usual design of locomotive boiler is not suited for a pressure of 350 lb. and that it must be radically changed to carry such high pressure. Mr. Cole pointed out that by the use of trailing wheels the boiler design is improved and higher efficiency secured. He thought it doubtful whether increased water volume would add to the efficiency of the boiler. Mr. Cole also stated that while the high cost of coal undoubtedly justified the introduction of devices that increase capacity and economy, the increased maintenance cost resulting from their use must be considered.

Clement F. Street (Locomotive Stoker Company) questioned the data Mr. Muhlfeld submitted regarding the cost of electric operation. He defended the performance of locomotive stokers, and stated that while the fuel performance secured on stoker-fired engines did not equal the results obtained by the best firemen, the stoker would save coal as compared with the average fireman.

H. B. Oatley (Locomotive Superheater Company) stated that the program of improvement laid out by Mr. Muhlfeld was not entirely practical as regards economy, though almost ideal from the standpoint of the generation and utilization of steam. He stated that with the proper design of boiler a steam pressure of 500 lb. would prove both safe and economical, and stated that condensing operation was not beyond the realm of possibility.

E. B. Katte (New York Central) disagreed with Mr. Muhlfeld's conclusions regarding the objections to electrification. He stated that experience had proved that the capital cost was not prohibitive, that electrical operation had been demonstrated efficient, economical and reliable for every class of service. He pointed out that electrification increased the capacity of tracks approximately 30 per cent and that while the first cost of the installation was higher than for a steam operated road the operating expense was less.

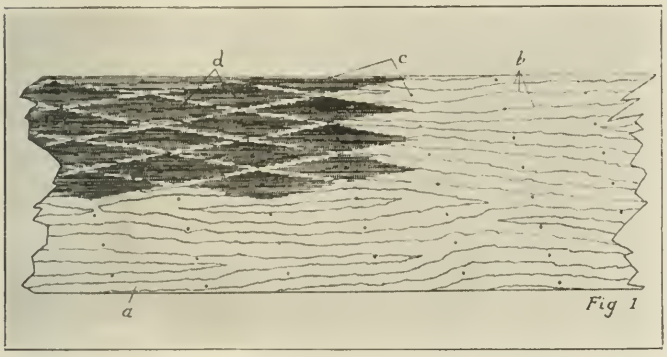
In closing the paper Mr. Muhlfeld stated that the cylinder temperature is the limiting factor in the boiler pressure carried. Superheated steam locomotives have been operated with steam temperatures as high as 750 deg., and this he considered the practical limit at the present time.

Timber Perforating Patent Released

Improved Method of Preparing Douglas Fir for Treatment is Dedicated to the Public

ONE OF THE RECENT DEVELOPMENTS in the timber preservation field is the dedication to the public of a process for perforating cross-ties and timbers to facilitate and better their preservation. The rights to this process were retained until October 6, 1919, by O. P. M. Goss under his letters patent No. 1252428, issued on January 8, 1918, when they were acquired by the Association of Creosoting Companies of the Pacific Coast and, by them, together with Mr. Goss, were released for general use; the dedicating document being filed with the U. S. Patent Office at Washington, D. C.

This process, which was developed to relieve the difficulties and uncertainties found in the treating of Douglas fir cross-ties and timbers, was described in considerable detail in an



Plan-view Showing Location of Holes and Spread of the Preservative

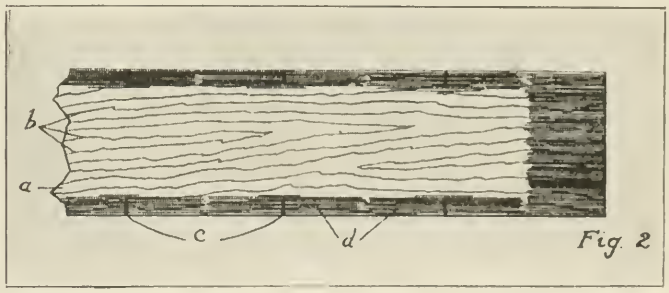
article by O. P. M. Goss on page 783 of the April 13, 1917 issue of the *Railway Age*. The results obtained in the treatment of this wood were seldom satisfactory, due chiefly to its high refractory character and its non-uniform resistance to the penetration of preservatives. This characteristic was more marked in the treatment of sawn Douglas fir where preservatives had to be injected into the heartwood, and it was not uncommon to find a decided difference in the depth of penetration and spread of the preservative in the same piece of timber.

The improvement in the method of treatment consisted primarily of a method of perforating the surface of the wood to be treated by holes systematically located at uniform distances apart, both transversely and longitudinally. These distances depended on the known normal absorption of the preservative with and across the grain of the wood under a given time of immersion, pressure and size of perforations. The result of the treatment gives a substantially uniform penetration of the preservative to a depth equal to that of the holes and without waste.

In Figs. 1 and 2, there is represented a block of timber whose treatment has been partially completed, the letters a, b, c and d representing respectively the timber, the grain, the perforations and the areas over which the preservative spreads from each hole. In the illustrations, the areas adjacent to each hole have not yet come together, as will be the case when the preservative has been fully absorbed by the timber, for, as will be noted, the extent of the absorption of the preservative is much greater along the grain of the wood and, as this extent of absorption can be determined by experiment, the perforations can be so located that the minimum areas impregnated will overlap at their margins. Through the staggering of the holes, the uniform and even treatment of the timber was promoted without the danger of the holes being so close together as to appreciably reduce the transverse strength of the timber.

In preparing Douglas fir for the open tank method of treatment, the timber was perforated with small holes 1/16 in. in diameter spaced 4 in. apart along the grain and ⅛ in. across the grain. The pieces to be treated were then boiled in a preservative oil for four hours at a temperature of 215 deg. F., after which the material was allowed to cool in the oil, the total time of the treatment being approximately 12 hours. A complete and practically uniform penetration was obtained in this way, while a similar result was obtained by the pressure retort method by previously perforating the wood to a depth of ¾ in. and ⅛ in. wide across the grain, the holes being spaced 7 in. with and ⅜ in. across the grain. The pieces were then placed in a pressure retort, the preservative oil introduced and raised to a temperature of 170 deg. F. The material was subjected to this temperature for four hours, after which a pressure of 120 lb. per sq. in. was applied, one hour being required to bring it to this pressure, which was held for a period of two hours, the temperature remaining the same.

While this process was developed in the study of the treatment of Douglas fir, it is applicable as well to other timbers, such as Southern pine and oak. Its application to bridge and structural timbers may require some modifications in the cross-sections designed to carry standard loading, but it is not expected that the perforating will materially reduce the strength of the timber, as it is done along the fibres of the wood and not across them. The machinery which has been built and used up to the present time for this purpose is applicable only to dimension stock such as cross-ties, switch-ties, bridge timbers and structural timbers. Studies are being



Split-section of Tie Showing Perforations and Corresponding Depth of Absorption

made, however, of the design of a machine that is expected to perforate poles and piling with equal satisfaction. One of the main advantages claimed for this method of preparation for treatment is that in addition to controlling or preventing the "checking" of material as commonly found, especially in sawn Douglas fir, and the giving of an even penetration of the preservative, it will also accomplish the important commercial result of reducing the period of treatment required to inject a given amount of preservative into the timber.

A short time after the patent was granted, its control was vested in Mr. Goss and the Charles R. McCormick & Co.,

San Francisco, Cal.; the St. Helens Creosoting Company, St. Helens, Oregon; the J. M. Colman Company, Seattle, Wash.; the Pacific Creosoting Company, Seattle, Wash.; the St. Paul & Tacoma Lumber Co., Tacoma, Wash., and the Columbia Creosoting Company, Portland, Oregon, composing the Association of Creosoting Companies of the Pacific Coast. No development progress was made during the European war, but an attempt was made by the owners early in 1919 to introduce the use of perforating before treatment. Royalty charges of one-half cent per cross-tie and 15 cents per 1,000 bd. ft. for lumber were adopted and announced to the railroad and commercial treating plants of the United States, where they met with considerable opposition. Believing that the best interests of the Douglas fir industry in the Pacific northwest would be furthered by the elimination of royalty charges, Edmund M. Blake of the Charles R. McCormick & Co. took the initiative in an effort to bring about this result. This was successfully accomplished on October 6, 1919, with the full co-operation of the above mentioned creosoting companies.

Railroad National Advertising

Thomas DeWitt Cuyler, chairman of the Association of Railway Executives, has announced that the fundamental facts of the railroad situation would be presented to the country by means of national advertising. The opening statement, to appear in the daily newspapers during the next few days, is signed by nearly a hundred executives of the principal railroads. It will be followed by a series of advertisements in the daily and weekly newspapers and in other publications.

"The unmistakable verdict of public opinion," said Mr. Cuyler in making the announcement of the plan of the railroad companies, "is that this great national industry shall continue to be conducted by private companies under strict public regulation. Modern railroad companies, of course, are not private affairs. Their capital is subscribed by a vast number of individual investors as well as by institutions, such as savings banks and life insurance companies, holding the savings of millions of people, and they are subject to the most minute regulation by the public authorities. In Europe such corporations are called public companies, and this name more accurately describes them.

"With the return of the railroads to the control of their owning companies, after two years of war service under government operation—a period of unprecedented industrial and financial change—the railroad managers will have many difficult problems to face. But the most important problem—the one most affecting the public welfare—will be that of attracting to the railroad business a flow of new capital, without which the railroads cannot grow and without which the country cannot grow.

"The whole railroad problem sifts down to this fundamental fact that in a growing country like ours, with the transportation demands increasing much faster than the population, there must be a continuous investment of new funds in the expansion of railroad facilities.

"Railroad freight traffic reached 200,000,000,000 ton-miles in 1906; it rose to 300,000,000,000 in 1913, and last year it crossed the 400,000,000,000 mark. The railroads are now hauling five times as much traffic as they did 30 years ago. And traffic is going to keep right on growing, because this country is going to keep right on growing."

"To keep pace with this increase in business the railroads before the war were expending about $500,000,000 a year of new capital for expansion. That, as we all know, was not enough. But railroad earnings were not large enough to attract the funds of investors in greater amount. In fact, for several years the market for new railroad stock had vanished. Nearly all the new capital had to be obtained through the sale of mortgage bonds and short-term notes. The companies were obliged to increase the number of their creditors because they could not attract more shareholders.

"During the period of war control the government has been unable to keep up normal expenditures for railroad upbuilding. Last year the labor and materials had to be devoted to the prosecution of the war, and this year the government has not had the money to spend. So with the return of the roads to their owners the managements will be faced with the necessity of very large capital expenditures for betterments and improvements. And this work will have to be done at a cost for labor and materials about double what it was before the war. New capital expenditures at the rate of $1,000,000,000 a year would, therefore, seem to be the minimum required if the railroads are to be enabled to handle the growing traffic of the country.

"To attract the new capital for upbuilding the railroads, the transportation industry must be able to earn a fair return on this capital. Adequate earnings are only possible with adequate rates for service. The rates now are admittedly too low to meet the greatly increased expenses of operation and leave a fair margin for capital."

In the opening statement to the public, signed by the executives of nearly all the principal railroad companies, the Association of Railway Executives states:

"It is the declared purpose of the United States government to restore the railroads at an early date to the control of their owners.

"The Association of Railway Executives represents those upon whom at that time responsibility will again rest for the prompt and successful movement of the country's commerce.

"Those constituting this association are keenly conscious of their accountability to the public.

"They have accordingly determined to present, as fully as they can, the fundamental facts and considerations which they themselves must face in their efforts to provide satisfactory railroad service.

"It is hoped to engage the interest of the whole American people, whose welfare is so vitally dependent upon adequate transportation.

"The country can grow only as the railroads grow. The railroad problem must be solved—and solved rightly and soon—if our country is to prosper.

"It is to promote that prosperity—permanently and in the interest of the whole people—that railroad executives will present to the public the situation as they see it."

A Queue on the Thames Embankment Waiting for Tram Cars

Hearing Before the House Commerce Committee*

Commissioner Clark Favors Compulsory Arbitration; Mr. Gompers Clashes With Representative Webster

Edgar E. Clark, member of the Interstate Commerce Commission, appeared before the House Committee on Interstate Commerce on Thursday and Friday of last week, devoting most of his time to comments on points that have been developed in the discussion before the House committee and the Senate committee. He denied that regulation of railroad rates had operated to reduced revenues. In this connection he said: "Much has been said about restoring railroad credit. I confess I do not yet definitely understand just what is meant by that phrase. Certainly it cannot be proposed that Congress shall by legislative fiat provide all railroads with a standard and uniform basis of credit." In his opinion, some railroads had good credit and some had poor credit, the former being the result of good management or favorable conditions and the latter of poor management, financial juggling or unfavorable conditions. He said that the trend of railroad earnings in recent years under regulation had been upward. It was not true, he said, that the commission had neglected to take into consideration the credit of all the roads. He cited numerous benevolent expressions of the commission in rate cases (notably those in which the application of the roads for higher rates were denied). On the other hand, he said, he doubted very much whether railroad credit had been helped by statements of railroad representatives.

He discussed the short line situation and said that he believed it would be unwise to give the Interstate Commerce Commission or any other agency the power to route unrouted shipments of freight. He was asked: "How can the weak roads be helped?" and replied: "When the legislature has provided a good law giving the weak railroads a fair opportunity and protection against unfair discrimination by stronger competitors, the law has done all that it can do.

"I personally would be against a guarantee unless based squarely on the value of property.

"I object to taking the profits from strong roads and giving them to weaker roads."

He thought that the only thing that can be done with the weak roads was to put them through a reorganization and he thought that the poor roads could be left out of a government guarantee. The case of the guarantee of bank deposits in Oklahoma was cited, but Representative Rayburn pointed out that the analogy between deposits is not good, whereas the guarantee that depositors would not lose the money they had put in a certain bank because the resources and credit of all the banks would be used to make good the assets of one bank, was not the same as providing that a sinking fund of, say, 1 per cent should be established by all the roads and that this fund should be used to meet a deficit of earnings of certain roads.

Returning to the case of the short lines, Commissioner Clark said that he believed that these lines should and could be aided by their trunk line connections as long as this aid did not constitute a rebate in favor of an industry which controlled or owned the majority stock of a short line.

Commenting on the testimony of witnesses who had discussed the taking of the water lines away from the jurisdiction of the Interstate Commerce Commission, he said that, in his opinion, no benefit had accrued to the public by any divorcement of water lines from railroad lines by the Panama Canal act.

He was then asked about the labor provisions of the Cummins bill and expressed the opinion that while no legislative enactment could compel a man to work when he wanted to quit work, nevertheless some legislative provision could be made which would prevent, apparently through compulsory arbitration, a tying up of the railroads of the country.

Mr. Clark was asked whether he thought there ought to be another governmental agency to consider the general railroad problem of the entire country, condition of railroad credit, etc., and to act in an advisory capacity to the Interstate Commerce Commission for the purpose of aiding the commission in fixing rates. He answered that he did not think this would be a good thing, because he thought that if the commission were to be influenced by the information collected, the commission itself ought to collect the information. He thought that there would be a disagreement between the board and the commission after a time. Mr. Clark said that rate-making would be simplified if Congress were to lay down in the act as a rule of law for the administrative tribunal the standard by which it is to measure the determination of reasonable and just rates and that he thought it would be better for Congress to do this directly than through some other governmental agency.

A. P. Thom, general counsel for the Association of Railway Executives, said that he wanted to get the most authoritative expression of opinion that it was possible to get on the provisions of the Cummins bill, which would take away all of the profits of a successful road above a certain fixed percentage. He, therefore, asked Charles E. Hughes, former justice of the Supreme Court of the United States, to render an opinion in the form of a letter to Mr. Thom. He introduced this letter into the testimony.

Justice Hughes' Letter

This opinion refers to section 6 of the Cummins bill, which proposes to take from the railway companies all earnings in excess of what from time to time the Interstate Commerce Commission holds to be a "fair return" on the value of their property. This is the same provision against which T. DeWitt Cuyler, chairman of the Association of Railway Executives, protested in his letter to the Senate Interstate Commerce Committee on September 9, holding that it would practically destroy the incentive to efficient and economical railroad management, and that it would make it impossible to raise the amounts of private capital needed for railway expansion in the future.

Judge Hughes' opinion in brief is that if rates which produce so-called excess earnings are just and reasonable rates, as they are presumed to be when fixed and regulated by a public authority like the Interstate Commerce Commission, then the earnings from those rates are the property of the railroad companies. They may be taxed but they cannot be taken away. That would be confiscation.

Judge Hughes says:

"Section 6 of the bill provides that: 'Rates of transportation shall at all times be just and reasonable.' It is provided in Section 1 of the bill that rates, fares and charges in force at the time of the repeal of the federal control act

* Because of the delayed issues of the *Railway Age* and the necessity of giving our readers as early advice as possible concerning the Esch bill and its passage by the House, the story of the latter part of the hearings before the House Committee on Interstate Commerce was held back. Some of our readers, however, insist that it be placed on record to complete the story which we have already published, and so that it will be available for reference in following the course of the bill through conference and to the final passage of a railroad bill.—Editor.

of March 21, 1918, shall remain in force until changed by competent authority. It is further provided in Section 5 of the bill that schedules of rates, fares and charges filed with the commission in accordance with the 'Act to Regulate Commerce' within 30 days after federal control ceases shall become effective at the end of four months after they are so filed, with such modifications as may be ordered by the commission, and the commission is required within that time to determine whether they shall be modified 'in order to make them fair, just and reasonable rates for the service to be performed.' It is further provided in Section 44 of the pending bill, amending Section 15 of the 'Act to Regulate Commerce,' that whenever the commission after a hearing either on complaint or on its own initiative shall be of opinion that any individual or joint rate, fare or charge whatsoever charged or collected by any carrier is or will be unjust or unreasonable the commission is authorized to determine what will be the just and reasonable individual or joint rate, fare or charge to be thereafter observed, and the carrier is prohibited from making any charge which is in conflict with this determination. Thus all the rates fixed and maintained are at all times open to inquiry and the commission has full authority to insist that the rates shall never be more than just and reasonable compensation for the services which the carrier renders. Nor does the bill interefere with the reparation proceedings which may be entertained on the application of persons aggrieved by extortionate charges.

"Taking all the provisions of the bill into consideration, it would seem that the rates as fixed and permitted to be charged and collected by the carrier, assuming that the rates are not confiscatory, should be regarded as just and reasonable rates fixed and maintained by competent authority. It is also to be observed that Section 6 of the bill providing for the payment to the Railway Transportation Board of the so-called 'excess' earnings does not provide for a determination that the rates under which the described 'excess' has been collected by the carriers were not just and reasonable rates for the services rendered.

"If, however, the rates thus fixed, charged and received by a carrier are to be deemed just and reasonable for the services rendered, the carrier is entitled to these receipts as its property, and the taking by the government of any portion of these receipts (except under a valid tax) for general governmental purposes or for the benefit of other carriers would appear to be taking of property contrary to the fifth amendment of the federal constitution.

"The provision of the pending bill is not a tax laid upon all carriers with respect either to gross receipts, or net receipts, or any other basis for the assessment of a tax, but is simply a requirement of the payment to the government board of the 'excess' earnings of a carrier which the Interstate Commerce Commission determines to be more than a 'fair return' upon the value of its property. Such an exaction goes beyond the limits of any decision known to me, and if the rates under which the so-called 'excess' earnings are collected by the carrier are to be deemed to be just and reasonable rates, fixed and maintained as such under the authority of law, I am unable to escape the conclusion that the requirement as to the payment of the so-called 'excess' earnings of a carrier exceeds the constitutional authority of Congress as applied to carriers not transacting their business under a federal franchise or contract imposing such a condition."

To the argument that the fixing of rates by a regulating authority may be considered only tentative, and that the rates so fixed may be assumed to be unreasonable if they produce excess earnings, Judge Hughes holds that what is a reasonable rate cannot be determined in this way, which is not a regulation of either rates or service, but of earnings. Congress and the Interstate Commerce Commission have no power to permit the collection of rates which are extortionate, even for a temporary period; and, therefore, what is a reasonable rate for a given service at a given time must be ascertained at the time the rate is made.

Judge Hughes' argument on this point is as follows:

"It is difficult to understand upon what theory of proper regulation such rates are to be deemed to be unreasonable without any further inquiry as to the conditions of the service or as to matters directly relating to the rates themselves, but solely upon an inquiry with respect to the value of the carrier's property and the amount of the total net earnings derived by the carrier from its operations. The latter may be a legitimate inquiry for a court in determining whether a legislative body or its subordinate agency has transcended its authority in fixing a body of rates so low as to be confiscatory. But it is a different thing thus to conclude that rates which are not confiscatory, and which as individual or joint rates have been expressly found in the case of the particular carrier to be just and reasonable for the services rendered were in fact not reasonable rates.

"Moreover, whether the rates which have produced the so-called 'excess' earnings of the carrier have or have not been sustained in proceedings under Section 15 of the 'Act to Regulate Commerce,' as amended, with respect to the individual and joint rates of the particular carrier, the fact remains that the rates charged and collected have been fixed and maintained as just and reasonable rates, and that the bill does not require as a necessary preliminary to the required payment of the 'excess' that there should be a finding that the rates were in fact unreasonable rates. The only finding required is that a particular carrier has earned more than the amount which the commission determines to be a 'fair return' upon the value of its property held or used for the service.

"The argument in support of the provision seems to assume that Congress, under the guise of regulating rates, either directly or through the commission, can abandon the fixing of what are reasonable rates for the services rendered by the carrier, and without any determination that the particular rates or the tariff schedule of a carrier are unreasonable, take the earnings of a carrier simply upon a determination that the carrier has received an 'excess' over a 'fair return' upon the value of its property.

"This would appear to be not a regulation of rates, or of service, but of earnings. I do not understand that it is within the authority conferred upon Congress to regulate interstate commerce to determine how much a carrier not exercising a federal franchise, or operating under a federal contract, shall earn in interstate commerce, assuming that the carrier discharges all the public obligations incident to its sevice and charges reasonable rates. In my view the regulation of such a carrier must have direct relation to the service it renders and if the question is of the amount of money it should receive for its service, to the reasonableness of its charges.

"Again, if the assumption could be indulged that the carrier has received more than a 'fair return', is to be regarded as tantamount to a finding that the rates which produce the 'excess' earnings are unreasonable rates, and that such a finding with an inquiry with respect to the rates themselves, but only as to earnings, could be sustained, there would be a further difficulty.

"If it is established that the rate is a reasonable one for a shipper or passenger to pay, it is the carrier that renders the service for which the rate is to be paid and it is proper that the carrier lawfully performing the service, and furnishing all the required facilities therefor, should receive and enjoy the proceeds of the rate thus charged. An attempt to

divest the carrier of any portion of its earnings thus obtained, on the theory that the charges which it was reasonable for shippers and passengers to pay for its services it was unreasonable for the carrier to receive and retain would, in my judgment, be outside of the scope of appropriate and valid regulation. The mere fact that it is proposed to devote the moneys or property of a carrier or of any other person to good uses cannot be regarded as justifying the deprivation of the carrier or such person of the right to enjoy and retain his own property, except as it may be taken for proper governmental purposes through valid taxation, or for public use on the payment of just compensation.

"For the reasons stated, I am constrained to the conclusion that the provision in section 6 of the pending bill as to the payment of 'excess' earnings, in its application to carriers not operating under a federal franchise or contract permitting the imposition of such a condition, violates the federal constitution."

Mr. Warfield Replies to Mr. Hughes

S. Davies Warfield, president of the National Association of Owners of Railroad Securities, has filed with both the Senate and House committees on interstate commerce an opinion by Elihu Root, John G. Milburn, John S. Miller, Hugh L. Bond, Jr., and Forney Johnston, advisory counsel of the association, that Congress has the constitutional power to regulate excess earnings of railroads over and above a fair return upon the value of their property. The opinion takes decided issue with that recently furnished by Charles E. Hughes and states that such excess earnings are the result of rates made to meet the actual necessities essential to the preservation of the life of the transportation system of the country.

"Without this power Congress must acknowledge is inability to sustain competitive agencies of transportation and the power to regulate commerce on a constructive basis would fail at the first test," the opinion states; "we have heretofore pointed out the desirability that any act of Congress proposing to regulate excess earnings thus produced should clearly set forth in the act the theory upon which the regulation is based and should make it clear that, to the extent to which rates established with this end in view shall be found to produce more than a fair and reasonable return upon the property of particular carriers, they are to be received conditionally and in trust for administration by the United States for the benefit of the general public interest in transportation.

"Most of the criticism directed against the process is based upon the assumption that the published rates kept in force from time to time by public authority are necessarily final and unconditional as to the carrier as well as to the shipper; and that legislation dealing with any portion of the proceeds of such published rates constitutes a mere effort to recover revenue which has become the absolute property of the carrier.

"We have heretofore advised that the legislation now under consideration by Congress should prescribe that while rates are to be just and reasonable so far as the shipper is concerned, the result is not to be regarded as attained unless they are also sufficient to sustain the agencies of transportation as a whole in the several rate-making groups; and, further, that the act should clearly state that although individual rates paid a given carrier in the group in order to sustain these agencies as a whole may include an element of excessive return for the specific service as rendered by that particular carrier, this excess is necessary to be paid by the shipper to sustain transportation in the group and will be dealt with by Congress in the interest of transportation as a whole rather than be left subject to recovery in a proceeding for reparation by the shipper. Recovery by the shipper would obviously amount to a rebate which would defeat the purpose. The question of 'reasonableness' from the shipper's standpoint is to be determined by the necessities of transportation in the group. He cannot insist upon a rate that would destroy essential agencies of transportation by attracting all of the business to their competitors. From the carrier's standpoint the question as to what each particular carrier shall be entitled to retain out of its earnings over and above a reasonable return upon its property is dependent upon entirely different considerations. The carrier cannot complain of action by Congress appropriately exerted under the commerce clause if such action leaves it with a fair and reasonable return.

"Singular confusion has arisen out of the reluctance in certain quarters to recognize the fact that a rate may be reasonable for a shipper to pay, because of the necessity of sustaining competitive agencies for transportation, which would be wholly unreasonable for individual carriers to demand if their case alone were being considered.

"This necessity would produce returns for certain carriers in each competitive group so excessive as to stand as a stumbling block to rates adequate to sustain transportation as a whole unless the excess is regulated. Denial of the right of Congress to deal with the excesses thus produced is tantamount to a denial of the power of Congress to regulate and conserve commerce. This excess is obviously a by-product resulting from the exertion by Congress of its regulatory power. We entertain no doubt whatever of the power of Congress, under appropriate legislation so stated as to demonstrate with accuracy just what is being done, to administer this by-product in the general public interest in transportation. No shipper can complain; and as it is a gratuitous excess temporarily conceded by Congress over and above a resonable return, it is difficult to ascertain any sound basis for complaint by the carrier." * * *

Testimony of A. P. Thom

Mr. Thom took up the question of the relation of state rates to interstate rates. He pointed out that the operating ratio prior to the government taking over the roads (in 1917) was 76 and that now the best that the roads could do was to retain 5 cents out of every dollar, the rest being required to pay operating expenses and taxes. He said that this situation was recognized specifically in the Cummins bill in Section 5, which provided for procedure during a period of reconstruction, but that in this provision nothing was said about state rates. Therefore, with the termination of federal control state rates would automatically go back to what they were in 1917, although interstate rates would be continued on present levels during the reconstruction period. This, Mr. Thom said, would create an impossible situation State rates must be readjusted; otherwise interstate rates could not be collected in practice even if they could remain on paper as they now are. He cited the case of coal moving from Pennsylvania coal fields to New York, Philadelphia and Baltimore. It would be impossible to charge a much higher interstate rate on coal to New York and to Baltimore and to charge the much lower intrastate rate on the same quality of coal to Philadelphia. The same would be true of wheat moving on an interstate rate from farms west of the Red river and intrastate rates on grain moved from farms just east of the Red river. He introduced the accompanying tables showing that state rates on distances from 35 miles to 400 miles were only about half what the interstate rate was.

He said that under the Esch bill some recognition of this situation was shown, but that under the Esch bill interstate rates would be regulated comprehensively, while state rates

would be regulated, if at all, only reluctantly. He was asked whether a state could not charter a road to do only intrastate business, and said that he thought legally it could but that practically it never would.

He thought that it was absolutely essential that one federal body should be given jurisdiction over the rates on every interstate carrier whether the carrier itself was wholly within one state or not and whether the haul was wholly within one state or not. He said, however, that if at this time Congress did not wish to go so far as to make a specific declaration of this scope there should be an amendment made to the Esch bill to provide:

1. That the carrier should have the right to complain to the Interstate Commerce Commission against a state rate.

2. That not only discrimination but inequality and undue burden on other rates could be complained of in regard to a state rate and,

appliance act, which act the Supreme Court held as applying to a state train as well as to an interstate train. The Shreveport case plainly indicated that the federal commission had the power to correct discrimination, but Mr. Thom contended that now this doctrine should be extended so that the power of the Interstate Commerce Commission over intrastate rates could and would be used to prevent wrongs as well as to correct them.

Members of the committee were eager to press Mr. Thom to the logical conclusion of his theories. He was asked whether Congress under his theory could except railroads from state taxes. He said he believed Congress could; in fact, that Congress could treat a railroad just as it could treat a national bank. A state had a right to be protected against any other state. The national legislature was not a foreign body, but represented the individual states just as much as a town councillor represented his community;

COMPARISON OF COMMODITY RATES

(a) Director General's present Interstate rates in Minnesota and North Dakota.
(b) Minnesota Commissioners' rates.
(c) North Dakota Legislative rates (Act of February 19, 1919).

	Grain				Cement			Lumber		
Miles	All grain. From stations on main line of Nor. Pac. Ry. to Minneapolis and Duluth (A)	Wheat (B)	Coarse grain (B)	All grain (C)	From Duluth, Minn., to main line stations on the Nor. Pac. Ry. (A)	(B)	(C)	From Minneapolis and Frazee, Minn., to main line stations on the Nor. Pac. Ry. (A)	(B)	(C)
100	..	....	....	....	....	....	....	14.5	6.6	6.6
200	..	....	....	....	..	....	....	20.5	8.8	8.8
300	17	10.9	10.1	9.6	19	11.6	10.5	21.5	10.5	10.5
400	20	12	11.1	10.6	25	13.8	12.1	28.5	12.1	12.1

LIVE STOCK

(Rates in dollars and cents for 36 ft. 6 in. car)

	Hogs in single deck cars			Cattle, carloads, also goats and sheep in double deck cars			Sheep or goats in single deck cars			Coal			
										From Duluth, Minn., to main line stations on Nor. Pac. Ry. in North Dakota (A)		(B) and (C)	
Miles	(A)	(B)	(C)	(A)	(B)	(C)	(A)	(B)	(C)	Hard	Soft	Hard	Soft
100	35.70	21.76	21.59	41.80	26.40	25.30	32.30	16.20	15.24	....	....	....	....
200	46.75	29.75	28.05	52.80	35.86	33.00	40.80	22.08	19.80	....	....	....	....
300	56.95	33.66	32.30	61.60	40.70	37.40	47.60	24.96	22.80	3.20	3.10	2.07	1.69
400	66.30	38.57	35.70	70.40	45.54	41.80	54.40	27.96	25.20	3.50	3.30	2.31	1.87

NOTE.—Rates for shorter distances not shown for the reason that there are comparatively few interstate movements for lesser distances.

COMPARISON OF CLASS RATES

(a) Director General's present Interstate rates in Minnesota and North Dakota.
(b) Minnesota Commissioners' rates.
(c) North Dakota Legislative rates (Act of February 19, 1919).

	1st Class		2nd Class		3rd Class		4th Class		5th Class		Class A		Class B		Class C		Class D		Class E	
Miles	(a)	(b & c)	(a)	(b & c)	(a)	(b & c)	(a)	(b&c)	(a)	(b & c)	(a)	(b & c)	(a)	(b & c)	(a)	(b & c)	(a)	(b & c)	(a)	(b & c)
25	25	15.9	21	13.3	17.5	10.6	15	8	11	6.4	12.5	7.2	9	5.6	7.5	4.8	6.5	4	5	3.2
50	37.5	20.8	32.5	17.3	25	13.9	19	10.4	15	8.3	15	9.4	14	7.3	11.5	6.2	9	5.2	7.5	4.2
75	45	25.7	39	21.4	30	17.1	22.5	12.9	17.5	10.3	17.5	11.6	16.5	9	14	7.7	11.5	6.4	9	5.1
100	51.5	30.6	44	25.5	34	20.4	26.5	15.3	20	12.2	20	13.8	17.5	10.7	15	9.2	12.5	7.7	10	6.1
200	75	50.2	64	41.8	50	33.5	37.5	25.1	30	20.1	30	22.6	26.5	17.6	22.5	15.1	17.5	12.6	15	10
300	99	60	84	50	65	40	50	30	40	24	40	27	35	21	30	18	24	15	20	12
400	122.5	69.8	105	58.2	82.5	46.5	62.5	34.9	49	27.9	49	31.3	42.5	24.4	37.5	20.9	30	17.5	25	14

3. To confer power on the Interstate Commerce Commission to suspend intrastate rates and to grant reparation in respect to such rates.

Asked whether or not the logic of his position in regard to intrastate rates would not lead to the conclusion that Congress could take away from the state commissions all of their powers and confer them on the Interstate Commerce Commission. he said that he thought legally and constitutionally this was so, but that it would not be a wise thing to exercise this power; that as to rates only should this power be definitely vested exclusively in the Interstate Commerce Commission.

Mr. Thom was asked whether the first federal employee case in the Supreme Court did not conflict with his theories. He said that it did absolutely, but that he believed that since rendering that opinion the Supreme Court had gotten away from the contention in that case. and he cited the safety that the duty, therefore, of the national legislature was to legislate in favor and in fairness to all the states and not to permit one state to discriminate against or lay unfair burdens on the other states.

Mr. Gompers Against Compulsory Arbitration

Samuel Gompers, president of the American Federation of Labor, testified before the committee on October 4 in opposition to any provision that may be inserted in the railroad bill providing for compulsory arbitration. His testimony was similar to that presented before the Senate committee previously, and his position led to a sharp clash with Representative Webster of Washington, who questioned Mr. Gompers as to what he would do if Congress should pass an anti-strike law and the law were held constitutional by the courts. After attempting to evade a direct answer, Mr. Gompers said he thought he would obey such a law, but he

was sure the working men would not. In reply to continued questions he said that he would not counsel obedience to such a law but would remain silent, advising organized labor to appeal to the country by trying to select a Congress that would repeal the law. It is impossible, he said, to prevent men from quitting their employers, no matter what law makes them lawbreakers.

Urged to state his position regarding the Plumb plan, Mr. Gompers finally asked that the committee should not press him for a statement at this time. Arbitration, he said, must be voluntary or it cannot be successful, and labor must always have the right to strike. Mere discussion of such legislation is likely to produce serious consequences by giving the radical element the means of undermining the more conservative element.

Following is part of the colloquy between Mr. Webster and Mr. Gompers, as taken from the record:

"Mr. Webster: It is my purpose to make some observations in Congress upon your testimony, and I have not the slightest purpose to misquote you or to misconstrue anything you say. I want you to keep me from doing that by telling me frankly, without any qualification or condition, just what your position is. I had gotten the impression from the newspaper reports of your testimony before the Senate committee that you had in effect taken the position that you would defy the laws of your country. Of course, I would not act upon that, and I should like before this committee, speaking in an official capacity, to ask you this question, and I want you to give me a fair answer so that there will be no possibility of misconstruction of what your position is.

"Suppose this Congress should incorporate in the bill that we now have under consideration some provision or provisions relating to compulsory arbitration and denying to some extent or qualifying your right to strike, and that law should be tested through the ordinary channels and in accordance with the established procedure to the point where the Supreme Court of the United States declared that law in all respects to be constitutional and valid, would you advise the men constituting the organizations which you represent to go counter to the provisions of that law so interpreted and construed by the Supreme Court of the United States?"

"Mr. Gompers: The question that has been propounded is one to which I have made answer.

"Of course, I do not think that I shall ever again work as a wage-earner in a factory; it would be simply impossible, that is, for practical purposes. I would say that if I were a wage worker I would still assert my right to quit my employment, even though in asserting that right it involved a violation of a declared constitutional statute. I would assert my right to quit work, to leave my employment, the same right as you have, sir; the same right as every other man in business has or in the law has, to quit employment, to quit his client at any time when his interest or his whim or his fancy prompt him. No one undertakes to stop any man from quitting his business."

"Mr. Webster: Would you counsel or advise the workmen to obey it?"

"Mr. Gompers: No, sir. I should probably remain quiet upon that subject and permit them to act as their judgment as law-abiding citizens directed them, but I would appeal and make the most strenuous efforts of which I was capable to secure a reversal of the Supreme Court's decision by the people through their Congressmen in the next Congress, as the decisions of the Supreme Court have been reversed in many instances by Congress and by the people."

"Mr. Webster: You have just stated that if this law should be declared constitutional, though it were your personal opinion that it was unconstitutional, that you would not advise the members of your organization to obey the law. Am I to understand from that that you would withhold the benefit of your very great influence as an expedient of labor in this country in a matter of encouraging obedience to the laws?"

"Mr. Gompers: Your question is entirely speculative and hypothetical. My work and the character of my work, my services stand. I am willing to submit them to any prejudicial opinion which may be held of me."

"Mr. Webster: Well, then, Mr. Gompers, you may answer this question for me, yes or no. The Congress of the United States places upon the statute book a law relating to compulsory arbitration and the right of labor to strike, which, in your judgment, trenches upon the constitutional right of an American freeman in that behalf, and that law is brought on for a test in the courts as to its constitutionality, and it finally reaches the Supreme Court of the United States and that tribunal declares that the law is constitutional, that the limitations placed upon the right to strike are valid and that the machinery arranged for the arbitration of disputes are valid and constitutional, would you, as the president of the American Federation of Labor, advise and counsel obedience to the law or not?"

"Mr. Gompers: Perhaps I may be entirely in error, but I think the question is unintelligibly stated. It occurs to me that it is unintelligible, that part of the question that if the Congress should enact a law for compulsory arbitration and the right to strike. What I think was intended was to prevent the right to strike."

W. N. Doak Also Opposes Compulsory Arbitration

W. N. Doak, vice-president of the Brotherhood of Railroad Trainmen, also opposed any kind of compulsory arbitration and said that Congress ought not to "start anything" that would further alienate labor and capital. He said a get-together conference between railroad operators and employees is probable after the railroads are given up by the government and that voluntary agreements without additional legislation will prove more satisfactory. He said that the organizations would not attempt to strike to force the adoption of the Plumb plan.

Return of Railroads Still in Doubt

The Railroad Administration, Congress, and railroad men and others throughout the country are awaiting anxiously the message which President Wilson is expected to send to Congress shortly regarding his intentions as to the restoration of the railroads to private management. The Railroad Administration has been proceeding all along on the assumption that the President has not changed his mind since he stated in his message to Congress in May that the railroads would be returned at the end of the year, but whereas two weeks ago most railroad men seemed fairly certain that the transfer would take place on that date, the delay in making the formal announcement and the uncertain situation as to railroad legislation in Congress has brought about a change in sentiment and the prevailing opinion now seems to be that a postponement of the transfer is to be expected. While varying opinions have been expressed, it seems to be true that at this writing no one knows what is to happen unless it be the President and there are many who believe that he has not finally made up his mind and will not until the fate of the Cummins bill in the Senate is known with certainty.

Director General Hines submitted a report to the President on both the railroad and the legislative situation on December 9, which it is understood merely outlined the facts and prospects for the President's determination. Later Mr.

Hines submitted another report which is understood to have contained a specific recommendation, the nature of which has not been disclosed.

One theory which is being discussed is that in the event of the failure of the Senate to pass a bill by the end of the year, the President would say that he had given Congress a full opportunity to legislate and as it had been unable to agree on a program he would keep the roads for another year, thus giving satisfaction to the labor organizations. This opinion is most frequently expressed by those who believe in a further continuation of government operation.

On the other hand there appear to be many more adherents to the opinion that the President is anxious to get rid of the railroads as soon as he can do so with safety and that if the Senate should pass a bill that would make it reasonably certain that a completed bill could be put through a conference committee and be accepted by the Senate and the House in a month or so he would consider it safe to return the roads on January 1 or shortly afterward.

If the Senate fails to agree before the holiday recess or before January 1, according to this theory, the return would be postponed for a month or two or three to give Congress further time to complete its permanent legislation.

As the Cummins bill has encountered a more all-round opposition in the Senate than was expected, the chances seem to favor a delay in the return of the roads beyond the first of the year, particularly as it is no longer possible to give the railroad companies an adequate notice.

Labor Leaders Ask Two-Year Extension of Government Control

That the President's mind is "still open" on the railroad question was stated by Joseph P. Tumulty, secretary to the President, to a delegation of labor leaders who called at the White House on December 17 and left a letter urging the President to set at rest rumors that he intended to return the railroads, and to retain them for at least two years. The delegation was made up of representatives of the conference of labor leaders, called by the American Federation of Labor and the officers of the train service brotherhoods that began a meeting on December 13 to consider general labor questions including opposition to the Cummins bill. Earlier in the day, headed by President Gompers of the American Federation of Labor, they had called on Senator Cummins, chairman of the Senate committee on interstate commerce and asked him to withdraw the Cummins bill and give government operation of the railroads a "fair and thorough test" in peace time.

The letter to the President was as follows:

"Proponents of the Cummins bill for the immediate return of the railroads with a high guaranteed compensation are attempting to justify this bill by asserting that it is your plan to return the railroads to their owners by January 1, 1920, and that some legislation providing for such return must be enacted immediately.

"We believe that this assertion is a great injustice to you. As you will doubtless know, an overwhelming majority of the farmers, of the members of the American Federation of Labor, of the railway brotherhoods, as well as of the general public, favor an extension of the period of government operation of the railroads for at least two years, in order that a fair test may have been made of government operation and a plan may be worked out for the ultimate disposition of the railroads which would be fair to all interests involved. Such recommendation was made by Mr. McAdoo when director general of the railroads, who urged a five-year extension of government operation, while members of the Interstate Commerce Commission have also urged extension.

"Director General Hines and members of the Interstate Commerce Commission have shown clearly that the return of the railroads will involve an increase in freight revenue of close to a billion dollars, the rates being increased 25 to 50 per cent. This increase in rates, according to these same authorities, will be reflected in an increased cost of living of at least four billion dollars a year, possibly five billion. The American people cannot and should not stand such increase.

"Government operation, as reported by Director General Hines, showed a net profit at the rate of $168,000,000 a year for the three months prior to the coal strike.

"The Senate is now being asked to investigate serious charges against certain officials and railroads during the period of food control, and they had committed sabotage and had wilfully and purposely attempted through unfair methods while presumably serving the Government, to discredit government operation.

"We respectfully request, Mr. President, on behalf of the farmers, the American Federation of Labor and the railway brotherhoods, as well as the general public, that you stop the rumors that you plan to return the railroads to private control, and that in view of the changed conditions and the prevalent industrial unrest you re-establish public confidence by advocating that the period of government operation be continued for at least two years, so that under peace conditions there may be a more thorough and more consistent trial of government operation, and that carefully considered plan for the ultimate disposal of the railroads may be worked out and adopted."

The letter was signed by the following:

Samuel Gompers, president of the American Federation of Labor.
George P. Hampton, managing director of the Farmers' National Council.
Warren S. Stone, grand chief of the Brotherhood of Railway Locomotive Engineers.
L. E. Sheppard, president of the Order of Railway Conductors.
Timothy Shea, acting chief of the Brotherhood of Locomotive Firemen and Engineers.
W. G. Lee, president, Brotherhood of Railway Trainmen.
Fred J. Chamberlain, representative of Washington, Oregon, Idaho and Colorado State Granges.
H. A. Fuller, vice-president of the American Society of Equity.
O. H. McGill, Seattle Cooperative Shingle Mills.
Martin F. Ryan, Brotherhood of Railway Carmen of America.
J. W. Kline, general president, International Brotherhood of Boiler Makers, Drop Forgers and Helpers.
Wm. H. Johnston, International Association of Machinists.
N. P. Alifas, International Association of Machinists, chairman.
George A. Luther, secretary, Brotherhood of Railway Clerks.
H. E. Wills, Brotherhood of Locomotive Engineers.
B. M. Jewell, acting president Railway Employees' Department.
Rolla S. Sextob, American Federation of Labor.
Henry Sterling, American Federation of Labor.
John T. McCrudden, Brotherhood of Railway Clerks.
R. T. Wood, U. B. of Maintenance of Way Employees and Railway Shop Laborers.
T. M. Pierson, Order of Railroad Telegraphers.
Charles J. McCowan, Brotherhood of Boilermakers.
W. N. Doak, Brotherhood of Railroad Trainmen.
W. M. Clark, Order of Railway Conductors of America.
W. L. McMenimen, Brotherhood of Railroad Trainmen.
P. J. McNamara, Brotherhood of Locomotive Firemen and Enginemen.

Mr. Hampton, Mr. Stone and W. H. Johnston acted as spokesmen and expressed similar sentiments.

In addressing Senator Cummins, Mr. Gompers said that organized labor wanted the government to retain control of the railroads for two years "for the purpose of testing out the best method for their continued operation" and, referring to the anti-strike provisions of the bill, he said the proposal was "filled with the gravest consequences. It will not stop strikes but will make respected citizens law-breakers." George P. Hampton, Fred J. Chamberlain and H. E. Wills also spoke.

Senator Cummins said he had no authority to withdraw the bill but offered to lay the request before the committee.

October Earnings and Expenses

THE OPERATING STATISTICS SECTION of the Railroad Administration has published figures covering the financial results of operation for October for all Class I roads in federal operation. These comprise 232,149 miles of road, or 97 per cent of the total of 240,177 miles of road federally operated. The condensed income account is as

	Month of October		Increase or decrease	
	1919	1918	Amount	Per cent
Operating revenues	$503,488,334	$484,372,562	$19,115,772	3.9
Operating expenses	399,400,554	378,975,377	20,425,177	5.4
Net operating revenue	104,087,780	105,397,185	d1,309,405	..
Taxes, rents, etc.	27,128,003	19,212,699	7,915,304	..
Net Operating income	76,959,777	86,184,486	d9,224,709	..

NOTE: d indicates decrease.

One-twelfth of the annual rental due the companies covered by the report amounts to $74,356,354, so that the net profit to the government was $2,603,423.

"In this connection it should be observed," the statement says, "that on account of the restoration on October 1 of car per diem charges the equipment rents in October, 1919, included $6,000,000 car per diem debits, while the corresponding credits to other railroads on account of October transportation, will not appear until November; also that there was a large amount of revenue estimated to be not less than $3,000,000 from coal traffic transported in October, which is not included in the October revenues because, on account of the then impending coal strike such coal traffic was held in transit in the last few days in October and the revenues shown on the waybills relating thereto were not taken into account for the month. The net result of these two items would be to add approximately $9,000,000 to the net operating income as stated above, which would result in a net profit to the government of $11,603,423.

"In making comparison with last year it should be noted that freight and passenger rates are on substantially the same basis in both years. The expenses in October, 1918, include about $12,800,000 back pay applicable to prior months, but they do not, on the other hand, reflect the increases to quite a number of classes of employees granted subsequent to October, 1918, which are included in the October, 1919, expenses. In addition the expenses for October, 1919, include about $4,800,000 back pay applicable to previous months."

There was an increase in the revenue and non-revenue ton miles during the month compared with the corresponding month of 1918 for the first time since January, 1919.

The results for the 10 months ended October 30 were:

	10 months ended Oct. 31		Increase or decrease	
	1919	1918	Amount	Per cent
Operating revenues	$4,234,992,130	$3,985,178,160	$249,813,970	6.3
Operating expenses	3,556,720 774	3,201,838,204	354,882,570	11.1
Net operating revenue	678,271,356	783,339,956	d105,068,600	..
Taxes, rents, etc.	199,288,721	183,363,173	15,925,548	..
Net operating income	478,982,635	599,976,783	d120,994,148	..
10/12 of annual rental	743 563 540	743 563 540	.....	..
Operating loss	264,580,905	143,586,757	120,994,148	..
Operating ratio	84.0	80.3	3.7	..

NOTE: d indicates decrease.

The comparison between the ten months' periods is substantially affected by the fact that the rate increases, approximately 25 per cent, which were in effect this year, became effective for passenger and freight traffic respectively the middle and latter part of June, 1918, and also by the fact that numerous important wage increases which were effective for all of 1919 were effective for only part or none of 1918.

Ore Loading Docks on the Great Lakes

THROUGH THE COURTESY of W. A. Clark, chief engineer of the Duluth & Iron Range and the Duluth, Messabi & Northern, we are able to publish the following table of statistics relative to ore-loading docks situated on the Great Lakes. This table has been revised to May 1, 1919, and shows the locations, numbers and capacities, etc., of all of the docks in use up to that date:

ORE LOADING DOCKS ON THE GREAT LAKE

Railway	Location	Dock No.	Number of pockets	Capacity per pocket in tons	Storage capacity in gross tons	Height of water to deck of dock	Width of dock outside to outside of partition posts	Length of dock	Angle of pockets	
A. C. & H. B.	Michipicoten, Ont.	1	12	...	.....	43 ft. 4 in.	25 ft. 0 in.	311 ft. 9 in.	44° 0′	
C. M. & St. P.	Escanaba, Mich.	1	240	175	42,000	66 ft. 6 in.	52 ft. 0 in.	1,500 ft.	45° 0′	
C. M. & St. P.	Escanaba, Mich.	2	240	200	48,000	69 ft. 2 in.	54 ft. 0 in.	1,500 ft.	45° 0′	
	Total	..	480	...	90,000	.....	.....	.....	.....	
C. N.	Key Harbor, Ont.	1	20	100	2,000	61 ft. 9 in.	28 ft. 0 in.	240 ft. 0 in.	37° 30′	
C. & N. W.	Escanaba, Mich.	3	226	125	28,250	52 ft. 8 in.	37 ft. 0 in.	1,356 ft.	45° 0′	
C. & N. W.	Escanaba, Mich.	4	250	125	31,250	59 ft. 2 in.	37 ft. 0 in.	1,500 ft.	45° 0′	
C. & N. W.	Escanaba, Mich.	5	370	250	92,500	70 ft. 9 in.	52 ft. 2 in.	2,200 ft.	45° 0′	
C. & N. W.	Escanaba, Mich.	6	320	250	80,000	70 ft. 0 in.	50 ft. 2 in.	1,920 ft.	45° 0′	
C. & N. W.	Ashland, Wis.	1	290	250	72,500	72 ft. 1 in.	50 ft. 2 in.	1,740 ft.	45° 0′	
C. & N. W.	Ashland, Wis.	2	278	200	55,600	70 ft. 4½ in.	50 ft. 2 in.	1,668 ft.	45° 0′	
C. & N. W.	Ashland, Wis.	3	200	250	50,000	73 ft. 5¼ in.	52 ft. 2 in.	1,200 ft.	45° 0′	
	Total	..	1,934	...	410,100	.....	.....	.....	.....	
D. & I. R.	Two Harbors, Minn.	1	224	250	56,000	74 ft. 0 in.	51 ft. 8 in.	1,376 ft.	48° 0′	Steel and concrete
D. & I. R.	Two Harbors, Minn.	2	228	300	68,400	80 ft. 0 in.	56 ft. 8 in.	1,400 ft.	48° 0′	Steel and concrete
D. & I. R.	Two Harbors, Minn.	5	168	150	25,200	66 ft. 9 in.	49 ft. 0 in.	1,050 ft.	43° 32′	
D. & I. R.	Two Harbors, Minn.	6	148	250	37,000	73 ft. 0 in.	51 ft. 3¼ in.	920 ft	45° 0′	Steel and concrete
	Total	..	768	...	186,600	.....	.....	.....	.....	
D. M. & N.	Duluth, Minn.	3	384	150	57,600	67 ft. ½ in.	59 ft. 0 in.	2,304 ft.	45° 0′	
D. M. & N.	Duluth, Minn.	4	384	200	76,800	72 ft. 6 in.	57 ft. 0 in.	2,304 ft.	45° 0′	
D. M. & N.	Duluth, Minn.	5	384	300	115,200	80 ft. 5 in.	56 ft. 0 in.	2,304 ft.	47° 30′	Steel and concrete
D. M. & N.	Duluth, Minn.	6	384	400	153,600	84 ft. 5 in.	60 ft. 0 in.	2,304 ft.	47° 30′	Steel and concrete
	Total	..	1,536	...	403,200	.....	.....	.....	.....	
D. S. S. & A.	Marquette, Mich.	5	200	225	45,000	70 ft. 10 in.	51 ft. 0 in.	1,236 ft.	45° 0′	
G. N.	Superior, Wis.	1	374	300	112,200	73 ft. 0 in.	62 ft. 8 in.	2,244 ft.	45° 0′	
G. N.	Superior, Wis.	2	350	300	105,000	73 ft. 0 in.	62 ft. 8 in.	2,100 ft.	45° 0′	
G. N.	Superior, Wis.	3	160	300	97,800	77 ft. 0 in.	59 ft. 8 in.	960 ft.	47° 30′	
G. N.	Superior, Wis.	3	166	300		73 ft. 0 in.	62 ft. 8 in.	996 ft.	45° 0′	
G. N.	Superior, Wis.	4	302	300	90,600	75 ft. 0 in.	62 ft. 6 in.	1,812 ft.	47° 30′	Steel and concrete
	Total	..	1,352	...	405,600	.....	.....	.....	.....	
L. S. & I.	Marquette, Mich.	2	200	250	50,000	75 ft. 0 in.	54 ft. 0 in.	1,200 ft.	45° 0′	Steel and concrete
M. St. P. & S. S. M.	Ashland, Wis.	1	314	100	31,400	66 ft. 2 in.	36 ft. 0 in.	1,908 ft.	50° 45′	
M. St. P. & S. S. M.	Ashland, Wis.	2	150	350	52,500	80 ft. 0 in.	59 ft. 0 in.	900 ft.	47° 30′	Reinforced concrete
M. St. P. & S. S. M.	Superior, Wis.	1	402	300	120,600	78 ft. 0 in.	58 ft. 0 in.	2,412 ft.	47° 0′	
	Total	..	866	...	204,500	.....	.....	.....	.....	
N. P.	Superior, Wis.	1	102	350	35,700	80 ft. 0 in.	57 ft. 2 in.	684 ft.	47° 30′	Steel and concrete
	Ext. 3h of	1	100	350	35,000	80 ft. 0 in.	59 ft. 2 in.	600 ft.	47° 30′	Reinforced concrete
	Total	..	202	...	70,700	.....	.....	.....	.....	

General News Department

Plans for a bridge at Detroit over the Detroit river recently reported as under discussion are assuming a more definite form, following investigations of the project. The American and Canadian corporations that are interested in the construction of a bridge have established a joint board. Gustave Lindenthal, consulting engineer, New York city, has been made consulting engineer of this board, and Charles Evan Fowler, consulting engineer, New York city, has been made chief engineer. The plans provide for a double deck bridge, carrying both highway and railway traffic with a central span of 1,800 ft. or 2,400 ft., depending upon the location adopted.

Recent press despatches from Winnipeg, Man., have indicated that members of the Brotherhood of Railway Trainmen and the Order of Railway Conductors have made a new agreement with the Canadian Pacific providing for increases in wages; but an officer of the Railway Association of Canada says that the agreement is only a local adjustment of rates of pay and working conditions for trainmen and conductors as provided in a supplement to the McAdoo award. The association officer has further announced that there are no negotiations either in progress or pending looking to any general increase in wages for Canadian railway employees.

The map of the railroads operated by the Canadian Government, printed in the *Railway Age* dated November 7, page 906, should have shown also the Temiskaming & Northern Ontario, which is an important north and south connection between the new trans-continental line and the older portions of the Canadian railroad system. The Temiskaming & Northern Ontario is owned and operated, not by the Dominion but by the Ontario Provincial Government. The main line extends from North Bay, on the line from Ottawa to Sudbury, northward 254 miles to Cochrane, which is a division point on the Trans-Continental, about 60 miles west of the boundary between Quebec and Ontario.

The Order of Railroad Station Agents has issued a circular discussing certain sections of the Esch bill, recently passed by the House of Representatives. The sections of the bill which the circular treats are those legalizing the machinery used by railroads and their employees before and during federal control for the settlement of wage and working condition disputes. The circular, after briefly outlining the plan contained in the bill for the settlement of labor disputes, says: "No provisions seem to have been made for a representation on the boards of adjustment of the thousands of railroad agents and the station supervisory forces and it becomes a matter of personal importance to every agent that he should be represented by one of his class. The station supervisory forces greatly outnumber the machinists, blacksmiths, sheet metal workers, electrical workers and switchmen. Unless we have a representative on one of these boards of adjustment our cases will be decided by a telegrapher, a clerk, a switchman, a maintenance of way and shop laborer and four railroad representatives." The circular closes with an earnest appeal to station agents and station supervisory officers to protest against the apparent oversight and to demand representation on one of the adjustment boards.

Minneapolis Track Plans

An ordinance requiring the depression of the tracks of the Chicago, Milwaukee & St. Paul in Minneapolis, Minn., and calling for the elevation of the city streets over the tracks is now pending before the Minneapolis city council. The ordinance is practically a compromise in a discussion between the city of Minneapolis and the Chicago, Milwaukee & St. Paul relative to the matter of separating grade crossings which has been in progress since 1916. At that time an ordinance was introduced and adopted by the city council requiring this road to depress its tracks and carry them under certain streets and avenues. This ordinance was resisted in the United States Court by the railroad company and was consequently held to be void.

New York Railroad Club

William L. Chenery, one of the editors of "Survey," will conduct an open forum to discuss The Industrial Conflict at the next meeting of the New York Railroad Club on Friday evening, December 19, 1919, at 29 West 39th street, New York City.

The Tie Merchants

The National Association of Railroad Tie Producers will hold its annual meeting at the Hotel Sherman, Chicago, on February 12 and 13, 1920, in conjunction with the annual meeting of the American Wood Preservers' Association. The program for this meeting is now in preparation.

An Idealist's View

The railroads should be compelled to adhere to their function as carriers. Let us demand that freight rates be based scientifically on the cost of service and that all agencies be co-ordinated and made to have proper arrangements for the inter-change of traffic. Let us see to it that the powers granted are rightfully used ,and that the expenditures for development are justified by proper service; that any route to be developed, railway, waterway, or highway, shall be worthy of development and when developed be used for the public service at rates which can be defended as representing the cost of the service rendered. Let the Federal agency be truly an inter-state commerce agency and not simply a regulator of railways. Can we not learn a lesson from the war? Is there not a golden mean between the unthinking machine developed by autocracy and the extreme individualism of democracy? Have we not had proof of the necessity for concerted action where great public issues are involved? Should we not have a Department of Transportation charged with the development and co-ordination of all the transportation agencies of the nation?—*Maj. Gen. W. M. Black.*

American Association of Engineers' Position on Unionism

The American Association of Engineers has issued a statement of its position with reference to trade unionism in the profession. The following is an abstract from this statement:

"Production should be increased—not limited. The profession cannot support strikes or lockouts or any other methods that may benefit any class at the expense of the nation as a whole.

"Rewards should be according to ability, initiative and constructive effort. Men are not equal in these respects. Each man should be encouraged to do his utmost and be given compensation according to ability and will to increase production and to achieve large results.

"The engineer, as an educated professional man, believes in basing his claims for proper and just reward for his services upon the justice of the facts presented, upon enlightenment of public opinion, upon loyalty between employer and employee, and upon the underlying fundamental desire of the great majority to do what is fair and right when the merits of the case in question are clearly presented and demonstrated. We believe in organized representation for

the correction of wrong, the advancement of the profession and service to the public, but are opposed to methods inconsistent with the dignity of the profession and which would lessen public confidence."

Canadian People Operating Canadian Railways

Employees may be represented on the governing board of the Canadian National Railway System; this was intimated in a recent address by Sir Robert Borden, Prime Minister of the Dominion of Canada, to the legislative board of the Brotherhood of Locomotive Firemen and Engineers. Sir Robert said, in part:

"In a country of vast area and scattered communities the problem of transportation is all important, and the efficiency of transportation in Canada is an essential factor in the national life. About one-half the total railway mileage of Canada is, or shortly will be, in the ownership of the state. You must realize, and I hope you will agree, that this condition emphasizes the importance of devising some means by which this great essential and national activity shall not be interrupted or prejudiced by disputes between employers and employed. Even as between a private corporation operating a great public utility and its employees there should be some more reasonable method than the imposition upon the general public of the inconvenience, the loss and the suffering which are occasioned by strikes. If, between jealous and sometimes antagonistic nations, the principle of settling international disputes by peaceful means has been acknowledged and adopted, surely disputes between employers and employed can be investigated and adjusted by means other than those which may bring upon the whole people distress and suffering comparable to that entailed by war. So far as railways in the ownership of the state are concerned, there is one additional consideration of which you should not lose sight. Those responsible for the administration of state railways are not actuated or influenced therein by any motive of private interest. Their duty is on the one hand to the public whom they serve, and on the other hand to the employees, who also serve the same public. So that in this instance employers and employed alike serve the people as a whole.

"I commend to your most thoughtful consideration the results which have been obtained in this country by the establishing of the tribunal known as Board of Adjustment No. 1, in connection with the Canadian Railway War Board. The Board has given decisions in 52 cases, as well as 6 supplementary cases, or in all 58 disputes which have thus been settled without resort to strike In addition, about a dozen potential disputes have been adjusted through the good offices of the Board without the necessity of a formal hearing. Disputes have also been adjusted for organizations which were not parties to the agreement. It is open to any class of railway or transportation employees to present a case to the Board, provided they agree to be bound by its decision.

"Is there not in this record food for the most careful reflection and consideration as to the future determination of disputes between organizations of railway employees and those responsible for the administration of the railways? In other countries there have recently been legislative proposals for the prohibition of strikes. It would not be my purpose to have the question approached in that way. The members of the railway organizations are citizens of this country, interested like others in its development, its progress and its orderly government. Any movement to make permanent and still more efficient the methods which have had such good results during the past eighteen months might well originate with them. This obligation is imposed and this responsibility is created not only by the power and influence of the organizations in question, but by the duty which their members owe to the state as good citizens. On our part we must not be unmindful of corresponding obligations. The problem of administering about 22,000 miles of railways in this country is one of exceptional moment and difficulty. Upon its successful solution probably depends the success of state ownership, not only in Canada but upon the whole North American continent. We must give earnest attention to some means by which the employees shall have just representation in the executive administration of this great system. I have given to this question some study in the consideration of the problem as a whole and you may be assured that such a proposal will command my entire sympathy."

Traffic News

At Evansville, Ind., cattle are coming into the stockyards in box cars, the shippers having been unable to obtain cattle cars.

M. T. Scanlan, commercial agent for the Chicago, Lake Shore & South Bend, with office in Chicago, has been appointed commercial agent for the Chicago, Racine & Milwaukee, with the same headquarters.

The Traffic and Transportation Association of Pittsburgh, Pa., at its monthly meeting at the Fort Pitt Hotel on December 4, elected the following officers: President, H. N. Holdren, assistant traffic manager, Pittsburgh-Des Moines Company; vice-president, S. R. Hosmer, Jones & Laughlin Steel Company; financial secretary, S. C. Corfield, traffic manager, Columbia Steel & Shafting Company; recording secretary, A. C. Schweitzer, Carnegie Steel Company; custodian, H. B. Parmelee, Carnegie Steel Company; treasurer, J. F. Sturm, National Tube Company; executive committee, W. H. Patton, Pittsburgh & Lake Erie Railroad Company; S. S. McKeever, W. H. Walker & Company; F. G. Wood, Canadian National Railways Company; G. H. Waggoner, Stalnaker Steel Company; R. J Zinsmeister, W. H. Herman Company.

The director general announces that an understanding has been reached between the United States Shipping Board and the Railroad Administration in the matter of storage or demurrage charges on export coal and freight, moving via North Atlantic ports under through bills of lading, under which these charges will be assumed by the party at fault—the shipper, the inland carrier, or the ocean carrier. He has also announced the names of members of the Trans-Atlantic Associated Freight Conference, which constitute practically the entire membership, also independent steamship lines or operators (not members of the associated conferences) that have agreed to become parties to the same understanding. It is expected that it will be possible to publish necessary amendments to tariffs, so that this arrangement may become effective not later than December 29.

The Cunard steamship line, and allied interests are credited by a New York paper with having made substantial progress with plans for the establishment of an immense freight terminal at Weehawken, N. J., the west side of the Hudson River, opposite 42d street, New York, which probably will dwarf anything of the same character now existing in New York. It is stated, on the authority of persons familiar with the project, that negotiations in progress for some time may be expected to mature in the spring. The proposed development will include the entire Weehawken frontage on the Hudson from the West Shore ferry slips south to the Erie Railroad piers. It does not involve any change in connection with the larger ships of the Cunard and allied lines, which dock at the Chelsea piers below Twenty-third street, New York. The new piers will have electrical and mechanical equipment equal to the best.

Coal Allowed for Ocean Vessels

Restrictions against the delivery of coal for bunkerage were removed on December 15 by the Railroad Administration, which will permit delivery in the following order of priority under the permit system: (1) Inland and coastwise vessels; (2) American ocean vessels; (3) foreign vessels.

Causes of Mail Delay

The post office department has issued a statement concerning train delays. It says that during the four weeks from February 16 to March 15, 1919, the number of letters delayed in the railway mail service as the result of being undistributed, from various causes, were 2,810,000, the delay ranging from one hour to twenty-four hours in reaching destination. During this same period there were 40,000 trains due to make connections that were missed. The number of letters delayed as a result of these failures of trains to main-

tain schedule connections aggregates over 35,000,000. The delay of 2,810,000 letters, as a result of being undistributed, was due for the most part to the clerks receiving mails from delayed trains in greater volume than they were prepared to handle. In November, 1917, there were 87,000 failures of mail trains to maintain their schedule connections, or more than double the number that occurred in March, 1919.

Coal Production

Bituminous coal production during the week ending December 6, according to the weekly report of the Geological Survey, was 43.5 per cent of normal, or less than at any time since the first two weeks of the strike. Compared with the fourth week, when the wage negotiations were broken off, the tonnage per working day fell off 8 per cent. The revised figures show that production during the first week of the strike was 29.6 per cent of normal, during the second week 33.3 per cent, during the third week 44.5 per cent, and during the fourth week 47.3 per cent. The total output for the week ending December 6, including lignite and coal coke, was 5,259,000 net tons. The average during the four weeks ending October 25, which may be regarded as normal, was 12,089,000 tons. The report says that production during the week reflected the state of the industry at a time when negotiations had been broken off because this was the period after the Central Interstate Wage Conference had adjourned after failing to reach an agreement. Comparatively few of the striking miners accepted the proffered increase of 14 per cent, and returned to work, while many mines which had resumed operations during the Washington negotiations had again shut down, notably in Wyoming, West Virginia, and the Cumberland-Piedmont field.

St. Paul Business Men

The St. Paul (Minn.) Association of Public and Business Affairs, having discussed the general railroad problem, has adopted resolutions advocating:—

"(1) That in returning the railroads Congress make liberal provision for refunding the indebtedness of the railway companies to the government on account of the creation by the government of additions and betterments upon railway property, the cost of which has been charged to the carriers, in order that all current assets may be forthwith available, for the betterment of transportation facilities; that until railway credit has been reestablished by such a readjustment under the supervision of a federal commission of railway revenues and expenses as will result in net earnings sufficient to attract the new capital required for the creation of additional facilities and the acquisition of needed equipment, the compensation guaranteed to the carriers during federal control be continued, and, if necessary to provide such capital, the government loan same to the carriers at reasonable rates of interest;

"(2) That the Interstate Commerce Commission be clothed with broader and more general authority over all rates, to the end that it may fix minimum and maximum rates, co-ordinate interstate and state rates, and thus bring about a more uniform, fair and non-discriminatory scale of rates throughout the country;

"(3) That some effective federal agency be created as the final arbiter in wage disputes and that lockouts and strikes be prohibited during the consideration and determination by such agency of any disputes;

"(4) That the Federal Commission be given exclusive supervision and control over the issuance of railway securities, with authority, when the public interest will be served, to permit consolidation of railways and railway facilities and service.

"In the judgment of the St. Paul Association the above deemed essentials can be best accomplished by amplifying and extending the jurisdiction and authority of existing governmental agencies rather than by the creation of new agencies; that the demand of the public is not for more regulatory machinery, but for a better transportation machine, more fully and adequately equipped, affording service, uninterrupted by strikes and lockouts, under the regulation of such effective governmental agencies as will at the same time protect railway capital, secure fair wages for the employees and protect the public against undue exaction from either railway companies or the employees thereof."

Commission and Court News

State Commissions

The Southern Railway Company has petitioned the Public Utilities Commission of Illinois for a modification of supplemental Order No. 1 to General Order No. 55, so that only one crossing sign need be maintained at highway crossings that are not "extra hazardous."

Court News

Crossing Accident—Standing Train

The Vermont Supreme Court holds that a railroad company is not liable for injuries to an automobile, the driver of which in coming down a steep hill at night, by reason of the slippery condition of the oiled road, was unable to stop on discovering a standing train on the crossing, whereby the automobile hit the train just as the latter was starting, though the railroad took no precautions to avoid such injury. The railroad's servants would be amply justified in acting on the belief that travelers in automobiles properly lighted and driving at reasonable speed would observe the cars on the crossing in time to avoid a collision.—Gilman v. Central Vermont (Vt.) 107 Atl. 122.

Interstate Commerce Act—Grain Elevators

The Oklahoma Supreme Court holds that by reason of the provisions of the act to regulate commerce (U. S. Comp. St. § 8563) the State Corporation Commission is without jurisdiction to require a railroad to designate a point on its right of way for the location of a portable grain elevator and to spot cars thereon for interstate shipments, when the effect of such order is to obstruct interstate commerce by materially interfering with the movement of cars to and from elevators permanently located near the right of way, and with the loading of cars on the right of way by track shippers.—Rock Island v. State (Okla.) 180 Pac. 246.

Demurrage

To a railroad's claim for demurrage on interstate shipments of ore to the defendant on an interchange track at its works at Kittanning, the defense was that, during the time charged for the railroad's tracks were so flooded as to suspend the road's operations. The interchange tracks, however, were not flooded, and there was no difficulty in the consignee returning the cars to the interchange track. It was claimed that as the railroad could not have removed the cars, or in any manner make use of them, it could not charge demurrage for the consignee's failure to deliver them there. The Pennsylvania Supreme Court held that this claim could not be sustained.—Pennsylvania v. Kattinning I. & S. Mfg. Co. (Pa.) 106 Atl. 207.

Limiting Liability to Carrier's Own Line

In an action by a shipper of live stock against an initial carrier for damages in transit, it appeared that the stock was shipped over the lines of connecting carriers, but each carrier made an independent contract with the shipper. The shipment was intrastate, and moved from Graham, Tex., to Ft. Worth over the Rock Island, thence to Sweetwater over the Texas & Pacific, thence to Post over the Panhandle & Santa Fe. The through rate was paid to the Rock Island, which limited its liability to its own line. The Texas Court of Civil Appeals holds that Texas Rev. St. 1911, Arts. 731, 732, relating to contracts for through shipment, recognized or acquiesced in by the carriers, had no application, and the Rock Island was not liable for damages accruing upon the lines of the connecting carriers.—Rock Island v. Hallam (Tex.) 211 S. W. 809.

United States Supreme Court

State Legislature's Power to Leave Question of Contributory Negligence to Jury

In an action against the Rock Island for knocking down and killing a person who stepped upon the track when a train was approaching in full view, the Supreme Court of the United States, per Mr. Justice Holmes, says on appeal from a judgment of the Oklahoma Supreme Court, that it may be assumed, as the State court assumed, that if the question were open for a ruling of law it would be ruled that the plaintiff could not recover. But the Oklahoma Constitution provides that "the defense of contributory negligence or of assumption of risk shall, in all cases whatsoever, be a question of fact, and shall, at all times, be left to the jury." Art. 23, Sec. 6. The case was left to the jury, and they found a verdict for the plaintiff. Judgment was entered for her and was affirmed by the Supreme Court of the State, which held that the provision applied to the case and that when so applied it did not contravene the Fourteenth Amendment. .

The Supreme Court of the United States holds that the railroad had only such right to the defense as the State Constitution allowed. Conceding that legislation cannot change the standard of conduct which is matter of law in its nature into matter of fact, the material element in the Oklahoma constitutional enactment is not that it called contributory negligence fact, but that it left it wholly to the jury. Judgmen for the plaintiff was affirmed.—Rock Island v. Cole. Decided December 8, 1919.

Compensation for Carrying the Mails

The New York, New Haven & Hartford sued the United States to recover the difference between amounts received through the Post Office Department and what it claimed should have been paid for its services in carrying the mails during a series of years, ending June 30, 1914. The demand was based on implied contracts alleged to arise from the following circumstances: First—Acceptance and transportation of the mails in reliance upon section 4002, Revised Statutes, as amended. This directs payment of specified sums per mile per annum according to weights; and the claim was that because the Post Office Department improperly construed and applied it, the railroad received much less than it should have received. Second—Acceptance and transportation of the mails under orders and coercion of the Post Office Department, followed by failure to allow reasonable compensation. The railroad claimed its property was taken for public use and adequate compensation must be paid.

Concerning the challenged interpretation and application of section 4002 R. S. resulting in payments during each four-year term on the basis of weights taken immediately prior to the beginning of the same instead of annually, the Supreme Court of the United States holds (opinion by Mr. Justice McReynolds) that the action taken accords with prior practice followed for many years; the letter of the statute permits it; the carrier submitted with full knowledge; and, impliedly at least, it was sanctioned by the Supreme Court in D. L. & W. v. United States, 249 U. S. 385. The court thought it must be held as settled that prior to the Act of July 28, 1916, Ch. 261, 39 Stat. 412, 419—with the exception of certain roads aided by land grants—railroads were not required by law to carry the mails. (Eastern v. United States 129 U. S. 391, 394; Atchison, T. & S. F. v. United States, 225 U. S. 640, 650; D. L. & W. v. United States, supra.) And as the railroad voluntarily accepted and performed the service with knowledge of what the United States intended to pay, it cannot now claim an implied contract for a greater sum. It may be, the court says, that any railroad by failing to carry the mails would incur the hostility of those living along its lines and as a consequence suffer serious financial losses; but the fear of such results does not amount to compulsion by the United States and cannot constitute the basis of a justiciable claim against them for taking property. The judgment of the Court of Claims dismissing the petition on demurrer (53 Ct. Cl. 222) was affirmed, Mr. Justice Brandeis dissenting.—N. Y., N. H. & H. v. United States. Decided December 8, 1919.

State Statute Imposing Penalty for Overcharge of Authorized Passenger Fare Upheld

By an Arkansas statute regulating rates for the transportation of passengers between points within the state, any railroad company that demands or collect a greater compensation than the statute prescribes is subjected "for every such offense" to a penalty of "not less than $50 nor more than $300 and costs of suit, including a reasonable attorney's fee," and the aggrieved passenger is given a right to recover the same in a civil action. In June, 1915, the St. Louis, Iron Mountain & Southern demanded and collected 66 cents more than the prescribed fare from each of two sisters returning to their home from a school commencement; and in suits separately brought, and afterwards consolidated, these passengers obtained judgments against the company for the overcharge; a penalty of $75 and costs of suit, including an attorney's fee of $25. The company appealed, asserting that the provision for the penalty was repugnant to the due process of law clause of the Fourteenth Amendment; but the Supreme Court of the state sustained the provision and affirmed the judgments. 131 Ark. 442. The railroad took the case to the Supreme Court of the United States.

The grounds on which the provision was said to contravene due process of law were, first, that the penalty was "so severe as to deprive the carrier of the right to resort to the courts to test the validity" of the rate prescribed, and, second, that the penalty was "arbitrary and unreasonable, and not proportionate to the actual damages sustained." The Supreme Court said, however, per Mr. Justice Van Devanter, that it did not appear that the carrier had not been afforded an adequate opportunity for safely testing the validity of the rate, or that its deviation therefrom proceeded from any belief that the rate was invalid. On the contrary, it was practically conceded, and the court took judicial notice of the fact, that if the carrier really regarded the rate as confiscatory, the way was open to secure a determination of that question by a suit in equity against the Railroad Commission of the state, during the pendency of which the operation of the penalty provision could have been suspended by injunction. Therefore it was held the first branch of the company's contention could not prevail.

The second branch was more strongly urged. The provision assailed is essentially penal, because primarily intended to punish the carrier for taking more than the prescribed rate. Yet it was held that giving the penalty to the aggrieved passenger did not require that it be confined or proportioned to his loss or damages; for, as it is imposed as a punishment for the violation of a public law, the legislature may adjust its amount to the public wrong rather than the private injury, just as if it were going to the state. The ultimate question was whether a penalty of not less than $50 and not more than $300 for the offense in question could be said to bring the provision prescribing it into conflict with the due process of law clause of the Fourteenth Amendment. The court said: "That this clause places a limitation upon the power of the states to prescribe penalties for violations of their laws has been fully recognized, but always with the express or tacit qualification that the states still possess a wide latitude of discretion in the matter and that their enactments transcend the limitation only where the penalty prescribed is so severe and oppressive as to be wholly disproportionate to the offense and obviously unreasonable. . . . When the penalty is contrasted with the overcharge possible in any instance it of course seems large, but, as we have said, its validity is not to be tested in that way. When it is considered with due regard for the interests of the public, the numberless opportunities for committing the offense, and the need for securing uniform adherence to established passenger rates, we think it properly cannot be said to be so severe and oppressive as to be wholly disproportionate to the offense or obviously unreasonable." Judgment for the plaintiffs was affirmed, Mr. Justice McReynolds dissenting.—St. Louis, Iron Mountain & Southern v. Williams. Decided December 8, 1919.

Foreign Railway News

The Channel Tunnel

Prime Minister Lloyd George recently made the important announcement to a private deputation that the British Cabinet had decided that there was no longer any political objection to the construction of the Channel Tunnel. He was not yet in a position to say that the military objection had also been removed. The Cabinet, before coming to a final decision, had asked for the considered views of the Admiralty, War Office, and Air Force Staffs, and their reports were now being awaited.

Deisel Locomotives for the Prussian Railways

LONDON.

The Zeitschrift des Vereines Deutsche Ingenieure in commenting on the problem of electrification of the Prussian Railway system states that Prussia, Bavaria and Duchy of Baden are partial to the 15,000-volt, 16-cycles, single-phase, alternating current system, which is that used in Switzerland. In combination with electric working this road is contemplating the use of internal combustion locomotives of the Deisel type to also be used on the electrified lines, and it has already been decided that such locomotives will be built for experiment having a horse power of 3,000. It is hoped to reserve about one-fifth of the total mileage for the use of these locomotives. One of the purposes attributed to this work is that in case of war these locomotives could be used over any tracks, even though electric power was not available.—*Le Genie Civil.*

Market for Light Railway Material in China

A number of native coal companies in China whose mines are adjacent to the Shantung railways, writes Vice Consul N. F. Allman, Tsinanfu, are now negotiating for the construction of light railways to connect their mines with the above line. The approximate total length of the light railways to be constructed is 50 miles; 25 miles of which have already been surveyed. The Chinese mine owners are desirous of obtaining American materials, if possible, and the dealers in railway material that may be interested would be expected to furnish complete equipment, including locomotives and several hundred coal cars. Good second-hand equipment would be acceptable for one of the lines, about 12 miles long, the material for which would have to be delivered immediately. The material for the other lines is desired not later than February, 1920.

(The names of two firms in this district who correspond in English and who are interested in negotiating direct for the proposed light railways, may be obtained, says Commerce Reports, from the Bureau of Foreign and Domestic Commerce or its district and co-operative offices. Refer to file No. 126417.)

Carbon Contact Trolley Bows

The Engineer states that on account of the scarcity of copper during the war, the copper contact bows of some of the electric trains in Germany were replaced by bows of aluminum, which had already been used for that purpose before the war. Aluminum, however became unobtainable, and zinc was used, but this did not answer particularly well. Experiments were then made with contact pieces of carbon. At first the wear was one gramme of carbon per 10 car-kilometers, but this was improved upon until some of the bows had reached a life of 110,000 car-kilometers. The carbon was first greased, but ultimately that was found to be unnecessary. The bows have a length of one meter and are built up of sections. The whole is mounted on a flat strip of steel plate, which is turned up on both sides so as to grip the carbon pieces, bars of cast iron are interposed between the carbon and the steel edges so as to secure good contact. In cross section the carbon is not solid and a tension device adjustable by means of screws if fitted into the hollow to press the carbon against the holder. There is less sparkling than with aluminium bows, and worn-down carbon sections can be renewed so that the carbon of the whole length of the bow is utilized.

French Engineering Society Forms British Section

LONDON.

The members of the Société des Ingénieurs Civils de France have formed a British Section which will meet periodically in London. The purpose of this section is to improve the relations between English and French engineers, not only civil, but in every branch of science. In describing the purposes of this new section, the president, T. J. Guéritte said that during the great war English and French engineers got in much closer contact with each other than at any other previous time, and it was the desire of the French and English engineers to prolong and further the kindly feeling and cooperation that had existed between the engineers of the two countries during the war. This London section will be used as a medium for keeping both English and French societies in touch with each other. The section has very broad ambitions and even contemplates arranging for the exchange of engineering students between engineering firms in both countries. Furthermore, there are many engineering questions of international importance which can be discussed between the two nations with very beneficial effect, such as the Channel Tunnel, the effect of the shortage in coal on the hydro-electrical development in France, etc. It is also the desire to make arrangements with the various English and French societies for the purpose of enlarging the foreign membership of these institutions.

The P. L. M. Disaster

The French railway companies have been very unfortunate of late in the matter of railway accidents. On September 4, 15 passengers were killed in the Toulouse express, which had stopped owing to want of steam, due, it is said, to bad coal, and was run into by a train from Bordeaux. The disaster on the P. L. M. at Pont-sur-Yonne on November 3, when the Simplon express was run into and 26 passengers killed, was, it is believed, due to the same cause. This latter accident has an interest for railway officers in that automatic signals, lock-and-block and cab signals have all cropped up as a result. The P. L. M. has, for 20 years, had some automatic signaling on the Nevers branch, 30 miles south of the site of the present accident. It schould be noted, though, that the representative of that company who was present at the Washington International Railway Congress of 1905 did not favor automatic signals because they could not do all that the human agent was capable of. Little lock-and-block has been used in France, except within what the Americans call "station limits." The military training the men have had has made them careful and no such interlocking has, therefore, been considered necessary. At the time of the outbreak of war the P. L. M. was trying a cab-signal.

Italian Railways Under Nationalization

An Italian engineer has recently published a study, reproduced in the Reforme Economique, of 14 years' experience of railway nationalization in Italy, from which the following figures are taken. In 1905 the State took over a railway system of over 11,500 km., which had previously been paying over some $12,400,000 a year to the national treasury, in the shape of a tax on profits. During the first year of State operation, this contribution had fallen to $8,900,000 and the system was being operated at a loss. Under company management, a policy of double tracking was adopted, but this work has been so slow under State ownership that 72 per cent of the mileage is still single track. Between 1899 and 1903 the companies made considerable progress with electrification; in 12 years the State has electrified only 25 miles, although electrification is especially urgent in Italy because the mountain lines, although representing only a seventh of the total mileage, consume 40 per cent of the coal used on the railways, and coal is extremely dear and scarce in the country. The same critic also contends that while the companies were very successful in the development of local traffic along the Adriatic coast, and had thus stimulated the transport of agricultural and industrial commodities to Great Britain and Central Europe, "no

serious measure" of the kind has been taken since 1905. The only appreciable increases are apparently the size of the staff and the ratio of expenses, so that "on certain lines of secondary importance the employees outnumber the passengers."

French Railways and Demobilization

Figures were recently given in the Journal des Transports, showing the very heavy traffic which the French railways have been called on to handle since the armistice in connection with demobilization. Between April 1 and October 1 last, 14,000 trains were run for the conveyance of 2,000,000 demobilized French soldiers and men on leave. A further 2,000 trains, averaging 50 cars each, were required for the transport of soldiers to garrison towns and of the war material to depots, and the addition of the trains carrying foodstuffs and other essential commodities and those run in connection with the victory celebrations brought the total for the eight months to 20,000 military trains. Approximately 9,000 trains, a large percentage of which traversed practically the whole of the country, were required for the American Army during the same period, in which the total number of the military trains amounted to about 30,000. This is exclusive of troop movements by sea; some 740,000 men and 5,000 horses were carried between France, Algeria, Morocco, the French colonies and eastern Europe. These figures have been published officially with a view to explaining why the French railways should still be so congested so many months after the cessation of hostilities. As the work of demobilization is now practically finished so far as the railway system is concerned, it is hoped that the general transport position will before long undergo an appreciable improvement.

Railway Notes from China

Peking, Oct. 23, 1919.

The Ministry of Communications apparently has now got the subject of statistical reports firmly in hand. Two annual reports covering the years 1916 and 1917 respectively, have come from the press during the present calendar year, and announcement is now made that report for the year 1918 will appear shortly. A condensed summary of the report has been given to the press. In addition, 10-daily Approximate Returns of Traffic (revenues) have been appearing regularly during the past three or four months.

The returns for the year 1918 are surprisingly good as will be seen from the following statement:

	1918	Compared with 1917 Increase	Decrease
Operating revenues	$77,652,153	$13,778,449	.....
Operating expenses	34,322,615	4,282,051	.....
Net operating revenues	$43,324,538	$9,496,399	.....
Income debits	$11,033,562	.....	$2,269,878
Income credits	1,209.144	108,647	.....
Net income debits	$9,824,418	.....	$2,378,525
Surplus for the year	$33,505,120	$11,874,924	.....

Operating expenses contain $1,777,422 for depreciation of rolling stock. The operating ratio was slightly over 44, compared with 47 in 1917 and 52 in 1915. Net operating revenues represent a return of 10.4 upon the cost of road and equipment, and are sufficient to cover net income debits more than four times. The surplus for the year is equivalent to 29 per cent upon the funds which the government has invested in the properties out of its own funds. Out of surplus $3,967,487 was invested in Additions to Property and $1,617,811 was used in retiring funded debt. By these means and the investment of other funds, the government equity in the property was increased during the year by $7,644,488.

The report shows an increase in the length of line by 28 kilometres only. Seven locomotives were purchased and 21 goods wagons were constructed. In addition, 200 wagons were leased upon a more or less permanent basis. The increase in performance per unit of equipment, however, indicates that purchases will have to be made more freely in the near future. Locomotive performance increased from 43,772 kilometres per year to 47,512. Carriage performance increased from 97 passenger kilometres per seat per day to 103, and wagon performance, measured in "Ton kilometres per ton of carrying capacity per running day" increased from 49.1 to 64.5. This measure is more severe than "kilometres per loaded car" in that it penalizes a wagon by the number of days that it was available for loads but was not used. Average train load shows an increase from 244 to 257 "long" tons. Train load has shown a consistent increase since the first statistics were compiled. Also the average haul per ton has been steadily increasing, from 165 kilometres in 1917 to 184 in 1918. In 1915 this figure was 141 kilometres. Passenger traffic exhibits similar tendencies.

It is explained in the preliminary statement that the season of 1918 was remarkably favorable for a good showing and that a similar improvement in 1919 is not to be expected, but the published figures for revenue, including results up to the end of July, indicate that the 1918 figures will be exceeded comfortably in 1919.

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Col. John Stevens, chairman of the Technical Commission of the Trans-Siberian Railway, has returned to Vladivostock after a visit of nearly a week in Peking and Tientsin. No reports have been given out, but it is believed that his visit concerned the attitude to be assumed by China upon the withdrawal of American forces along the Chinese eastern section. This withdrawal has been reported as imminent several times by the press of a certain country.

* * *

The sixth conference of the traffic managers and accountants of the Chinese Government Railways upon the subject of through traffic has taken a temporary adjournment after a session of two weeks. The session just closed made history in that for the first time plans have been agreed upon for a comprehensive interchange of goods wagons. Under the plans now formulated, through shipments may be transferred at the option of the receiving line, but at its own expense. The rate of car hire is 10 cents per ton per day. At the end of 12 days a penalty rate of 40 cents begins to run, as a means of forcing return to home line promptly. (It is anticipated that after locomotive superintendents have brought about uniform standards of repairs, inspection and lubrication, this penalty can be modified or removed.) Settlements are to be made between lines on the basis of daily balances and will be effected through the clearing house, attached to the Ministry of Communications. Wagons unfit for service are to be returned to home line for heavy repairs. So far as consistent with safe operation, light repairs will be left for the home line to make, the line upon which discovered to be responsible for costs. All repairs are to be made at cost, with no percentage for overhead. Junction reports will be made to the clearing house which will keep a car register of movements and be responsible for accuracy of charges. This subject has been under discussion ever since through traffic was attempted first, five years ago.

* * *

The adjourned session of the traffic managers will convene two weeks hence for the purpose of taking under consideration the report of a sub-committee upon uniform classification of goods.

* * *

There is an unconfirmed report here that the Ministry of Communications has engaged the services of four foreign experts to assist in the standardization of rolling stock. France, England, Japan and America are said to be represented upon this group. For two years or more a Railway Technics Commission composed of Chinese has been working upon this subject. It is reported that this commission will submit to a convention of the mechanical officers of the lines, to be called next spring, a set of standards for goods wagons. It is expected naturally that the representatives of the various national types will have criticisms to offer. In order to meet these criticisms and to insure fair treatment to all concerned, the group of technical advisers, referred to above, will be constituted as a quasi board of arbitration, with powers of recommendation only. Such recommendations in the past, however, have carried great weight with the Ministry.

Equipment and Supplies

Locomotives

THE CENTRAL OF NEW JERSEY is inquiring for 11 Mikado locomotives.

BELGIAN GOVERNMENT. Unconfirmed reports are to the effect that the Belgian Government has divided an order for 660 Consolidation locomotives equally between the American Locomotive Company and the Baldwin Locomotive Works.

Freight Cars

THE GULF REFINING COMPANY is reported as having ordered 1,000 tank cars from the Standard Steel Car Company.

THE PRESSED STEEL CAR COMPANY has issued inquiries for the Koppel Industrial Car Company for specialties for 20 to 50 and 300 cane cars.

Trade Publications

BALANCING APPARATUS.—A small pamphlet has been issued by the Vibration Specialty Company, Philadelphia, Pa., describing briefly the service which this company is prepared to render and its balancing apparatus to eliminate vibration in heavy machinery. Several illustrations show rotors and crank shafts which were put in balance on equipment of this company.

AEROIL THAWING OUTFITS AND TORCHES.—Bulletin No. 10 has recently been issued by the Aeroil Burner Company, Inc., 400 Main street, Union Hill, N. J. This illustrates the Aeroil thawing outfit and shows their application in thawing out hoppers of coal cars. The outfits are designed especially for use in the removal of ice and snow from frozen coal, sand and ore cars, hoppers, pockets, tracks and switches, etc.

WELDING AND CUTTING EQUIPMENT.—The Carbo-Hydrogen Company of America, Pittsburgh, Pa., has issued nine bulletins bound in a folder, describing cutting and welding torches and tips, regulators, and a portable cutting outfit mounted on a truck. All of the parts for carbo apparatus are catalogued in one of the bulletins and another contains directions for operating carbo cutting torches, bringing out some points that should be carefully observed when operating any cutting torch.

DROP FORGINGS.—J. H. Williams & Co., Brooklyn, N. Y., manufacturers of Superior drop forgings and drop-forged tools, have issued the seventeenth edition of their catalogue, containing 160 pages, 4 in. by 6 in., fully illustrating and describing their standard stock specialties. These include several new lines, namely, "Agrippa" set screw pattern turning tool holders, "Agrippa" boring tool posts, "Vulcan" forged-cutter tool holders and several new sets of drop-forged wrenches. The book also contains a description of the drop-forging process in simple, non-technical style for the benefit of those not conversant with its details.

FURNACES FOR HEAT TREATING.—Catalogue No. 75, containing 80 pages, 8½ in. by 11 in., has been published by the Chicago Flexible Shaft Company, Chicago, and is devoted to Stewart gas and oil furnaces, which are adapted to a wide range of heat treating operations. These furnaces burn only gas or oil fuel and are built in many designs and sizes to meet a great variety of conditions, the line being divided into oven, crucible and forge types. Several special features of the Stewart furnaces are described, including a U-shaped bottom slab which makes it unnecessary to use muffles and gives to the furnace area the advantage of the transfer of heat through the bottom and sides of the enclosure. The many types of furnaces are separately described and illustrated, specifications and prices being given also, in addition to which the book contains instructions as to the proper methods of hardening steel, carbonizing, cyanide treating, etc.

Railway Officers

Railroad Administration

Regional

Riley Williams has been appointed federal superintendent of operation of the Brooklyn Eastern District Terminal succeeding E. J. Sullivan, assigned to other duties.

Operating

T. J. Scott, assistant freight trainmaster of the Pennsylvania, Eastern Lines, at Mifflin, Pa., has resigned. Mr. Scott has been succeeded by **W. R. Lockard,** assistant freight trainmaster at Altoona. **E. L. Lowder,** yard master at Altoona, has been promoted to succeed Mr. Lockard.

Corporate

Executive, Financial, Legal and Accounting

Carl R. Gray, president of the Western Maryland, has been elected president of the Union Pacific, with headquarters at Omaha, Neb. (Particulars of the appointment are given elsewhere in this issue.) **E. E. Calvin,** federal manager, has been elected vice-president in charge of operations, effective at the end of federal control.

J. M. Lee, Kansas City, Kan., has been appointed receiver of the Kansas City Northwestern, with office in that city, succeeding **L. S. Cass,** who has resigned. The appointment was made by Judge William C. Hook of the United States District Court, at Leavenworth, Kan., who recently ordered that all operations of the road be stopped.

Obituary

Samuel M. Brown, formerly general freight and passenger agent on the Denver & Rio Grande, at Leadville, Colo., died recently in that city.

Stephen Pearson Brown, vice-president and general manager of the Ford, Bacon & Davis Corporation, managing engineer of Ford, Bacon & Davis, engineers of New York City, and from 1912 to 1917 chief engineer in charge of design and construction of the Mount Royal tunnel and terminal development in Montreal for the Canadian Northern, was drowned December 14 after breaking through the ice at Sebec Lake, Me. Mr. Brown was born in Dover, Me., April 29, 1877. Upon being graduated from the Massachusetts Institute of Technology, he gained shop experience as a blacksmith, machinist and carpenter in the Brown Mills at Dover. His professional career began in 1900 as junior partner in the firm of Collier & Brown, consulting engineers, of Atlanta, Ga., with whom he remained until 1904, when he became inspector of the Bridgeport Station works of the New York, New Haven & Hartford. The following year he was appointed resident engineer on the Port Morris depression of the New York Central. From 1906 until 1908 he was respectively principal assistant engineer in charge of construction and general superintendent of all work west of Fifth avenue on the crosstown section of the Pennsylvania tunnels under New York City. In 1908 he went abroad to investigate European tunnel practise. During 1909 and until 1912, he was chief engineer of the Tidewater Building Company and the T. B. Bryson Company, which built a section of the Fourth Avenue Rapid Transit four-track subway in Brooklyn, N. Y. His chief work until his death has been mentioned above. In addition to his business connections Mr. Brown was a member of the American Society of Civil Engineers, American Society of Mechanical Engineers, American Railway Engineering Association, Engineering Institute of Canada, Institution of Civil Engineers (British) and the Engineers' Club of New York.

EDITORIAL

Railway Age

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The Decline of Railway Bridge Work

It has been so long since the railroads have undertaken certain classes of major improvements that their absence has ceased to be conspicuous. This is most decidedly the case in the field of bridge construction. Many large projects undertaken before the beginning of the European war were continued for some years thereafter, but the feats of engineering brought to mind by the names Quebec, Hell Gate, Memphis, Brunot's Island, Metropolis and Sciotoville have all passed into history, followed more recently by the work at Blacks Run, New London and Louisville. That large bridge construction is not absolutely dead is indicated by the work now in progress on the Baltimore & Ohio bridge at Pittsburgh and by occasional references to proposed projects at Niagara Falls, Castleton, Cincinnati, Detroit and New Orleans, some of these being quite definite while others are decidedly visionary. All of these, however, are in a more or less dormant state at the present time and will continue to be until the ability of the railroads to secure funds for such purposes has been restored to normal.

Senator Cummins' Appeal to Congress

When the history of the relations between the government and the railroads during recent years is written the two facts which probably will stand out in that history as the most extraordinary will be the defeat of the railroad appropriation bill in March, 1919, and the attitude toward the return of the railways to private management which was assumed by Congress almost, if not quite, to the end of the year 1919. The railroad appropriation bill was defeated by a filibuster last spring, although everybody recognized the fact that the appropriation was actually needed and that the defeat of the bill might prevent the Railroad Administration from functioning at all and would certainly prevent it from carrying out any substantial program of railroad improvements—the latter being the effect which it actually has had. But extraordinary and astonishing as was the defeat of the railroad appropriation bill, it was not so extraordinary and astonishing as the fact that when, according to President Wilson's announcement, the date on which the railways would be returned to private management was less than two weeks away, Congress complacently prepared to take a recess without having passed any railroad legislation. Every intelligent man in America knows that the return of the railways to private operation without some kind of legislation having been passed would result in financial disaster not only to them but to the nation; yet Senator Cummins considered it necessary this week to appeal to Congress to do something about this before taking its ease before the holidays. The effects of failure to pass any legislation, or the passage of bad legislation, would be felt throughout the country both immediately and for years to come. The facts about the railroad situation have been dinned into the ears of Congress for months. And yet Congress continues to do nothing. Under government ownership and management Congressional action upon railroad questions of the greatest importance would be necessary at every session. If, under present conditions, Congress cannot be made to appreciate the railroad situation and influenced to do something, how can any person who is not a downright lunatic believe it could be influenced to act with the intelligence and promptness that it would be necessary for it to act under government ownership if the railways were to be adequately developed and efficiently managed?

Emergency Train Protection

The need for emergency protection arises at times on all railroads. In meeting such demands it is evident that some lines equipped with automatic block signals are not getting the maximum possible protection from these installations. Many lines traverse rough country, with deep cuts and numerous tunnels; run along the banks of streams that are liable to overflow or are subject to other dangerous conditions. As a protection watchmen or track walkers are employed to inspect constantly the conditions existing at such locations, and provision is made for quick communication with headquarters in cases of emergency. At those locations where automatic signals are in service it would be to the advantage of the roads if more general use were made of them by providing means whereby the watchman or track walker might be able to place the signals in the "stop" position on each side of the danger point as an emergency protection until he is enabled to notify the proper officers. Objections might be raised that these men should not be allowed to manipulate the signals, but certainly if they are capable of being intrusted with the responsibility of protecting trains otherwise in emergencies there should be no objection to their opening a track relay by means of a knife switch conveniently located or by cutting a circuit wire which might be made readily accessible. This is not an untried idea, as is evidenced by its application to some roads which now provide permanent emergency signal protection for trains at dangerous locations. It is a practice which should be more generally followed in the future in order to more nearly obtain the maximum benefits which can be derived from an installation of signals. The application of such protection to a particular road is a matter of detail which may be worked out by the signal department on that road.

The Railroads' Advertising Campaign

It is no reflection on advertising that the great American circus was one of the first large national institutions to test out its possibilities on a scale commensurate with the scope of the business. But one of the easiest ways to advertise is to pile adjective on adjective in an appeal to imagination rather than reason. As a matter of fact, this kind of advertising has been so widespread as to be synonymous with advertising in the minds of, probably, the majority of people. Very recently, however, advertising of an entirely different kind has been tried out fairly extensively. Those most conservative of institutions, the national banks, have tried it with success. Men and institutions that have been played upon by demagogues and yellow newspapers, have found it possible

to tell their side of the story to the public effectively and without loss of dignity, through buying space in national magazines and in the daily papers. Now the railroad executives have decided to undertake a national advertising campaign with the double purpose, first, of informing the public of the facts regarding the situation at the time the railroads are about to be returned to their owners, and second, of keeping the general public informed of what railroad managements are doing, what their problems are and of the progress being made in the solution of these problems. The millennium is not going to arrive in railroad affairs on the day the private corporations resume operation. Every shipper is not going to have his freight moved promptly and safely whether it is correctly marked or not. Every traveler is not going to encounter a courteous ticket agent, baggage man, brakeman and conductor. The best that can be hoped, is for the immediate inauguration of a drive to improve the railroad service and lift it from the sad estate into which it has fallen under war conditions and during the last year of confusion under government operation. It is eminently fitting and should be mutually helpful for the railroad executives to lay before the public the progress being made in carrying out this undertaking, and it is both fitting and just that investors should have the fullest information in regard to the properties in which they are vitally interested. The following resolutions have been introduced in Congress to investigate the advertising campaign of the railroads and also the propaganda campaign of the Plumb Plan League. There has been no secrecy about the fact that the railways are preparing to spend about a million dollars in their advertising campaign and that the advertising is to run some weeks and is to appear in daily, weekly, agricultural, trade and labor papers throughout the country. The amount it is planned to spend is not large relatively to the size of the railroad industry, the importance of the railroad problem and the number of people it is necessary to reach.

Why Speed Is Imperative in Dealing With the Railroad Problem

THE GOVERNMENT ought not to relinquish control of the railroads or to terminate the guarantees of standard return without permanent legislation insuring the companies that they will be given rates which will not only maintain their solvency but also enable them to raise the vast amounts of new capital they need. The railroads ought not to be returned to private operation at all without at least temporary legislation continuing the guarantees of standard return until permanent legislation has been enacted.

While these things are plain to those who know the existing railroad situation, the additional and almost equally important fact should not be overlooked that the welfare of the country demands that permanent legislation shall be passed and the railroads returned to private control as soon as possible. The facilities of the railways are today far more inadequate to the present and prospective demands of commerce than they ever were before. There is good reason for believing that the demands on them will increase during the coming year and will be larger in the late summer, fall and winter of 1920 than ever before. Therefore, a large expenditure for additions and improvements should be made in 1920. But until permanent legislation is passed the railway companies cannot begin raising funds for this work; they cannot begin making preparations for it until they know the exact date on which the properties will be returned to them; and they cannot actually begin the work until the properties are back in their hands. There is now talk of delaying the return of the railways to April 1. If it were definitely announced that they were not going to be returned until then Congress probably would defer passing permanent legislation until almost that date. The result would be to render it impossible to carry out a program of improvements which would be of any help in handling business in 1920.

The budgets providing for needed work can be made up in a short time. Many companies already have them practically made up for the next year. But after the budgets are made up the new capital for whose investment they provide must be raised. Most of the companies will not be able to raise any new capital until permanent legislation is passed.

Improvements and additions are of two kinds, those to permanent structures, such as tracks, yards and buildings, and those to locomotives and cars. After the money for additions to, and improvements in, permanent structures is raised the orders for materials must be placed. This involves negotiations of more or less length with the railway supply companies. Then the materials and supplies must be made by the manufacturers before they can be delivered to the railway. Meantime the railway companies must be getting ready the organizations, including large numbers of employees, that are to do the work for them after the materials have been received. Under present conditions in the iron and steel and other industries the delivery of materials will be slow and labor will be difficult to get. Unless the railway companies are able to begin placing orders for materials and getting ready their organizations within a few months, it will be impossible for them to do in 1920 any considerable amount of additions and betterments work which will help them to handle the traffic of 1920.

The same reasoning applies with equal force to the obtaining of new equipment. In January, 1918, immediately after government control was adopted, the *Railway Age* began urging the Railroad Administration to place at once whatever orders it was going to place for locomotives and cars upon the ground that if it did not place them at once it would not get the equipment in time to be of any service to it in the year 1918. Instead, the Railroad Administration entered upon a policy of wholesale standardization, and the orders for equipment were not placed for some months. When they were placed it was optimistically announced by some officials of the Railroad Administration that most of the equipment ordered would be delivered and ready for service by fall. The *Railway Age* said it would not be, because it could not be. Our prediction proved only too correct. Not all of the 100,000 freight cars ordered in 1918 have been delivered yet, and only a small part of the new locomotives and cars were ready for service in the fall of 1918. The course of events will be similar in 1920 unless the railway companies are put in a position where they can place their orders for equipment very early in the year. It takes time to design equipment, to make the contracts for it, and especially for the builders to get materials and labor and to do the actual work of building.

If the return of the railways to their owners is to be postponed beyond January 1 the program which should be adopted seems obvious. First, the date on which they are to be returned should be finally and irrevocably settled, and it should not be later than March 1. Then Congress should work unremittingly on permanent railroad legislation and pass it not later than February 1. The railway companies will then know pretty early in the year just what kind of regulation they are going to have. They will be able to begin placing orders and to perfect their organizations for the work which is to be done after the properties are returned. The properties ought to be returned not later than March 1, because improvement work should be begun throughout the country in March.

If Congress and the administration fail to pass legislation by February 1 or to return the railroads to their owners by

March 1 they will assume a serious responsibility for the effects which their delays will produce upon the ability of the railroads to handle the commerce of the country when it again reaches its peak in the latter part of 1920.

The Storage of Railway Fuel

THE RECENTLY SETTLED STRIKE of bituminous coal miners and the acute stage of fuel which has resulted in many sections of the country brings forcibly before the public the urgent need of stabilizing the soft coal mining industry. As indicated by the demands of the miners, one of the most serious causes of discontent is the lack of steady employment which, while the wages appear to be adequate on a daily basis, results in the aggregate earnings of the men in this industry being too small to provide a satisfactory living when distributed over the many periods of unemployment.

In a statement issued by Eugene McAuliffe on October 1, the difficulties surrounding the industry are divided into three classes as follows: First, a measure of mine development in excess of that required if it were reasonably employed, this excess development working short time during the summer, thereby materially increasing the cost of production, with the recurring opening during the winter season of mines producing low grade coal, employing transitory and unskilled labor; second, a season of idleness on the part of mine labor, which is being used as the basis of a demand for a six-hour working day and wage increases approximating one hundred per cent; third, the difficult task set the railroads to provide sufficient coal cars to move the winter's coal supply from August to December, inclusive, with material increase in the cost to the consumer necessary to recover the losses sustained by the producer during the idle summer period, plus the premiums that invariably follow a heavy demand, however made, for any commodity.

The remedying of these conditions is a national problem in which no section of the public is not interested. Aside from the mines themselves, however, probably no industry is more directly affected than the railroads and the benefit to them of any measure of stabilization which may be effected are ample justification for the taking of special measures on their part to that end. At least two such measures have been proposed: The publication of seasonal coal freight rates and the storage of the railway fuel supply during the spring and summer months. Among the benefits of storing coal for the railroads are the transfer from the period of heavy traffic movement during the fall and early winter months, of the movement of a large portion of the railway fuel supply to the spring and summer months, when the traffic movement is at its lowest ebb; the insurance of an adequate fuel supply for the transportation needs of the country during possible fuel shortages due to strikes or extraordinary winter weather conditions, and the possibilities of some advantages in price as well as in the quality of the coal received. These advantages in a measure are off-set by the necessity for providing proper storage facilities, the cost of the extra handling involved and the deterioration in the quality of the fuel resulting from storing and handling. With efficient care in the provision of storage facilities, however, the latter objection may be reduced to such an extent that the net result will be a fair profit. The railroads normally consume something over one-quarter of the total output of the bituminous mines and a reasonable program of storage involving this proportion of the total coal supply undoubtedly would exercise a strong influence in overcoming the evils of the present highly speculative condition of the soft coal mining industry. A study of the problems involved in satisfactorily establishing such a program is, therefore, worthy of vigorous prosecution by the railroads throughout the country.

Letters to the Editor

Labor Union Guarantees

St. Paul, Minn.

TO THE EDITOR:

Will some one offer a reasonable explanation why the various railroad labor organizations, when they contract with the railroads to carry out the provisions of their schedules, could not, in all fairness and as an efficient business method, be required to guarantee their contract performance by a suitable bond?

For instance, a concern will make a contract with a railroad to handle its coal docks—a matter of comparative minor importance—and the first requisite is for the contractor to give the railroad a satisfactory guaranty bond. But a railroad will contract with labor organizations for the most important feature of its operation, and all they secure are a few signatures, which means the contract provisions can be and are violated with impunity.

A certified check of a railroad union, securely deposited as a guarantee for faithful performance, would, in my opinion, go a long way to prevent injudicious action on the part of union officers and members. As long as these affairs are cold business propositions why not bind the bargain *on both sides* in the way I have above mentioned? It is not a matter of intangible honor—it is a matter of tangible dollars—so let the dollars do the work. I believe it would put a stop to a good deal of railroad labor trouble, could make "unauthorized" strikes unknown, and do much toward guaranteeing the men and the railroads a squarer deal.

AN OBSERVER.

Salaries of Railroad Officials

New York

TO THE EDITOR:

The article bearing the above title, which appears on page 751 of your issue of November 26, and your editorial on the subject in the issue of November 14, are interesting reading. It seems that Representative T. W. Sims, in a speech before the House, makes the statement that the salaries are exorbitant and extravagant and in order to prove his statement gives the amounts of the salaries received by the 23 highest paid officials of the U. S. Government.

It is said, and truly, that comparisons are odious, but if Mr. Sims wishes to draw them he should by no means stop where he does, but in all fairness should go on far enough to enable the drawing of some just and reasonable conclusions from his comparisons. He should go on clear down the line and show that as a class the employees of the railroads of this country are today drawing as high a rate of compensation for the service rendered as any class of employees in the world. He should also show that the employees of our government are drawing a lower rate of pay for the service they are supposed to render than any other class of employees in this country. He should also show that these same railroad employees were at least 25 per cent more efficient under the management of the men given in the list referred to than they were under government management. One of the first acts of our government when it took over the railroads was to abolish piece work, and as a result it took ten men to do the work heretofore done by six men. Here is a difference of 40 per cent.

The 23 government offices named were created and had salaries attached to them before railroads existed, and there-

fore there must have been a time when the salary paid to any one of these 25 government officials was much higher than that paid to any railroad officer. There must be some good and sufficient reason for the change which has taken place, and perhaps the best explanation can be found in the results which have followed. In the period during which it has been gradually brought about there has been an increase which is almost beyond the grasp of the human mind, in the volume of the business handled by both groups of officials, and also in the intricacy and complication of the problems which they have had to solve. While this was taking place the records show that on the railroads there was a corresponding increase in efficiency and economy of operation.

The job of the railroad operating officer is to produce transportation, and the railroads of this country, while under the management of the 208 general officers whose names are given in the list referred to, were producing railroad transportation at the lowest costs ever known. There has never been a time or place where as much railroad transportation, either freight or passenger, could be purchased for a given amount of money as from the railroads of the United States during several years before the government took over their operation. Taking them as a whole, our railroads were at this time the most complicated and at the same time the most efficiently managed industry the world has ever known.

The reason that these men were able to consummate this wonderful achievement was, as you say, because they began at the bottom and worked up. Any one who knows the game knows that it was work all the way. Taking them as a class, the fact that any man reached the top was proof that he was a man of more than ordinary ability and a big man in every way, because this road is not traveled by any other kind. There may be some exceptions to this rule, but if there are they are so few that they are not worthy of consideration when looking at the subject as a whole.

Railroad management is the most complicated and most difficult management the world knows because the human element enters into it to such a great extent. Most any one can manage a lot of machines because machines have a set pace and can always be depended on to do certain things, but human beings have no set pace and by far the largest percentage of them are not dependable. An indifferent manager of men can make a good showing when he comes in fairly constant personal contact with his men, but when the manager must be distant from them at long intervals he must be a big man and have a strong personality in order to retain their loyalty.

There is no other line of business which depends so largely on the human element, and therefore so largely on the loyalty of the employees. The manner in which one or two disloyal, disgruntled, inefficient or lazy employees can tie up a whole division of a railroad is simply appalling, as every man who has been a division superintendent knows to his sorrow.

What about the salaries? They are only an incident and one of the smallest in the consideration af the subject. The little old law of supply and demand fixed them as, in the long run, it fixes most things in this world. We are hearing a lot about human effort of certain kinds not being a commodity and not being for sale, but the name which you give it does not seem to change its status very much, as it is always up against this law and always will be so long as human nature is what it is. The salaries have been increased from time to time as demanded, and I mean demanded, by this law.

And while the railroads were going ahead in this way what was our government doing? Was it keeping up? It was not. It was not even holding its own, but actually going back, and, outside of the military departments, there is probably not a single one of its many activities which is not carried on with less efficiency than it was 25 years ago, and today it is wasteful and inefficient to such an extent as to almost imperil its very existence. This does not apply to our Navy Department, which is efficient, and the reason is set forth by Admiral Fisk in his recent book, "From Midshipman to Rear Admiral," in the following statement:

"In the Navy no young man can be admitted to the lowest class in the naval academy unless he is of good moral, mental and physical character; he cannot graduate until after he had passed a satisfactory moral, mental and physical examination of great rigidity; he cannot be promoted to any rank thereafter until he has passed rigid moral, mental and physical examinations."

This is why our Navy is efficient. It recognizes and rewards good work. Admiral Fisk says further: "Yet in almost every other government organization—Congress, the Supreme Court, the Cabinet, the departments and all state and municipal positions, no examination of any kind is held, and the matter of fitness for a position seems to be the last point considered in appointing a man to fill it."

This is the reason for government operation under these departments being inefficient and wasteful. Good work is neither recognized nor rewarded.

The railroads, taking them as a whole, and during the period referred to, recognized good work and rewarded it. There was always a demand for good men and the employees knew that their advancement depended on their industry and ability. As an example: About 25 years ago one of the officials whose name is in the list referred to was filling a subordinate position and drawing a salary of $3,500 a year. A manufacturing company offered him a position at a salary of $12,000 per year and he refused the offer, saying that he expected some day to be president of the railroad for which he was working. He is almost there now.

Mr. Sims says in his judgment the Pennsylvania is the greatest railroad system in this country, and in the year 1917 it had a president at a salary of $75,460 and eleven vice-presidents at salaries beginning with $40,620 and running down to $25,000. Can it be that it has not occurred to Mr. Sims that one of the reasons for this being the greatest railroad system is *because* it has these officials and pays them these seemingly high salaries.

As a general rule, when a man buys anything he comes pretty near getting what he pays for, and this rule applies particularly to the purchase of service of any nature. Service is purchased to fill certain specifications and withstand certain tests just as materials are, and the price commanded by both is governed largely by the specifications they will meet and the test they will withstand. Any price paid for a piece of material is exorbitant if that material fails. Any price paid for service is exorbitant if the service is not delivered, and there is no redress. Good material has always commanded a high price and always will. Good service has always commanded a high price and always will; and in the long run, as a general rule, the highest priced material and the highest priced service are the best investment.

Our government chooses to use low priced service and gets just what it pays for. CLEMENT F. STREET.

PEAT CONSUMPTION IN IRELAND.—It is estimated that at the present time the Irish bogs contain between 3,500,000,000 and 4,000,000,000 tons of anhydrous peat, or 5,000,000,000 tons of air-dried peat. At present about 6,000,000 tons of peat are burned as fuel in Ireland per annum and over 4,500,000 tons of coal are imported. If this coal were replaced by peat fuel at the rate of two tons of air-dried peat to one ton of coal, the total consumption of peat in Ireland would be about 15,000,000 tons per annum, and the peat deposits would be sufficient to satisfy the fuel and power requirements of the country at the present rate of consumption for more than 300 years.—*The Engineer,* London.

The Condition of Rolling Stock in France Today

A Great Sufficiency, but Task of Putting It In Condition Is a Difficult One

By Francis Jaques

Paris, France.

"THE FRENCH RAILROADS at the present time are to be considered as being among the seriously wounded of the war, and neither the armistice nor the coming of peace can put them on their feet as with the touch of a fairy wand." Such were the words of one of the leading French railroad men shortly after the armistice, and the serious condition of the railroads today only goes to bear out the truth of his statement.

The rolling stock suffered particularly, for the magnificent effort of the railroads during the long war—one of the principal factors of the final success—was made under such conditions that it was practically impossible to make repairs or replace the worn-out equipment until the arrival of the Americans. As a result of this long-prolonged strain the condition of French rolling stock today is deplorable, and this is one of the causes of the very serious transportation crisis which is having such a disastrous effect at the present time on the whole life of the country.

It should be distinctly understood that it is not from a lack of equipment that France is suffering, but because its rolling stock is in exceedingly bad condition, literally worn out by the effort of the war. We shall first give some figures, which are extremely eloquent, showing the quantity of rolling stock in France before, during and after the war, and then explain what measures are being taken to improve conditions.

In addition to this rolling stock belonging to the principal railroads, the enemy captured locomotives, passenger cars and freight cars belonging to the secondary railroad companies, to the mines and to private parties. An estimate has never been made of the amount of this equipment taken.

France has already received, and is now receiving, a certain amount of rolling stock from two sources, the so-called "Felton Equipment" and German equipment. This is not included in the above figures.

The "Felton Equipment" is rolling stock ordered by the American army from America during the war by contracts with various companies. The coming of the armistice naturally made a vast change in the state of affairs, and the American army no longer required this equipment. The French government, therefore, being in need of rolling stock, took over the contracts for the delivery of this "Felton Equipment," which is quite apart and in addition to the 1,300 odd locomotives and 19,000 odd cars left in France by the American army for the French government. The following are the figures with regard to the so-called "Felton Equipment" which is being erected by the Middletown Car Company—the cars at St. Nazaire and the locomotives at La Rochelle:

"FELTON EQUIPMENT"

Freight Cars—	
Total number	19,860
Now in service	8,043
Locomotives—	
Total number	485
Already assigned to French railroads	431
Assigned to Roumania	15
Not yet assigned	39

A certain amount of rolling stock has been received by France from Germany as her share of the 150,000 cars and 5,000 locomotives assigned to the Allies by the armistice. Its final disposition has not yet been decided by the Peace Conference, but it is expected that France will keep as much of the equipment as it needs, returning the rest to Germany. In this case the value of the equipment kept will be probably deducted from the amount of the war indemnity which Germany will have to pay. The following figures show the amount of this equipment received by France to date:

Freight cars	63,871
Passenger cars	5,953
Locomotives	2,749

Intensive Use of Equipment During the War

It will be seen from all of the accompanying figures that there is not a lack of rolling stock in France today, but that the amount of equipment under repair is deplorably great. By the third year of the war the quantity of rolling stock was very low, most of this equipment having been lost at the very beginning at the time of the battle of Charleroi. This loss, coupled with the decrease in the number of the personnel, was felt tremendously. This was all the more the case because of the fact that the needs became greater and

EQUIPMENT FIGURES

Freight Cars

Railroad	Aug. 1, 1914	Aug. 1, 1917	Dec. 1, 1918	Nov. 1, 1919
Paris, Lyons & Mediterranean	105,578	107,754	108,971	109,433
Etat (State)	59,874	70,809	77,413	76,109
Paris-Orleans	43,235	48,382	51,071	52,155
Nord	76,625	49,870	52,281	54,440
Est	59,183	44,561	49,775	48,111
Ceintures (Paris belt lines)	.....	.....	.....	.....
Total number of freight cars	373,553	350,717	368,954	371,359
Number of cars under repair belonging to railroads	13,060	28,088	36,342	50,391
Number of cars under repair belonging to private parties	.....	.....	.....	13,514

Passenger Cars

Railroad	Aug. 1, 1914	Aug. 1, 1917	Dec. 1, 1918	Nov. 1, 1919
Paris, Lyons & Mediterranean	10,503	10,377	10,327	10,338
Etat (State)	9,192	9,198	9,276	9,126
Paris-Orleans	8,151	5,807	5,606	5,621
Nord	9,483	7,320	7,102	8,561
Est	6,875	6,216	6,637	6,170
Midi	4,799	4,775	4,739	5,576
Ceintures (belt lines)	317	314	313	313
Total number of passenger cars	49,320	44,007	44,000	45,705
Number of cars under repair	3,988	5,094	7,072	.....

Locomotives

Railroad	Aug. 1, 1914	Aug. 1, 1917	Dec. 1, 1918	Nov. 1, 1919
Paris, Lyons & Mediterranean	3,651	3,787	4,127	4,306
Etat (State)	2,863	3,033	3,295	3,393
Paris-Orleans	2,084	2,167	2,405	2,592
Nord	2,359	2,603	2,614	2,449
Est	1,956	1,948	1,976	2,152
Midi	1,032	1,026	1,078	1,062
Ceintures (belt lines)	102	138	149	139
Total number of locomotives	14,047	14,702	15,644	16,093
Number of locomotives under repair	1,146	2,031	2,733	3,540

EQUIPMENT BELONGING TO THE PRINCIPAL FRENCH RAILROADS, CAPTURED BY THE ENEMY. FIGURES AS FURNISHED BY THE RAILROADS ON OCT. 1, 1918.

Railroad	Locomotives	Passenger cars	Baggage cars and fast freight equipment	Freight cars and slow freight equipment
Paris, Lyons & Mediterranean	.....	7	39	980
Etat (State)	.....	38	43	2,341
Paris-Orleans	1	64	.....	2,026
Nord	76	575	603	29,788*
Est	14	80	116	11,810
Midi	.....	252	252	574
Ceintures (belt lines)	.....	.....	.....	.....
Total	91	1,016	1,053	47,519

* Including 7 locomotives, 146 passenger cars and 6,292 freight cars belonging to the Belgian Nord Railroad.

greater. It was not until 1916, however, that a certain number of passenger trains were taken off in order to try to help the situation.

The greatest effort came at the time of the powerful German offense at the end of March, 1918. The Nord and Est railroads had to increase nearly ten fold the number of trains moved daily for military purposes. When the enemy was advancing rapidly on Amiens, an important train escaped one day by its speed while the Germans and French were both heavily bombarding the line.

In November, 1917, the Paris, Lyons & Mediterranean was advised only 48 hours ahead that it would have to move 100,000 French and English troops to Italy, supplying them with food and ammunition. In spite of the difficulties of the country through which this movement had to be made, the Paris, Lyons and Mediterranean accomplished this formidable task as desired and without increasing its personnel.

During the war the traffic on the Nord, Est and Paris, Lyons & Mediterranean was 80 per cent greater than in time of peace, and all this had to be handled with a smaller amount of rolling stock and a greatly reduced personnel. The task of the personnel was still further complicated on the Nord by the fact that it had to work in collaboration with a personnel only speaking English and operating on the same lines.

American Assistance

With the arrival of the American army in France, the transportation requirements became even greater. The leaders of the American Transportation Corps, however, soon adopted very radical methods to improve the situation, always remaining in close collaboration with the French. Arrangements were made to import a large number of freight cars and locomotives from America, and these were erected by the American army in France. The Americans worked in the shops either independently or together with the French workmen. The former method was found the more successful because of the impossibility of rapidly accustoming men to work together of two races with such radically different customs, methods and hours of work, and speaking different languages.

Towards the end of the war, when speed was of vast importance, erected locomotives were imported from America and unloaded in France with the huge cranes which the American army had installed. This feat was accomplished with very sucessful results.

Thanks, therefore, to this American assistance in importing cars and locomotives and in repairing the worn-out French rolling stock, the equipment situation began to improve towards the end. It was high time, for the condition of the French rolling stock was indeed desperate in April, 1917.

Proposed Measures for Increasing the Quantity of Serviceable Equipment

By the addition of the American and German cars and locomotives to the French stock, a total amount has now been reached which is not far from that in existence just before the war. A glance at the figures at the beginning of this article will show the vast amount of equipment under repair which has accumulated during the war. Some of this rolling stock has been literally used up to the extreme limit, and, like the famous "one hoss shay," is on the point of falling to pieces. For this reason it has even been proposed to destroy a great many cars which are beyond repair and are taking up siding and yard space all over France. A short trip in any direction will soon convince the observant traveler of the wisdom of this proposal.

On August 29, 1919, M. Claveille, minister of public works, sent a note to the railroad companies in which he insisted for the eighth time upon the necessity for adopting exceptionally radical and energetic measures for relieving the serious transportation question. He urged that efforts be made to stop the rapid increase of bad order equipment. He suggested that the companies use the artillery and powder shops, now useless, and also the installations left in France by the Americans and English for this work. He asked the companies, utterly unable to cope with the situation themselves, to make contracts with private firms, and drew attention to the fact that the measures proposed in his circulars of December, 1918, and January, 1919, had not been carried out.

On October 2, 1919, M. Claveille sent a new letter to the principal railroads stating that he considered the situation as very serious. In that he says: "Our situation is such that not a minute is to be lost for adopting all the remedies, without exception, which may have a favorable influence on the operation of the railroads." The minister requested that a report be submitted to him by October 15, suggesting measures to improve the transportation situation.

The Technical Committee for the Operation of Railroads replied in a formidable document. The following passages of this report are extremely enlightening with regard to the equipment situation:

"The effort of the French railroads, so important a factor in the successful result of the war, was made under conditions which rendered the repairing and replacing of rolling stock impossible. This has caused a general depreciation of the equipment and lessened efficiency of personnel.

"The defects existing before the war have increased. In quantity the amount of rolling stock is at present sufficient. There were more locomotives and more cars in August, 1919, than in 1913.

"It is not, therefore, the number of cars which is not sufficient, for we are waiting for equipment to be delivered to us which represents about 1,500 locomotives, 3,000 passenger cars and 36,000 freight cars.

"However, although it is true that we have so many cars, we have the following percentage of worn-out equipment which needs repairs.

"Locomotives, 20 per cent instead of 9 per cent in time of peace; passenger cars, 26.4 per cent instead of 8.8 per cent, and freight cars, 15.7 per cent instead of 3.7 per cent.

"Also, among the other locomotives, unfortunately not a day passes but what a great many have to receive some slight repairs which keep them out of service. This fact has a considerable and disastrous effect on the regularity of the operation of trains.

"Without delay, repair shops are going to be created in connection with the engine terminals, and small yards are going to be built everywhere, following the example set by the Paris, Lyons & Mediterranean, in order to reduce the lengths of hauls for equipment.

"On October 1, 1919, 193 contracts were being made for the repairing of rolling stock, 52 for locomotives, 54 for passenger cars and 87 for freight cars.

"On the other hand, with the application of the 8-hour law, it is to be feared that we shall soon lack locomotives. It will then be necessary either to give up the facilities given the workmen by the 8-hour law or operate the locomotives under the pool system."

The Technical Committee did not believe it its duty to make this decision.

The above passages from the report of this committee give a very good idea of the serious situation with regard to rolling stock, resulting not from the lack of equipment but from its bad condition.

Motive power difficulties are made still worse by the very poor quality of the coal. It often happens that the coal which has to be used is not even in the form of "briquettes," but is literally dust. If a fireman rakes his fire down a

little too energetically, he is liable to cause it to fall through the grate.

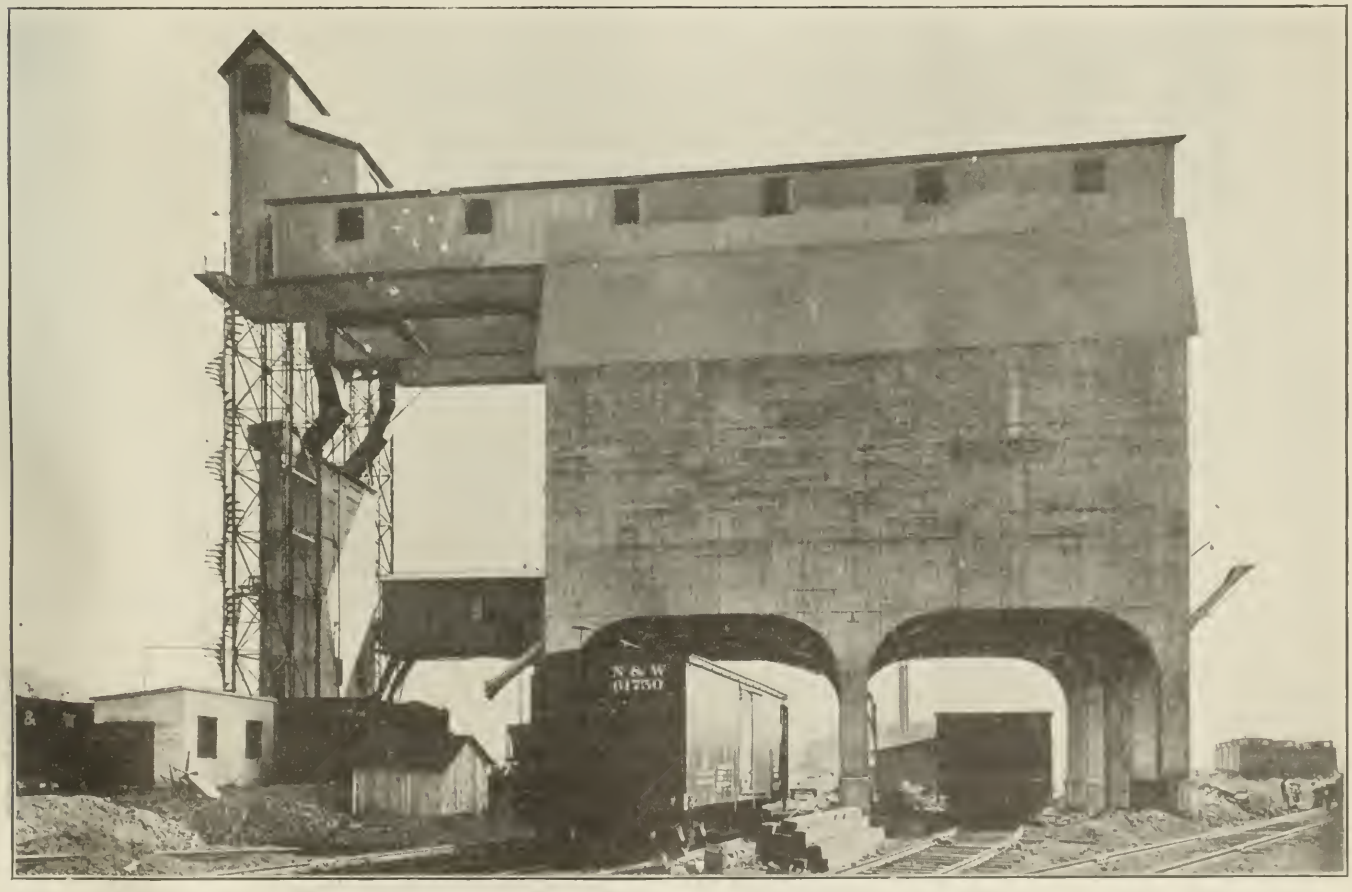
American firms will naturally be eager to know whether American assistance is going to be called upon to relieve the serious situation in which the French rolling stock now is, and, if so, what the business opportunities will be. The writer does not believe that much raw material will be imported from America. It is the policy of the present French government to restrict importations as much as possible in order to protect French industries and to try to stop the disastrous fall of the franc which is at present ruining France. Then, too, as a result of the war, France has acquired the opportunity of obtaining minerals in large quantities from the region of the Saar, and a great many orders have been placed in that district.

One of the great difficulties with which the French have to cope at present is the lack of organization. In this respect, American firms could co-operate with them by the organization of repair shops, employing French workmen and material. Unfortunately, however, the state of mind of the workmen in France is now very much upset. There is a widespread fight for shorter hours and higher pay, and this is coupled with a general spirit of laziness mingled with "bolshevism." The application of the 8-hour law has come too rapidly, and the workmen, encouraged by the fact that their reasonable demands were granted at once, are now inclined to go too far, asking for such short hours and such large wages that the companies would be unable to operate the railroads under such conditions. One of the highest railroad officials in France said recently that, in his opinion, if matters kept on going in the same direction as at present, the only solution of the financial problem would be to increase the rates by 100 per cent.. The effect on the public can be imagined.

To return to the rolling stock situation, it may be said, therefore, that there is equipment enough in France today or ordered; but that the great difficulty arises from the amount of bad order cars and locomotives. The remedy lies in the destruction of the equipment beyond repair, and in the proper organization of shops to put into shape the vast quantity of rolling stock now lying idle and blocking the traffic and rendering the proper operation of the railroads impossible. The solution of this problem is a vital one for the future of France, and there is an excellent chance for American concerns to get their share of the private contracts being made, upon condition that their work be organized and executed in France.

Large Coaling Station Embodies a New Feature

PROVISION FOR THE PREPARATION of coal for stoker-equipped engines is a feature of a large coaling station recently completed for the Norfolk & Western at West Roanoke, Va. The 1,200-ton coal pocket is divided into two bins of 600 tons capacity each. One of these is for the storage of lump coal and the other one for screenings to be used in the stoker-equipped engines. Each of the bins is provided with six spouts to deliver coal to engines on six tracks simultaneously.



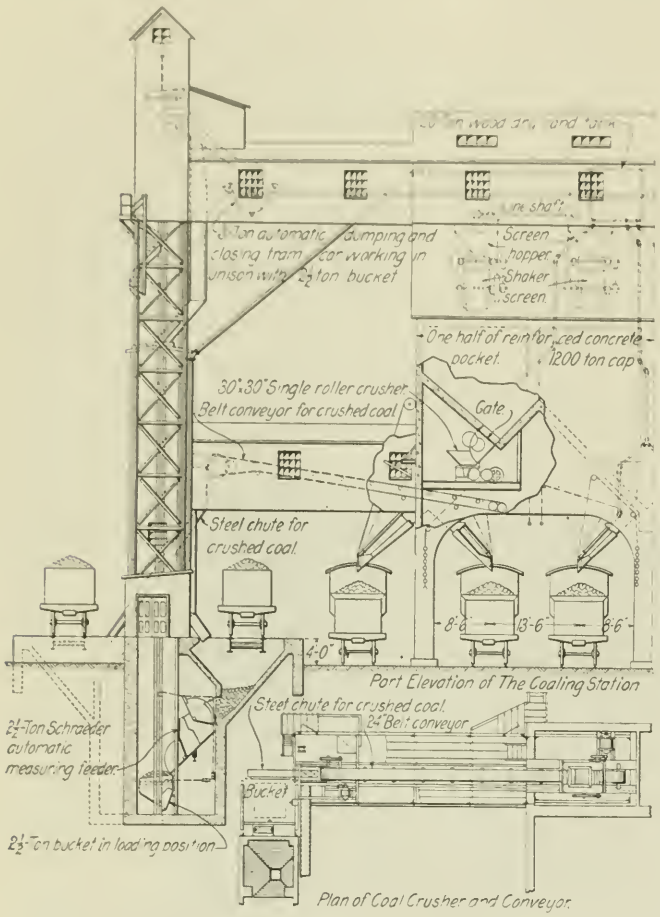
General View of the New Coaling Station at West Roanoke

To grade the coal for the two bins it is screened with electrically-operated shaker screens, which divide the coal into the two grades, that through two-inch perforations dropping into one bin and all the oversize coal passing off the end of the screen into the lump coal pocket.

To take care of a possible inadequate supply of the fine

coal as obtained merely by screening the run of coal delivered to the station, provision has been made for the manufacture of screening coal. An electrically operated crusher is included in the equipment, being installed as shown on the drawing under one end of the lump coal pocket, so that the coal from this bin may be run through this crusher. The crushed coal is carried by a belt conveyor to the elevator tower, where it may be chuted to either track hopper and returned to the storage bin.

This coaling station was designed and erected by the Roberts & Schaefer Company, engineers and contractors, Chicago, and all equipment for handling the coal conforms to



Elevation Showing Track Hoppers and Elevator and One-Half of the Storage Pocket

the standard designs of that company. There are two track hoppers for receiving coal and two separate elevating towers, each having a capacity of 75 tons of coal per hour. The delivery of coal from the elevator bucket to the bins is accomplished by two tram cars running on independent turnways according to an arrangement used previously in other large stations of the same type. These tram cars each dump coal into any one of four hoppers, the hoppers being arranged in pairs over transverse conveyors that deliver the coal to the four sets of shaker screens.

This station is also equipped with the "R and S" gravity sand plant and Beamer steam sand dryer. A reinforced concrete bin of 120-tons capacity is provided for the wet sand between the two coal elevator towers with the dryers located beneath. The dry sand is delivered to a 20-ton capacity dry sand tank in the deck house above the coal pocket from which the sand is chuted by gravity to each one of the coaling tracks. This station was designed and built under the direction of J. E. Crawford, chief engineer of the Norfolk & Western.

Coal Loading Heavy

DESPITE THE GREAT difficulties in getting empty coal cars back to their normal channels of traffic after the extraordinary dislocation during the coal strike, gratifying progress is being made in supplying empties at the coal mines, according to a statement issued by the Railroad Administration on December 19.

On December 12 1,058,000 tons of bituminous coal was produced, equivalent to 52.5 per cent of the pre-strike average. By December 16 this volume had risen to 1,595,000 tons, or 79.1 per cent of the pre-strike average (based on the high rate of production during October), or in other words 30,392 cars, a greater amount than the average daily production during the corresponding week in December, 1917, which average was 30,000 cars, and it is considerably in excess of the production during the corresponding week of December, 1916 and 1918.

"Inevitably there are car shortages," the statement says, "but they are not as numerous as might have been expected. It is highly probable, however, that the next few days will be exceptionally difficult in a few fields. The Railroad Administration, in co-operation with the National Coal Association, is doing everything possible to remedy the abnormal conditions, and it is expected that very shortly all facilities for the transportation of coal will be again on a normal basis.

"On December 10 attention was called to the dislocation of production, transportation and distribution of coal caused by the miners' strike, and expressing the hope that the general public, the coal operators and the miners will all appreciate these difficulties and will make allowances for the time required to restore normal conditions.

"This interruption of normal activities inevitably resulted in a disarrangement of coal car supply, in that the needs of the public, being of paramount concern, necessitated the movement of great numbers of cars great distances from the source of loading and into sections of the country not usually supplied from sources which were called upon during the period of the strike. For instance, certain mining regions had therefore always shipped their coal to the Atlantic seaboard, but owing to the pressing needs of the Middle and far Western states much of this coal was transshipped there, resulting in depleting somewhat the territory east of the Alleghenies and in operating difficulties in returning these cars to the mines. Adverse weather conditions in many sections are adding to these difficulties.

"No more coal is being held in storage on wheels than territorial needs make advisable, and every possible effort is being made with a view to the expeditious handling of empty cars."

Following is a statement of the average daily car loading of bituminous coal for the week ending on December 20 for the years 1916, 1917 and 1918, as compared with the car loading for December 17, 1919:

Region	Roads	Average loading per day week ending December 20			Loaded December 17, 1919	Percentage as compared with 1917
		1916	1917	1918		
Eastern	24	4,230	4,865	4,560	4,629	95.1
Allegheny	24	7,404	7,758	9,380	9,143	117.9
Pocahontas	6	4,000	2,914	3,400	4,699	161.3
Southern	17	3,900	4,756	4,357	5,664	119.1
Northwestern	12	1,950	2,123	1,776	1,174	55.3
Central Western	27	4,957	5,770	4,310	5,932	102.8
Southwestern	19	2,608	1,566	2,190	1,748	111.6
Total	129	29,049	29,752	29,973	32,989	110.9

THE NORTHWESTERN PACIFIC has secured from the Railroad Commission of California an extension to December 31, 1920, of the time granted by the Commission for the sale of its bonds.

Economics of Freight Car Maintenance and Operation

Relative Saving Effected by Rebuilding or Retirement—Great Increase in Cost of Repairs

By L. K. Sillcox

Master Car Builder, Chicago, Milwaukee & St. Paul

THE ECONOMIC SITUATION with respect to the performance of that great vehicle of commerce, the freight car, is one of basic importance. Any success in railroad operation corresponds largely to the net number of car miles attained per car per day, which figure ought to be as nearly 40 or above as possible. Why many roads are only showing 30 or even less miles is probably due to many causes beyond the exact knowledge of the writer, but in any event, so far as the problem is affected from the standpoint of design, maintenance and inspection of freight car equipment, there are a number of conditions which deserve calm and clear analysis.

The comments which follow are submitted with due consideration for the varying experiences and circumstances which obviously have to be allowed for, knowing that they must be met conservatively and frankly in view of whatever limitations may present themselves. We are dealing with a work which in practice is responsible for millions of dollars expended annually, and each individual task in design and maintenance deserves its full share of study and careful analysis. The inspection of freight trains can be discussed on a more uniform basis and greater similarity in practices can be obtained than at present, and I think to considerable advantage.

Weak Draft Members Most Serious Defect

One noteworthy fact, the explanation of which I have tried to investigate, should be first mentioned. Of all the complaints which are general in the operation of freight train equipment at the present time, the behavior of the weakly constructed design of car is found to be the most perplexing, principally due to draft attachment failures in combination with dangerously inadequate running gear members, such as truck, side frames, axles and bolsters. Although this difficulty is in greater measure due to wooden underframe cars, yet it is also noticeable in the case of improperly designed steel cars. Right at the present time there is a tremendous demand for suitable cars, which is not being satisfied, and yet it would appear to any thoughtful man that too many cars are standing idle which ought to be making their just proportion of revenue mileage. It does not seem to be altogether a case as to shortage of cars, but rather a matter of having more cars made really and honestly fit.

It has been said that a very large percentage of cars should be destroyed, especially those of wooden construction. A careful check, extending over a period of seven months in normal heavy trunk line service, has demonstrated that we can expect about 20 per cent or 30 per cent of the house cars used at this time to be of the type which we generally term as weakly constructed, not being as yet reinforced with metal attachments or ends. The problem to be determined in a decision concerning the retirement or reconstruction of any such car is generally influenced by the distinctive demand for the equipment on the owner's line and a knowledge of whether the expense of betterment or improvement to the existing equipment is offset by the capitalized value of the saving which can be realized in the maintenance account, as well as keeping in mind the better characteristic operation which is practically guaranteed from such a program.

Extended observation has often brought out the fact that the capitalized saving in the repair account through the adoption of an intensive retirement program and the acquisition of new high capacity units in equal number or tonnage, which are bound to present very much greater service capacity and earning power, if there is a paying demand for tonnage space, has proven most practical. It will never be found possible satisfactorily to determine upon any general policy without a most careful unit study for each class of car, besides being fortified with a liberal knowledge of the exact operating possibilities of the property owning the equipment.

Repairs of Foreign Lines Must Be Considered

Another serious limitation to our field of selection in the matter of deciding between reinforcement or retirement, and subsequent replacement in satisfactory designs, is the fact that the majority of defects occurring in connection with car equipment when off home lines, except in case of derailment or fire, have only in late years been made owner's responsibility.

This is where a vast amount of money is apt to be applied beyond the control of the car owner, and will undoubtedly bring about, of its own accord, more systematic analysis in the future as to deficiencies in each class of car in order to guard against the possibility of duplicating repairs to failed members which do not meet present-day requirements; so that the sum total of expense for any class of rolling stock does not become excessive, due to a large part of the work being repeated so continuously and carried out beyond the immediate observation of the car owner, resulting in extravagance, though not necessarily for the total equipment owned. Of course, under these circumstances excessive maintenance charges will not often be so easily reflected in system statements covering total ownership, but only in particularly grouped classes, which it may be desired to observe.

Attention Before Loading Prevents Delays

It is especially urgent that the best interests of the shippers and dealers, as well as of the railroads which serve them, be maintained by the inauguration of substantial repair practices which will insure a minimum delay of cars on shop tracks and line or road chargeable to their general condition and style of construction. Thorough inspection and repairs of cars before loading, and careful attention to brakes, lubrication, running gear and lading after classification at originating terminals, are a fundamental necessity.

Cars set off on the line, due to bad order condition of couplers, draft rigging, wheels, brakes, heated bearings, shifted lading and other similar causes, are usually the outcome of lack of proper attention at the originating terminal, which results in accidents, destroyed lading and cars, reduced train rating, delays to traffic, blocking of passing tracks, engine and train crew overtime and extraordinary

*From a paper presented before the Western Railway Club, October 20, 1919.

expense for sending men and materials out on the line to eventually make repairs.

Weak Cars Should Be Kept on Owner's Lines

At the present time nearly all systems are offering in interchange some load and empty cars that are of such design or condition as to make them entirely unfit for the service to be performed on the average trunk line railroad. This class of equipment, which cannot be depended upon to pass properly in main line movements, should be restricted to owner's lines, where it can haul the maximum amount of commercial and company lading with the least liability for delays, transfer or repairs. When a freight car of undesirable class and capacity has outlived its usefulness, from the standpoint of commercial utility, age, decay, corrosion, obsolescence or accident, so that the expenditure necessary to put it in serviceable condition is not justified, it should be dismantled forthwith. The intensive movement of tonnage, creating an acute demand for power and a severe congestion in terminals, has at many points made it impractical, due to the time consumed and necessary switching required, to place weakly constructed cars in the rear of long trains. That is why this subject looms so prominently before us today. Tremendous damage is done to these weak cars, and especially when not protected against the hammer blows of modern operation. Not only this, but delays and accidents are multiplying daily from the continued handling of these weak cars in this manner.

There is no question which demands so much attention and would result so advantageously as a serious and clear investigation covering the proper design for recommended reinforcement of existing obsolete equipment, with a view of causing it to be mandatory to so strengthen cars or retire them for interstate service, as well as that of shops and facilities, provided for its construction and upkeep.

Repair Facilities Are Inadequate

Freight car repair yards have been located at inconvenient out-of-the-way places; repair tracks have been set too closely together for convenience; the facilities for repairing have not been the best, and the consequence has been that cars which should have been returned to service promptly and with repairs properly made have been held out of service longer than necessary and were not properly repaired. Never before has there been such pressing necessity for intelligent work, for proper tool equipment and for shelter for the men employed as at the present time. It is a reflection on good judgment when cars are held out of service for which there is a paying demand at the time, and it would appear that with the attention now concentrated on the railroads, the best efforts are not only desirable but are absolutely necessary for a relief of the conditions considered.

The scope of the operations in commercial value; the great numbers of men coming under the control of the mechanical department; the drift of the times concerning methods for carrying out the work, and the very intensive service necessary to transportation matters, as well as the growing importance of economics, all tend to make us focus our attention on these questions. There is no denying the fact that all these matters involve, more than any one thing, the element of men, and if we are going to get the best from our men we must provide responsible supervision, with necessary support and initiative, so as to maintain action and make good from day to day. The moral responsibility of every one is as great and as constant, whether one is here or there, or doing one thing or another, and this responsibility is in exact proportion to the intelligence of the individual, coupled with whatever measure of freedom for action is allowed. It implies leadership and teaching, not in some things to be sure, but in all of the relations that bring individuals together in industry and business, so that our choice, especially among our highest supervisors, should be along most practical and fundamental lines. This is only referred to as a timely suggestion, since it has so far-reaching an effect that words could not be found sufficiently to emphasize its importance.

Greater Interchangeability Desirable

The first division of the subject assigned to me has regard for the design of rolling stock. I do not thing it is reasonable to believe that the roads will adopt and maintain one standard type of car indefinitely to a single inflexible pattern. There are sure to be improvements and modifications which different groups of railroad men think it desirable to make, and such motive would be difficult to subdue. It would seem proper for the draft lugs, truck frames, truck bolsters, center plates, striking castings, coupler carriers, brake beams, truck springs, drawbar yokes, uncoupling mechanism, brake hangers, drawgear carriers and center-plate height of truck to be standardized and made interchangeable to a greater degree than at present, both in new and repair work.

It does seem indefensible that the slight variations made in these parts should necessitate their being obtained from the car owners. In designing a car, what must be considered is the service in which its paying demand rests, not the service in which it may possibly run. It is only fair to assume that every railroad management aims to place in service cars built in a substantial manner. Standards in detail construction have been adopted by the Master Car Builders Association, which have assisted greatly in reducing the amount of stock necessary to be carried. The difficulty seems to be that these standards have not been enforced under mandatory rules, and their full practical value has never been properly felt on this account. I believe the time has arrived to introduce additional standards affecting the maintenance of box cars which can also be applied to all types used in interstate service.

The application of steel center sills as well as draft arms to old cars will not only prolong their life but cause them to have a more continuous earning capacity, due to not becoming marked out to shop tracks every few hundred miles for the application of draft timbers and end sills, as well as avoiding damage to adjacent equipment and delays to trains and in terminals, to say nothing of the tremendous losses due to damaged lading and loss of patronage, where delays and slow delivery become epidemic.

Poorly Designed Cars Are a Source of Trouble

Mechanical and transportation officers have seen and appreciate the results of poor designing and inferior construction, both as regards wooden and steel cars. One of the surprising features with regard to many steel cars in service which cause the greatest trouble and embarrassment is that they are not of particularly light construction, but the metal has been disposed with very little regard to the engineering feature of service requirements actually encountered. There is no doubt whatsoever but that many of these cars could be built with at least equal or even less weight, and a perfectly satisfactory structure obtained. This is what is so confusing to the minds of executive officers when they have purchased and placed in service not a cheap or even a light car and it fails; then on top of it all it is necessary later to recommend reconstruction and additional expense in order to stop permanently a severe leak in the maintenance account.

New fads in the design and building of car equipment should not be permitted, or any innovations until thoroughly tried out and known to be reasonable and capable of standing up in normal heavy service for at least a period of five

years, besides being passed upon and judged by uninterested, well-experienced and competent authorities.

It is not alone the larger locomotives being used today which have called for a more thorough investigation of the subject of car design and construction, but also the severe shocks which cars are receiving in classification yards. The superstructure of box cars should receive just as much attention as the underframe and trucks, otherwise leakage and subsequent loss of metal roof sheets, through racking and frames not being kept in alinement, is bound to result; when this happens it places restrictions on the ultimate utility of the car for certain classes of service where leakage is detrimental.

Wooden Frame Cars Need Steel Centersills

The strongest argument in favor of the general adoption of the steel underframe, and one which is barely, if ever, touched upon, is the fact that wooden framed cars are always damaged when in collision with steel underframe cars, while the latter escape uninjured. If, because of their decided economy, the more recent designs of metal construction are continued in use, then it is essential that other cars associated with them should be made strong enough to withstand the severe shocks incident to the movement of heavy tonnage trains now so generally experienced.

There is no doubt that the light wooden cars may be strong enough to carry the load for which they were designed, but they need a stiff backbone in the underframe to protect them from being crushed in the middle of a long train or between two heavy cars under impact. The same argument of uniformity holds true of couplers, draft gear and brake equipment. It is for this reason that we must at this time give more positive backing to the need of metal reinforcement programs for cars of light design rather than hesitating on a questionable economy in operating expense, due to carrying larger loads and less dead weight. It simply must be determined whether the cars are to be modernized or retired from service.

Wooden Versus Steel Cars

With respect to the life of the wooden car compared with steel, it is well to state that none of the modern steel cars have been in use long enough in general operation to determine their ultimate length of useful service. It has been found, however, what may be expected of all metal coal and other special classes of cars on prescribed lines having a given commodity and territory; this, of course, is of value for local comparative use only. There is great difference of opinion about the loss of weight in steel due to corrosion, and this may well be expected because of varying climatic conditions, and until some definite conclusions can be drawn, based on a wide range of observation under every service condition, any data used must be employed with caution.

Records indicate foundation for the opinion that wooden cars have been in continuous use from 20 to 30 years, but it is probable that such cars have been rebuilt from the sills up once or even more times in that period, so that we ought not to be disposed to question the assumption of the average life of such cars being 20 years. With respect to the high cost of repairs to wooden as compared to steel equipment referred to, and which is almost always carried on gradually, we must not forget that for steel cars, up until the time rebuilding is necessary, usually only light repairs are made, due to the various roads not being equipped to do the heavy work at this time. Therefore any comparative costs should be viewed with these thoughts in mind and wrong conclusions avoided.

Increase in Cost of Freight Car Repairs

Such a large proportion of failures in units of freight car equipment as is now being experienced appears to indicate that there is something radically defective in the elementary handling of the transportation problem or else the maintenance features have been neglected and have not kept in step with the advance movement of the service to be rendered. The cost of freight car repairs has been continually increasing and in somewhat greater proportion than the advance in labor and material accounts would explain. The tendency for such increases can only be offset by providing all means that aim to reduce the number employed and get the greatest possible output from each man. This not only makes itself felt upon the payrolls but reduces the time cars are held out of service, which is another source of revenue. In dealing with concrete cases, showing the increase in freight car repair costs, a table is shown below for eight of the largest Western railroads:

Road	Year	Number of freight equipment cars	Average miles per freight car per year	Cost of freight car repairs per car per year	Cost of freight car repairs per mile, cents
A	1916.....	66,409	11,593	$69.13	0.599
	1917.....	70,396	11,853	68.12	0.558
	1918.....	70,400	12,064	146.52	1.221
B	1916.....	57,401	8,931	53.98	0.60
	1917.....	58,256	8,396	66.64	0.80
	1918.....	55,819	8,987	147.13	1.64
C	1916.....	57,985	10,974	58.76	0.54
	1917.....	47,845	11,171	74.98	0.67
	1918.....	50,079	10,376	133.60	1.29
D	1916.....	46,925	11,098	85.59	0.80
	1917.....	46,281	11,191	126.92	1.13
	1918.....	45,993	10,459	201.23	1.92
E	1916.....	68,339	13,059	74.66	0.57
	1917.....	67,828	14,553	88.46	0.61
	1918.....	69,622	11,145	149.88	1.35
F	1916.....	67,370	13,053	98.16	0.75
	1917.....	67,168	11,214	122.93	1.09
	1918.....	61,457	11,905	266.57	2.24
G	1916.....	63,143	11,646	120.20	1.03
	1917.....	64,919	12,377	113.12	0.91
	1918.....	66,741	12,810	177.18	1.38
H	1916.....	81,034	9,468	71.48	0.76
	1917.....	83,147	9,499	84.84	0.89
	1918.....	72,141	9,377	146.36	1.58

The serious increases in total expense from year to year are attributed more to the character of equipment owned than any other feature, and the logical proposal is, therefore, that more rapid retirement of obsolete equipment should be carried out. When such cars are dismantled and permanently removed from service, one of the features which can be expected to effect a saving and prevent such increases as indicated above is the relative reduction in the amount of material used for repairs to old cars.

It can be fairly well stated that the total car repair expense is about equally divided between labor and material under normal conditions where extensive reclamation operations are resorted to locally, thus holding down the amount of new material obtained to a minimum. Most wooden cars are at least 15 years old, and many have seen 25 or more years service. Comparatively few of the weakly designed cars complained of have been reinforced with metal draft rigging. Failure of draft attachments and associated parts contribute most seriously to the unprecedented increase in cost of repairs. In maintaining these weakly designed cars, such a large part of the available time and expense is absorbed that the better cars are permitted to drift along and deteriorate much faster than they should.

Setting Limit for Repairs Does Not Force Retirement of Cars

It seems to be a general practice to place small limits of expense on these older cars with the idea that these limits would force such cars to be automatically taken out of service as they become deteriorated beyond a point where repairs would be economical. It can be shown that this equipment is on the repair track a large portion of the time,

and in each instance just sufficient work is done to run the car a little further owing to the policy of concentrating on light repair work first where a demand for equipment exists. Such a plan of retirement does not work satisfactorily, and in the end the roads have far exceeded any proposed sum of money which they planned on placing against these old cars to keep them in service. I do not think anyone who has followed the plan in question has ever found the result in practice any different than stated.

Low Stresses Prolong Life of Parts

During winter months, and at time of heavy tonnage movements, wrecks and delays caused through breaking down of trucks are very serious matters, and the question is always asked as to why such things happen. Fatigue failure in metal truck frames, axles, bolsters and other portions of equipment is characterized by suddenness, and oftentimes occurs immediately after careful inspection has been made. The fractures sometimes disclose a crystalline appearance over part of the surface, and it is this feature which has many times given rise to the term "crystallized." This supposition, however, has been found generally false, since close examination of metals under stress shows no change of the general scheme of internal structure, but under severely heavy stress there appears a gradual breakdown of the crystals forming the member.

Metal used for the running gear of cars is more or less ductile, and when these parts are deformed cold the first yielding occurs in the particular grains which either take the most stress or have the lowest elastic limit. The failure in such metals subjected to repeated stress takes place with substantially no general deformation, but there is, however, considerable localized distress among the structural particles, which increases directly with the number of applications of stress.

Car trucks have imposed upon them repeated stress in service, and failure seems to develop in proportion to the continuous mileage made. In analyzing specific cases of breakages, they seem to appear almost exclusively through the unification of yielding particles, with the result that cracks develop with final added stress, promoting the extension of this crack into the adjacent area on both sides. Steel must be considered as filled with a multitude of minute flaws, originating at the time the metal becomes solidified. In static testing steel, under stress of about one-half its ultimate strength, passes into a semi-plastic condition, in which there is a gradual flow of the material. Under such condition the small flaws have almost no effect upon the flow or upon the static strength. When steel is loaded to moderate stresses the yield is almost entirely elastic in general, but a small portion of its inelastic energy being taken up by the steel itself.

In this way it can be reasoned that sufficient material is necessary to any truck side frame or bolster in order to keep down the working load of the material and give long life to the part. Of course, where springs are improperly designed to carry the load truck members receive hammer blows in service for which they were never designed, and this seems to be particularly true in the case of the M. C. B. grouping of springs for 50-ton cars, as often they stand practically solid under the static weight of the car and lading. This is a subject which should be placed before the proper committee of the M. C. B. Association.

As a plan of interesting local foremen in the discharge of their duties it is well for them to have a working knowledge of the money they are spending, and attached is copy of the form shown in Fig. 1, which is filled out daily and wired to the general offices twice a month. Very interesting results have been obtained from this practice, and it establishes the plan of foremen going over time slips personally to know that labor charges are being properly distributed. With this data, and knowing the amount of work turned out, a good practical analysis is obtained concerning relative efficiency month by month, which guards against excess overtime payments and similar wastes.

UNITED STATES RAILROAD ADMINISTRATION
Director General of Railroads
CHICAGO, MILWAUKEE & ST. PAUL RAILROAD

Distribution of Pay Roll for Month of _____ 19__

Station _____ Foreman _____

FIRST HALF

Telegraph Symbol	A	B	C	D	E	F	G	H	K	L	M	N	O	P	Q	R	S
Date	Freight Car Repairs	Passenger Car Repairs	Work Car Repairs	Shop Machinery Repairs	Passenger Car Retirements	Freight Car Retirements	Work Car Retirements	Locomotive Repairs	Locomotive Retirements	Dispatchers and Hostlers	Motor Car Repairs	Shop Orders	Coal Chutes	Transportation Expense	Other Expenses	Total	Man Hours
1	$	$	$	$	$	$	$	$	$	$	$	$	$	$	$	$	
2																	
3																	
4																	
Monthly Total Expenditures	$	$	$	$	$	$	$	$	$	$	$	$	$	$	$	$	
Total First Half	$	$	$	$	$	$	$	$	$	$	$	$	$	$	$	$	

SECOND HALF

16	$	$	$	$	$	$	$	$	$	$	$	$	$	$	$	$	
17																	
18																	
31																	
Monthly Total Expenditures	$	$	$	$	$	$	$	$	$	$	$	$	$	$	$	$	
Total Second Half	$	$	$	$	$	$	$	$	$	$	$	$	$	$	$	$	
General Total for Month	$	$	$	$	$	$	$	$	$	$	$	$	$	$	$	$	

Form Used by Local Foremen to Show Distribution of Pay Roll Expense

On the road with which I am connected practices have been adopted which have done a great deal to unify our efforts, especially in through business, besides positively maintaining the responsibility of each individual engaged and avoiding any duplication of inspection or excess within reasonable mileage limits.

The desire to save time and cost of inspection by resorting to the so-called safety inspection of some roads has about reached its limit. The class of men that railroads are obliged to draw from, in some districts at least, do not make the most expert inspectors. The saving in reducing the number of men and time to make the usual superficial safety inspection oftentimes proves a serious loss, for the result

of a derailment or wreck on account of a loose or defective wheel, or some other important part of the running gear, or brakes which have been overlooked on account of time or judgment, is worthy of serious consideration. No one will deny that all cars are rankly abused, but very little is heard of crews being suspended or even censured on account of damage to rolling stock, no matter what the extent. The ultimate loss cannot be measured by figuring the cost of renewing certain broken parts when cars are handled roughly, for premature failure of other parts will follow.

Consideration of overtime and the sixteen-hour law, as well as expeditious train movement, demands the minimum lapse of time between that for which the crew is called and that when the train departs. Hence a train prepared for departure should require no more brake work after the engine is coupled than, at the most, stopping a few leaks in those couplings and making the formal test. But often today there are greater delays due to making other repairs, or the train proceeds with less efficient brakes than it should have.

To avoid this the repairs required must be determined with arriving trains. The incoming engineer should add to the reduction required for stopping enough to fully apply the brakes, and the brakeman should await his advice that this has been done before cutting off the engine. Car inspectors should be present to make an immediate examination and to bad order all defective brakes. Such repairs as ordinary brake pipe leaks, defective hose and wrong piston travel—those requiring little time—should next be made, but cars requiring heavy brake repairs should be marked for the repair tracks.

In this matter judgment must be exercised, as perishable or other very important loads, as well as empties needed at once for such lading, must not be delayed. Neither should other less important cars be held in numbers far greater than the local force can repair in a day if such force is as great as the regular amount of work, including such repairs, would keep busy. The car foreman and the yardmaster should consult to adjust the foregoing, but when the former removes bad order marks without repairs having been made he should fill out and apply an air brake defect card to better insure prompt repairs at the earliest practicable date.

Discussion

G. S. Goodwin (C., R. I. & P.) stated that at the present time the railroads were justified in making more extensive alterations when reinforcing old cars. He cited the fact that steel frame box cars which formerly could be purchased for $900 now cost $3,000.

T. H. Goodnow (C. & N. W.) expressed the opinion that the retirement of wooden cars is one of the most important problems confronting the mechanical department at the present time. There are still in service a great many wooden cars of 80,000-lb. capacity, built between 1902 and 1907, which have as high cubical capacity as cars now being built. These cars will give good service if reinforced, and the work should be done without delay. Mr. Goodnow called attention to the many circumstances which must be considered in analyzing statistics regarding freight cars. He doubted whether any reliable figures showing the relative life and cost of wooden and steel cars were available, because the early all-steel cars were confined almost exclusively to gondola and hopper types, which cost less to maintain than house cars. He called attention to the large percentage of foreign cars which all the railroads had on their lines during 1918, and stated that for this reason the expenditures for freight car repairs did not furnish a true indication of the relative cost of maintenance of the equipment of the various companies. He said the past two years had proved that cars cannot be taken care of as well away from home as when the equipment occasionally reaches the owning road and favored greater standardization of truck and draft gear parts to facilitate maintenance. He indorsed the system of organization in force on the C., M. & St. P., and stated that an individual car department was necessary in order to get the best results from the local organization.

J. W. Luke (A. T. & S. F.) expressed the opinion that some roads are not keeping cars in fit condition, and the standard of equipment maintenance would not be improved unless the burden of repair work could be distributed among all the roads. From the year 1917 to 1919 the Santa Fe's expenditure for repairs to foreign cars rose from $1,690,000 to $7,700,000, an increase of 355 per cent. Mr. Luke advocated the reinforcement of wooden cars with steel channel center sills, and stated that the cost of maintenance of cars so improved compared favorably with modern equipment.

C. Wymer (C. & E. I.) mentioned that sometimes equipment is designed with no thought of future repairs, and the replacement of minor parts necessitates expensive dismantling. Such construction inevitably increases the cost of repairs.

In the course of the discussion Mr. Sillcox elaborated on some of the points brought out in the paper. To emphasize the necessity for retiring cars of wooden construction, he quoted statistics showing that 76 per cent of the cars damaged in service were cars with wooden underframes. The failures were distributed as follows: Draft gear, 63 per cent; knocked off center, 14 per cent; end frame failure, 14 per cent; cornered, 9 per cent. He called attention to the fact that the roads showing the least cost of freight car maintenance had had the most rapid rate of acquisition and also the most rapid retirement. On some roads the acquisition and retirement were so slow that the freight equipment would only be renewed in a period of 40 or 50 years. Mr. Sillcox favored the modernizing of cars of 40 tons capacity, but stated that the reinforcement of 30-ton cars was usually not economical because it would involve an increase in the weight of the car, and since the total weight was limited by the capacity of the axles the maximum allowable load would be less than 66,000 lb.

Orders of Regional Directors

RENTAL RATES FOR LOCOMOTIVES.—Supplement 1 to Order 207 of the Southwestern regional director states that the following will govern with respect to the rental charges for other line locomotives:

"On locomotives delivered by owners having direct physical connection with borrowing road, rental will commence with delivery, and where there is no such connection rental will commence upon delivery by owner to first connecting road.

"The rental will cease with delivery of locomtive to owning line rails, whether there is direct physical connection with owner or not, except that:

"When a locomotive is no longer required by renting line, and instead of being returned to owner is sent elsewhere for service, the rental of delivering line will cease and the rental of receiving line will begin when locomotive is ready for service at point of interchange; i. e., in case where the locomotive is interchanged direct between these roads. If the delivery in such a case involves movement over an intermediate railroad, rental of receiving line will begin when the locomotive is ready for service at interchange point where they receive it."

Incomplete Brakes on Gondola Cars.—Supplement 2 to Circular 201 of the Southwestern regional director states that 500 U. S. Standard hopper cars, allocated to the Pere Marquette, built by the Ralston Steel Car Company and num-

bered 13,000 to 13,499 were placed in service without sheave wheels on brake and hand brake pull rod. The circular instructs that, where these cars are found with sheave wheels omitted on the end of the hand brake rod, changes should be made at once, regardless of ownership.

Weekly Traffic Report

ACCORDING TO A REPORT on traffic conditions for the week ended December 15, made to Walker D. Hines, director general of railroads, revenue freight loadings and receipts from connections for the various regions throughout the country were as follows:

Eastern region—Revenue freight loaded, 197,682 cars, a decrease of 4,687 over same period last year; receipts from connections, 227,692 cars, an increase of 1,709. Allegheny region—Revenue freight loaded, 177,007, a decrease of 13,981; receipts from connections, 150,753, a decrease of 14,401 cars. Pocahontas region—Revenue freight loaded, 36,458 cars, an increase of 1,049 cars; receipts from connections, 15,010 cars, a decrease of 3,558. Southern region—Revenue freight loaded, 118,019 cars, an increase of 2,546 cars; receipts from connections, 75,943 cars, an increase of 5,379 cars. Northwestern region—Revenue freight loaded, 116,709 cars, a decrease of 3,199 cars; receipts from connections, 73,114 cars, a decrease of 1,502 cars. Central Western region—Revenue freight loaded, 105,921 cars, a decrease of 8,446 cars; receipts from connections, 63,357 cars, an increase of 3,721 cars. Southwestern region—Revenue freight loaded, 57,095 cars, an increase of 699 cars; receipts from connections, 49,103 cars, an increase of 3,965 cars.

A summary of the report follows:

Eastern Region—Report from the iron and steel territories shows some deduction in the number of blast furnaces in operation, due to the shortage of coal. The output and movement of traffic to and from a considerable number of industries was largely interfered with by the acute coal situation, but improvement has already begun. Passenger business is good, but curtailment of service, brought about to conserve coal, of course had a serious effect on passenger traffic.

Allegheny Region—Notwithstanding the coal situation there was an increase of one stack in the number of iron furnaces in blast in this region, as compared with same week of last year. There has been a slight improvement in the box and flat car situation. The withdrawal of numerous passenger trains for a few days resulted in overcrowding trains, but service was improved and is now operating on normal basis.

Pocahontas Region—Business generally was affected by the coal situation and also by high water troubles and embargoes. Passenger travel continues good, although earnings are not as large as for the same period last year, which is accounted for by the discontinuance of the heavy military travel of a year ago. A number of passenger trains were also discontinued in this region in order to conserve fuel.

Southern Region—There has been a gradual improvement in the box car situation. Southern Pine Association reports orders received during the week, 3,874 carloads. This is a substantial reduction in average orders, but the association reports an increase in average shipments and average production. Unfilled orders on hand amounted to 24,128 cars. Cotton movement continues active, with a specially heavy movement to the ports for export. Merchandise traffic to Florida is in excess of any previous year, and Cuban freight continues to offer in excess of carrying capacity of the East Coast car ferries. Unprecedented rainfalls during last few days of the week resulted in serious interruptions to traffic generally by washouts. Passenger travel was very good during the week, notwithstanding the general uneasiness which prevailed on account of the coal situation and curtailment of train service.

Northwestern Region—General business conditions are sound, but some industries have been forced to shut down or reduce their working time, account of coal shortage. However, the general feeling is optimistic as to the future. There is a specially heavy demand for refrigerators to load perishable freight. Lumber and forest product loading showed an increase of 3,792 cars, but grain and live stock loading both showed decreases. Passenger train service was temporarily curtailed on account of fuel shortage.

Central Western Region—Shipments of California commodities requiring refrigerator cars from January 1 to November 24 this year amounted to 123,128 cars, showing an increase of 37,765 cars over the same period of last year. Notwithstanding reduction in passenger train service and efforts to discourage unnecessary travel, the number of passengers handled continued very heavy.

Southwestern Region—Business conditions generally were reported as satisfactory, notwithstanding the fact that some plants were forced to suspend operations and others were unable to work to maximum capacity, account of insufficient fuel supply. Preferred attention is being given to furnishing cars for sugar and rice loading in Louisiana. Rice continues to bring high prices, and there is an active demand, both foreign and domestic. Due to completion of additional pipe lines, there has been an increased production of oil in the Burk-Burnett district, it being estimated that the average daily production in this field amounts to over 100,000 barrels. Gas and oil well activities also continue in Louisiana. Notwithstanding curtailment of passenger train service, regular travel continued above normal, with heavy travel in the Little Rock, Ark., district and from and through Memphis gateway. California travel was quite heavy.

Relative Durability of Green and Seasoned Timber

WHILE OPINIONS have always differed as to the comparative durability of untreated green and seasoned timbers when used for poles, posts and ties, etc., recent experiments of the Forest Products Laboratory, Madison, Wis., indicate that there is practically no difference in their life when exposed to the weather and in contact with the ground.

A test of untreated green and seasoned ties of Douglas fir and western larch, laid in tracks of the Northern Pacific at two different points, showed that the life of the green fir ties was 7.65 years, while that of the seasoned timber was 7.75 a difference of 1/10 year in favor of the seasoned. In the case of the larch the results were about the same, the green ties lasting an average of 7.3 years and the seasoned 7.4 years. Tests of telephone poles showed the rate of decay in green poles to be a trifle less than in the seasoned.

This almost equal durability of untreated green and seasoned poles and ties, or in fact any exposed timber in this condition, is due to the fact that as soon as the timber is placed it begins to take up or give out moisture, according to its condition of seasoning and the conditions of exposure. Thus in a relatively short time both green and seasoned timbers reach the same moisture content, and as this is the determining factor in decay, their life will necessarily be approximately equal. This does not apply, however, to wood used in building construction, as this does not usually dry out so rapidly after being placed, resulting in shrinkage, which is objectionable, and also in decay before it seasons. Only seasoned wood should be used for this class of work.

Second Meeting of Telegraph and Telephone Division

Wire Crossings, Pole Line Consrtuction and Mailgram Service Among Important Subjects Considered

The Telegraph *and* Telephone division of Section 1—Operating of the American Railroad Association held its second meeting at the Congress Hotel, Chicago, on December 3, 4 and 5. The resignation of Martin H. Clapp, chairman of the division, made it necessary for the Committee of Direction to appoint a successor, and J. F. Caskey, superintendent of telegraph of the Lehigh Valley and first vice-chairman of the division, was selected and presided at this meeting. These changes made it necessary to fill other vacancies which resulted therefrom, and the Committee of Direction appointed H. Hulatt, manager of telegraphs, Grand Trunk System, as first vice-chairman and W. H. Hall, superintendent of telegraphs, Missouri, Kansas & Texas Lines, second vice-chairman. E. L. King, superintendent of telegraph, Southern Pacific Lines, was appointed a member of the Committee on Direction to fill the vacancy caused by Mr. Hall's promotion. The total registration of railroad representatives at the meeting was about 170.

Report of Committee of Direction

The Committee of Direction felt that each railroad should assume the expenses of its representative in attendance at sessions of the Telegraph and Telephone division, other than those involved in attendance at committee meetings, which will be assumed by the American Railroad Association. In the event of an employee who is not a representative member being required to attend a meeting of a special committee on whose work he is engaged, a request for his attendance should be forwarded to the senior representative member of his road.

In order to clear up any misunderstanding concerning the question of membership of the division, methods of voting, etc., the Committee of Direction submitted several additional paragraphs to be added to the regulations of the division, the most important of which was as follows:

> Representatives of members shall be those actively connected, in official or supervisory capacities, with railroad telegraph or telephone service, who have general charge of such service over an entire railroad or grand division of a railroad consisting of two or more transportation divisions. In addition, other officers and employees in like capacities and in service may be designated by the railroads as their representatives or may be called upon by the division for special duties.

The method of voting at meetings of the division was given consideration, and the Committee of Direction decided that it was not necessary to take any action upon the subject owing to the fact that representative members of the division can call for a vote by roll call (which is based upon the number of memberships held by each railroad in the association) upon any motion at a session of the division.

This committee has given consideration to the question of a manual of recommended practices, which is to be of the loose-leaf binder type and of convenient size, so that recommended practices may be issued from time to time as desired.

It was decided that two sessions of the division shall be held each year, one in the spring and one in the fall. The spring session for 1920 will be held in St. Louis on March 30 and 31 and April 1, and the fall meeting, which will be the annual meeting, will be held in Winnipeg on September 22, 23 and 24 unless some emergency arises which makes a change necessary.

Almost all of the discussion concerning the report of the Committee of Direction was based on the question of membership and the voting power of members. It was explained that each road supporting the American Railroad Association is a member of the Telegraph and Telephone division and therefore has a right to appoint representative members, consisting of any number of represenatives it sees fit to select. Each representative member has a right to a vote on the floor, but when a disputed question arises a roll call vote is necessary; the ranking representative member of each road is the only one qualified to vote in accordance with the mileage of the road or roads he represents. The privilege of voting on letter ballot is restricted in the same manner. Affiliated members (those not in railroad service) have the right to vote in committtees with which they may happen to be working. However, such members do not have the right to vote at division meetings in the adoption or rejection of matters presented at such meetings.

Maintenance and Construction of Pole Lines

Sub-Committee "A"—of Committee No. 1—Construction and Maintenance—Outside Plant, presented a report of progress in the revision of specifications for the Maintenance and Construction of Pole Lines, and it expects to present acceptable specifications at the next annual meeting. The report was accepted as information.

Wire Crossings

The report of Sub-Committee "B"—Wire Crossings, of Committee No. 1—Construction and Maintenance—Outside Plant, contained a synopsis of its activities since the meeting of the division held in Chicago in June, 1919. Since that date this committee held two separate meetings and one joint meeting for the purpose of arriving at a definite conclusion relative to the proposed revision of the National Electrical Safety Code, a portion of which deals with signal lines crossing over railways.

At the joint meeting, which was called by M. G. Lloyd of the Bureau of Standards, there were present, besides members of Committee "B," representatives of the Bureau of Standards, the American Electric Railway Engineering Association and three representatives of the railroad engineering departments, besides several wire-owning companies. At this meeting Sub-Committee "B" of the Telegraph and Telephone division advocated the changes recommended in its report submitted at the Chicago meeting in June. The Bureau of Standards asked the committee to endeavor to draft a clause which would allow weaker construction over some of the minor side tracks to take the place of the Rule, Signal Lines Crossing Over Unimportant Railroads, which appeared in an earlier revised Bureau of Standards Code and which the Telegraph and Telephone division persistently objected to; the committee taking the stand that there are no unimportant railroads. The Bureau of Standards also wished to get further opinions in regard to the use of No. 12 galvanized steel wire for spans 125 ft. long or less.

Sub-Committee "B" recommended that the Rule, Signal Lines Crossing Over Unimportant Railroads, be corrected to Signal Lines Crossings Over Minor Tracks (not including any main tracks), and that this rule should provide

for narrow gage tracks, tracks used only temporarily for construction purposes for a period not to exceed one year, tracks on which standard freight cars cannot, for physical reasons, be operated, street railway tracks on public highways and industrial spur tracks with not exceeding two tracks under the same span. Besides the above, other recommendations were submitted to the Bureau of Standards on rules and regulations to cover signal lines crossing over railways. The Bureau of Standards then presented its revisions to the Telegraph and Telephone division at its December meeting. The portion of the Bureau of Standards revised code on Signal Lines Crossing Over Railways, which received the greatest amount of discussion, reads as follows:

Signal lines crossing over tracks included in the following list shall conform to the requirements of Grade E:

1. Spurs not exceeding two tracks in the same span.
2. Branches on which no regular schedule of operation is maintained.
3. Narrow-gage tracks or other tracks on which standard rolling stock cannot, for physical reasons, be operated.
4. Tracks used only temporarily for construction or similar purposes for a period not exceeding one year.
5. Tracks not operated as a public utility, such as industrial railways used in logging, mining, etc.

In presenting this report E. C. Keenan, general superintendent telegraph and telephone Eastern region, United States Railroad Administration, said that the Bureau of Standards expected to publish a revised National Electrical Safety Code and that Sub-Committ "B" of the Telegraph and Telephone division was endeavoring to get the best possible form of construction for signal lines crossing over railways, that it could under the conditions and that it was necessary to grant several concessions to the Bureau of Standards if the matter was to be cleaned up in a satisfactory manner. Regarding the several items covering various classified tracks, Sub-Committee "B" recommended that the first two classifications be revised as follows:

Signal lines crossing over minor tracks included in the following list shall conform to requirements of Grade E:

1. Spurs less than 2,000 ft. long and not exceeding two tracks in the same span.
2. Branches on which no regular schedule of operation is maintained.

The committee recommended that item 2 be eliminated entirely because it felt there were many such branch lines which were as important as main lines. Items 3, 4 and 5 were considered satisfactory as presented.

William Bennett (C. & N. W.) stated that he believed the entire matter was based on the wrong principle. He objected to the methods used for determining the classification of standard gage steam railroad industry or spur tracks as minor by the number of tracks under a span of wires. He stated that the proper method required a primary consideration of the exposure of persons to risk and injury. He further said that a very large part of the deaths and injuries of railroad employees engaged in transportation occur upon minor tracks, called industry and yard tracks, and that electrical conductors crossing over such tracks in many cases are attached to buildings and structures of various kinds other than poles. Industry tracks are largely composed of curves of unusually short radii, which are introduced to avoid objects which cannot be removed to permit tangent alinement. These objects constitute obstructions to the view of railroad employees engaged in switching cars, and because of these conditions employees are obliged to ride upon side ladders and roofs much more frequently and under more hazardous circumstances than when engaged in work upon ordinary yard and main tracks, this greater exposure being necessary to permit them to occupy positions from which their manual signals can be seen. He therefore believed that it was extremely important that extra care should be taken to avoid scant lateral and vertical clearances between electrical conductors and their supports and standard freight cars, and that ample strength should be provided in the conductors and their attachments and supports at crossings over such minor tracks.

E. C. Keenen stated that Grade "E" construction was one-third weaker in crossing span supports than Grade "D," the requirement over main line crossings, and that the proposed construction is the strongest the A. R. A. can secure from the Bureau of Standards. Sub-Committee "B" was instructed to continue its work on the balance of the revised National Electrical Safety Code submitted by the Bureau of Standards and to recommend the necessary changes it felt would be agreeable to the division, so that the Bureau of Standards would have the advantage of such recommendations in preparing its final draft of the code, which it expects to complete within a short time.

Underground Construction and Transportation

Sub-Committee "C"—Underground Construction, Committee No. 1, Construction and Maintenance, Outside Plant, submitted specifications for conduit castings, creosoted wood conduit and plank, fibre conduit, pulling-in iron, steel pipe conduit and for vitrified clay conduit.

The committee found that the Signal division of the A. R. A. already had prepared certain specifications which meet the requirements, and these, with similar specifications of telegraph and other companies, were embodied in the specifications mentioned above. Each of these specifications was submitted to the division for its approval, and is to be submitted to letter ballot for inclusion in the manual. After brief discussion each specification was approved.

Sub-Committee "D" Transpositions, Committee No. 1, Construction and Maintenance—Outside Plant, submitted complete a specification for locating and installing transpositions in telephone circuits. This specification is practically the same as that presented at the June meeting of the division, only a few minor changes being made by the committee, based on comments received since the June meeting. The Sub-Committee also submitted specifications for the line materials referred to in the specifications, these being complete manufacturing specifications which can be used in purchasing and inspecting the materials required for transposition in telephone circuits.

W. Roger, telegraph and telephone engineer, Southwestern region, United States Railroad Administration, stated that a very heavy line between St. Louis and Kansas City, with transposition such as shown in the plans, has proved very successful. After a brief discussion of the various specifications they were accepted by the division, to be submitted to letter ballot for approval.

Committee No. 2—Construction and Maintenance—Inside Plant, submitted specification for the installation of telegraph and telephone equipment in railroad offices. A draft of the specification was submitted to the division at its Chicago meeting in June, at which meeting recommendations were offered, and the committee was instructed to proceed with the development of the specification after receiving written comments and criticisms from the members. Its report at the December meeting included the preliminary draft, together with the revised draft. After brief discussion the report was accepted as information and progress.

Report on Electrolysis and Lightning Protection

Committee No. 3—Protection Against Electrolysis, made no detailed report on the subject of protection against electrolysis, as its report presented at the June meeting, which which was accepted as information, was later adopted for in-

clusion in the manual. This committee's present work is to keep in touch with electrolysis in general and be prepared to make any recommendations that may seem necessary, so as to keep the instructions which have already been adopted up-to-date.

Committee No. 4—Protection Against Lightning or Electric Light and Power Circuits, submitted a preliminary draft and specifications for such protection. E. C. Keenan objected to any separation of the wires and apparatus owned by railroads from that not owned by the railroads. He believed that from the standpoint of the protection of life and property there should be no separation of the wires and that any clauses so separating such wires and apparatus should be eliminated.

H. W. Drake, apparatus engineer, Western Union Telegraph Company, said he believed in practical methods, and wondered if any one could imagine that the telegraph and telephone companies would attempt to put in apparatus which would introduce a hazard to lives and property. He further stated that it would be almost impractical to expect a complete and thorough inspection of installations for the purpose of determining whether each and every wire, of which there are great quantities entering railway buildings, had the protection such as might be specified in the division specifications. He said that protective apparatus designed for commercial company purposes may necessarily have to be different for the protection of its apparatus than that required for protecting the apparatus on railroad circuits.

The committee's report, with the exception of the specification for line fuses, was accepted for submission to letter ballot for inclusion in the manual after necessary corrections were made in the matter of what constitutes approved methods.

Committee No. 5—Telegraph and Telephone Development, presented a report upon a number of recent improvements, which was accepted as information.

Message Traffic

Committee No. 6—Message Traffic—submitted recommended practices for traingram service, the education covering the proper use of traingram facilities, of the examination of telegraph operators on switchboard manipulation and a program of future work to be undertaken by the committee. The committee recommended that traingram service shall be under the control of the telegraph department, the baggage department and other departments co-operating to maintain prompt and efficient service between offices, stations and trains. Where there is a large volume of business to be handled by traingrams between designated points daily it may be found advantageous to provide small leather or canvas pouches with proper tags for this service. Where the business does not justify this, envelopes should be used; two envelopes of light green color being provided, one 3½ in. by 6½ in. and the other 4¼ in. by 9½ in., with traingrams printed blank, 8½ in. by 5½ in., of light green color to correspond with the envelopes.

A member of the telegraph office staff, especially assigned, should make a record of traingrams, placing a copy of this record in the envelope with the traingrams and retaining one copy in the telegraph office file; address envelopes to the representative of the telegraph department at destination and see that traingrams are delivered to the station or train baggagement, who will give this class of mail special attention.

Train baggagemen will keep traingrams in packages separate from other mail and will stamp on the envelope the date and the train handled. The representative of the telegraph department at divisional and relay offices should have a clerk or messenger meet passenger trains, obtain traingrams and deliver them to the telegraph office, where they will be checked, their receipt acknowledged by wire by giving the sheet number accompanying the traingrams and delivery made in the same manner as telegrams. If any traingrams are missing from the package the originating office shall be advised.

The question was raised as to why green traingrams and envelopes were recommended in place of the pink, which on some roads has become common practice. E. L. King, superintendent telegraph, Southern Pacific, explained that green was recommended because it was desired to establish a standard to be used throughout the country. It was further explained that green was chosen because it was found to be less expensive than other colors.

G. A. Cellar, superintendent telegraph, Pennsylvania Lines West, inquired whether all traingram service was to be handled through the telegraph office, and if so if such service at way stations was to be handled by the operator. In such an event he concluded that traingram service might become very complicated. Mr. King explained that the committee did not advocate that, stating that the more elaborate system was to be used only for large offices.

A number of the members were in favor of the system which provided that the various departments traingram their own department. H. Hulatt, manager of telegraphs, Grand Trunk System, stated that many offices did not trust traingram service, so that it was the desire of the committee to establish a system which could be relied upon so that they would have confidence in the service.

E. C. Keenan said that traingram service had been in use on the New York Central for about 30 years to his knowledge and that various schemes had been tried out from time to time under the supervision of the telegraph office. He stated that the results proved that it was necessary to eliminate the red tape and that he believed the originator of the message should handle and send it out. It is now the practice to send traingrams direct from the originating office to the baggage department. He said it resolved itself into a question of supervision and that he believed that traingrams should not be used promiscuously.

After considerable discussion the committee moved that that portion of the report be accepted by the division. Mr. Keenan offered a substitute motion to the effect that the recommended practice relative to handling of traingrams be further considered by the committee; that it should obtain the views of the members of the division in writing as to their methods of handling traingrams, especially as to whether this service should be handled by the originator of the message or sent to the telegraph office for handling, and after receiving such information the committee draft its recommendations for submission to the division. After a ballot vote the substituted motion carried.

Inductive Interference

Committee No. 7—Inductive Interference, which is a new committee, submitted preliminary information on inductive interference to telegraph and telephone lines due to various causes. High tension lines throughout the country are rapidly increasing, so that it is important that the telegraph department should have the benefit of such studies as have been made. This committee presented exhibits made up in part from papers by H. S. Waren, presented before the American Institute of Electrical Engineers in April, 1918; by P. J. Howe at the St. Louis meeting of the Railroad Telegraph Superintendents in May, 1913; on "Toll Telephone Practice" by Thiess and Joy, edited by F. F. Fowle; also General Order No. 52 of the Railroad Commission of the State of California. After a brief discussion this report was accepted as information.

Increased Wages Consumed 97 Per Cent of Increased Rates

Increases in freight and passenger rates made during federal control amounted to $1,835,000,000 when applied to the traffic moved up to July 31, 1919, while the increases in wages applied to the number of employees and the hours or days worked in July, 1919, amounted to $1,774,800,000, or 97 per cent of the revenue from the increased rates, according to a statement compiled by the Interstate Commerce Commission at the request of Senator E. D. Smith of South Carolina and presented by him in the Senate on December 20. Senator Smith also asked to have a large amount of more detailed statistics on the subject printed as a Senate document. A part of the commission's statement as presented to the Senate is as follows:

While the statistics of revenues and expenses are available for October, 1919, the wage data are available only as late as July, and it is necessary to put all steps in the following series of computations on the same basis.

I. The volume of traffic under federal control up to and including the month of July, 1919, was as follows:

CLASS I ROADS ONLY

	Ton-miles of revenue freight	Passengers carried 1 mile
Year ending December 31, 1918	398,442,020,000	42,566,343,000
Seven months ending July 31, 1919	196,289,549,000	25,856,377,000
Total	594,731,569,000	68,422,720,000

II. The average revenue per ton-mile and per passenger-mile at the rates prevailing in 1917, before federal control, and in 1919, after the rate increases coming into effect subsequently, were as follows:

	Calendar year 1917	First seven months of 1919	Increase
Revenue per ton-mile, mills	7.15	9.73	2.58
Revenue per passenger per mile, cents	2.09	2.53	.44

III. Applying the increases shown under paragraph II, we get the following approximation of the increase in money which would have been paid by the public on the traffic of 19 months if the higher rates now enjoyed by the Railroad Administration, as compared with those prevailing in the calendar year 1917, the last year of private control, had been in effect from January 1, 1918:

Increased freight revenue	$1,534,000,000
Increased passenger revenue	301,000,000
Total	$1,835,000,000

IV. The aggregate time worked by employees of Class I railroads during federal control, from January 1, 1918, to July 31, 1919, was as follows:

	Calendar year 1918	First seven months of 1919
Reported on hourly basis, hours	4,950,985,160	2,499,458,577
Total	7,450,443,737	
Reported on daily basis, days	71,534,214	41,494,450
Total	113,028,664	

V. The average rates of pay per hour and per day for the year 1917 and in July, 1919, the latest month available, were as follows:

	Year ended December 31, 1917	Month of July, 1919	Increase
Reported on hourly basis, per hour	$0.318	$0.532	$0.214
Reported on daily basis, per day	3.334	4.989	1.596

VI. Applying these increases, we get an increased compensation on the aggregate time above shown as follows:

Reported on an hourly basis	$1,594,400,000
Reported on a daily basis	180,400,000
Total	$1,774,800,000

This takes account not only of the increased rate per hour, but also of the additional men required because of the shorter working day.

VII. Comparing the increase represented by the freight rates and passenger fares, under paragraph III above, with the increase due to increased basis of compensation and reduction in hours per day, we have the following:

Payable by public	$1,835,000,000
Received by labor, or 97 per cent	1,775,000,000

The balance would be absorbed by increased prices of materials.

It should be noted that the higher basis of freight rates and passenger fares shown above was not actually operative during the whole period of federal control nor was the wage basis of 1919 actually used during the whole period of federal control.

VIII. The number of freight cars and their average capacity is shown by the following table:

Date	Number of freight cars	Average capacity (tons)
June 30, 1915	2,341,567	39.7
June 30, 1916	2,313,378	40.5
December 31, 1916	2,359,475	40.9
December 31, 1917	2,379,472	41.5
December 31, 1918	2,380,879	41.5

IX. The ton-miles and passenger-miles in the last two years under private control compared with the two years of federal control are as follows, for a mileage corresponding to Class I roads under federal control:

Year ended —	Ton-miles	Passenger-miles
December 31, 1916	360,751,781,794	34,502,599,882
December 31, 1917	392,623,247,073	39,381,719,320
Total	753,375,028,867	73,884,319,202
December 31, 1918	398,442,019,620	42,566,342,892
December 31, 1919	366,303,547,875	44,788,784,401
Total	764,750,567,495	87,355,127,293
Per cent of increase, 1918 and 1919 over 1916 and 1917	1.5	18.2

The ton-miles are based on the revenue and nonrevenue ton-miles shown in the operating reports issued by the Railroad Administration. The nonrevenue ton-miles have been excluded on a percentage basis. In completing the year 1919 and 1918 figures have been used for the months for which 1919 data are lacking, namely, November and December as to ton-miles, and October, November and December as to passenger-miles. The 1916 and 1917 figures published by the Interstate Commerce Commission have been slightly reduced to bring them to a basis comparable with the mileage of Class I roads under federal control.

X. The railway operating revenues, expenses, and railway operating income during and since the test period may be summarized as follows:

Year	Railway operating revenues	Railway operating expenses	Operating income as defined under the Federal control act
Three years ending June 30, 1917	$3,374,030,692	$2,280,653,433	$996,524,492
Year ended December 31, 1917	4,010,463,579	2,858,212,210	974,778,937
Year ended December 31, 1918	4,913,319,604	4,006,894,762	690,418,778
Ten months of 1919	4,292,802,493	3,615,440,558	481,082,531

XI. Statement as to various wage increases. This information is given in a separate statement which is being prepared by the Railroad Administration.

XII. Prices of railway materials. The following data from the Federal Reserve Bulletin for October, 1919, are illustrative:

Year and month	Coal, bituminous, run of mine: Average price per short ton	Coal, bituminous, run of mine: Relative price	Steel rails, open hearth, Pittsburgh: Average price per short ton	Steel rails, open hearth, Pittsburgh: Relative price
July, 1914	$2.20	100	$30	100
August, 1914	2.20	100	30	100
1915	2.20	100	30	100
1916	2.20	100	35	117
1917	4.40	200	40	133
1918	4.10	186	57	190
1919	4.00	182	47	157

AN AERODROME is to be constructed at Goregaon, Bombay, by the Government of India. The area of land purchased for this purpose is 300,000 square yards.

Laboratory Tests on Holding Power of Track Spikes

Some Screw and Cut Spikes Are Subjected to Comparison with an Entirely New Type of Fastening

A SERIES OF TESTS was recently conducted in the Civil Engineering Testing Laboratories of Columbia University for the purpose of comparing the holding power of a new form of track spike with that developed by the ordinary cut spike and the screw spike. These tests were reported by Albin H. Beyer and William J. Krefeld in Bulletin No. 1 of these laboratories, which presents some interesting facts for the consideration of engineers of track and other railway officers concerned with track maintenance.

The new spike is known as the Sessler Grip spike, manufactured by the American Spike Company of New York.

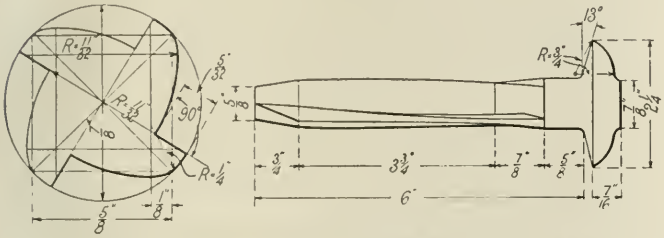


Fig. 1. Details of the Sessler Grip Spike

As shown in Fig. 1, this spike has a round shank with grooves in it and a round head not unlike that of a screw spike with the nut portion removed. The grooves in the shank, which are of a peculiar shape, as shown in the cross section on the illustration, have a slight twist, so that the spike revolves slightly in driving and drawing. The spike is driven in a manner similar to the ordinary cut spike.

The following is an abstract from the laboratories' bulletin:

The spikes were investigated for resistance to direct pull and resistance to direct pull as affected by redriving. The spikes tested were: (a) A chisel-pointed cut spike furnished by the Pennsylvania Lines with a shank 6 in. long and 21/32 in. square in section, the average weight being 0.81 lb. per spike; (b) a standard screw spike submitted by the Delaware, Lackawanna & Western with an average weight of 1.31 lb.; (c) the Sessler spike, which had an average weight of 1.1 lb. per spike.

The ties used in these tests were furnished by the various railroads and represent average quality. They included untreated chestnut, and white oak ties sawed on two sides, an untreated white oak hewn tie, untreated Douglas fir ties sawed on four sides and creosoted yellow pine ties sawed on two sides.

The pulling tests made to determine the holding power of the three kinds of spikes were conducted under the following conditions:

(*a*) 4 Pennsylvania cut spikes driven 5½ in. without bored hole;

(*b*) 4 Pennsylvania cut spikes driven 5½ in. into ½ in. bored hole;

(*c*) 4 D. L. & W. screw spikes screwed 6 in. into ⅝-in. hole;

(d) 4 D. L. & W. screw spikes driven 6 in. into ⅝-in. hole;

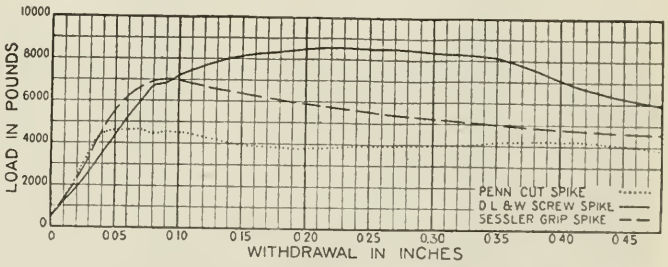
(*e*) 4 Sessler Grip spikes driven 5½ in. without bored hole;

(*f*) 4 Sessler Grip spikes driven 5½ in. into 7/16-in. bored hole.

All cut and Sessler Grip spikes were driven by a man inexperienced in track work. The screw spikes were inserted in accordance with the personal instructions of W. L. Madill, roadmaster on the Lackawanna at Hoboken, N. J. One set of screw spikes in each kind of tie was driven for the full 6-in. depth to determine also the effect upon the holding power of driving as compared with the standard method of screwing the spike in.

All tests were made in the civil engineering testing laboratory at Columbia University. The tie, with the spikes to be tested facing downward, rested upon two steel blocks upon the upper head of a 100,000-lb. Riehle testing machine. The spike was gripped by means of a special holder forged in the form of a closed yoke and provided with a slot of width sufficient to engage the shank of the spike below the head. The same holder was used for the screw and Sessler Grip spikes as they had the same sized shank under the head. The holder used for the cut spike was similar except for the slot, which was slightly narrower. The load, therefore, was applied to the spike head at two points directly opposite each other, thus tending to insure an axial pull. The lower ends, or shanks, of these holders were held by the pin of a shackle, which was in turn held by a yoke gripped by the wedges in the lower head of the testing machine. Deformation measurements were made in a number of ways to insure a degree of accuracy commensurate with the purpose for which the measurements were to be used.

For purposes of comparison the resistance of the spikes as they were pulled were tabulated for definite amounts of withdrawals, and these were used for the plotting of curves, of which the one in Fig. 2 is typical, except that in cases where the screw spikes were driven all or part way, instead of being screwed into place, the holding power was not nearly



Cut Spike and Sessler Spike Were Driven into Holes 5½ in., Screw Spike Was Screwed into Hole 6 in.

Fig. 2. Direct Pull Test in a Treated Yellow Pine Tie

so large. In the case of white oak ties the resistance obtained for all of the spikes was much greater than in yellow pine, reaching about 12,000 lb. for the Sessler spikes and 16,000 lb. for the screw spikes. One phenomenon of these tests, as illustrated in Fig. 1, is that, within the limits within which the withdrawal is approximately proportional to the load, the withdrawal for both the cut spike and the Sessler spike is proportionately less for a given load than it is for the screw spike.

Redrive and Pulling Tests

In accordance with the suggestion made by the engineers of several Eastern railroads, redrive and pulling tests were made to determine the effect of the successive redriving of a

spike after having been withdrawn 0.25 in. It is believed that such tests will give some information as to the influence upon the holding power of the spike when redriven after having been lifted in service. Six such tests were made for each type of spike in each of the four kinds of ties.

The method of testing was similar to that in the direct pulling tests, except that the spikes were withdrawn only ¼ in. The cut spike and the Sessler Grip spike were then redriven, and the screw spike reserved the full amount of the withdrawal in all cases. The spikes were then repulled ¼ in., redriven or rescrewed, respectively, and again repulled ¼ in.

The results obtained from these redriving and repulling tests were computed and plotted in the same way as those for the straight pulling tests and in the same manner. Fig. 3 shows an example of the curves obtained in these repulling tests for the spikes in an untreated white oak tie. These curves show higher values by over 100 per cent than those obtained in the treated yellow pine ties and also evidence a considerably greater difference between the screw spike and the Sessler spike than was obtained in the case of the pine ties.

Relative Ultimate Holding Power

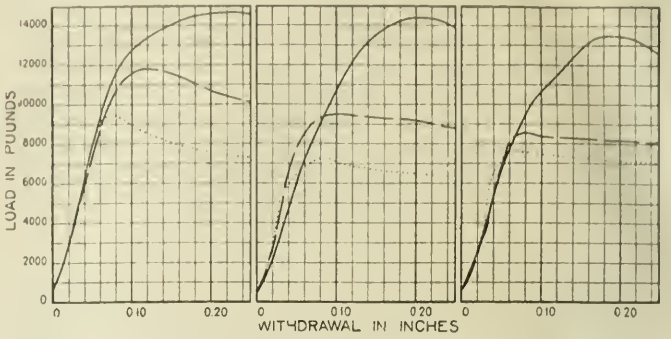
The relative ultimate holding powers of the three types of spikes tested expressed in terms of the cut spike driven without a hole for the various ties is as follows:

Tie	Method of driving	Cut	Screw*	Sessler grip
Chestnut	Without hole	100 %		139.5%
	With hole	95.2%	176.6%	118.5%
Creosoted yellow pine	Without hole	100 %		142.1%
	With hole	96.9%	175.2%	134.1%
White oak	Without hole	100 %		114.3%
	With hole	97.6%	172.7%	130.8%
Douglas fir	Without hole	100 %		121.4%
	With hole	82.7%	167.4%	107.5%
Average, all woods	Without hole	100 %		129.3%
	With hole	93.1%	172.9%	122.7%

*Screw spike screwed full depth.

These results appear to indicate that both the cut and the Sessler Grip spike develop a slightly higher initial resistance to withdrawal when driven without a pre-bored hole than when driven into ½-in. and 7/16-in. holes, respectively. This increase in initial holding power secured when a spike of this type is driven without pre-forming the hole is of doubtful value; for the efficiency and ultimate life of a spike in a tie depends not so much upon the ultimate initial resistance to withdrawal as it does upon the range of elastic behavior of the wood fibers, provided the friction between the wood fibers and the surface of the spike is sufficient.

A cut spike driven into a tie without first pre-forming the hole crushes and bunches the fibers over a wide area, due largely to the splitting and wedging action being confined to one plane. With the Sessler grip spike, this splitting action appears to be less, due party to the shape of the point tending to produce a combined cutting and splitting action, but much more to the rotation of the spike on driving, averaging 63 deg. when driven without a hole and 68 deg. when driven into a hole. The crushing and bunching of the wood fibers can be materially reduced both with the cut spike and the Sessler grip spike by pre-forming the hole, as shown in Fig. 4.

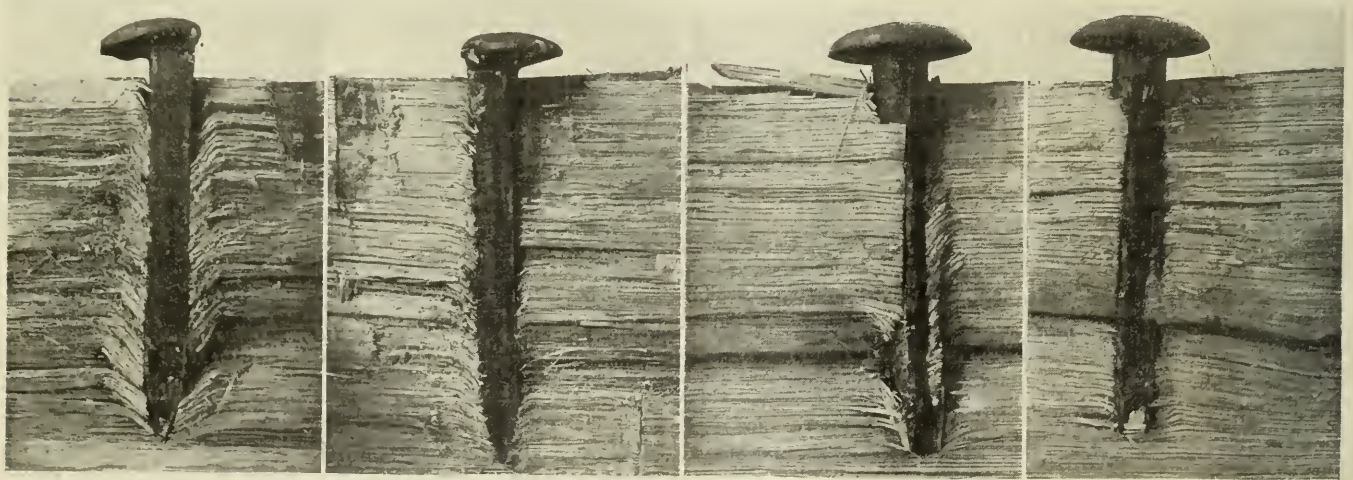


Cut pike and Sessler Spike Were Driven into Holes 5½ in., Screw Spike Was Screwed into Hole 6 in.

Fig. 3. Re-pulling Test in an Untreated White Oak Tie

Elasticity of a Spike Fastening

When a spike is driven into a tie the fibers of the wood are forced downward and pressed simultaneously outward. When such a spike fastening is subjected to a direct pull, within its elastic range, the friction between the wood fibers and the surface of the spike tends to hold it in place, and whatever yielding does take place is due solely to the elastic distortion of the wood fibers. The elastic withdrawal limit of a spike fastening is reached either when the wood fibers in contact with the surface of the spike are strained beyond their elastic limit, or the bond or adhesion between the fibers of wood and the surface of the spike is insufficient to prevent relative motion between the two. Both in the cut and Sessler Grip spike failures appear to take place simul-



Cut Spike without Hole. *Cut Spike in Pre-Bored Hole,* *Sessler Spike without Hole.* *Sessler Spike with Pre-Bored Hole..*

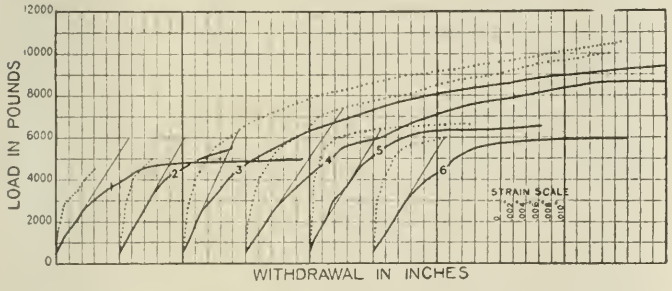
Fig. 4. How Pre-Bored Holes Reduce the Injury Caused by Spike Driving

taneously in the two ways just described. In the screw spike, on the other hand, failure is more gradual, but incipient failure takes place at very low loads, probably due to the crushing of the fibers against the thread of the screw.

Within the elastic withdrawal limit the resistance to direct pull developed by a spike is directly proportional to the displacement of the spike in the wood. Also within the elastic withdrawal range the permanent set is practically negligible.

When the load upon a spike exceeds its elastic withdrawal limit, sliding friction comes more and more into play and the permanent sets become appreciable. The ultimate resistance to withdrawal that is actually developed by a spike depends somewhat upon the elastic strength of the wood fibers, but much more upon the friction of the bunched and distorted fibers upon each other and the surface of the spike; the amount of friction varies in very wide limits even in the same tie, especially in the cut spike, this friction varies suddenly and irregularly with the amount of withdrawal, giving the load strain curve a saw-tooth appearance.

To be a permanent rail fastening, a spike must not be loaded in excess of its elastic withdrawal resistance, irrespective of its ultimate resistance. A rail fastening should, therefore, be designed with a sufficient number of spikes, so that the load per spike does not exceed the elastic withdrawal



1 and 2—Cut Spike, 3 and 4—Screw Spike, 5 and 6—Sessler Spike. Full Line Is Strain Curve, Dotted Line Is Set Curve.

Fig. 5. Relation Between Applied Load and Corresponding Withdrawal and Set

resistance of any spike. It is obvious that the least number of spikes and greatest efficiency per rail fastening will be obtained with that type of spike having the highest elastic withdrawal resistance. A proper safety factor should also be introduced in the design to allow for any possible lowering of the elastic withdrawal resistance resulting from the fatigue and physical deterioration of the wood fibres with time.

The true elastic withdrawal limits can be only approximately determined from the load stress curves, as the inaccuracies of measurements introduced by the compression of the tie on the bearing blocks and the twisting, especially of a more or less warped tie, have in some cases modified the curves. This is especially true in the case of the screw spike, which requires the most sensitive instruments to locate the point of incipient failure. For these reasons only general conclusions can be drawn from these tests as to the actual and relative elastic withdrawal resistances of the three types of spikes under the various conditions tested.

To determine the true elastic behavior of the three types of spikes a limited number of tests were made, in which the withdrawal of the spike was measured directly to the nearest 1-10,000 part of an inch. In this investigation a creosoted yellow pine tie was used and two spikes of each type were tested, using prebored holes.

Based upon the results of these tests, the relative average elastic limits, taking the cut spike at 100 per cent, is:

Cut spike	100 per cent	
Screw spike	90 per cent	elastic limit in bearing
	178 per cent	final yield point
Sessler Grip spike	129 per cent	

To determine the true elastic behavior of three kinds of spikes, a limited number of tests were made, in which the withdrawal of spikes was measured directly to the nearest one ten-thousandth part of an inch. In this investigation a creosoted yellow pine tie was used and two spikes of each type were tested, using pre-boring the holes. The results of these tests are given in Fig. 5. Based on these results, the relative average elastic limit, taking the cut spike as 100 per cent, is 90 per cent for the elastic limit in bearing of the screw spike, 178 for the final yield point of the screw spike, and 129 per cent for the Sessler spike.

The behavior of the screw spike, as already mentioned, is somewhat peculiar; at about 2,700 lb. the true elastic limit is reached, evidently due to a bearing failure of the thread upon the wood, represented by the lower percentage in the above table. From this point up to about 5,000 lb. the load strain curve is still substantially straight, but slightly more inclined. At this upper limit, represented by the higher value in the above statement, there is a decided change in direction, increasing rapidly with the load, practically a yield point. Because of the limited extent of this investigation, covering two spikes of each kind in one tie only, the results cannot be considered conclusive and require further verification.

General Conclusions

1. The tests outlined herein, although of limited extent, show conclusively that the rail fastenings tested act as elastic structures within certain limits, depending upon the character of the wood and type of spike.

2. In the softer woods the elastic limit of the fastening is reached at very small withdrawals, ranging from 0.004 to 0.006 in. In an oak tie these limits appear to be somewhat higher.

3. Within the elastic range of the fastening the resistance developed by the fastening is directly proportional to the amount of withdrawal.

4. Small permanent withdrawals or sets have been recorded within the elastic range of the rail fastening, but these are no greater than would be reasonably expected in a material such as wood.

5. A rail fastening to approach permanency must at no time be stressed beyond its elastic holding power, making due allowances for the fatigue and physical deterioration of the wood fibers during the life of the fastening.

6. In view of the importance of these facts to the railway profession, a more complete investigation should be made to definitely establish the elastic behavior of various types of spikes, both without and with preformed holes of various sizes driven into ties of various stages of deterioration.

Photo from International Film Service

The Bagdad Railway Under British Control. Turkish Prisoners on Their Way to Prison Camp

Say Farmers Oppose Government Ownership of Railroads

Assertions that the farmers of the United States favor government ownership or operation of the railroads, which are frequently circulated by the labor organizations and by Benjamin C. Marsh, secretary of one of the farmers' organizations, are denied in a letter addressed to President Wilson by Thomas C. Atkeson, Washington representative of the National Grange, which claims a membership of more than 1,000,000 farmers, and also by representatives of other farm organizations, quoted in an article in the Washington Star of December 21 by William Harrison Moore.

In a letter to President Wilson, Professor Atkeson sets forth the resolution adopted by the National Grange urging the return of railroads to private ownership. Professor Atkeson states that it is his belief that "a large majority of the farmers of the nation believe that government operation of all railroads should cease at the earlist possible moment.

"It is also my belief," he says, "that persons who have sought recently to give currency to statements that organized farmers favored government ownership are not farmers themselves and do not represent any considerable proportion of the men or women actually engaged in farming. In this belief I am strengthened by the fact that the agricultural press, with few and inconspicuous exceptions, oppose government ownership, and continuation of government operation, and the leaders of the great agricultural organizations other than the National Grange are unanimous in opposition to government ownership."

Professor Atkeson, in discussing the question of how many farmers are actually in favor of government control of railroads or the Plumb plan, said that less than 5 per cent of the agriculturists in America believe in government ownership.

"Articles appearing in the press of the country last week gave prominence to the visit of a delegation of 27 men to the White House to protest against the return of railroads to the owners for a period of at least two years," said Professor Atkeson. "This delegation, the newspapers stated, was 'composed of representatives of union labor and farmers' organizations.' Now, this is a fallacy. There was a large number of union labor men present, all right, but only two men claimed to represent the 'farmers of the country.' These men are George P. Hampton and Benjamin C. Marsh. They claim to represent the Farmers' National Headquarters. Hampton is in charge, and Marsh is his assistant.

"The delegation which waited upon the President—they were greeted by Mr. Tumulty, by the way—sang loud the praises of government ownership, according to the newspaper reports. A letter to Mr. Wilson, setting forth in one part how strong the farmers of the country were for government ownership, and how bitter was their opposition to the Cummins railroad bill, made interesting reading.

"But the letter had the facts wrong. The truth of the matter is, these so-called farmers' delegates did not represent the great mass of American farmers. I doubt if they represent 150,000 farmers in the entire country. The great farmers' organizations are for the most part heartily in favor of the Cummins railroad bill and bitterly opposed to the government retention of railroads."

That Hampton and Marsh of the farmers' national headquarters "faithfully represent some farmers with radical tendencies in the western states" is the opinion expressed by Charles A. Lyman, secretary of the National Board of Farm Organizations."

Mr. Lyman said that while Hampton and Marsh have lined up the American Society of Equity, containing perhaps 40,000 farmers of Wisconsin, Minnesota, Iowa and North Dakota, and a couple of other farmers' protective societies, the total number of farmers represented by these men will not exceed 200,000.

The majority of members of the National Board of Farm Organizations, Mr. Lyman said, are heartily opposed to government ownership and favor the return of the railroads to their owners.

A. M. Loomis, assistant to Professor Atkeson, pointed out that at the fifty-third annual session of the National Grange, held November 12 at Grand Rapids, Mich., the organization without a dissenting voice, went on record as being unalterably opposed to government control. The resolution on nationalization, adopted at the meeting, reads in part as follows:

"We declare our opposition to government ownership and to nationalization of business and industry unless clearly required in the public interest. We favor the safeguarding and protection of every right of private property on the broad ground that only by the full development of the right of private property can there be perpetuated the full measure of individual initiative and emulation upon which a democracy is based and by which its future is assured."

On the same day this resolution was adopted, Mr. Loomis said, the American Farm Bureau in Chicago also voiced its opposition to federal ownership. The same week the state committees of agriculture met in Chicago and adopted a similar resolution.

Early in November the National Farmers' Congress, composed of "steady, clear-thinking delegates," named by the governors of the various states, met at Hagerstown, Md., and went on record as being opposed to government ownership.

In the face of this opposition to government ownership, according to Mr. Loomis, the letter to President Wilson made it appear that the farmers were "all keen for this business of government control, and the newspapers naturally played up the fact."

In the address of Oliver Wilson, master of the National Grange, delivered at the annual meeting, the following was stated:

"One of the imperative necessities of today is the putting of emphasis upon the sacred rights of property, as opposed to the wild orgies of radicalism, nationalization and anarchy, which are sweeping the land and threatening to destroy every industry, every farm and every home."

On December 16 Professor Atkeson dispatched a letter to Senator Cummins urging prompt action by the Senate in turning back to the owners the railroads of the country and enacting proper legislation for this purpose.

Orders of Regional Directors

Inspection and marking of cotton.—Supplement 1 to Circular 235 of the Southwestern regional director amends Section 3 of the original order so that compressed cotton properly covered with bagging and which is to be further compressed for high density within the territory governed by these rules, may be accepted without patches, provided that in addition to the shipping marks, there is attached to each bale a waterproof shipping tag showing the name of shipper, point of origin, consignee and destination, and provided further that the shipper shows on his bill of lading "Cotton to be compressed to high density at . . . ." Section 7 is also amended so that cotton linters, which have been compressed before delivery to the carriers, in carload lots of not less than 75 bales consigned from one consignor to one consignee, upon which a carload rate is applicable, may be received without being tagged.

Wage Agreement for the Shop Employees

For First Time Railroads of This Country Have Entered Into National Agreement With Shopmen

DIRECTOR GENERAL HINES entered into the following agreement, effective October 20, with the shop employees on roads under federal operation, represented by the Railway Employees' Department of the American Federation of Labor and it affiliated organizations of the Mechanical Section and Divisions Nos. 1, 2 and 3, thereof, including the International Association of Machinists, International Brotherhood of Boilermakers, Iron Ship Builders and Helpers of America, International Brotherhood of Blacksmiths and Helpers, Amalgamated Sheet Metal Workers' International Alliance, International Brotherhood of Electrical Workers, and the Brotherhood Railway Carmen of America.

It is understood that this agreement shall apply to those who perform the work specified in this agreement in the maintenance of equipment, maintenance of way, signal maintenance (except electricians engaged in signal maintenance, telegraph maintenance and all other departments of all railroads in federal operation, shop employees of American Railway Express, and Pullman Car Line employees having the same working conditions as specified in Supplement No. 4 to General Order No. 27. It is understood that this agreement does not annul agreements already in effect with other organizations unless and until a majority of the employees concerned express a desire for a change.

GENERAL RULES

Hours of Service.—Rule 1. Eight hours shall constitute a day's work. All employees coming under the provisions of this schedule, except as provided for in Rule 15, shall be paid on the hourly basis.

Rule 2. When one shift is employed, the starting time shall be not earlier than 7 o'clock, and not later than 8 o'clock. The time and length of the lunch period shall be subject to mutual agreement.

Rule 3. Where two shifts are employed, the starting time of the first shift shall be governed by Rule 2, and the second shift shall start immediately following the first shift, or at 8 p. m. The spread of the second shift shall consist of eight consecutive hours, including an allowance of 20 minutes for lunch within the limits of the fifth hour.

Rule 4. Where three shifts are employed, the starting time of the first shift shall be governed by Rule 2, and the starting time for each following shift shall be regulated accordingly. The spread of each shift shall consist of eight consecutive hours, including an allowance of 20 minutes for lunch within the limits of the fifth hour.

Rule 5. The time established for commencing and quitting work for all men on each shift shall be the same at the respective points, but where three shifts are worked by running repair forces, and two shifts by back shop forces, the quitting time of the first shift and the commencing and quitting time of the second shift of the back shop forces will be governed by the provisions of Rule 3.

Exception.—It is agreed that three eight hour shifts may be established under the provisions of Rule 4, for the employees necessary to the continuous operation of power houses, millwright gangs, heat treating plants, train yard running repair and inspection forces (not repair tracks) without extending the provisions of Rule 4 to the balance of the shop forces.

Rule 6. All overtime, except as the provisions of Rules 7, 9, 10 and 15 apply, outside of bulletin hours, up to and including the sixteenth hour of service in any one 24-hour period, computed from the starting time of the employee's regular shift, shall be paid for at the rate of time and one-half and thereafter at the rate of double time, up to the starting time of the employee's regular shift. This to include work performed on Sundays, New Year's Day, Washington's Birthday, Decoration Day, Fourth of July, Labor Day, Thanksgiving Day, Christmas and such state holidays as are now recognized as punitive overtime days at the various points on the respective railroads within the different states.

Rule 7. For continuous service after regular working hours, employees will be paid one hour for forty minutes' service or less, and shall not be required to work more than one hour without being permitted to go to meals. Employees called or required to return to work will be allowed five hours for three hours and twenty minutes' service or less. They shall be required to do only such work as held or called for.

Rule 8. Employees regularly assigned to work on Sundays or holidays, or those called to take the place of such employees, will he allowed to complete the balance of the day unless released at their own request. Those who are called will be advised as soon as possible after vacancies become known.

Rule 9. Employees required to work during lunch period shall receive pay for one hour straight time and be allowed necessary time to procure lunch without loss of time. This does not apply where employees are allowed the twenty minutes for lunch without deduction therefor.

Rule 10. Employees, except as the provisions of Rules 12 and 15 apply, sent out on the road for emergency service, shall receive continuous time from the time called until their return as follows:

Overtime Emergency Service Road Work.—Overtime rates for all overtime hours and straight time for the recognized straight time hours at home station, whether working, waiting or traveling, except that after the first 24 hours, if relieved from duty and permitted to go to bed for five or more hours, they will not be allowed time for such hours, provided that in no case shall an employee be paid for less than eight hours on week days, and eight hours at one and one-half time for Sundays and recognized holidays, for each calendar day. Where meals and lodging are not provided by the railroad, actual expenses will be allowed. Employees will receive all allowances for expenses not later than the time when they are paid for the service rendered. Employees will be called as nearly as possible, one hour before leaving time, and on their return will deliver tools at point designated.

Rule 11. When it becomes necessary for employees to work overtime, they shall not be laid off during regular working hours to equalize the time. At points where sufficient number of employees are employed, employees shall not work two consecutive Sundays (holidays to be considered as Sundays). Record will be kept of overtime worked and men called with the purpose in view of distributing the overtime equally.

Rule 12. When necessary to fill temporary vacancies at outlying points, employees, excluding those specified in Rules 14 and 15, will be sent out and will be paid for this service as follows: Continuous time for time called up to time of reporting at point to which sent, overtime rates for all overtime hours, and straight time for the recognized straight time hours at home station, whether waiting or traveling (the same provisions to apply for return trip). While at such point they will be paid straight time and overtime in accordance with practice at home point with a guarantee of not less than eight hours' pay, at the established rate, for each calendar day, including Sundays and holidays at overtime rates. Where meals and lodging are not provided by the railroad, actual expenses will be allowed. Rules in existing agreements or shop rules covering the road service described in Rules 10 and 12, which are more favorable to the employees, are to be preserved.

Rule 13. Employees changed from one shift to another will be paid overtime rates for the first shift of each change. Employees working two shifts or more on a new shift shall be considered transferred.

Rule 14. Employees regularly assigned to road work whose tour of duty is regular, and who leave and return to home station daily (a boarding car to be considered a home station) shall be paid continuous time from the time of leaving the home station to the time they return, whether working, waiting or traveling, exclusive of the meal period, at straight time for the regular hours, and overtime rates for all overtime hours, as per overtime rules. The starting time to be not earlier than 6 a. m., nor later than 8 a. m. Where two or more shifts are worked, the starting time of each following shift will be regulated accordingly.

Rule 15. Employees regularly assigned to perform road work and paid on a monthly basis, shall be paid not less than the minimum hourly rate established for the corresponding class of employees coming under the provisions of this schedule, on the basis of 365 eight-hour days per calendar year, with pay at the rate of time and one-half time for Sundays and holidays designated herein; otherwise, overtime will not be paid. Where meals and lodging are not furnished by the railroad, or when the service requirements make the purchase of meals and lodging necessary, while away from home point, employees will be paid actual expenses. This service is distinct and separate from that performed by any other class of employees coming under the provisions of this schedule and is not to be confused therewith; the employees assigned to it shall not be assigned to or used to perform the construction, repair and emergency work assigned to the other employees under the provisions of the general and special rules of this schedule.

NOTE

The following is an example to be followed in arriving at the monthly rate:

365 days multiplied by 8 equals	2,920 hours
59 Sundays and holidays at one-half time will be 59 x 4, equaling	236 hours
Total hours to be paid for	3,156 hours

The monthly salary is arrived at by dividing the total earnings of 3,156 hours by 12; no overtime is allowed for time worked in excess of eight hours per day; on the other hand, no time is to be deducted unless the employee lays off of his own accord.

Filling Vacancies.—Rule 16. When an employee is required to fill the place of another employee receiving a higher rate of pay, he shall receive the higher rate, but if required to fill, temporarily the place of another employee receiving a lower rate, his rate will not be changed.

Rule 17. Employees serving on night shifts, desiring day work, shall have preference when vacancies occur, according to their seniority.

Rule 18. When new jobs are created or vacancies occur in the respective crafts, the oldest employees in point of service shall, if sufficient ability is shown by trial, be given preference in filling such new jobs or any vacancies that may be desirable to them. All vacancies or new jobs created will be bulletined. Bulletins must be posted five days before vacancies are filled permanently. Employees desiring to avail themselves of this rule will make application to the official in charge and a copy of the application will be given to the local chairman.

Rule 19. Mechanics in service will be considered for promotion to posi-

tions as foremen. When vacancies occur in positions of gang foremen men from the respective crafts will have preference in promotion.

Rule 20. Employees transferred from one point to another, with a view of accepting a permanent transfer, will, after 30 days, lose their seniority at the point they left and their seniority at the point to which transferred will begin on date of transfer, seniority to govern. Employees will not be compelled to accept a permanent transfer to another point.

Rule 21. When the requirements of the service will permit, employees, on request, will be granted leave of absence for a limited time, with privilege of renewal. An employee absent on leave who engages in other employment, will lose his seniority unless special provisions shall have been made therefor by the proper official and committee representing his craft. The arbitrary refusal of a reasonable amount of leave of employees when they can be spared, or failure to handle promptly cases involving sickness or business matters of serious importance to the employee, is an improper practice and may be handled as unjust treatment under this agreement.

Absence from Work.—Rule 22. In case an employee is unavoidably kept from work he will not be discriminated against. An employee detained from work on account of sickness or for any other good cause shall notify his foreman as early as possible.

Faithful Service.—Rule 23. Employees who have given long and faithful service in the employ of the company and who have become unable to handle heavy work to advantage, will be given preference of such light work in their line as they are able to handle.

Attending Court.—Rule 24. When attending court as witnesses for the railroad, employees will receive pay for all time lost at home station, with a minimum of eight hours' time each week day and eight hours at rate and one-half for Sundays and holidays, either at home station, away from home, or traveling. Time and one-half will be paid for traveling during overtime hours where employees are unable to secure sleeping car accommodation. Actual expenses will be allowed when away from home station, and necessary expenses will be allowed when at home. When necessary, the company will furnish transportation and will be entitled to certificate for witness fees in all cases.

Paying Off.—Rule 25. Employees will be paid off during their regular working hours, semi-monthly, except where existing state laws provide a more desirable paying off condition. Should the regular pay day fall on a holiday or days when the shops are closed down, men will be paid on the preceding day. Where there is a shortage equal to one day's pay or more in the pay of an employee, a voucher will be issued to cover the shortage. Employees leaving the service of the company will be furnished with a time voucher covering all time due within 24 hours where D. C. checks are issued and within 48 hours at other points, or earlier when possible.

Rule 26. During inclement weather provision will be made where buildings are available to pay employees under shelter.

Reduction of Forces.—Rule 27. When it becomes necessary to reduce expenses, the force at any point or in any department or sub-division thereof shall be reduced, seniority as per Rule 31 to govern; the men affected to take the rate of the job to which they are assigned. Five days' notice will be given men affected before reduction is made, and lists will be furnished local committee. In the restoration of forces, senior laid off men will be given preference of re-employment, if available, within a reasonable time, and shall be returned to their former position; local committee will be furnished list of men to be restored to service; in reducing force the ratio of apprentices will be maintained.

Rule 28. Employees laid off on account of reduction in force, who desire to seek employment elsewhere, will, upon application, be furnished with a pass to any point desired on the same railroad.

Rule 29. When reducing forces, if men are needed at any other point they will be given preference to transfer to nearest point, with privilege of returning to home station when force is increased, such transfer to be made without expense to the company. Seniority to govern all cases.

Rule 30. Employees required to work when shops are closed down, due to breakdown in machinery, floods, fires, and the like, will receive straight time for regular hours, and overtime for overtime hours.

Seniority.—Rule 31. Seniority of employees in each craft covered by this agreement shall be confined to the point employed in each of the following departments: Maintenance of Way (Bridge and Building where separate from Maintenance of Way Department); Maintenance of Equipment; Maintenance of Telegraph; Maintenance of Signals; four subdivisions of the Carmen as follows: Patternmakers, Upholsters, Painters, and other Carmen. The seniority lists will be open to inspection and copy furnished the committee.

Assignment of Work.—Rule 32. None but mechanics or apprentices regularly employed as such shall do mechanics' work as per special rules of each craft, except foreman at points where no mechanics are employed.

Rule 33. In compliance with the special rules included in this agreement, none but mechanics and their apprentices in their respective crafts shall operate oxy-acetylene, thermit, or electric welders; where oxy-acetylene or other welding processes are used, each craft shall perform the work which was generally recognized as work belonging to that craft prior to the introduction of such processes, except the use of the cutting torch when engaged in wrecking service.

Filling Foremanship Temporarily.—Rule 34. Should an employee be assigned temporarily to fill the place of a foreman, he will be paid his own rate, straight time for straight time hours and overtime for overtime hours, if greater than the foreman's rate. If it is not, he will get the foreman's rate. Such positions shall be filled only by mechanics of the respective craft in their departments.

Grievances.—Rule 35. Should any employee subject to this agreement believe he has been unjustly dealt with, or any of the provisions of this agreement have been violated, the case shall be taken to the foreman, general foreman, master mechanic, or shop superintendent, each in their respective order, by the duly authorized local committee or their representative. If stenographic report of investigation is taken, the committee shall be furnished a copy. If the result still be unsatisfactory, the duly authorized general committee, or their representatives, shall have the right of appeal, preferably in writing, to the higher officials designated to handle such matters in their respective order, and conference will be granted within ten days of application. All conferences between local officials and local committees to be held during regular working hours without loss of time to committeemen.

Rule 36. Should the highest designated railroad official or his duly authorized representative and the duly authorized representative of the employees fail to agree, the case shall then be jointly submitted in writing to the chief executive officer of the railroad and the chief executive officer of the Railway Employees' Department of the American Federation of Labor for adjudication or final disposition. The methods of procedure will be those prescribed by the Railroad Administration. To the extent that these rules may remain in force after the expiration of federal operation, the methods of procedure will thereafter be such as may be agreed to by the representatives of the railroads and the representatives of the organizations herein specified. Prior to the assertion of grievances as herein provided, and while questions of grievances are pending, there will neither be a shut down by the employer nor a suspension of work by the employees.

Rule 37. An employee who has been in the service of the railroad 30 days shall not be dismissed for incompetency, neither shall an employee be discharged for any cause without first being given an investigation.

Rule 38. If it is found that an employee has been unjustly discharged or dealt with, such employee shall be reinstated with full pay for all time lost.

Committees.—Rule 39. The company will not discriminate against any committeemen, who from time to time, represent other employees, and will grant them leave of absence and free transportation when delegated to represent other employees.

Apprentices.—Rule 40. All apprentices must be able to speak, read, and write the English language and understand at least the first four rules of arithmetic. Applicants for regular apprenticeship shall be between 16 and 21 years of age, and if accepted, shall serve four years of 290 days each calendar year. If retained in the service at the expiration of their apprenticeship they shall be paid not less than the minimum rate established for journeymen mechanics of their respective crafts. In selecting helper apprentices, seniority will govern and all selections will be made in conjunction with the respective craft shop committees. (NOTE: See special rules of each craft for additional apprentice rules.)

Rule 41. All apprentices must be indentured and shall be furnished with a duplicate of indenture by the company, who will also furnish every opportunity possible for the apprentice to secure a complete knowledge of the trade.

No apprentice will be started at points where there are not adequate facilities for learning the trade.

Rule 40 shall govern in the employment of apprentices.

FORM OF INDENTURE

This will certify that.....was employed as a .....apprentice by the.....Railroad, at.....on.....19..., to serve four years, a minimum of two hundred and ninety days each.

.....
(Title of officer in charge.)

SERVICE PERFORMED DURING APPRENTICESHIP

.....
.....
.....

This will certify that on..... ....., 19...., ... completed the course of apprenticeship specified above and is entitled, if employed by the.....Railroad to the rates of pay and conditions of service of.....

.....
(Title of officer in charge.)

NOTE: *The above form is to be used both for regular and helper apprentices. (Helper apprentices to serve 3 years.)*

Rule 42. The ratio of apprentices in their respective crafts, shall not be more than one to every five mechanics. Two apprentices will not be worked together as partners. The distribution of apprentices among shops where general repairs are made on the division shall be as nearly as possible in proportion to the mechanics in the respective trades employed therein. In computing the number of apprentices that may be employed in a trade on a division, the total number of mechanics of that trade employed on the division will be considered. If, within six months, an apprentice shows no aptitude to learn the trade, he will not be retained as an apprentice. An apprentice shall not be dismissed or leave the service of his own accord, except for just and sufficient cause, before completing his apprenticeship. Apprentices shall not be assigned to work on night shifts. An apprentice shall not be allowed to work overtime during the first three years of his apprenticeship. If an apprentice is retained in the service upon completing the apprenticeship, his seniority rights as a mechanic will date from the time of completion of apprenticeship. Preference will be given to sons of employees in the selection of apprentices to the extent of at least 80 per cent of the number employed.

Rates of Pay.—Rule 43. The rate for all mechanics who were receiving 68 cents per hour or more under Supplement 4 to General Order 27, except those provided for in Rule 45, will be increased 4 cents per hour, effective May 1, 1919. Steel car workers and other mechanics in the car department who were receiving the rate of 63 cents per hour, under Supplement 4 to General Order 27, will be increased 4 cents per hour, effective May 1, 1919. Other mechanics in the car department who were receiving 58 cents per hour, under Supplement 4 to General Order 27, will be increased 9 cents per hour, making a rate of 67 cents per hour, effective May 1, 1919.

Rule 44. Apprentices, helpers, and other classes of workmen covered by Supplement 4 to General Order 27, except those provided for in Rule 45, will be increased 4 cents per hour above the present rate, effective

May 1, 1919. This increase to apply also to men paid on the step-rates provided for in Section 2 and 2a of Article 2, Supplement 4 to General Order 27, except those provided for in Rule 45, effective May 1, 1919.

Rule 45. Linemen and others covered by Rule 141 shall receive 68 cents per hour, effective May 1, 1919. Groundmen covered by Rule 142 shall receive 62 cents per hour, effective May 1, 1919. Coal pier elevator operators and coal pier electric hoist operators as covered by Rule 143 shall receive 55 cents per hour, effective May 1, 1919.

Applicants for Employment.—Rule 46. Applicants for employment will be required to make statement only as to their ability, and address of relatives, except when their duties require them to distinguish signals or do flagging when they shall be required to pass the usual eyesight and hearing tests.

Conditions of Shops, Etc.—Rule 47. Good drinking water and ice will be furnished. Sanitary drinking fountains will be provided where necessary. Pits and floors, lockers, toilets and wash rooms will be kept in good repair and in a clean, dry and sanitary condition. Shops, locker rooms and wash rooms will be lighted and heated in the best manner possible consistent with the source of heat and light available at the point in question.

Personal Injuries.—Rule 48. Employees injured while at work will not be required to make accident reports before they are given medical attention, but will make them as soon as practicable thereafter. Proper medical attention will be given at the earliest possible moment, and employees shall be permitted to return to work without signing a release pending final settlement of the case. At the option of the employee, personal injury settlements may be handled under the provisions of Rules 35 and 36. Where death or permanent disability results from injury, the lawful heirs of the deceased may have the case handled as herein provided.

Rule 49. A place will be provided inside all shops and roundhouses where proper notices of interest to employees may be posted.

Shop Trains.—Rule 50. Existing conditions in regard to shop trains will be maintained unless changed by mutual agreement. The company will endeavor to keep shop trains on schedule time, properly heated and lighted, and in a safe, clean and sanitary condition. This not to apply to temporary service provided in case of emergency.

Free Transportation.—Rule 51. Employees covered by this agreement, and those dependent upon them for support, will be given the same consideration in granting free transportation as is granted other employees in service. General committees representing employees covered by this agreement to be granted same consideration as is granted general committees representing employees in other branches of the service.

Rule 52. Employees will not be required to work on engines or cars outside of shops during inclement weather, if shop room and pits are available. This does not apply to work in engine cabs or emergency work on engines or cars set out for or attached to trains. Should it become necessary to establish a regular night shift in shops, such men will not be used on running repair work unless work is brought to shop. When it is necessary to make repairs to engines, boilers, tanks and tank cars, such parts shall be cleaned before mechanics are required to work on same. This will also apply to cars undergoing general repairs. Employees will not be assigned to jobs where they will be exposed to sand blast and paint blowers while in operation. All acetylene or electric welding or cutting will be protected by a suitable screen when its use is required.

Rule 53. Emery wheels and grindstones will be installed at convenient places in the shop and will be kept true and in order.

Help to be Furnished.—Rule 54. Craftsmen and apprentices will be furnished sufficient competent help, when needed to handle the work, if available. When experienced helpers are available, they will be employed in preference to inexperienced men. Laborers when used as helpers will be paid the helpers' rate.

Rule 55. When dismantling or scrapping engines, boilers, tanks, cars (except wood cars) or other machinery, this work will be done by mechanics of their respective crafts. Sufficient help will be furnished. When wood cars are dismantled for scrapping, parts to be removed before car is burned or destroyed will be removed by carmen.

Rule 56. No employee will be required to work under a locomotive or car without being protected by proper signals. Where the nature of the work to be done requires it, locomotives or passenger cars will be placed over a pit, if available.

Rule 57. In shops and roundhouses not now equipped with connections for taking the steam from engines arrangements will be made to equip them so that steam from locomotives will not be blown off inside the house.

Rule 58. All engines will be placed under smoke jacks in roundhouses where practicable, when being fired up.

Rule 59. At shops and roundhouses equipped with electricity, electric light globes and extensions will be kept in tool rooms available for use.

Rule 60. When employees are required to check in and out on their own time, they will be paid one hour extra at the close of each week, regardless of the number of hours worked during the week.

MACHINISTS' SPECIAL RULES

Qualifications.—Rule 61. Any man who has served an apprenticeship or has had four years' experience at the machinists' trade and who, by his skill and experience, is qualified and capable of laying out and fitting together the metal parts of any machine or locomotive, with or without drawings, and competent to do either sizing, shaping, turning, boring, planing, grinding, finishing, or adjusting the metal parts of any machine or locomotive whatsoever shall constitute a machinist.

Classification of Work.—Rule 62. Machinists' work shall consist of laying out, fitting, adjusting, shaping, boring, slotting, milling, and grinding of materials used in building, assembling, maintaining, dismantling, and installing locomotives and engines (operated by steam or other power), pumps, cranes, hoists, elevators, pneumatic and hydraulic tools and machinery, scale building, shafting, and other shop machinery; ratchet and other skilled drilling and reaming; tool and die making, tool grinding and machine grinding, axle truing, axle, wheel and tire turning and boring; engine inspecting; air equipment, lubricator and injector work; removing, replacing, grinding, bolting, and breaking of all joints on superheaters; oxy-acetylene, thermit and electric welding on work generally recognized as machinists' work; the operation of all machines used in such work, including drill presses and bolt threaders using a facing, boring or turning head or milling apparatus, and all other work generally recognized as machinists' work.

Machinist Apprentices.—Rule 63. Include regular and helper apprentices in connection with the work defined by Rule 62.

Machinist Helpers.—Rule 64. Employees assigned to help machinists and apprentices, operators of drill presses and bolt threaders not equipped with a facing, boring or turning head or milling apparatus, bolt pointing and centering machines, wheel presses, bolt threaders, nut tappers and facers; crane men helpers, tool room attendants, machinery oilers, box packers, grease cup fillers and oilers, and applying all couplings between engine and tenders; locomotive tender and draft rigging work except when performed by carmen.

Assignment to Running Repairs.—Rule 65. Machinist assigned to running repairs, shall not be required to work on dead work, at points where dead work forces are maintained.

Dead Work.—Rule 66. Dead work means all work on an engine which can not be handled within 24 hours by the regularly assigned running repair forces maintained at point where the question arises.

Dead Work and Running Repair Forces.—Rule 67. Dead work forces will not be assigned to perform running repair work, except when the regularly assigned running repair forces are unable to get engines out in time to prevent delay to train movement.

Work at Wrecks.—Rule 68. In case of wrecks where engines are disabled, machinist and helper (more if necessary) shall accompany the wrecker. They will work under the direction of the wreck foreman.

Apprentices Classification of Work.—Rule 69. Apprentices shall be instructed in all branches of the machinists' trade. They will serve three years on machines and special jobs. Apprentices will not be required to work more than four months on any one machine or special job. During the last year of their apprenticeship they will work on the floor. Apprentices shall not work on oxy-acetylene, thermit, electric or other welding processes until they are in their last year.

Helper Apprentices.—Rule 70. Helpers who have had not less than two consecutive years' experience as machinist helper at the point where employed, at the time application for apprenticeship is made may become a helper apprentice. When assigned as a helper apprentice they must not be over 25 years of age.

Rule 71. Helper apprentices shall serve three years, a minimum of 2990 days each calendar year, and shall be governed by the same laws and rules as governed regular apprentices.

Rule 72. The number of helper apprentices must not at any time exceed 50 per cent of the combined number of regular and helper apprentices assigned.

Rule 73. Helper apprentices shall receive the minimum helper rate for the first six months, with an increase of 2 cents per hour for every six months thereafter until they have served three years.

Helpers.—Rule 74. Helpers, when used in any way in connection with machinists' work shall in all cases work under the orders of the machinist, both under the direction of the foremen.

Rule 75. When vacancies occur under classification of machinist helper (temporary or permanent) machinist helpers in the service will be given preference in promotion to position paying either same or higher rate at station employed, seniority to govern.

Rule 76. Laborers, or similar class of workmen, shall not be permitted to do helpers' work as outlined in Rule 64 if regular machinist helpers are available.

Differentials for Machinists.—Rule 77. Machinists required to inspect locomotives and swear to reports required by the Federal Locomotive Inspection Law shall receive 5 cents per hour above the minimum rate paid machinists at the point employed. Autogenous welders shall receive 5 cents per hour above the minimum rate paid machinists at the point employed.

[Here follow special rules, similar to those for the machinists, for the boilermakers, blacksmiths, sheet metal workers, electrical workers and carmen.—EDITOR.]

MISCELLANEOUS

Scope of General and Special Rules.—Rule 180. Except as provided for under the special rules of each craft, the general rules shall govern in all cases.

Effect on Existing Agreements.—Rule 181. In consideration of the standardization of hours of service and rules governing working conditions hereby established on all railroads in Federal operation, the general and special rules of this agreement shall supersede and be substituted for the general and special rules of existing agreements in conflict herewith; rules of existing agreements dealing with conditions of employment not specifically provided for herein shall remain in effect and be recognized as addenda to this agreement by the several railroads who negotiated such rules. Rulings that have been made by the Director General of Railroads and Railroad Board of Adjustment No. 2, where not in conflict with the rules of this agreement, shall remain in effect.

Duration of Agreement.—Rule 182. These general and special rules and regulations shall remain in full force and effect during federal operation unless superseded or amended as herein provided. They shall be printed by the railroads and each employee affected thereby shall be provided with a copy on request.

Revision of Agreement, Etc.—Rule 183. Should either the Railroad Administration or the organizations desire to revise these rules, a written statement containing the proposed changes shall be given and conference held within thirty days to arrange details necessary to negotiate to a conclusion.

Rule 184. Except as herein provided, nothing in these rules shall be construed to supersede methods of procedure promulgated by the Railroad Administration for the handling of grievances, or the application or interpretation of the provision of this agreement.

Rule 185. This agreement shall become effective 30 days after date signed by the Director General of Railroads, and the representatives of the employees' organizations.

Rule 186. Differentials provided for in this agreement for highly skilled employees shall become effective as of May 1, 1919.

Train Accidents in November[1]

THE FOLLOWING is a list of the most notable train accidents that occurred on the railways of the United States in the month of November, 1919:

COLLISIONS

Date	Road	Place	Kind of accident	Kind of train	Killed	Injured
11	Penn	Crestline	rc	F. & F...	0	7
14	Louis'l. & N.	Edenwold	rc	P. & F...	0	4
24	Seaboard A. L.	Littleton	rc	P. & F...	0	2
*†25	Penn	McDonald	rc	F. & F...	2	2
26	A. T. & S. F.	Ft. Madison	bc	P. & F...	2	3

DERAILMENTS

	Road	Place	Cause of derailment	Kind of train	Killed	Injured
13	Boston & M.	Berlin, N. H.	Washout	P.	1	0
17	Penn	Lancaster	Neg.	F.	2	1
17	Penn	Lancaster	Acc. obst.	P.	0	4
20	Gulf Coast	Settegast	Cattle	P.	0	4
*21	Georgia	Greensboro, Ga.	ms.	F.	0	1
24	Macon & B.	Skipperton, Ga.	Boiler	F.	1	1

OTHER ACCIDENTS

Date	Road	Place	Cause of accident	Kind of train	Killed	Injured.
6	Bessemer & L. E.	Hewitts, Pa.	Boiler	F.	3	0

The trains in collision on the Pennsylvania Lines at Crestline, Ohio, on the 11th, were an eastbound wrecking train, which had just stopped at the yardmaster's office, and a following locomotive without train, the locomotive crushing the rear car of the wrecker, injuring seven employees.

The trains in collision near Edenwold, Tenn., on the morning of the 14th, about 5 o'clock, were northbound passenger No. 4 and northbound freight No. 14, the passenger train running into the freight. Four trainmen were injured. The freight, entering the side track, was stopped before the caboose cleared the derail and this made it impossible to set the switch straight, and the passenger train entered the siding. It had passed an automatic block signal set at caution, but the signal nearest the switch indicated clear, the caboose of the freight having cleared the track circuit controlling that signal. It is said that a fusee had been placed about 700 ft., in the rear of the freight.

The trains in collision near Littleton, N. C., on the 24th were northbound passenger No. 16 and a preceding freight, the freight being run into by the passenger while standing at a station. The engineman and fireman were injured.

The trains in collision on the Pennsylvania Lines at McDonald, Pa., on the 25th were a westbound stock train standing at a water station; a locomotive without train following the stock train, and a third train, a freight, which ran into the light engine, pushed it forward, and wrecked the caboose of the standing train. A drover in this caboose was killed and his body partly destroyed by fire, and one fireman was fatally injured. Two other trainmen were badly hurt. The fire was started by coals from one of the fire boxes.

The trains in collision at the east end of the bridge across the Mississippi River near Fort Madison, Iowa, on the 26th, were westbound passenger No. 1, and an eastbound freight. The engineman and fireman of the passenger train were killed, and three other trainmen were injured. Both locomotives and two baggage cars were partly submerged in the river.

The train derailed on the Boston & Maine near Berlin, N. H., on the 13th, was a southbound local passenger, double-headed. Both locomotives and the two first cars were derailed at a washout and the locomotives were overturned. One fireman was killed and four other trainmen injured.

The trains involved in the accidents near Lancaster, Pa., on the 17th, were an eastbound freight, Extra 1137, and eastbound passenger No. 576. The freight train running past distant and home block signals set against it was thrown off the track at a derailing switch, and the engine was upset. The passenger train, running on the middle track, was derailed by running into the freight wreck and its locomotive was overturned. The engineman and one brakeman of the freight were killed. Seven other employees and six passengers were injured; two cars in the passenger train being damaged. The accidents happened at 7:46 a. m., in a dense fog.

The train derailed on the Gulf Coast Lines at Settegast, Tex., on the evening of the 20th, was westbound passenger No. 3. Four cows on the track were struck by the locomotive and killed, and one of them, being thrown against a switch stand, knocked it over, opened the switch and derailed three of the cars of the train, two coaches being overturned. The train was crowded, but only ten persons were injured, and these injuries were classed as slight.

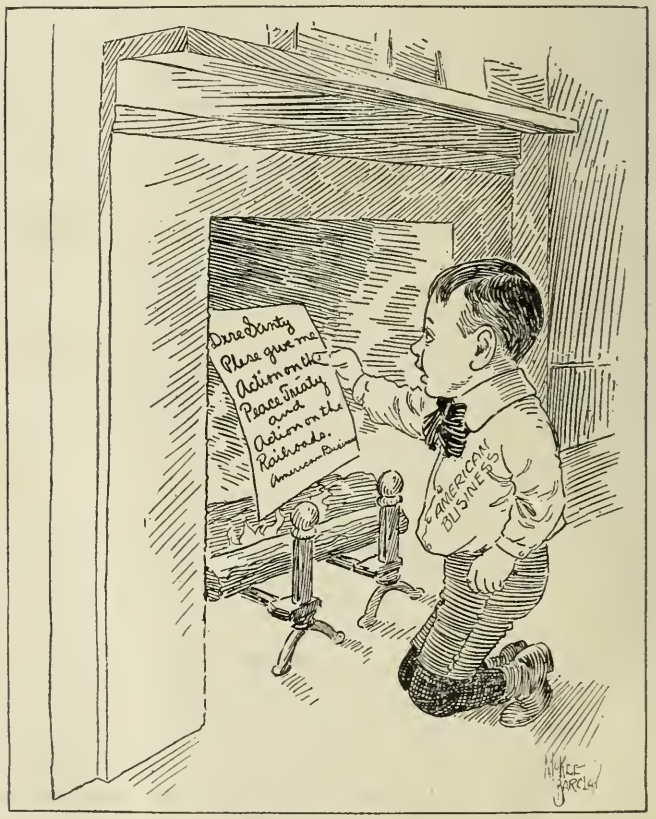
The train derailed near Greensboro, Ga., on the 21st, was an eastbound freight. The train ran off the track at a misplaced switch and ten cars were wrecked, together with the station building. Six freight cars and a part of the station were burned up. A traveling fireman was injured. The switch had been left wrong by a bridge foreman. The fire started from the stove in the station.

The train involved in the accident on the Macon & Birmingham, near Skipperton, Ga., on the 24th, was a westbound freight. The locomotive and tender were derailed by the explosion of the boiler, and the engineman was fatally scalded. The fireman was slightly injured. The cause of the explosion was low water.

The train involved in the accident at Hewitt, Pa., on the 6th, was a southbound freight. The boiler of the locomotive exploded and the engine was wrecked. The engineman, fireman and one brakeman were killed. The cause of the explosion was an overheated crown sheet, due to low water.

Canada—In a butting collision of passenger trains on the Canadian Pacific near Terrebonne, Que., on the evening of the 22d, one engineman and one express messenger were killed and six passengers were injured.

[1]Abbreviations and marks used in Accident List:
rc, Rear collision——bc, Butting collision——xc, Other collisions——bb, Broken——d, Defective——unf, Unforeseen obstruction——unx, Unexplained——derail, Open rerailing switch——ms, Misplaced switch——ass, obst., Accidental obstruction——malice, Malicious obstruction of track, etc. ——boiler, Explosion of locomotive on road——fire, Cars burned while running——P. or Pass., Passenger train——F. or Ft., Freight train (including empty engines, work trains, etc.)——Asterisk, Wreck wholly or partly destroyed by fire——Dagger, One or more passengers killed.



From the Baltimore Sun

His Letter to Santa Claus

The Proposed Trans-Saharian Railway

Technical Consideration Involved in the Construction of a Railway Across the Desert of Sahara

FOR MANY YEARS France has recognized the desirability and value of a rail connection across the Sahara desert between Southern Algeria on the North and Western French Africa on the south. The "Genie Civil" has in the past discussed several proposed routes and has but recently reviewed the situation, describing some of the technical problems that must be met in the construction of this railway, from which the following is taken:

Before the war the two principal Sahara rail routes mentioned were those of the engineer in chief for bridges and roads, Souleyre, who suggested a line from Biskra to Tombouctou via Touggout and In-Salah, with a branch line to Lake Tchad (Fig 1-Line B), and the project of M. Andre Berthelot, which takes as the point of departure Colomb-Bechar, the terminus of the line Sud-Oranais (Fig.1-Line A). Other promoters suggested a program even more extended, suggesting communications between Algiers, the Niger, the Belgian Congo and British East Africa by branch lines going respectively to Tombouctou, the terminus (Kano) of the Nigerian railway, then Stanleyville on the River Congo and finally to Port Florence on Lake Victoria (terminus of the British railway running from Mombasa, a port on the Indian Ocean). It was a question first of connecting Algeria (and as a result Morocco and Tunis) with West and equatorial Africa, of which the wealth (notably the mineral reaches of Katanga, in the Belgian Congo) gives great hopes, and then, by a junction with the future "Cape to Cairo" railway, with the vast and prosperous regions of South Africa.

As indicated in the legend, the full lines indicate existing railroads; the cross hatched lines the new Trans-Saharian project; heavy dotted line, other lines proposed for construction by the French and the dot and dash line, older Trans-Saharian projects.

Fig. 1—Map of Africa, Showing New Lines Proposed Before the War

Quite recently other projects have been introduced, hardly less striking, such as the Paris-Madrid-Tangiers-Dakar line and the Trans-Soudanese line starting from Dakar (and from Conakry) going to Fort Lamy and Khartoum, with a terminus at Port Soudan and Djibouti on the Red Sea, which was recommended by M. Tilho. On account of the economic conditions brought about by the war, however, there is, of course, no possibility of the immediate realization of any of these plans. Nevertheless there is no reason now for not making some surveys in order to facilitate the work for the next generation.

Two memorandums on this subject were published quite recently, one by Lieut.-Colonel Godfrey, director of the Biskra-Houggourt Railway and another by M. L. Durandeau, director of technical service works of Southern Algerian territory. M. Godefroy in his discussion of the Trans-Saharian railway takes into consideration that the "Trans-Africans" aspire to a continental trade and even to a transcontinental one. With a line across the Sahara, London and Paris could be put in easy communication by a combined service of steamers and rapid trains with Central Africa on the one hand (via Marseilles, Algeria, the Belgian Congo and the Great Lakes), and with South America on the other hand (via Marseilles, Algeria, the buckle of the Niger, Dakar and the crossing from Dakar to Pernambuco (See Fig. 1).

M. Godefroy considers that if it is wished to establish a junction between Algeria and the "Cape to Cairo" railway, it would be advantageous instead of joining up with this line in the center of Africa, to join it at Cairo itself by a line running from Fez-Algiers-Tunis-Tripoli and the Tripoline and Cyrenean Coast. This railway would have, besides general traffic, the advantage of serving the immense number of Mussulman pilgrims to Mecca, pilgrims who every year fill up entire ships, and for whom the railway from Damascus to Medina was constructed by the Turkish government in 1908. The Fez-Cairo railway exists already in part up to Gabes on one side and from Daba to Cairo via Alexandria on the other. On the other side the strategic railway constructed by the British to revictual its Palestine Expeditionary Force could be easily extended as far as the Mecca railway.

The Trans-Saharian line which is recommended by M. Godefroy starts from Touggourt, the present terminus of the Algerian system (Algiers and Constantinople-Biskra-Trouggourt railway) and descends via Ouargla (the date region), In-Salah, crosses the Tidikelt and the Adrar in order to arrive near Bourem. This involves about 1,470 miles of line. (See Fig. 2.) The point at which this line crosses the Niger, at Tosaye, the river flows between two steep banks where a bridge could easily be erected. With the line from Touggourt to Algiers the journey from Algiers to the Niger would be about 1,860 miles. At the present time the line has been surveyed as far as In-Salah.

Trans-Saharian Traffic

With this line in operation western French Africa would be able to send numbers of workers into Algeria and Tunisia for agriculture and the mines which are in want of manual labor; thence there would be a very nearly constant stream

of natives between the North and the South. Higher class passengers would obviously be few, but this railway would easily supplant the sea route for mail and freight which is very much slower than the service that could be provided by this new line. The freight frame would consist chiefly of rice from the Soudan and cattle on foot or frozen meat from the buckle of the Niger going North; conversely wheat, fruit, dates from Algeria, textile fabrics and manufactured products and stock of mechanical tools going South.

Technical Problems Involved in the Construction

The experience acquired in the working of the Southern Algerian Oranais railways will be of great assistance in the construction of the Saharian railroad. A summary of M. Durandeau's discussion of the problems to be encountered is given below. The construction and maintenance of such a line differs above all in its details of construction and maintenance from a European railway on flat ground.

The plans for this railway as recommended by Souleyre and Berthelot included the use of a normal gage, but this exists only on one part of the Algerian railway system. The line of the Southern Oranais is of 1.05 meter gage while the Southern Algerian line is 1 meter gage. Thus, if the line is extended over either of these roads a transhipment will have to be made if the normal gage is to be used. It would seem, therefore, more practical for the use of a gage to accommodate the connecting lines and thus obviate the necessity of a transhipment. Furthermore a narrow gage would not necessarily mean a restriction of traffic and with track of easy curves and grades sufficient speed can be obtained provided the track is sufficiently strong. Furthermore if in a certain number of years the traffic justifies a change from a narrow gage to the normal gage it could easily be done without interrupting the service, by widening the road bed and by placing ties for the normal gage between the existing ties and supplying the new rails to them. M. Durandeau proposes to use the double head rails of 65-ft. in length, weighing 85-lb. per yard, placed on chairs weighing about

Fig. 2—Map of West Africa, Showing the Proposed Trans-Saharian and Trans-Soudanian Lines

The use of double headed rails mounted in chairs is believed necessary in order to raise the track as high as possible above the ballasting so as to facilitate the passage of the fine gravel driven by the wind between the ties and to lessen the risk of sand banks on the rails. Furthermore, due

31-lb. These chairs to be mounted on cedar ties measuring 7-ft. 2½-in. by 10½-in. by 6-in. or upon metallic ties weighing 99lb. which are to be 6-ft. 11-in. long. It is anticipated that this track will be able to support an axle load of 36,500-lb. and speeds of 37 miles an hour.

to the saline nature of the ground in a large part of the territory to be covered, it is necessary to keep the rails as high above the ground and as dry as possible, to prevent serious corrosion. The chlorides and sulphates under the influence of the variations of humidity give off acids which will attack the metal very rapidly. In such districts it is obviously necessary to use the wood ties instead of the metallic ties.

In order to avoid the drifting of the sand on to the switches, which has often caused accidents on the Southern Algerian railways, it will be necessary to place the switches on chairs and, furthermore, place the ties on a floor composed of other ties parallel to the track and joined. This will enable the sand to slip away between the switches and the ties.

The question of width of the road bed and of ballasting is of first importance for a Saharian railway, for the maintenance staff will be inevitably small. It will of necessity be made of sand for a large part of the way and it will be difficult to maintain it properly on account of the wind and it will be necessary to clear the track of the drifted sand frequently.

Ballasting with good quality broken stone would cost a great deal on account of the long haul. Ballasting made of gypsum of which there is a large quantity readily available would become quickly disintegrated and would be a detriment not only to the track but to the health of the staff.

When laying out the line it will be necessary to keep away from sand-hills as much as possible and to build windbreaks on those which are near the track. Plantations of tamaris can be used to very good advantage for this purpose. The location of the line should be carried out much less with the idea of obtaining a straight line than to avoiding slopes and inclines; provided that large gradients are maintained for curves, the visibility of the track and the maximum speed obtainable are almost the same as on a straight line.

The great inconvenience pointed out, relative to the possible corrosion of the rails, is met with again in connection with mortar, lime or cement, to which the saline nature of the soil is absolutely injurious. The experience with masonry of the railways of the Southern Constantinois has shown that the variations of heat and cold, of dryness and humidity, influence in an unfavorable way the resistance of cements which are at the same time affected by chemical decompositions.

M. Durandeau advises using freestone, without mortar, and cedar wood, or drystone masonry, and the use of thick lime when mortar is indispensable.

In the Sahara where materials for construction are wanting, only rough stone of gypsum is found which for all works of masonry such as buildings, small aqueducts, etc., can be perfectly well used with mortar of thick lime and sand found on the spot. It will be very desirable to construct the drystone masonry in metallic gabions. The use of these gabions permits raising the piles and gives greater security.

Organization for Construction

It is obvious that the line across the Sahara Desert will have to originate from Southern Algeria. All material can be supplied to the construction workshops from the lines already laid in that country. The advance working party which would lay the ballasting would require in the neighborhood of 2,000 "navvies" and it is anticipated that 2 kilometers of rail could be laid per day. The workmen and the foremen could be lodged in a train of some 50 freight cars (the small freight cars or wagons are used in this country) and the working train would consist of one tractor equipped for generating electricity, one office wagon, one store wagon, including a kitchen and restaurant, two wagons for the housing of the foremen, one ambulance wagon, wagons for the European workmen, and finally a large number of wagons for the natives.

Every morning and evening a train with working stock and stores would bring along a kilometer of track for laying in the evening or on the following morning. This material would be unloaded behind the train for the use of the staff and would be picked up by some special arranged loading device under the trucks of the working train and carried forward to the point of working. As the line progressed, stations would be instituted at intervals of 100 kilometers for stocking working train at the front.

Traction Units for Use on the Desert

On account of the scarcity of water and particularly on account of the extremely bad water found on the Desert it is impracticable to use steam locomotives for hauling the trains. Furthermore, coal for use on locomotives would have to be brought to the railway from Europe at great expense. It therefore seems preferable to plan on the use of Diesel or Still type of internal combustion engines or electric traction. It is a question which is still to be studied, but it is believed no difficulty will be experienced in this respect by the time the Trans-Saharian railway is built, due to the rapid progress in this particular subject.

Such are the problems involved in the construction of a conditions, particularly in Europe, it evidently will be some Trans-Saharian railway, and due to the present economic time before the work can be undertaken.

Freight Locomotive and Freight Train Costs

THE TOTAL COST of freight train service, including locomotive service, per 1,000 gross ton miles, which had been decreasing each month this year, including August, has been increasing in the fall months and was slightly greater in September than in August and in October, as compared with September, according to the monthly report of the Operating Statistics Section, although the report shows a decrease as compared with October, 1918. For October, 1919, it was 105.8 cents, as compared with 108.2 cents in October, 1918, and 101.1 cents in September, 1919. In August, 1919, it was 99.5 cents. Per locomotive mile and per train mile the cost was greater than for October of last year. The cost of freight locomotive service per locomotive mile in October was 109.8 cents, as compared with 108.7. In September it was 106.7 cents. The cost of freight train service per train mile in October was 159.8, as compared with 157.8. In September it was 156.2. The combined figures for all regions and the comparative figures for last year are as follows, (costs for 1918 have been readjusted for back pay, while the costs for 1919 apply to the month of October only, the back pay applicable to previous months having been eliminated):

	October 1919	October 1918
Cost of locomotive service per locomotive mile (cents)	109.8	108.7
Locomotive repairs	35.5	35.1
Enginehouse expenses	8.0	8.4
Train enginemen	21.1	19.3
Locomotive fuel	41.7	42.5
Other locomotive supplies	3.5	3.4
Cost of train service per train mile	159.8	157.8
Locomotive repairs, Enginehouse expenses, Locomotive fuel	49.4	50.1
Other locomotive supplies	4.0	4.9
Train enginemen	24.0	22.2
Trainmen	27.6	25.8
Train supplies and expenses	7.5	6.8
Cost of total train service per 1,000 gross ton miles	105.8	108.2
Locomotive repairs, Enginehouse expenses, Locomotive fuel	32.7	34.4
Other locomotive supplies	31.3	33.5
Enginemen and Trainmen	2.6	2.7
Train supplies and expenses	34.1	33.
	5.0	4.7

Railroad Surplus or Deficit Depends on Method of Figuring

THE INTERESTING QUESTION as to "when is a surplus not a surplus?" which has been agitating Congress, the labor leaders and others who have been discussing the railroad problem ever since the Railroad Administration gave to the press the surprising news that it had earned a surplus in July and followed it with similar statements for August, September and October, has now been answered by a statement authorized by Director General Hines explaining the matter. The statement for some reason received little publicity, but he shows that while in those four months the net operating income of the roads was $22,516,446 greater than four-twelfths of the standard return, it was also $29,573,000 less than the roads earned in the corresponding four months of the test period on which the standard return is based.

Senator LaFollette and other advocates of government ownership or continued government operation of the railroads have been using the surpluses derived by comparison with one-twelfth of the standard return for each month as arguments to prove that the railroads are now on a self-sustaining basis and if retained by the government could be operated without a rate increase, ignoring the fact that the Railroad Administration has not yet succeeded in standardizing the months of the year and that the roads ought to earn much more than that in the fall months in order to make a favorable showing. Also the representatives of organized labor and of some of the farmers that recently called at the White House to urge the President to keep the railroads went so far as to say that the railways showed a net profit "at the rate of $168,000,000 a year" for the three months prior to the coal strike.

This reminds one of Abe Kabibble's boast that he made "$5,000 a year some weeks." In those three months the roads actually earned $68,000,000 less than they did in the corresponding months of 1918, in which year the deficit was $236,000,000, whereas this year it is $269,000,000 for only 10 months. The $168,000,000 was arrived at by multiplying by four the $42,000,000 surplus for August, September and October arrived at in a statement issued by the Railroad Administration by comparison with three-twelfths of the standard return after charging out the back pay applicable to prior months and also by reaching into November for about $9,000,000 for business done in October, which would not be taken into the accounts until November.

In its press notices regarding monthly operating results, the Railroad Administration has consistently made its comparisons with one-twelfth of the standard return—$74,356,354—because it is payable in equal quarterly instalments, although this method had the effect of overstating its deficit in the early months of the year and of understating it in the later months. In a condensed income account compiled monthly for the Class I roads by the Operating Statistics Section, however, the "net federal income" is compared with the standard return for the period covered by the report based on the proportion which the railway operating income in the same period of the three years of the test period bore to the total railway operating income during the test period. The proportions to be used for each month, as given in a footnote to its reports, are:

	Per cent		Per cent
January	6.228	July	8.363
February	5.257	August	9.643
March	7.517	September	10.113
April	7.438	October	10.436
May	8.568	November	9.222
June	9.149	December	8.066

The total net operating income for the 10 months of this year for which reports are available was $478,982,635, as compared with $599,976,783 in the corresponding period of 1918. Ten-twelfths of the annual rental is $743,563,540, and on that basis the 10 months' deficit is $264,580,905, but the proportion of it that accrued in the corresponding 10 months of the test period was $748,252,000, and on that basis the deficit is $269,000,000, a difference of less than $5,000,000. But for October alone the two methods produce very different results.

The net operating income was $76,959,777, which represents a surplus of $2,603,423 as compared with one-twelfth of the standard return, but a deficit of $17,417,000 as compared with the $94,387,000 which the roads earned in the average October of the test period. In October, 1918, the net operating income was $86,184,486, so that there was actually a greater deficit in October this year than last year. Mr. Hines' statement, which also takes into account some adjustments for back pay, is as follows:

"For each of the four months, July, August, September and October, the Class I railroads in federal operation have shown an aggregate profit after deducting one-twelfth of the rental. The total of the profits for the four months thus shown were $22,516,446. The question has been raised as to whether there ought not to have been deducted a larger proportion of the rental corresponding with the proportion of net operating income which the railroads under private management earned on an average in the corresponding months of the three-year test period. The Railroad Administration has adopted the same policy in the four months in question that it adopted in the preceding six months. Uniform deduction of one-twelfth of the rental was made each month, because the standard contract provides that three-twelfths of the annual rental shall be paid at the end of each three months, so that in effect the Railroad Administration must account for one-twelfth of the annual rental each month, and hence it seemed appropriate to charge it accordingly.

"But since the method thus used for the months of July to October has been questioned, it seems desirable to call attention to what the result would be for this four months' period if there were deducted a proportion of the annual rental in excess of four-twelfths and equal to the proportion of the annual operating income earned by the railroads in the corresponding four months of the test period. In arriving at this result there has also been deducted the back payments made the shopmen for the four months in question. A deduction has also been made of the estimated cost of recent readjustments of wages and working conditions, such as allowance of time and a half for overtime to certain additional classes of employees, including train and enginemen in road freight service. While none of these readjustments were actually applicable to the months in question, the deduction of the estimated amounts thereof serves to make the result for the four months more indicative of the result for the future, and hence a more useful index to the real earning capacity of the railroads in federal operation, on the basis of existing wages and working conditions. The hire of equipment is also treated on a uniform basis, though a different method of accounting therefor was adopted in October.

"On the basis thus indicated the loss for the four-month period, after deducting the larger proportion of the rental as above explained, would have been approximately $29,573,000. This amount is two and two-tenths per cent of the operating revenues from freight traffic for the period. This gives full effect to the relatively heavy business normally done in these four months, as indicated by the operating income of the same four months during the test period.

"As bearing on the significance of this result as an index to real earning capacity of railroads in federal operation, it is desirable to emphasize that on the average the maintenance expenditures for the four-month period were adequate to maintain the property and were fairly related to the ex-

penses for the test period after taking into consideration the increases in prices and wages.

"It must be remembered that to the extent to which this larger deduction for rental is made in the four-month period in question, there must be a corresponding diminution in the rental, and hence in the deficit heretofore shown in the first six months of the year.

"Attention has heretofore been called in the monthly statements issued by the Railroad Administration to the fact that there was an abnormal falling off in freight business in the early part of the year and that this was prolonged over an abnormal period of time, covering the entire first six months, and that to a substantial extent the relatively large deficit incurred in the first six months was due to this great and prolonged diminution of freight traffic. The traffic for the months of July, August, September and October has been on a more normal basis, although in the latter part of October it was seriously deranged and carried on under especially unfavorable conditions by reason of the impending coal strike."

Cummins Railroad Bill Passed by Senate

Sent to Conference with Esch Bill—President Fixes March 1 for Return of Railroads

THE SENATE on December 20 passed by a vote of 46 to 30 the Cummins bill for the reorganization of the railroad system of the United States and of the system of railroad regulation, without having heard from the President on his intentions as to the return of the roads. The bill, together with the Esch bill passed by the House on November 20, was then sent to conference for the reconciliation of the many important differences between them; and the conferees have begun work during the holiday recess of Congress, which lasts until January 5, in the hope that they can submit a report some time in January. The conferees are Senators Cummins, Kellogg, Poindexter, Pomerene and Robinson and Representatives Esch, Barkley, Hamilton, Sims and Winslow, who constituted the sub-committees of the Senate and House committees on interstate commerce, respectively, that did most of the work on the bills, having drafted the tentative bills which constituted the basis for the bills later reported by the full committees.

Only Eleven Votes for Government Operation

The Senate passed the bill apparently without any great degree of enthusiasm, after three weeks of debate, during which there was a very slim attendance, including five night sessions. It seemed far more interested in getting the bill out of the way in time for the holiday recess and as to its provision a large number of senators relied on the judgment of the committee on interstate commerce, that had worked on the bill throughout the greater part of the year, or upon the conferees, upon whom rests the responsibility of drafting the final bill. Many who did not fully understand or were in doubt as to the wisdom of many features of the bill voted for it because it provides for the return of the railroads to private management or because the conferees may save them trouble of making up their minds as to many of its provisions or will give them another chance to vote.

The most pronounced expression of sentiment in connection with the bill came on Senator LaFollette's motion to substitute for it a two-year extension of the present federal control, which received only 11 votes, while there were 65 against it. On the motion to substitute the Senate bill for the House bill there were 41 votes to 17, but this probably was influenced more by the desire to get the two bills into conference than by the exact division of opinion as to the two bills.

Efforts to eliminate or change the fundamental principles of the bill met with little support, and were represented rather by the votes against the bill than by proposals for modifications in it. The most important change made in the Senate was the addition of a provision for a revolving fund of $500,000,000 for loans to railroad companies for capital improvements.

The Senate apparently had difficulty in drawing a clear-cut issue on the bill, although the party line was in evidence as 33 of the votes for it were Republican and 13 Democratic, while 22 of the votes against it were Democratic and 8 Republican. Three Republicans, Gronna, LaFollette and Norris, and eight Democrats, Ashurst, Chamberlain, Henderson, Johnson of South Dakota, Kendrick, Nugent, Sheppard and Walsh of Montana voted for the continuation of government operation.

The organized propaganda against the bill carried on by the labor organizations and one of the several organizations that claim to represent the farmers, was based on the assertion that the bill had been dictated by and was wholly for the selfish interests of the railroads, but this was so manifestly untrue and railroad support for the bill was so conspicuously absent that it hardly represented a satisfactory issue and probably as many votes were cast against the bill on the ground that it was not sufficiently generous to the railroads as because of a belief that it gave them too much.

The railroad executives themselves indicated far more opposition to the bill than support of it, although their efforts were directed more particularly for or against individual provisions of the bill and in general they apparently took the position of being grateful for whatever they could get. Senator Chamberlain of Oregon at one time asserted that the railroad executives were repeating the performance of the brotherhoods at the time they were said to have forced the passage of the Adamson law "at the point of a gun" and he declared that the railroad presidents and general managers were in the galleries demanding the passage of the bill. The only railroad executive in the galleries at the time was S. Davies Warfield, who is chairman of the Seaboard Air Line, but who is also president of the National Association of Owners of Railroad Securities. Senator Cummins replied to Senator Chamberlain, saying that the railroad executives were opposed to the bill and that if any one knew of a railroad president in favor of it he would be glad to have him named.

Mr. Warfield was an interested observer of the proceedings throughout and Bird M. Robinson, president of the American Short Line Railroad Association, was also in the gallery part of the time but railroad officers were most conspicuous by their absence.

A considerable number of amendments to the bill were adopted but most of them applied to details. Some of the provisions which it had been predicted would meet with bitter opposition, such as those for federal incorporation and compulsory consolidation, aroused comparatively little discussion. The labor provisions were the cause of the liveliest controversy but the prohibition against strikes

was left intact. It was apparent that the labor organizations had much less influence in the Senate than they had in the House because, whereas the House had adopted by a large majority the Anderson amendment which incorporated the views of the labor organizations, including the confirmation of all wage orders of the Railroad Administration for the future, the Senate voted down by a large majority the amendment in which the labor organizations were particularly interested—that to strike out the labor provisions entirely—and only 11 votes were cast for their proposal for a two-year extension of government operation.

The character of the bill that will ultimately be adopted now depends very largely upon the work of the conferees, because the bills are so fundamentally different that a great deal depends upon which of the conflicting provisions are sacrificed for trading purposes in the efforts to reach an agreement. It is also regarded as certain that it will be necessary for the two groups of conferees to seek instructions from their respective houses. Moreover, a great deal depends upon the character of the changes that are agreed upon in the provisions of the two bills that are somewhat similar in purpose and intent but vary in important details. A very large part of the Esch bill is also in the Cummins bill, but the latter included many important features not in the Esch bill.

Differences Between House and Senate

These include the rule of rate-making, based on an instruction to the Interstate Commerce Commission to make rates produce a net operating income as nearly as may be to 5½ per cent on the aggregate value of the property in each rate-making district, with a division of earnings above 6 per cent; the proposed consolidation of the railroads into 20 to 35 systems, the creation of a transportation board to take over many of the present functions of the Interstate Commerce Commission, as well as the new functions provided for in the bill; the anti-strike provisions and the provision for federal incorporation. While the House bill provides for bi-partisan wage boards without any provision for a decision in the case of their failure to agree, the Senate bill provides for an appeal to the transportation board.

Both bills provide for the return of the railroads to private management, but greatly increase the extent of their regulation by federal authority. While the Senate bill would return the roads on the last day of the month in which the act is approved, the House bill provides that if this shall take place after the fifteenth day of the month the transfer shall be at the end of the following month.

Both bills provide for the funding of indebtedness of the carriers to the government, but under different conditions, and while the House bill provides for a period of 10 years, not beginning until after the first five years from the date of the act, the Senate bill makes the 10-year period begin at once. The House bill also reduces the amount of the capital expenditures that may be funded by deducting a large part of the indebtedness of the government to the railroads on account of compensation.

Both bills provide for a temporary guaranty to the railroads pending a decision of the Interstate Commerce Commission as to a proper level of rates. The Senate bill allows the roads two months within which to file tariffs and provides for the guaranty and the commission shall render its decision, or for four months after the filing of tariffs, while the House makes the guaranty period a straight six months, but the Senate bill would allow a guaranty based on a proportionate amount of the guaranteed standard return, which would be one-twelfth of the annual rental for each month of the guaranty period, while the House bill provides for a guaranty not less than the average operating income for the three corresponding periods of six months in the test period, which would be considerably less than one-half of the year's rental if the guaranty period begins in the first part of the year. The Senate bill provides that any railroad earning more than its guaranty during the period shall pay the excess into the treasury of the United States, but the House bill contains no such provision.

The House bill provides for a loan fund of $250,000,000, while the Senate bill provides for $500,000,000.

A summary of the principal provisions of the Cummins bill was published in the *Railway Age* of October 3 (issued November 19).

No Message from President

It had been fully expected that the President would send to Congress his promised message on the readjustment of the affairs of the railroads growing out of federal control before the members left the city for the holiday recess, but Congress was allowed to recess without having heard from him as to whether or not he had changed his mind about relinquishing the railroads at the end of the year. This made it impossible for him to address Congress before January 5, which led to a belief in the minds of many that he had decided to let the legislation take its course and let the date for the return of the roads be fixed by Congress. The fact that both bills provide in a generally similar way for the return of the roads would make it possible for him to take the position that Congress had taken the matter out of his hands after he had announced his intentions last May.

The plan which had been proposed in November to enact temporary legislation providing for an extension of the guaranty pending the completion of permanent legislation was abandoned in view of the fact that the passage of the bill by the Senate made it possible to hope for the final passage of the bill some time in January.

Debate on the Senate Bill

The debate in the Senate up to December 16 was reported in last week's issue.

On December 16 Senator Poindexter of Washington delivered a lengthy address in favor of his amendment to strike out the proviso in the long and short haul clause, which gives the Interstate Commerce Commission discretion in permitting exemptions from the strict application of the law in order to leave the so-called long and short haul rule as contained in the act to regulate commerce unqualified.

The Senate committee on interstate commerce at one time had reported favorably the Senator's bill to provide for a rigid long and short haul clause, but in the Cummins bill it adopted a compromise attaching to the commission's discretion the requirement that the lesser charge for the longer distance must be fairly compensatory and that no relief shall be allowed on account of merely potential water competition.

Senator King of Utah stated that many of the senators are very earnestly in favor of Senator Poindexter's amendment and would not allow the bill to go through if they could have their way unless the proviso were stricken out. After some discussion the amendment was allowed to go over until the following day, when it was defeated by a vote of 25 to 41.

An amendment was offered by Senator Gay of Louisiana to exempt from the provisions relating to the grouping, consolidation or federal incorporation of carriers and the adjustment of rates to yield the return prescribed in the bill and the disposition of excess operating income of belt line, terminal or switching railroads or other terminal facilities owned and operated by any state or political subdivision thereof. The purpose was to exempt the belt line owned by the city of New Orleans. Senator Cummins explained that

the bill does not apply to belt lines and switching facilities, but the amendment was adopted.

Revolving Fund Increased

Senator Frelinghuysen of New Jersey offered an amendment providing for a revolving fund of $750,000,000, from which loans could be made to railroads by the transportation board under provisions similar to those included in the Esch bill, which provides a fund of only $250,000,000. The Senator explained that the necessity for such a loan fund had become apparent in the last few days, because a committee of bankers, advising in respect to the proposed general equipment trust to take care of cars and locomotives purchased by the director general, has advised that market conditions are not favorable now to the placing of even that gilt-edged security, and therefore apprehension had been expressed that less attractive securities offered by the railroads during the coming year may not be any more successful.

The vital public interest in adequacy of facilities and service in the immediate future seems to require, he said, that in the absence of a public market for railroad securities Congress should provide a credit with which the railroads can proceed with essential work. If the Senate bill contains no such provision, under the conference rules the conferees would be limited to the acceptance or rejection of the provision in the House bill providing for a fund of $250,000,000, and he desired to include provision for a possible $750,000,000 in order that the conferees may exercise their discretion between the two sums.

Senator Frelinghuysen read a letter from Director General Hines, whom he had asked for an estimate, in which Mr. Hines expressed the opinion that the railroads would hardly be able to expend more than $400,000,000 on capital account during 1920, but that at least 50 per cent additional ought to be expended. The Senator said that maturities in 1920 would amount to $221,000,000, one-fifteenth of the sums to be paid on the rolling stock already purchased by the Railroad Administration would require about $25,000,000, and that improvements other than equipment already contracted for are estimated by the director of capital expenditures of the Railroad Administration at from $200,000,000 to $250,000,000 of new money, making a total of $446,000,000. It seems obvious, he said, that an insurance of $750,000,000 of loans would be moderate in case investment conditions should continue for any length of time as they now are, or at least it would be pertinent for the Senate to permit the conferees the latitude suggested. Mr. Hines' letter was as follows:

"Your inquiry presupposes that the capital expenditures would be planned and carried out by the railroad companies. On that assumption it must be borne in mind that the companies will require time to formulate and adopt plans and arrange for financing. This will all require considerable time, and it is not probable that the companies would be able to enter in a confident and effective way upon the making of provision for either betterments to roadway or acquisition of additional rolling stock upon an extensive scale prior to March 1, next. The amount that they would be able to spend in the calendar year 1920 would be considerably curtailed by such a late start in putting their plans into effect. Taking this into consideration, my judgment is that $400,000,000 would represent approximately the expenditure of cash which they would actually be able to make in the remaining part of the calendar year 1920. There is a possibility that this might be somewhat exceeded, but I do not think, in any event, it would go beyond $500,000,000, and I think the probability is much more in favor of $400,000,000.

"I do not mean by the foregoing that the figure of $400,000,000 represents the full amount that ought in the public interest to be expended during the year 1920. On the contrary, I should say that at least 50 per cent additional ought to be expended in order reasonably to provide for the needs of the public service; but, in my opinion, this larger and more desirable provision cannot be made because of the delay which will inevitably be connected with the transition back to private control and with each company thereafter making its own independent plans and necessarily waiting until it can obtain some more definite light as to its financial status."

Senator Frelinghuysen said it would be good business for the United States government at this time, when the credit of the transportation systems of the country is at its lowest ebb and when underlying securities are selling at figures which have not been reached before in 20 years, to help the railroads to rehabilitate themselves when they go back into private management.

Senator Cummins said he had hoped that Congress would adopt such legislation as would enable the railroads to command the credit necessary to meet the exigencies of the coming year, and he was not willing to assume that the railroads could not borrow the money which they unquestionably will need. He did not doubt that their requirements would amount to $750,000,000, but he was not willing to admit that the legislation which is to be adopted would not make it possible for the railroads to finance themselves without government loans.

"If I did not believe," he said, "that the legislation which will be adopted by Congress would put the transportation system of the United States in position to take care of itself, I would not be in favor of returning the railroads to their present owners. To me the suggestion implies great doubt of the efficacy of the legislation which we are proposing, and inasmuch as I do not maintain a doubt of that character I cannot support the amendment."

At the suggestion of Senator Pomerene, Mr. Frelinghuysen changed his figure to $500,000,000, and after having been allowed to go over until the next day for further discussion the amendment was adopted by a vote of 28 to 20.

Increase in Rates Necessary

Senator Underwood of Alabama discussed the bill at length on December 16, supporting the bill in general and partricularly the provisions designed to improve the credit of the railroads by establishing a rule of rate-making. He also favored the proposed limitation of earnings in order that rates might be made to improve the general condition of the railroads without giving the more prosperous companies earnings which would be regarded as excessive. Senator Underwood declared that unless Congress legislates on the question of railroad transportation at a very early date the entire transportation system of the country will be in danger. He said the President had twice indicated his desire to return the railroads, and he did not believe it is possible to do so under present conditions and without remedial legislation without danger to the business interests of the country. The policy of regulation of railroads in the past has been correct, so far as policy is concerned, but its practical workings, in his judgment, had been a mistake. He thought that freight should be carried at a reasonable rate, but that it was far more important to the shipper to have railroad facilities that will properly put him in contact with his ultimate market than to have cheap freight rates.

He pointed to the fact that wages have been increased by an amount more than all the railroads have ever paid in any year for interest and dividends and that the increased expenses, as well as increases in cost of fuel and materials and supplies, must be paid for some way. "Whether this bill passes or does not pass," he said, "it will be necessary to take up the slack or the railroads cannot run. Even if we do not pass this bill, the Interstate Commerce Commission or the director general must make increases in rates to meet the increased expenditures for labor, for fuel, for the procurement of money, or the railroads cannot run. Such

an increase is going to come whether the bill is passed or whether it is not passed."

Surplus Earnings Questioned

Senator Stanley of Kentucky asked for an explanation of the statements that the railroads have earned a surplus during recent months. Senator Cummins said he had given the matter some investigation, which possibly the Senator from Alabama had not, and that he would answer the question. In the first place, he said, the cost of the general administration has not been charged to operating expenses, and, secondly, the fall months are those in which the net earnings of the railroads are much higher than in other months.

"The statement that a profit has been made is arrived at in this way," said Senator Cummins. "The earnings of the railroad companies for these favorable months have been aggregated and then one-twelfth of the annual compensation has been deducted, with the result stated by those who have occupied the floor. I assume that the fallacy of that kind of computation is at once observable to any student of the subject. The only way in which you can ascertain whether or not a railway is profitable in its operation is to take in the entire year with all of its variations, and I think that when the year is over it will be found that the Railroad Administration for this year has lost more than $325,000,000."

"Does not the Senator himself know," said Senator Underwood, "that what they gain in October, November and December is not going to be a gain in January, February and March?"

Senator King said he had been informed that the Railroad Administration during the last few months had curtailed necessary expenditures for improvement and maintenance. Senator Underwood said he could not speak by the card on that subject, but that he rides on the railroads sometimes and that it is common knowledge to everybody that rides on the railroads how many freight cars are standing on the side tracks and cannot be used because they are out of repair.

Better Service Under Private Management

Senator Underwood also expressed the opinion that a return to private management would result in better service, saying that there is no one man of sufficient ability to sit in Washington and make all the railroads function as successfully as they could do under presidents, general managers and boards of directors who are interested in the property and have a specific line of road under their observation. It was certain that if Congress would declare a permanent policy of continued control by the government the Railroad Administration would be compelled to increase freight rates, but that, expecting that the roads will be turned back to their owners in January, it was very natural for the administration to try to work through the present condition without an increase in rates. He also declared that the Cummins bill would provide for a very small increase in the income of the railroads. He said the guarantee, based on the earnings of the test period, averages 5.22 per cent on the property investment account, while the bill gives them 5½ per cent on the value of the property as determined by the commission. Assuming that the property investment fairly approximates the value, this would result in an increase of only $50,400,000, he said, and if the railroads are approaching a condition where they are earning a guarantee, a very slight increase would be needed. "All this talk about a $4,000,000,000 charge upon the American people, all this talk about a tremendous increase in freight rates under the bill is a mere smoke cloud blown by the enemy to conceal its own operations," he said.

Senator Curtis offered as an amendment a provision for extending the effective date of section 10 of the Clayton anti-trust law until January 1, 1920, which was adopted. A resolution containing a similar provision had previously passed the Senate but had not passed the House.

Lenroot Criticises Bill

Senator Lenroot also criticized the proposed rate-making which he devoted to a criticism of the Plumb plan and an analysis of the Lenroot-Amster plan for a public corporation to control the railroads as a single system. He objected to many provisions of the Cummins bill, saying that the practical guarantee of an average of 5½ per cent would remove incentive to efficiency and would be unfair to the most efficient roads, and he also objected to the labor provisions of the bill on the ground that the proposed transportation board, because of the nature of most of its functions, would not be so situated as to be an impartial tribunal on wage questions. He also objected to the provisions regarding the temporary guarantee of the standard return on the ground that the roads that would not need such a guarantee could not be required to turn over any surplus to the government. Senator Cummins thought the bill provided a contractual relation created by the acceptance of the guarantee. Senator Lenroot said that a road that expected to make more than the guarantee would not accept any guarantee, and therefore there would be no contractual relation. Senator Cummins said that possibly there was an oversight on the part of the committee in that respect.

Senator Lenroot also criticized the proposed rate-making rule, saying that if, under a system of rates that would produce 5½ per cent of the aggregate value of the property in a district, a road that earned only 2 per cent might go into court and secure an additional increase that would disturb the whole system. Senator Lenroot asked Senator Cummins if he thought it would be entirely safe for the government to say to the railroads that they can operate as many trains as they like, as extravagantly as they wish, and that the government will pay the bills during the period of the temporary guarantee. Senator Cummins said that the bill already provided that the commission in calculating the amount of the guarantee should take into consideration for maintenance expenditures only an amount equal to that provided for in the standard contract, but that the bill might go further and authorize the commission to exclude any operating expenses that ought not to have been incurred. He understood that Senator Curtis had an amendment covering that point which he would offer later.

Senator Lenroot also objected to the provision for a temporary guarantee in the discretion of the transportation board to companies going through a process of consolidation. Senator Cummins thought that this point was of little importance, because the proposed guarantee was only that of the standard return which, based on the earnings of the test period, would be small in relation to the future condition of the railroads. "If there are very many roads," he said, "which do not earn in the years to come the average return of 1915, 1916 and 1917, the transportation of the country will be in a bad way."

On December 17 Senator Lenroot's amendment to eliminate this guarantee during consolidation was adopted.

An amendment by Senator Jones of Washington to limit the authority of the Interstate Commerce Commission over docks and waterway terminals, which would be provided for in the bill, was adopted on December 16.

On December 17 a vigorous effort was made by senators who were anxious to secure consideration of the sugar bill to displace the railroad bill temporarily. Senator Cummins objected to this, saying he thought it would be possible to pass the railroad bill in shorter time than would be required by the sugar bill, and his position was sustained by a vote of 23 to 41.

Senator LaFollette Criticised

Senator Townsend of Michigan delivered a speech in support of the bill on December 17. He said the most bitter opposition to the measure came from a senator who was a member of the committee, and yet during all the weeks of conscientious and full consideration of the bill by the committee he had never heard him make one single constructive suggestion before the committee. This referred to Senator LaFollette. He thought this bill, for the first time in the history of railroad legislation, has for its cardinal principle protection of the people's rights. It has nothing in it which has in view the serving of any special interest. The bill is not what the railroad owners wanted, he said, and a statement to the contrary is in reckless disregard to the facts and the evidence as they have been disclosed. It is not in the interest of the railroad employees, although every one of their rights is protected, in harmony with the same principles which have been applied to owners.

Regarding the labor provisions, he said that six times since he has been in Congress he has introduced bills providing for compulsory investigation of the questions growing out of the controversies between capital and labor. Every time that measure has been opposed by both capital and labor. Yet Mr. Lewis, acting president of the United Mine Workers, in explaining to his followers the agreement which has recently been made with the representatives of the government for the settlement of the questions involved in the coal strike, has stated that the proposal, which is really for compulsory arbitration, was a great victory. "Possibly this particular agreement," Senator Townsend said, "contained other understandings than those submitted to writing, but on its face it is a provision for compulsory arbitration."

He also argued against the Poindexter amendment on the long and short haul clause, and after the conlusion of his speech a vote was taken and it was rejected.

Senator Jones of Washington offered an amendment to strike out section 14, which authorizes the Interstate Commerce Commission to fix minimum rates, because he thought it would hurt the water lines. Senator Ransdell of Louisiana, former president of the National Rivers and Harbors Congress, also supported the amendment, stating that if the commission were given the right to fix minimum rates it might fix such a minimum that shippers could not afford to use the waterways. After various senators had explained that the purpose of the bill was to prevent railroads from reducing rates unduly to kill water competition, the amendment was withdrawn.

The Labor Provisions

An amendment offered by Senator Sterling of South Dakota to strike out of the labor provisions of the bill the word "crafts" an insert in lieu thereof the words "classified employees" was adopted after the senator had explained this was to prevent a possible interpretation of the bill that would give the employees outside of the unions no votes in the nomination of the committee on wages and working conditions, and he submitted another amendment, which was adopted, providing that all classified employees without other distinction shall have the right and opportunity through proper notice to participate in such nominations. Senator Smith of South Carolina offered an amendment to strike out the provision in the bill requiring a certificate by the transportation board before the construction of a new line or the extension of a line can be undertaken.

Senator Stanley again offered his amendment to strike out the labor provisions of the bill, to which Senator McCormick of Illinois offered a substitute to fix a specific time of 90 days during which the committee on wages and working conditions or the regional boards of adjustment will be required to pass on wage questions, and to make it illegal to call a strike until 60 days after a decision had been made. This, he said, was patterned after a Canadian law, but was intended to correct the principal objection which has been raised to the Canadian law, which does not provide a definite time within which the wage boards must render a decision. He said that the Senate must reckon with the grave improbability that the provision of the bill as reported making strikes illegal can ever become a law.

Amendments proposed by Senator Cummins were adopted on December 16 to include employees of sleeping car companies in the wage provisions of the bill, to insert the words "value of the railroad property" in one place where "property investment" had been inadvertently used, and to provide that through rates for transportation wholly by railroad shall be made for the ordinary transportation service from point of origin to the destination and delivery at the usual unloading places and in the case of live stock destined to public stock yards to include the service of unloading and delivery. This was offered at the suggestion of the American National Live Stock Association.

The amendment offered by Senator Curtis of Kansas to guarantee the short lines relinquished by the Railroad Administration to the extent of any actual operating deficit since January 1, 1918, was adopted on December 16.

The Anti-Strike Provision

Discussing the Stanley amendment to strike out the labor provision, on December 18, Senator Underwood declared that the question of the right of railroad employees to strike goes far beyond the question of labor and capital. So far as railroad labor is concerned, he said, it has no issue with invested capital, because as a practical proposition the wages of labor engaged in railroad industry have long ceased to come out of invested capital. They come out of freight rates and passenger rates as prescribed by the government and the earnings of the roads must come out of the public.

"If that is the case," he asked, "is it fairly stating the proposition to say that labor must still carry this weapon of offense against capital, that the value of its wage must be determined on the battle ground between labor and capital, and then after the battle is fought and won the result of the victory must be assessed against the public, which has had no interest or no hand in the dispute? But it does not even stop there. The public are not only required to pay the bill, but they must bear the burden of the fight. The reservation to labor of the right to strike is either an actual fact, a weapon that is poised on its way to the blow, or it is a mere theory and is of no value."

Senator Thomas of Colorado and Senator Stanley delivered the principal speeches on the anti-strike provisions, although a large number of senators participated in the debate. Senator Thomas pointed out that the total number of men who went on strike in the United States during the war exceeded the total number of soldiers sent to France by about 350,000 men. The total number of strikers, he said, was 2,386,285, while the total number of men sent to France was 2,053,347. Senator Thomas said the increases in wages granted by the Railroad Administration could not be considered excessive, but that there were excessive instances. He told a story of an instance on the Wabash Railroad, which, he said, had formerly paid a farmer $20 a month for turning on and off a switch in a water tank operated by electricity, who had been classified by the Railroad Administration as an electrician, paid for his entire day at the rate of about $300 a month and given over $2,500 back pay.

This, however, was denied in a letter sent to the Senator by Director General Hines, which he inserted in the record later. Mr. Hines said the statement had been circulated some time ago, at which time he challenged and denied it, but the untrue statement continues to receive currency. He

said he had been unable to find anything in the wage transactions of the Railroad Administration which resembled the statement in any respect and that such a case could not have been evolved from the principles of wage adjustment adopted by the Railroad Administration.

Senator Stanley's amendment was defeated by a vote of 46 to 25, after which Senator McCormick's substitute amendment to prohibit strikes until after 60 days after a decision by the wage board was defeated by a tie vote of 31 to 31. On the following day a separate vote was taken on the Stanley amendment, and it was again defeated by a vote of 39 to 24, while Senator McCormick's substitute was again defeated by a vote of 30 to 33.

Senator Pomerene offered an amendment authorizing the transportation board to require carriers to furnish sufficient refrigerator cars for the transportation of fresh meat, but later withdrew it after it had been pointed out that this in effect would require the railroads to purchase the cars owned by the packers and would probably require another revolving fund to enable them to do so.

An amendment proposed by Senator Smith of South Carolina to strike out the provision requiring a certificate of public interest for the construction of new lines was defeated by a vote of 23 to 44. The senator argued that the provision would prevent the development of new or sparsely settled territory by the construction of local lines. Senator Cummins expressed the opinion that the passage of his bill would do more to encourage and promote the building of railroads into undeveloped parts of the United States than anything that has been suggested for years.

Senator Jones of New Mexico offered an amendment to include within the things to be considered by the commission in fixing rates the requirements for additional capital to encourage needed new construction, which was rejected. Two other amendments intended to facilitate new construction were also rejected.

Senator Myers of Montana proposed to increase the proportion of so-called excess earnings which may be retained by a carrier prior to the building up of its reserve fund from one-half to two-thirds of the net operating income between 6 and 7 per cent, but it was rejected without a record vote.

Senator Smith of Georgia introduced an amendment, which was adopted, to continue the effect of the amendment to the fifteenth section of the commerce act requiring the permission of the commission for the filing of a tariff containing an increased rate, which was adopted at his proposal in 1917, but which by its terms expires on January 1, 1920.

Senator Pomerene offered another amendment, which was agreed to, authorizing the transportation board to require any carrier to furnish refrigerator cars for the transportation of vegetables, fruits and fresh meats and such other perishable commodities as require a refrigerator service, but also authorizing it to expend, if the revenue of the carrier is inadequate for that purpose, a portion of the revolving fund therefor. It was provided, however, that this provision shall not in any wise relieve common carriers from their duty to furnish such refrigerator cars as are required for the transportation of vegetables, fruits, fresh meats and other perishable commodities.

Senator Walsh of Massachusetts offered an amendment which he said was intended to guarantee to the railroad employees reasonable wages. It provided for the stabilization of wages less than $3,000 a year by an adjustment in accordance with the average cost of living as determined by the Bureau of Labor Statistics quarterly, providing nothing in the provision should operate to reduce wages below the amount to which the employees were entitled in December, 1919. The amendment was rejected.

Senator Chamberlain of Oregon opposed the passage of the bill, saying that whereas in 1916 the railroad brotherhoods were accused of demanding the passage of the Adamson law at the point of a gun, the railroad owners and the security holders are now demanding that Congress pass a bill at once and in a hurry to prevent the railroad companies going into bankruptcy. "Instead of the labor men holding the gun and sitting in the galleries looking down upon Congress," he said, "the railroad presidents, managers and their representatives are sitting in the galleries looking down upon Congress and insisting—what? Not only that their rates shall be increased but that we shall grant them large sums of money out of the treasury of the United States and out of the pockets of the taxpayers. Whose ox has been gored this time, Mr. President, and who will ring the changes now or in the coming campaign?"

Senator King remarked that, aside from those that had come from those favoring the Plumb plan, the only communications he had received opposed to the legislation were from those who owned railroad securities. The only railroad executive in the gallery at the time was S. Davies Warfield, who is chairman of the Seaboard Air Line, but who is also president of the National Association of Owners of Railroad Securities, which has been strongly supporting the bill. Senator Cummins said he did not know of a railroad president in the United States who is in favor of the bill, and he did not believe that the Senator from Oregon knew of any. "On the contrary," he said, "so far as I know, they all protest against its provisions. It has been asserted here a great many times that this is a bill made up by the railroad companies, but if any senator knows of a single railway executive who is favoring this bill I should like to hear him named."

Senator Chamberlain said he had not taken the trouble to inquire, to which Senator Cummins replied:

"The senator from Oregon has just asserted that railroad presidents were looking down upon the Senate insisting upon the passage of this bill. Now, that is not accurate, whatever else may be true. It is true that an association of bondholders, or some part of it, believes that this bill ought to be passed."

Senator Ransdell offered an amendment striking out the provision authorizing the commission to prescribe minimum rates, and also another declaring that the commission shall have no authority to establish any route, classification, rate, fare or charge when the transportation is wholly by water. These were adopted after Senator Cummins had said that he did not think the commission was given the power to establish such a rate by water and that the provision regarding minimum rates was included in the House bill, so that the whole question could go to conference in any event.

Senator Henderson of Nevada introduced a new amendment designed to restore a rigid long and short haul clause, which was lost by a tie vote, and Senator Poindexter secured another vote on his amendment to strike out the provision authorizing the commission to grant exceptions, which was also rejected.

Senator Brandegee of Connecticut offered an amendment to create a board of adjustment to adjudicate disputes between the government and the railroad companies growing out of the contracts entered into under the federal control act, but it was rejected.

An amendment by Senator Thomas of Colorado was adopted providing that passenger tickets, excepting special rate tickets for excursions, conventions, etc., shall not be limited and shall be honored when presented in payment for passage by any lawful owner thereof.

Senator King of Utah offered an amendment to strike out the rate-making section of the bill and to substitute for it a rule that rates by groups shall from time to time be adjusted by the Interstate Commerce Commission, so as to provide revenue sufficient to pay the wages of labor and all other

expenses of operating, including taxes, to earn proper current capital charges, to maintain necessary funds for repairs, replacements and working operations and establish credit sufficient to attract the new capital required to meet the public need for present and reasonable prospective transportation facilities and service. The amendment also provided that in applying the foregoing rule a comprehensive view of the conditions of each rate-making group shall be taken and the level of rates, fares and charges shall be determined with reasonable reference to railroads fairly representative of average conditions therein. In support of his argument for this amendment, Senator King presented part of the argument against the rate-making provisions of the Cummins bill recently published by Judge Lovett. The amendment was rejected without a record vote.

La Follette Delays Passage

It was expected that the bill would be passed at a late session on Friday night, but after it had been voted 41 to 17 to substitute the Senate bill for the House bill, Senator LaFollette offered as a substitute a provision for an extension of the present system of federal control for two years, prohibiting the relinquishment of the railroads prior to that time by the government or by any officer or agent thereof. Senators Sheppard of Texas and Kirby of Montana spoke in favor of this proposal, and a vote was about to be taken when Senator LaFollette announced that he had a few remarks to make. It had been understood that Senator LaFollette had promised not to filibuster against the passage of the bill when it became apparent that the Senate would refuse to adopt any amendments to the labor provisions, and therefore that there were no provisions in the bill which the labor organizations desired to insist upon, but Senator LaFollette did want to make a speech on the two-year extension which has been demanded by organized labor. He did not want to make the speech that night, however, as he had a bad cold, and he appeared to be able to speak only with great difficulty. After it had become apparent, however, that he proposed to hold the floor unless the bill could be postponed until the following day, a unanimous consent agreement was arranged providing for a final vote on the passage of the bill not later than 3:30 p. m. on Saturday, whereupon Senator LaFollette allowed his speech to be interrupted. This gave him, however, four hours on Saturday, which he devoted to an impassioned denunciation of the bill and of the railroads generally, after which his amendment was voted on and defeated and the bill was adopted without further formality.

The conferees were immediately appointed both in the Senate and in the House. In the House Representative Meade proposed a motion to instruct the House conferees to insist on the retention in the bill of the Anderson amendment, including the labor provisions. At the request of Mr. Esch, who asked that the conferees be left unhampered, he agreed to withhold the motion. Mr. Esch said that in view of the fact that the labor provisions are so radically different in the two bills it is almost certain that the conferees may have to go back to the House for further instructions.

The conferees held their first session on the bill on December 23 and another on December 24, after which they adjourned until Monday, December 29.

The Railroad Commission of California, in the year ending June 30, 1919, investigated 54 accidents. The commission requires the railways to examine the qualifications and physical fitness of employees in train and engine service, and has required the smaller companies to operate their roads in accordance with rules and methods which have been found to be most satisfactory by other companies.

Roads Will Be Returned March 1

President Wilson on Wednesday evening, December 24, issued the following proclamation concerning the relinquishment of federal control of railroads and systems of transportation:

"Whereas, in the exercise of authority committed to me by law I have heretofore, through the Secretary of War, taken possession of, and have, through the Director General of Railroads, exercised control over certain railroads, systems of transportation and property appurtenant thereto or connected therewith, including systems of coastwise and inland transportation and property appurtenant thereto or con- or controlled by said railroads or systems of transportation; including also terminals, terminal companies and terminal associations, sleeping and parlor cars, private cars and private car lines, elevators, warehouses, telegraph and telephone lines and all other equipment and appurtenances commonly used upon or operated as a part of such railroads and systems of transportation; and,

"Whereas, I now deem it needful and desirable that all railroads, systems of transportation and property now under such Federal control be relinquished therefrom,

"Now, therefore, under authority of Section 14 of the Federal control act approved March 21, 1918, and of all other powers and provisions of law thereto me enabling, I, Woodrow Wilson, President of the United States, do hereby relinquish from Federal control, effective the first day of March, 1920, at 12:01 o'clock a. m., all railroads, systems of transportation and property of whatever kind taken or held under such Federal control and not heretofore relinquished, and restore the same to the possession and control of their respective owners.

"Walker D. Hines, Director General of Railroads, or his successor in office is hereby authorized and directed, through such agent and agencies as he may determine, if in any manner not inconsistent with the provisions of said act of March 21, 1918, to adjust, settle and close all matters, including the making of agreements for compensation, and all questions and disputes of whatsoever nature arising out of or incident to Federal control, until otherwise provided by proclamation of the President or by act of Congress. And generally to do and perform as fully in all respects as the President is authorized to do, all and singular the acts and things necessary or proper in order to carry into effect this proclamation and the relinquishment of said railroads, systems of transportation and property.

"For the purposes of accounting and for all other purposes this proclamation shall become effective on the first day of March, 1920, at 12:01 a. m.

"In witness whereof I have hereunto set my hand and caused the seal of the United States to be affixed.

"Done by the President, through Newton D. Baker, Secretary of War, in the District of Columbia, this 24th day of December, the year of our Lord one thousand nine hundred and nineteen, and of the independence of the United States of America the one hundred and forty-fourth."

A similar proclamation was also issued relinquishing the American Railway Express Company.

Forty-one years at the throttle without one accident to mar his work is the remarkable record established by Lew Patrick, as reported by the Canadian Pacific. Up to October 31, 1919, Mr. Patrick was an engineman, running trains out of Revelstoke on the mountain division. He is one of the pioneers who went west with the railroad, starting at St. Boniface, Manitoba, when a young man of twenty-five years. From June, 1896, to the spring of 1918, Patrick was a runner on the Imperial Limited passenger trains.

General News Department

J. L. Truden, general superintendent of the Boston & Albany, has received from the King of the Belgians a medal of the Order of Leopold II, presented in appreciation of the efficiency with which King Albert's train was managed while moving over the Boston & Albany line.

The Kansas City Northwestern, having ceased to operate trains, as ordered recently by the United States District Court, Eastern District of Kansas, the court has ordered Jay M. Lee, the newly appointed receiver, to discharge all operating employees, retaining only the office men in the legal, auditing and grain departments.

The Twentieth Century Limited express train of the New York Central, and the Broadway Limited of the Pennsylvania were put in service on December 20, following the ten-days' suspension of their trips because of the scarcity of coal and the disturbance in freight traffic. The restoration of these trains completed the return to normal timetables on all lines east of Chicago.

E. C. Davidson, secretary-treasurer of the International Association of Machinists, has been quoted as saying that nearly 100 per cent of the members of the organization have voted in favor of a strike if the anti-strike provisions of the Cummins bill are adopted by the Senate, and that there will be a general strike of railroad employees, except possibly the enginemen, conductors and firemen, if the bill goes through.

Engineering Council recently mailed to 50,000 engineers an appeal for funds to carry on its work. This extraordinary measure was necessitated by present financial conditions resulting from the war. Engineers are expecting much of the council and commending the work which it has done. In order, however, that the council may continue its work for professional welfare and civic service, not less than $45,000 is needed for 1920. Of this amount, $30,000, at least, must come from general contributions. To December 16, 550 contributions have been received, totaling $3,843. They range from one dollar to $100 each and average $7.

The Illinois Southern Railroad, extending from Salem, Ill., southwest 127 miles to Bismarck, Mo., has ceased operation, under an order entered on December 11 by Federal Judge George Carpenter in the United States District Court at Chicago. The order was issued at the request of W. W. Wheelock, receiver of the property, after foreclosure proceedings had been started by the bondholders, represented by the Chicago Clearing-House Association. The railway was capitalized at $5,000,000 and is asserted to have lost $100,000 in the recent past, struggling to operate against financial odds. It has been losing money for two years and has paid no interest on its bonds. The recent coal strike produced complete insolvency, as the road derived its main traffic from the Illinois coal fields.

The Safety Section, Division of Operation, of the United States Railroad Administration reports for the month of September 193 railroad employees killed and 11,887 injured, as compared with 261 killed and 12,476 injured in September of last year. The number of meetings of safety committees held in September on the railroads under federal control was 1,888, with an attendance of 28,935. The number of men who, during the month, received instruction or advice on safety matters either by attending meetings or by being spoken to individually by committee-men was 183,383; and 160,320 safety bulletins, circulars, etc., were distributed. Other safety "literature," including magazines, etc., in addition to the foregoing, was distributed to the number of 1,108,189 copies. For the first nine months of 1919 the total net decrease in casualties, reported by regions, was, for the whole country, 1,002 employees killed, and 23,986 injured; or, in round numbers, and crediting the safety committees with the whole of the saving in life and limb, 25,000 personal injuries prevented. A. F. Duffy, manager of the Section, urges safety supervisors to be careful not to allow discussion of the possible change in the management of the railroads to have any influence in relaxing activities for safety.

The fire insurance men are preparing to renew business with the railroads when the lines are returned, according to the New York Journal of Commerce. Notwithstanding the doubt as to the return of the railroads to private ownership on January 1, the underwriters are preparing to re-enter the field closed to them when the Government took over the railroads. The premiums paid by the railroads to the fire insurance companies before the Government took control have been estimated all the way from $10,000,000 to a much larger sum. Considerable organization work will be necessary before the insurance companies can take up the railroad lines again, but the underwriters propose to be ready. Many of the inspectors, and in some cases entire organizations, went over to the Government when the roads were transferred, and these it is expected will come back.

Public Ownership League Wants Railroads Retained

A petition bearing 22,000 signatures secured by the Public Ownership League in 38 states, protesting against the return of the railroads to private management, was filed in Congress on December 20 by Representative Sinclair of North Dakota. On the back of the sheets bearing the signatures was the following statement.

"Keep the railroads. The people have bought and paid for them twice over. The people should own and operate them. The people of this nation have invested more than $900,000,000 in rehabilitating the railway system that private ownership had so exploited and plundered and mismanaged that it was utterly inadequate.

"The people have invested another $975,000,000 in improving labor conditions and pulling the railroads out of an impossible situation that private ownership had created.

"The government has rehabilitated the dilapitated system, unified it, effected numerous economies and guaranteed the private owners their usual dividends. And yet they are not satisfied. They want the railroads back again for further exploitation and plunder. We protest."

Disastrous Collision at Onawa, Me.

In a butting collision between an immigrant train and a freight, on the Canadian Pacific, near Onawa, Me., at 7:15 on the morning of the 20th of December, 19 passengers and four trainmen were killed, and 35 passengers were injured, some of the killed being burned to death, and some of the injured severely burnt before they could be rescued. The enginemen and firemen of both trains were killed.

Onawa is about 50 miles northwest from Bangor, and lies between two junctions of the Canadian Pacific with the Bangor & Aroostook, Greenville about 15 miles to the west, and Brownville Junction, about 20 miles to the east. Trains were sent over the Bangor & Aroostook until the track was cleared.

The immigrant train, carrying about 300 passengers, was the fourth section of westbound passenger train No. 39, and the freight was an eastbound extra. Both locomotives were wrecked and the freight engine crashed through the first two coaches of the passenger train. The wreck took fire from coals in the fireboxes. The freight had met the third section of the passenger train at Bodfish, one mile west of Onawa, and should have waited there for the fourth section. The temperature at the time of the collision was about 20 deg. below zero.

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF OCTOBER, 1919—CONTINUED

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses						Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
		Freight	Passenger.	Total (Inc. misc.)	Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.					
Ft. Worth & Rio Grande	235	99,063	69,511	185,795	34,743	20,178	2,419	80,911	7,808	146,063	78.61	39,732	2,983	36,741	72,588
Galveston, Harrisburg & S. Ant	1,381	1,402,753	413,920	1,917,814	203,366	423,887	16,012	673,704	54,586	1,388,980	72.42	528,833	52,892	475,501	—70,805
Galveston Wharf	13	.....	.....	101,989	47,705	2,376	.....	33,192	1,647	101,992	100.00	—3	12,500	—12,503	—8,369
Georgia R. R	328	531,631	145,378	723,781	66,018	115,182	8,300	276,791	17,296	483,809	66.84	239,973	5,950	234,019	—45,238
Georgia & Florida	348	60,565	23,786	91,636	49,272	20,621	1,486	50,636	5,867	136,522	148.98	—44,886	4,200	—49,085	—20,451
Georgia Southern & Fla	402	256,898	95,351	389,804	76,242	96,746	5,440	189,679	11,552	397,685	102.02	—7,880	13,733	—21,647	—34,290
Grand Rapids & Ind	569	585,288	172,652	812,190	79,309	183,947	9,857	352,363	23,079	649,846	80.01	162,334	25,951	136,368	11,400
Grand Trunk W	1,001	1,724,259	299,581	2,212,240	269,759	139,527	18,315	945,078	57,101	1,436,562	64.93	115,678	59,126	716,544	440,726
Grand Trunk Line in N. E	172	168,662	33,131	223,309	113,646	34,261	2,952	113,103	13,756	291,714	129.47	—66,405	14,500	—80,905	151,320
Great Northern	8,171	9,119,284	1,750,420	11,790,299	1,539,854	1,797,110	54,716	4,210,652	164,237	7,897,464	66.98	3,892,835	783,480	3,108,962	—435,917
Green Bay & Western	252	110,798	16,355	135,404	24,784	30,154	805	46,329	1,861	103,930	76.75	31,473	4,420	27,053	3,394
Gulf & Ship Island	307	159,348	45,553	223,413	58,796	57,338	3,783	103,282	9,281	233,053	104.31	—9,640	11,408	—21,132	—45,326
Gulf, Colo. & S. Fe	1,937	1,664,200	565,714	2,349,413	499,520	351,727	23,834	775,944	45,570	1,687,095	71.80	662,318	71,166	590,294	230,677
Gulf, Mobile & Northern	467	240,709	50,309	306,827	70,031	63,521	5,301	114,369	10,709	264,131	86.08	42,697	11,866	30,620	27,609
Hocking Valley	350	1,212,530	126,777	1,418,374	150,753	376,762	5,518	414,348	21,030	967,425	68.21	450,949	50,500	400,449	—96,449
Houston & Texas Central	547	725,991	238,924	1,023,432	148,184	196,753	5,779	372,343	19,494	742,633	72.56	280,799	34,458	246,078	50,560
Houston, E. & W. Texas	190	160,942	46,022	219,268	39,870	41,414	883	109,573	4,286	196,026	89.40	23,243	6,249	16,706	—10,849
Ill. Cent.	4,799	8,013,938	2,060,099	10,774,864	1,916,941	2,927,290	75,052	4,121,504	226,967	9,315,666	86.45	1,459,198	457,487	998,412	—216,341
Ind. Harbor Belt	116	.....	.....	644,338	153,717	125,799	1,813	483,245	17,713	782,285	121.40	—137,946	9,954	—147,901	20,778
Int. & Great Northern	1,159	956,650	315,477	1,364,461	273,689	359,512	11,929	765,978	42,604	1,460,781	107.05	—96,320	23,500	—119,840	—400,313
Kanawha & Mich	176	412,736	50,963	477,400	68,099	155,107	3,543	144,438	13,502	384,688	80.57	92,712	18,958	73,755	—204,702
Kan. City, Mex. & Orient	272	124,936	17,397	148,593	52,690	52,542	2,092	90,907	1,213	205,444	138.25	—56,851	6,250	—63,116	—42,671
Kan. City, Mex. & Orient of Texas	465	113,682	25,119	145,091	34,838	58,823	2,131	84,632	7,459	187,883	129.49	—42,792	5,000	—47,824	—609
Kansas City Southern	774	1,108,209	222,526	1,463,259	189,594	277,316	9,295	492,406	33,276	1,004,999	68.68	458,260	61,250	396,603	—476
Kansas City Terminal	27	.....	.....	146,045	30,710	32,294	.....	63,925	2,514	130,888	89.62	15,156	24,475	—9,319	10,200
Lake Erie & W	902	880,221	62,980	995,284	154,735	178,774	11,380	368,506	24,309	737,705	74.12	257,580	46,700	211,860	189,928
Lake Superior & Ishpeming	34	86,022	158	97,442	18,209	14,599	192	21,358	2,542	56,900	58.39	40,542	3,872	36,670	—107,486
Lehigh & Hudson	96	297,304	4,158	309,463	28,480	52,032	1,610	118,941	5,799	206,862	66.84	102,601	7,866	94,734	83,213
Lehigh & N. England	234	430,155	1,679	449,423	72,652	76,823	1,959	136,128	8,860	296,421	65.96	153,003	7,380	145,623	78,863
Lehigh Valley	1,435	5,257,787	524,374	6,210,026	1,056,340	1,790,953	35,964	2,586,143	88,116	5,577,405	89.81	632,622	163,000	469,578	—359,672
Long Island	398	653,260	984,944	1,854,252	227,673	399,483	17,350	1,055,854	53,612	1,770,981	95.51	83,271	94,428	—11,820	172,896
Los Angeles & Salt Lake	1,168	1,102,299	374,899	1,577,113	122,241	315,954	18,090	540,985	30,586	1,071,338	67.93	505,775	69,473	436,077	7,697
Lou. & Ark	302	121,585	47,899	178,349	76,507	41,145	2,082	72,964	6,669	199,067	111.61	—20,718	11,216	—32,115	—29,227
Lou., Ry. & Nav. Co	349	273,750	41,845	328,597	100,485	51,130	3,700	109,326	8,340	272,981	83.07	55,616	18,000	37,588	38,412
Lou. Western	207	278,880	108,659	408,315	37,221	68,440	4,534	93,295	10,549	216,054	52.91	192,261	8,779	183,381	—8,486
Louisville & Nash	5,013	7,736,046	2,147,441	10,450,909	1,585,029	2,537,661	129,411	3,858,776	191,551	8,368,389	80.07	2,082,520	260,773	184,474	251,184
Lou., Henderson & St. L	199	204,219	62,520	280,294	44,657	35,026	4,398	100,860	107,772	192,713	68.75	87,581	4,000	83,536	—30,079
Maine Central	1,216	1,099,239	379,759	1,594,679	355,886	406,413	12,868	797,203	36,816	1,613,710	101.19	—19,031	80,680	—99,811	7,719
Md., Del. & Vt	82	89,108	36,748	122,035	9,814	17,752	2,275	81,393	2,297	113,532	93.03	8,502	1,894	6,608	24,117
Michigan Central	1,861	5,353,517	1,741,039	7,819,648	829,265	1,437,759	58,475	2,656,295	123,597	5,196,886	66.45	2,622,762	285,000	2,337,559	449,219
Midland Valley	390	281,539	95,258	391,768	106,769	81,160	9,106	150,585	24,324	371,945	94.93	19,823	6,786	13,007	—68,249
Mineral Range	101	59,579	213	62,918	13,631	17,730	320	28,465	1,084	61,231	97.31	1,687	3,500	—1,813	—9,307
Minn., St. Paul & Sault Ste. Marie	4,243	3,478,868	728,978	4,483,018	619,304	958,745	23,440	1,753,046	79,385	3,450,530	76.96	1,032,489	242,036	790,146	—430,891
Minn. & Int. Ry	194	49,924	27,844	83,190	18,344	17,979	470	42,839	3,362	82,995	99.76	195	4,158	—3,962	10,055
Mississippi Central	164	72,137	28,111	103,975	23,212	24,517	1,349	38,435	5,982	93,496	89.92	10,480	2,800	7,653	2,456
Mo. & North Arkansas	365	102,116	51,018	162,936	48,709	37,641	1,609	64,047	7,756	159,712	98.01	3,224	6,242	—3,018	19,387
Mo., Kan. & Texas	1,713	2,366,911	666,085	3,235,979	470,733	914,952	31,640	1,044,843	81,987	2,557,057	79.01	678,923	59,835	618,883	—656,752
Mo., Kan. & Texas of Texas	1,796	1,533,371	833,509	2,532,784	555,106	541,732	27,678	1,267,473	91,568	2,509,063	99.06	23,721	82,255	—58,913	—127,512
Mo., Oklahoma & Gulf	332	179,401	21,668	211,767	86,643	68,280	1,915	89,424	7,346	253,891	119 89	—42,124	8,560	—50,711	—37,582
Mo. Pacific	7,301	6,985,201	1,790,303	9,398,504	1,930,598	1,877,596	86,275	3,586,867	224,853	7,742,668	82.38	1,655,836	271,374	1,381,496	1,233,207
Mobile & Ohio	997	1,343,508	183,946	1,611,268	330,644	478,522	25,724	675,843	47,604	1,560,180	96.82	51,088	40,000	10,783	—45,354
Monongahela Ry.	108	335,840	23,231	368,731	49,392	34,923	701	105,030	8,482	198,529	53.84	170,203	5,000	165,202	54,658
Monongahela Connecting	6	.....	.....	198,814	30,060	61,166	525	88,343	7,235	187,330	94.22	11,484	1,568	9,916	1,487
Montour	56	155,484	1,206	165,111	26,566	78,925	935	33,761	7,021	144,278	87.38	20,833	1,452	19,381	—23,238
Morgan's La. & Tex	400	553,819	172,162	767,957	113,552	114,261	831	246,760	19,100	504,067	65.63	263,889	29,797	233,623	53,923
Nash., Chatt. & St. L	1,247	1,296,179	447,244	1,858,640	313,416	508,758	29,868	720,825	44,696	1,625,555	87.45	233,085	50,000	182,931	—262,216
Nevada Northern	168	142,506	11,145	158,679	27,348	34,397	994	43,665	5,090	111,634	70.35	47,045	9,100	37,945	—73,261
New Orleans & N. E	195	347,826	123,627	530,322	106,761	142,317	0,010	225,061	8,513	491,097	93.73	33,225	21,727	11,214	—91,114
New Orleans Great Northern	284	131,732	51,743	191,846	38,573	42,259	1,782	91,110	8,634	183,805	95.80	8,041	8,983	—946	—47,577
New Orleans, Texas & Mex	191	180,483	42,052	229,789	49,216	42,548	2,427	26,880	6,420	129,801	56.48	99,987	10,000	89,976	55,728
New York Central	6,075	18,763,994	6,841,685	29,205,872	3,188,780	6,709,220	229,574	11,243,750	694,028	2,248,985	77.00	6,716,047	1,131,648	5,582,952	—2,736,666
New York, Chicago & St. L	574	1,794,228	92,016	1,957,583	253,084	357,252	25,445	834,301	53,593	1,528,601	78.07	428,981	30,000	398,855	—228,049
N. Y., N. H. & Hartford	1,965	5,258,693	3,882,319	10,346,763	1,318,514	1,919,899	35,158	4,566,954	263,809	8,256,818	79.80	2,089,944	392,000	1,692,762	635,035
N. Y., Onta. & Western	569	618,226	128,193	893,950	178,223	271,490	9,952	432,481	21,887	914,033	102.24	—20,083	30,000	—50,093	—27,563
N. Y., Phila. & Norfolk	121	586,432	98,119	735,792	67,816	211,055	8,919	307,911	11,175	623,197	84.69	112,595	23,806	88,589	11,674
N. Y., Susq. & Western	135	261,088	60,102	360,172	71,682	44,722	2,104	205,065	9,126	332,698	92.37	27,473	40,700	—13,241	—212,670
Newburgh & South Shore	7	.....	.....	19,435	8,669	17,397	.....	31,927	4,187	62,181	319.94	—42,745	7,174	—49,920	—93,237
Norfolk & Western	2,088	6,267,635	878,673	7,459,599	993,936	2,266,777	38,191	2,635,440	112,113	6,066,668	81 32	1,392,931	260,000	1,132,482	—799,030
Norfolk Southern	906	444,918	181,572	666,345	122,345	100,634	10,707	276,880	21,717	532,432	79.90	134,051	16,000	117,953	91,177
Minn. & St. Louis	1,646	1,177,808	218,861	1,460,087	243,909	291,449	13,798	629,143	30,492	1,209,406	82.83	250,681	45,519	204,706	54,159

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF OCTOBER, 1919—CONTINUED

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses						Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year
					Maintenance of—										
		Freight.	Passenger.	Total (inc. misc.)	Way and structures.	Equipment.	Traffic.	Transportation.	General.	Total.					
Northern Pacific	6,610	8,152,980	1,850,735	10,703,040	1,391,114	1,695,396	63,363	3,600,375	193,574	7,020,168	65.59	3,682,872	735,327	2,945,797	—1,960,169
Northwestern Pacific	538	417,149	192,156	673,861	127,991	76,239	4,547	254,248	14,221	479,748	71.19	194,113	25,647	161,408	13,502
Northern Alabama	112	101,544	14,685	118,875	25,032	5,843	1,485	58,960	1,510	92,830	78.09	25,545	3,500	21,745	—44,607
Oregon Short Line	2,347	3,102,979	623,365	3,951,560	253,137	470,522	16,072	1,033,380	103,629	1,935,348	48.97	2,016,212	172,105	1,843,982	693,[illegible]1
Oregon-Wash. R. R. & Nav.	2,070	2,053,951	575,021	2,825,629	403,171	413,153	27,384	1,114,946	90,173	2,068,137	73.19	757,493	113,614	642,917	190,398
Panhandle & Santa Fe	772	529,051	143,031	701,129	68,822	173,660	4,275	268,077	14,326	529,139	75.46	171,991	20,895	150,952	195,343
Penn. R. R. West	1,754	8,090,784	1,632,256	10,607,011	1,878,051	2,863,195	75,544	4,163,241	204,354	9,270,078	87.39	1,336,933	355,622	979,718	—150,424
Penn R. R. East	5,367	24,653,899	8,129,213	36,030,244	5,253,547	10,581,019	240,980	15,338,002	765,844	32,876,714	91.24	3,153,530	879,389	2,272,098	—1,025,[illegible]9
Peoria & P. U.	19	30,613	3,609	151,131	23,584	42,923	621	79,596	5,689	152,414	100.84	—1,282	9,500	—10,782	26,[illegible]7
Pere Marquette	2,230	2,752,940	501,856	3,539,290	250,159	637,926	29,927	1,338,778	98,674	2,364,420	66.80	1,174,870	62,475	1,112,341	346,[illegible]5
Perkiomen	41	90,565	5,509	99,137	8,445	4,429	13	34,796	236	47,942	48.35	51,195	1,427	49,768	—7,[illegible]23
Phila. & Read.	1,127	5,787,324	1,081,752	7,277,755	794,583	1,631,665	38,537	3,236,739	141,036	5,876,609	80.74	1,410,146	143,228	1,266,805	1,[illegible]7
Phila., Bethlehem & New England	71	.....	.....	75,932	10,826	13,409	438	54,990	991	80,653	106.21	—4,721	1,100	—5,821	—17,[illegible]0
Pitts. & Lake Erie	224	1,905,906	230,010	2,286,073	255,194	820,885	19,331	860,705	46,154	2,002,860	87.61	283,213	72,000	211,212	—945,[illegible]0
Pitts. & W. Va.	63	118,117	9,364	139,348	35,775	51,440	989	61,996	6,849	164,043	117.73	—24,696	11,467	36,162	28,[illegible]5
Pitts. & Shawmut	103	126,010	4,007	132,435	26,911	42,065	1,108	42,976	2,872	115,932	87.53	16,504	997	15,506	51,[illegible]2
Pitts., Cinc., Chicago & St. Louis	2,383	6,346,277	1,798,203	8,930,380	1,621,699	3,197,685	99,716	3,811,813	202,164	9,015,361	100.95	—84,981	259,594	—345,[illegible]3	1,440,[illegible]7
Pitts., Shawmut & Northern	204	129,347	5,530	138,999	27,117	50,147	949	54,293	5,534	138,045	99.31	954	1,909	—955	35,[illegible]0
Port Reading	21	132,039	.....	194,895	38,903	33,275	18	95,416	231	167,842	86.11	27,053	18,229	8,823	—70,[illegible]0
Quincy & Omaha & Kansas City	255	69,348	26,801	103,439	36,555	25,763	121	56,123	1,896	120,353	116.35	—16,914	3,053	—19,974	7,[illegible]1
Rich., Fred. & Pot.	81	269,034	283,013	612,029	48,748	101,844	3,385	224,772	14,449	395,967	64.69	216,061	13,135	202,923	—[illegible]9,[illegible]7
Rutland	415	257,512	111,847	445,546	85,788	104,497	4,202	198,560	12,012	406,736	91.28	38,810	19,559	19,251	84,127
St. Joseph & G. I.	258	228,367	49,850	280,368	60,145	55,120	2,689	142,416	14,250	274,620	97.94	5,749	11,853	—6,104	—35,[illegible]8
St. L., Brownsville & Mex.	548	363,139	143,387	537,216	144,077	82,168	4,233	148,432	16,042	349,950	73.52	142,266	10,000	132,194	80,331
Port L. Merchants Bridge Term.	9	.....	806	367,391	42,731	61,038	763	242,670	7,127	354,330	96.44	13,061	8,000	5,061	17,662
St. L. & San Francisco	4,761	5,214,718	2,028,597	7,662,183	1,393,794	1,376,088	61,998	2,724,927	175,735	5,725,113	74.71	1,937,070	208,091	1,727,431	406,807
St. L. Transfer	6	.....	.....	116,191	10,544	13,851	124	55,368	2,203	82,091	70.65	34,100	143	33,958	35,024
St. L., San F. & Texas	134	96,781	27,465	138,792	33,734	12,203	1,814	77,241	4,901	129,892	93.58	8,900	1,629	7,265	17,381
St. L. Southwestern	939	967,325	203,576	1,236,245	224,705	226,487	15,221	324,549	7,525	802,875	64.94	433,370	37,770	395,555	341,176
St. L. Southwestern of Texas	814	458,423	158,660	663,972	224,416	203,107	9,348	327,841	17,714	781,652	117.72	—117,681	21,000	—138,720	28,765
San Ant. & Aransas Pass	736	276,420	132,231	437,230	138,079	132,466	7,096	297,340	17,739	502,694	114.97	—65,464	15,000	—80,473	—145,723
Seaboard Airline	3,563	2,405,699	926,199	3,657,285	603,227	806,632	70,801	1,609,632	97,385	3,213,496	87.87	443,789	135,000	307,922	69,757
South Buffalo	11	12,429	.....	52,820	8,000	13,629	465	19,967	1,414	43,475	82.30	9,346	3,667	5,679	—25,474
Southern	6,982	8,435,466	2,826,107	12,356,555	2,272,631	2,820,295	136,973	3,159,382	288,121	10,771,424	87.17	1,585,132	351,538	1,222,070	—2,339,692
Southern in Miss.	278	136,533	52,402	201,752	49,965	23,605	2,385	83,889	4,683	164,527	81.54	37,225	9,000	28,[illegible]3	21,058
Southern Pacific	7,049	12,176,786	4,055,087	17,567,995	1,670,576	2,972,394	150,407	5,855,603	266,773	11,195,237	63.72	6,372,758	350,022	6,021,960	758,657
Southern Pac. S. S. Lines	.....	616,758	60,119	694,767	11,375	87,704	13,883	618,713	22,387	754,062	108.53	—59,295	9,997	—69,316	—183,[illegible]0
Spokane International	156	116,821	17,473	137,041	31,505	10,320	2,081	44,162	4,598	92,513	67.51	44,528	4,012	40,515	10,494
Spokane Port & Seattle	538	526,182	153,839	724,015	109,628	69,104	7,283	224,916	21,853	435,366	60.13	288,649	59,200	229,436	68,874
Staten Island Rapid Transit	23	91,974	70,057	182,775	28,013	29,524	1,626	98,848	9,627	167,637	91.71	15,138	20,000	—4,864	—12,806
Tennessee Central	292	162,321	45,463	219,272	51,578	43,648	3,235	112,619	5,765	216,844	98.89	2,427	5,136	—2,711	—8,541
Terminal R. R. Assn. of St. L.	36	.....	1,600	414,507	54,281	63,372	906	190,186	3,641	315,619	76.14	98,888	32,435	66,453	69,478
Texarkan & Ft. Smith	87	132,742	20,360	163,624	16,947	25,515	498	54,835	3,320	100,741	61.56	62,883	6,458	56,410	12,197
Texas & N. E.	469	513,209	168,499	751,751	167,900	237,494	3,981	239,868	13,546	696,269	92.61	55,492	21,356	33,660	14,824
Texas & Pacific	1,946	2,139,124	1,078,564	3,419,775	426,190	764,212	24,175	1,414,730	81,825	2,747,464	80.34	672,311	100,000	571,050	6,998
Toledo & O. Central	435	898,380	71,405	1,018,874	135,906	242,307	6,515	402,485	17,600	807,973	79.30	210,901	30,014	180,897	—53,062
Toledo, Peoria & Western	247	108,834	49,711	169,327	37,815	48,078	2,007	78,757	4,783	171,379	101.21	—2,053	8,500	—10,553	1,597
Toledo, St. L. & Western	454	744,660	33,430	827,617	142,565	176,188	6,281	314,489	11,188	650,620	78.61	176,997	30,000	146,973	—48,985
Trinity & Brazos Valley	368	116,935	24,493	146,812	63,913	46,008	2,032	63,725	8,064	183,742	125.15	—36,930	10,408	—47,338	10,351
Ulster & Delaware	128	69,275	51,485	140,954	19,527	18,780	1,212	60,865	5,533	106,300	75.41	34,654	4,800	29,824	21,960
Union R. R. of Penna.	40	.....	.....	683,212	127,378	273,897	229	348,972	6,759	757,235	110.83	—74,024	6,704	—80,729	71,106
Union Pacific	3,614	9,312,192	1,897,190	11,825,306	1,427,680	1,976,728	51,795	3,135,115	246,994	7,067,824	59.76	4,757,432	329,384	4,427,157	—577,163
Utah Ry.	98	139,389	473	138,113	14,318	25,076	182	25,740	2,642	67,959	49.21	70,154	5,052	65,103	—3,389
Vicks., Shreveport & Pacific	171	205,945	97,422	325,255	55,597	68,397	10,571	106,579	17,218	261,661	80.44	63,593	20,242	43,302	28,728
Virginian	523	1,178,972	60,171	1,363,916	175,646	262,691	4,506	425,132	18,107	884,148	64.82	479,768	24,500	455,107	347,939
Wabash Ry.	2,563	3,919,805	882,527	5,185,114	873,377	934,443	57,215	2,144,144	119,164	4,152,265	80.08	1,032,849	112,092	920,650	—64,699
Wash. Southern	35	99,563	192,805	357,515	29,196	44,093	1,829	111,488	6,551	194,207	54.31	163,308	6,379	156,925	—26,893
W. Jersey & Seashore	361	352,600	475,383	900,029	174,109	180,075	7,437	507,351	21,556	896,091	99.56	3,938	52,025	—48,258	—155,919
Western Maryland	689	1,273,809	97,890	1,485,966	254,915	517,528	18,784	549,238	50,566	1,405,354	94.57	80,612	43,200	37,412	485,724
Western Pacific	1,042	1,476,324	252,679	1,780,854	139,374	206,951	13,669	390,722	30,055	802,822	45.08	978,032	50,911	927,023	746,323
Western Ry. of Alabama	133	118,291	78,218	213,812	29,452	48,772	3,383	69,054	6,902	161,278	75.42	52,534	3,000	49,530	14,530
Wheeling & Lake Erie	511	1,141,701	56,829	1,324,427	187,266	275,570	8,715	498,105	26,447	998,898	75.42	325,529	64,000	261,529	—92,453
Wichita Falls & N. W.	329	214,892	37,756	263,583	78,611	23,279	2,036	141,992	6,747	252,665	95.85	10,918	9,908	989	17,260
Yazoo & Miss. Valley	1,381	1,724,218	479,518	2,315,003	378,250	538,556	15,609	804,222	47,974	1,781,061	76.93	533,943	65,583	468,296	—30,568

REVENUES AND EXPENSES OF RAILWAYS

TEN MONTHS OF CALENDAR YEAR 1919

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses						Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
					Maintenance of										
		Freight.	Passenger.	Total (Inc. misc.)	Way and structures.	Equipment.	Traffic.	Transportation.	General.	Total.					
Alabama & Vicksburg	141	$1,505,868	$628,814	$2,287,577	$428,027	$495,706	$18,854	$919,009	$87,895	$1,969,022	86.07	$318,555	$112,372	$205,899	—$38,135
Alabama Great Southern	312	5,964,971	2,071,568	8,489,661	1,272,647	2,138,029	132,342	3,289,130	185,317	7,076,233	83.35	1,413,429	232,786	1,179,529	—503,565
Ann Arbor	301	2,812,771	595,754	3,601,410	515,570	619,743	47,147	1,662,177	106,560	2,951,755	81.96	649,655	159,800	489,388	379,150
Arizona East	377	2,414,663	447,437	3,077,954	711,149	505,736	22,106	1,010,599	90,691	2,374,421	77.14	703,533	163,103	539,948	—598,308
Atchison, Topeka & Santa Fe	8,645	99,991,485	37,146,622	144,822,598	19,256,633	33,368,726	1,417,997	51,125,720	2,522,920	107,299,667	74.09	37,522,931	5,755,027	31,737,519	—3,565,408
Atlanta & West Point	93	1,061,645	957,663	2,256,464	278,505	412,566	30,966	850,933	65,605	1,667,818	73.91	588,646	77,500	511,044	—51,903
Atlanta, Birmingham & Atlantic	639	3,094,238	794,481	4,156,669	978,712	1,278,746	71,976	2,340,015	123,784	4,794,009	115.33	—637,340	160,000	—798,855	—395,630
Atlantic City	177	1,191,574	2,538,184	3,906,677	477,806	472,954	17,044	1,883,834	13,562	2,866,146	73.36	1,040,531	130,086	910,441	—77,417
Atlantic Coast Line	4,864	33,125,431	15,405,021	51,815,735	7,878,256	11,427,303	600,600	22,850,579	1,103,558	44,147,059	85.20	7,668,675	2,110,000	5,542,313	—4,023,402
Baltimore & Ohio Chicago Terminal	90	.....	3,052	1,658,242	345,506	454,878	11,406	262,901	84,284	2,206,626	133.07	—548,384	276,092	—825,203	168,821
Baltimore & Ohio	5,151	113,252,300	27,088,159	151,527,691	22,591,966	46,665,578	1,578,682	65,225,294	3,743,325	140,846,074	92.95	10,681,617	3,700,040	6,967,980	—1,584,540
Baltimore, Chesapeake & Atlantic	87	858,144	452,629	1,360,332	155,055	395,102	10,371	780,714	34,829	1,376,071	101.15	—15,839	34,150	—49,993	68,131
Bangor & Aroostook	632	3,219,295	771,565	4,204,215	940,637	1,185,611	38,512	1,624,741	123,190	3,973,600	94.51	230,615	211,885	16,820	—292,714
Beaumont, Sour Lake & Western	118	796,233	254,271	1,103,001	254,492	208,180	218,924	465,024	50,816	997,436	90.42	105,565	27,000	78,375	—294,761
Belt Ry. Co. of Chicago	31	.....	.....	3,111,865	295,678	554,711	3,575	1,810,463	79,530	2,743,957	88.17	367,908	155,108	212,800	277,023
Bessemer & Lake Erie	217	10,548,611	416,095	11,226,250	1,253,348	3,347,341	105,056	3,458,701	193,331	8,351,881	74.39	2,874,369	145,000	2,729,234	—961,953
Bingham & Garfield	37	951,589	20,442	1,010,966	384,210	405,707	13,048	278,287	41,712	1,145,134	113.27	—134,169	78,193	—212,361	—1,508,117
Birmingham Southern	29	366,851	.....	480,311	41,700	59,363	7,009	236,227	32,748	377,048	78.50	103,263	18,301	83,999	—196,701
Boston & Maine	2,258	35,256,120	18,412,521	59,675,322	7,881,886	11,636,462	413,668	31,337,781	1,725,297	53,346,825	89.39	6,328,496	1,807,795	4,519,855	—1,249,731
Buffalo, Susquehanna R R	296	1,782,301	67,722	1,941,829	453,262	941,508	17,923	656,648	79,309	2,148,651	110.65	—206,822	32,500	—239,322	—287,256
Buffalo, Rochester & Pittsburgh	589	10,321,063	1,310,265	12,110,845	1,969,972	4,318,305	145,459	5,712,855	326,674	12,495,972	103.17	—385,127	270,006	—655,680	—1,354,072
Canadian Pacific Lines in Maine	233	1,559,534	512,809	2,189,933	520,837	497,849	25,947	1,346,941	34,956	2,425,795	110.77	—235,862	110,000	—345,862	24,306
Carolina, Clinchfield & Ohio	282	4,484,884	342,718	4,914,209	763,705	1,237,206	45,657	1,520,697	136,611	3,702,671	75.34	1,211,538	163,000	1,048,364	285,515
Central of New England	301	5,130,599	246,507	5,617,335	1,309,754	1,006,163	28,734	2,501,501	143,907	4,996,681	88.95	620,655	160,000	459,578	—87,070
Central of Georgia	1,918	10,716,968	5,320,719	17,690,513	3,492,366	3,667,358	347,059	7,589,966	592,665	15,698,436	88.74	1,992,077	635,337	1,348,727	—1,748,464
Central R. R. of New Jersey	685	27,205,103	7,155,550	36,973,106	4,482,665	9,673,829	257,050	17,364,965	853,557	32,783,188	88.66	4,189,919	1,933,311	2,256,441	—4,794,745
Central Vermont	411	3,506,442	900,977	4,827,338	947,678	1,228,644	76,116	2,940,525	177,965	5,388,007	111.61	—560,668	174,000	—734,843	—517,170
Charleston & Western Carolina	342	1,879,922	512,995	2,507,730	464,971	484,288	47,114	1,232,489	53,554	2,282,416	91.01	225,314	79,018	146,256	—280,153
Chesapeake & Ohio	2,503	44,670,301	12,343,923	60,445,309	9,825,539	13,931,528	361,377	23,493,698	1,114,823	49,047,015	81.13	11,398,294	1,660,441	9,732,763	—3,810,804
Chicago & Alton	1,050	14,522,095	5,361,284	21,120,693	3,602,461	5,912,393	249,166	8,904,565	494,355	19,260,441	91.19	1,860,253	615,680	1,242,603	—1,521,810
Chicago & Eastern Illinois	1,131	15,375,691	4,068,208	20,942,491	3,169,177	7,365,605	215,981	8,731,333	472,372	20,027,542	95.63	914,948	749,092	161,992	—1,633,658
Chicago & Erie	269	6,945,506	968,959	8,620,446	963,931	1,431,596	106,613	4,311,017	277,402	7,120,940	82.60	1,499,505	319,965	1,179,444	674,630
Chicago & North Western	8,090	77,198,246	29,385,211	116,365,240	17,481,894	23,898,473	732,856	51,819,497	2,505,966	97,312,244	83.62	19,052,991	4,750,000	14,292,153	1,636,788
Chicago, Burlington & Quincy	9,372	89,199,752	29,853,667	128,485,759	18,542,932	26,474,716	890,954	48,577,143	3,204,204	98,935,361	77.00	29,550,398	4,522,806	25,002,369	3,401,567
Chicago Great Western	1,496	12,011,332	5,054,004	18,354,866	3,029,961	4,060,071	262,413	7,787,332	453,220	15,724,120	85.66	2,630,745	568,263	2,061,885	1,274,662
Chicago, Indianapolis & Louisville	657	6,966,770	2,405,984	10,274,610	1,227,419	2,637,654	142,789	4,301,159	260,494	8,667,954	84.36	1,606,656	400,012	1,205,367	3,762
Chicago Junction	12	.....	.....	3,056,318	692,459	500,248	978	2,266,538	69,226	3,529,449	115.48	—473,131	26,589	—499,803	—195,749
Chicago, Milwaukee & St. Paul	10,647	88,474,950	25,424,077	125,060,892	19,343,396	33,988,489	902,185	56,388,180	3,201,840	114,288,485	91.38	10,772,407	5,308,078	5,402,776	83,647
Chicago, Peoria & St. Louis	247	1,111,543	253,316	1,453,415	383,014	658,434	28,462	853,395	86,770	2,010,025	138.31	—556,610	68,766	—625,392	—362,575
Chicago, Rock Island & Gulf	474	2,904,287	895,866	4,042,612	644,486	742,650	70,242	1,738,858	119,179	3,325,170	82.25	717,442	138,257	578,744	—270,116
Chicago, Rock Island & Pacific	7,594	60,183,710	26,286,989	91,777,948	15,278,327	20,622,063	1,034,078	38,741,605	1,998,080	78,028,404	85.02	13,749,545	3,476,371	10,267,475	579,211
Chicago, St. Paul, Minn. & Omaha	1,749	14,904,607	6,287,631	22,682,130	3,295,814	4,173,778	213,879	10,561,082	605,595	18,991,685	88.72	3,690,445	1,082,632	2,603,923	515,657
Chicago, Terre Haute & S. E.	374	3,291,039	217,956	3,600,532	563,376	1,552,487	30,441	1,359,857	88,226	3,610,629	100.28	—10,097	145,000	—155,117	—598,771
Cincinnati, Leb. & Northern	76	725,369	79,931	951,778	177,682	218,790	13,467	540,867	9,086	959,891	100.85	—8,113	45,617	—53,730	—78,254
Cincinnati, Indianapolis & Western	321	1,791,162	539,442	2,563,301	503,481	808,722	53,073	1,343,681	132,492	2,850,156	111.19	—286,855	111,061	—397,926	—330,987
Cincinnati, N. O. & Texas Pacific	337	9,582,094	3,051,671	13,295,155	1,914,970	4,318,465	228,837	5,380,354	343,447	12,257,191	92.19	1,037,964	378,667	654,800	—1,302,294
Cincinnati Northern	251	2,166,426	190,816	2,425,489	355,724	528,534	22,043	852,511	47,664	1,806,476	74.47	619,013	98,700	520,154	266,758
Cleveland, Cincinnati, Chic. & St. Louis	2,397	41,649,054	14,269,788	60,561,108	7,399,685	11,633,079	762,637	24,260,810	1,088,003	45,616,121	75.32	14,944,987	1,837,000	13,099,674	—314,141
Colorado & Southern	1,001	8,153,820	2,117,679	10,880,419	1,799,593	2,554,598	84,723	3,992,497	349,191	8,854,255	81.37	2,026,164	470,000	1,552,436	—635,954
Colorado & Wyoming	41	231,753	11,718	876,725	107,036	161,766	1,440	384,929	38,104	693,275	79.07	183,450	40,000	143,450	—37,357
Cumberland Valley	163	3,734,101	732,646	4,780,022	852,486	1,057,410	64,880	1,823,814	114,575	3,919,536	81.99	860,485	84,177	775,905	—834,324
Delaware & Hudson	875	24,660,778	2,772,738	29,049,930	3,673,052	8,177,647	200,407	12,774,646	1,079,611	26,209,610	90.22	2,840,320	627,000	2,206,114	—382,283
Delaware, Lackawanna & Western	955	42,810,081	10,438,260	59,376,607	6,328,676	12,570,290	413,992	25,128,524	1,132,486	46,173,759	77.76	13,202,848	3,131,002	10,050,316	—3,491,411
Denver & Rio Grande	2,594	19,616,097	5,791,602	27,020,630	4,173,128	6,504,352	196,063	9,095,759	693,053	21,092,658	78.06	5,297,972	1,090,000	4,833,440	870,085
Denver & Salt Lake	255	1,939,619	383,799	2,396,731	728,127	925,695	9,474	1,307,897	51,540	3,022,732	126.11	—626,001	90,000	—716,570	—220,394
Detroit & Mackinaw	381	977,517	326,607	1,380,353	230,712	368,918	28,614	633,291	95,073	1,355,927	98.23	24,426	78,797	—54,372	—104,044
Detroit & Toledo Shore Line	61	2,008,915	.....	2,044,422	192,253	199,199	10,884	586,600	41,773	1,030,121	50.38	1,014,301	92,196	922,098	335,291
Detroit, Toledo & Ironton	456	2,834,072	134,034	3,149,024	904,087	945,275	29,021	1,457,026	128,531	3,463,953	110.00	—314,929	91,268	—406,594	—86,029
Duluth & Iron Range	292	6,659,938	221,205	7,397,771	853,428	969,161	4,643	1,839,623	142,898	3,812,647	51.53	3,585,123	372,814	3,211,404	—734,167
Duluth, Missabe & Northern	411	16,879,783	447,994	18,698,783	1,570,578	1,355,614	21,390	3,260,125	191,863	6,413,239	34.29	12,285,545	755,658	11,529,886	—302,412
Duluth, South Shore & Atlantic	599	2,708,932	1,017,033	3,981,777	812,555	701,617	55,340	1,881,888	92,802	3,594,562	40.27	387,215	203,003	183,996	—130,343
Duluth, Winnipeg & Pacific	178	1,291,522	247,702	1,588,630	321,977	312,799	25,669	694,926	81,123	1,443,096	90.83	145,534	81,458	64,074	—5,822
East St. Louis Connecting	3	.....	.....	1,009,937	143,641	242,656	2,711	681,046	33,718	1,103,409	109.26	—93,472	25,321	118,793	—63,572
El Paso & Southwestern	1,027	8,118,889	1,799,822	10,460,981	1,825,214	2,087,667	98,763	2,888,549	253,286	7,229,913	69.11	3,231,068	526,174	2,704,433	—1,699,102
Elgin, Joliet & Eastern	828	13,890,395	98	16,128,294	1,586,446	4,219,887	68,861	6,260,144	258,169	12,391,878	76.83	3,736,416	542,270	3,194,224	—697,227
Erie	1,989	57,860,107	11,470,513	76,050,004	8,971,662	23,935,396	625,113	36,863,874	2,010,859	72,831,199	95.76	3,218,805	2,696,572	502,611	3,063,477
Florida East Coast	764	4,841,472	2,482,286	8,260,140	1,396,458	1,531,798	78,350	3,631,082	172,602	6,905,035	88.59	1,355,106	389,907	962,587	—652,221
Fonda, Johnstown & Gloversville	88	342,612	658,527	1,042,375	120,670	89,448	6,292	399,219	50,251	665,880	63.88	376,494	54,000	322,494	3,803
Ft. Smith & Western	253	974,399	284,388	1,340,391	246,670	311,140	37,078	472,479	63,993	1,137,154	84.83	203,237	50,000	152,313	65,599
Ft. Worth & Denver City	454	5,873,322	2,868,977	9,089,145	870,677	1,746,980	43,594	3,337,961	249,546	6,280,115	69.09	2,809,029	188,782	2,619,093	1,420,787

REVENUES AND EXPENSES OF RAILWAYS

TEN MONTHS OF CALENDAR YEAR 1919 CONTINUED

Name of road.	Average mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (Inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total	Operating ratio	Net from railway operations	Railway tax accruals	Operating income (or loss)	Increase (or decrease) comp. with last year
Ft. Worth & Rio Grande	235	$687,257	$542,561	$1,321,538	$284,058	$225,815	$12,954	$660,217	$61,699	$1,244,745	94.18	$76,807	$50,419	$46,[illegible]	$2[illegible]
Galveston, Harrisburg & San Antonio	1,381	12,145,364	4,558,876	17,540,860	2,543,566	3,995,990	173,384	6,576,115	534,881	13,972,960	79.65	3,567,900	5[illegible],925	3,034,071	—2,[illegible],135
Galveston Wharf Co	13	.....	.....	726,766	286,385	9,039	189	274,200	15,243	694,706	95.58	32,060	125,000	—92,940	—371,950
Georgia R. R	328	3,321,834	1,497,050	5,177,735	534,582	868,978	81,495	2,428,984	168,414	4,089,189	78.97	1,088,546	6[illegible],500	1,027,987	—848,534
Georgia & Florida	348	562,075	206,102	818,535	311,906	201,139	18,587	520,874	56,024	1,108,530	135.42	—289,995	42,019	—332,795	—271,360
Georgia Southern & Florida	402	2,304,626	952,717	3,567,683	612,747	850,270	60,716	1,690,096	107,224	3,346,398	93.79	221,285	138,374	82,255	—84,544
Grand Rapids & Indiana	569	4,501,012	1,818,577	6,834,118	881,097	1,520,510	103,842	3,207,352	237,790	5,979,569	87.49	854,549	258,395	596,143	144,153
Grand Trunk Western	1,001	13,984,385	3,027,340	18,529,516	2,347,406	3,067,574	172,541	8,268,888	483,264	14,384,750	77.63	4,144,766	511,[illegible]	3,629,3[illegible]	3,433,[illegible]
Grand Trunk Line in New England	172	2,008,743	393,290	2,846,619	974,842	418,851	29,472	1,754,263	123,676	3,648,473	128.16	—801,853	127,[illegible]	—928,853	—261,409
Great Northern	8,227	64,832,042	16,396,842	89,025,304	15,402,551	15,858,095	564,666	36,087,057	1,537,115	70,578,568	79.27	18,446,737	4,903,924	13,536,235	4,423,934
Green Bay & Western	252	779,382	165,679	1,007,439	219,826	252,939	10,902	422,538	19,207	925,357	91.85	82,083	43,932	38,151	—38,411
Gulf & Ship Island	307	1,411,130	458,766	2,021,333	529,845	487,264	39,451	849,118	91,537	2,001,814	99.03	19,519	108,101	—89,258	—501,002
Gulf, Colorado & Santa Fe	1,935	11,786,179	4,505,069	17,226,312	3,759,290	3,103,573	165,802	7,210,264	484,023	14,669,550	85.16	2,556,763	711,676	1,838,836	—1,324,923
Gulf, Mobile & Northern	432	1,722,870	455,794	2,297,999	490,849	550,205	56,337	1,050,288	101,343	2,241,746	97.54	56,254	112,670	—57,015	—255,764
Hocking Valley	350	8,363,060	1,018,551	10,001,360	1,118,725	3,162,313	59,216	3,310,751	208,099	7,854,247	78.53	2,147,113	462,782	1,680,167	—440,253
Houston & Texas Central	847	5,011,749	2,130,906	7,584,751	1,428,251	1,439,044	67,384	3,131,699	196,275	6,261,409	79.71	1,323,342	344,847	975,152	—867,198
Houston, East & West Texas	190	1,397,217	456,861	1,943,604	350,826	253,879	9,649	901,671	42,076	1,558,049	80.16	385,555	62,987	321,270	—56,490
Illinois Central	4,791	63,381,263	20,057,570	89,670,631	15,436,938	24,513,161	166,290	36,809,725	2,233,035	80,631,605	89.91	9,039,026	4,169,914	4,844,193	—6,699,961
Indiana Harbor Belt	116	.....	.....	5,447,281	993,138	1,060,066	17,425	3,601,780	170,825	5,843,233	107.26	—395,952	99,851	—495,813	228,[illegible]
International & Great Northern	1,159	8,218,189	2,777,582	11,742,021	2,712,037	3,163,099	130,514	6,017,667	416,236	12,506,701	106.51	—764,680	280,500	—1,046,198	—2,475,1[illegible]
Kanawha & Mich	176	3,005,056	558,872	3,681,965	540,647	1,348,140	25,274	1,322,192	129,903	3,366,168	91.42	315,797	183,841	131,952	—1,111,33[illegible]
Kansas City, Mexico & Orient	272	908,626	176,752	1,137,714	446,841	425,326	14,944	648,164	74,605	1,609,880	141.50	—472,166	62,551	—534,886	—252,3[illegible]
Kansas City, Mexico & Orient of Texas	465	758,122	160 357	972,009	336,675	426,917	15,724	660,032	77,126	1,516,473	156.01	—544,464	49,906	—594,477	—317,9[illegible]
Kansas City Southern	774	9,394,799	2,018,344	12,360,549	1,960,757	2,739,969	161,106	4,925,322	394,371	10,170,135	82.27	2,190,414	644,886	1,540,361	—1,443,526
Kansas City Terminal	26	.....	.....	1,156,457	192,475	251,287	.....	488,577	14,558	958,889	82.92	197,569	236,492	—38,999	11,466
Lake Erie & Western	902	7,072,259	663,111	8,111,225	1,402,699	2,239,138	119,341	3,517,133	237,274	7,511,078	92.60	600,146	348,100	250,810	—32[illegible],5[illegible]
Lake Superior & Ishpeming	34	816,891	2,263	920,785	193,012	172,433	2,007	187,283	25,339	580,074	62.99	340,710	34,826	305,885	—454,002
Lehigh & Hudson	96	2,141,204	40,611	2,256,903	268,002	484,711	15,134	930,121	58,080	1,756,048	77.81	500,855	56,833	444,004	203,860
Lehigh & North Western	231	3,051,899	15,892	3,219,201	482,849	683,272	26,632	1,117,657	96,758	2,405,578	74.72	813,621	79,951	133,673	—150,444
Lehigh Valley	1,435	43,010,643	5,764,879	53,379,836	8,095,607	14,628,912	414,761	24,100,582	1,050,915	48,472,846	90.81	4,906,991	1,591,600	3,313,836	—2,016,651
Long Island	398	5,159,991	13,728,479	20,902,802	2,665,740	3,478,513	131,458	9,961,858	484,588	16,865,163	80.68	4,037,639	921,833	3,111,999	—1,605,805
Los Angeles & Salt Lake	1,168	9,712,544	3,534,612	14,080,586	2,030,873	2,973,255	183,137	4,731,589	303,585	10,602,038	75.29	3,478,548	685,219	2,791,618	277,867
Louisiana & Arkansas	302	1,257,823	390,430	1,712,103	527,414	410,948	32,091	756,560	62,386	1,789,099	104.49	—76,996	113,188	—190,416	—278,922
Louisiana Ry. & Navigation Co	349	2,394,689	368,633	2,911,687	812,921	539,335	38,813	1,282,632	78,333	2,752,033	94.51	159,654	148,000	11,452	—301,438
Louisiana Western	207	2,137,787	1,107,021	3,396,486	495,940	635,436	40,912	950,372	107,276	2,250,957	66.28	1,145,529	91,117	1,054,117	—537,960
Louisville & Nashville	5,013	63,648,954	20,746,181	89,043,902	13,818,801	23,214,552	1,180,679	36,428,196	1,891,207	76,880,860	86.34	12,163,042	2,565,699	9,589,276	—6,706,785
Louisville, Henderson & St. L	199	1,684,826	651,571	2,445,884	493,893	330,955	55,829	929,793	76,070	1,886,540	77.13	559,344	40,000	518,588	—148,440
Maine Central	1,216	9,245,809	4,155,448	14,447,154	2,658,267	3,393,190	123,445	8,039,959	360,343	14,613,776	101.16	—166,622	761,289	—928,311	—897,680
Maryland, Delaware & Virginia	82	704,287	414,250	1,146,274	91,272	277,156	8,103	737,059	21,369	1,134,957	99.01	11,316	17,813	—6,517	17,681
Michigan Central	1,861	42,573,845	16,579,083	64,737,874	8,173,796	12,553,062	647,493	23,714,101	1,116,186	46,943,146	72.51	17,794,728	2,110,000	15,679,772	3,658,414
Midland Valley	388	2,323,717	826,077	3,269,221	734,409	607,521	36,158	1,217,470	137,094	2,732,653	83.58	536,568	68,846	466,294	—249,592
Mineral Range	101	606,911	3,716	637,402	123,246	212,417	4,057	344,019	9,866	693,605	108.81	—56,203	35,500	—91,703	—79,280
Minneapolis & St. Louis	1,646	8,334,844	2,301,303	11,152,329	1,972,748	2,691,315	12,517	348,970	58,695	935,325	110.88	—91,814	31,675	—123,722	—377,412
Minn., St. Paul & Sault Ste. Marie	4,243	26,039,162	6,833,131	35,162,855	5,313,637	7,178,341	243,008	14,545,376	765,182	28,222,808	80.26	6,940,046	20,050,978	4,887,010	2,246,262
Minn. & International Ry	194	519,292	251,937	883,061	221,405	165,170	5,001	465,374	34,405	891,355	100.93	—8,295	47,277	—55,585	—38,530
Mississippi Central	164	520,707	281,335	843,511	212,210	302,933	107,666	5,331,046	296,970	10,393,595	93.19	758,735	500,624	253,717	161,908
Missouri & North Arkansas	365	806,196	422,914	1,308,023	599,586	378,959	20,119	632,014	88,459	1,718,130	131.35	—410,102	63,352	—474,733	—497,836
Missouri, Kansas & Texas	1,713	20,060,842	6,705,093	28,328,571	5,041,412	7,937,080	285,736	9,603,188	782,733	23,766,380	83.89	4,562,191	894,556	3,664,826	—97,231
Missouri, Kansas & Texas of Texas	1,796	12,523,645	6,711,290	20,650,754	4,336,489	3,857,200	230,436	10,434,257	762,236	19,797,508	95.86	853,246	551,558	296,329	53,704
Missouri, Oklahoma & Gulf	332	976,632	185,789	1,232,474	579,160	508,444	18,798	702,862	70,357	1,881,996	152.70	—649,522	85,038	—735,563	—427,508
Missouri Pacific	7,185	54,625,864	17,142,520	76,882,429	15,355,502	17,167,852	841,226	31,924,416	2,074,960	67,705,637	88.06	9,176,792	2,669,487	6,479,865	—4,207,191
Mobile & Ohio	996	10,183,728	1,834,964	12,741,598	2,241,242	4,134,120	239,197	6,024,900	416,373	13,064,312	102.53	—322,715	498,022	—822,017	—1,027,505
Monongahela Ry.	108	2,152,120	207,742	2,989,546	592,478	371,912	9,559	915,768	72,020	1,961,737	65.61	1,027,809	50,000	977,789	177,093
Monongahela Connecting	6	.....	.....	1,515,524	250,196	534,787	5,181	751,272	70,452	1,611,889	106.35	—96,365	20,006	—116,371	—383,306
Montour	56	1,070,805	13,844	1,135,514	296,313	610,504	12,317	285,748	65,480	1,269,115	111.76	—133,600	22,236	—155,842	—239,473
Morgan's Louisiana & Texas R. R	400	4,232,584	1,729,910	6,333,768	10,832,000	1,326,590	80,399	2,568,524	198,761	5,277,287	83.31	1,056,482	304,512	750,200	—1,246,143
Nashville, Chattanooga & St. L	1,247	10,755,756	4,489,565	16,284,729	2,875,865	4,180,449	336,119	7,141,795	437,104	15,059,389	92.47	1,225,340	500,000	722,435	—2,441,411
Nevada Northern	168	.....	1,104,333	1,264,313	218,546	224,049	9,379	362,926	43,348	859,447	67.97	404,866	186,585	218,280	—760,158
New Orleans & N. E	195	3,407,231	1.256,129	5,311,829	963,390	1,164,887	80,807	2,458,112	143,101	4,861,346	91.51	450,482	276,940	172,504	—764,081
New Orleans Great Northern	284	1,383,281	451,205	1,914,446	381,638	425,144	23,318	820,037	87,073	1,741,272	90.95	173,174	94,844	75,387	—365,943
New Orleans, Texas & Mexico	191	1,198,399	377,112	1,660,898	408,052	390,506	27,583	514,902	61,028	1,424,378	85.75	236,520	100,000	136,304	—208,433
New York Central	6,075	156,839,316	71,416,147	258,216,642	32,940,826	55,704,102	2,260,586	105,791,454	6,361,618	206,876,690	80.12	51,339,953	9,538,967	41,787,668	3,217,999
New York, Chicago & St. L	574	17,450,262	1,645,388	19,665,069	2,458,863	3,625,431	256,113	8,094,680	527,728	15,000,789	76.28	4,664,280	495.000	4,168,386	733,871
New York, New Haven & Hartford	1,965	40,007,751	37,185,611	87,075,144	11,645,006	17,550,259	450,493	42,035,338	2,649,114	75,810,294	87.06	11,264,850	2,928,000	8,316,615	—3,991,742
New York, Ontario & Western	569	5,367,038	2,463,011	9,285,770	1,439,544	2,202,166	86,600	4,086,109	226,423	8,040,842	86.59	1,244,928	266,800	978,149	—57,006
New York, Philadelphia & Norfolk	121	5,194,429	1,174,423	6,834,622	554,192	1,722,721	87,724	3,131,020	112,668	5,793,049	84.76	1,041,573	178,149	863,187	—43,326
New York, Susquehanna & Western	135	2,254,187	578,055	3,230,886	371,210	536,797	21,846	1,975,583	81,474	2,987,036	92.45	243,851	329,666	—86,542	—419,764
Newburgh & South Shore	7	.....	.....	1,067,250	185,407	280,951	.....	512,880	38,953	1,078,190	101.02	—10,940	64,526	—75,467	—246,983
Norfolk & Western	2,088	51,432,344	9,234,099	63,482,642	8,490,149	18,657,717	361,114	23,118,256	1,064,320	51,862,993	81.69	11,619,649	2,600,000	9,017,864	—5,261,559
Norfolk & Southern	906	3,481,090	1,542,487	5,353,564	1,113,991	1,018,908	79,159	2,667,431	208,934	5,092,505	95.12	261,059	179,850	80,611	—215,093

REVENUES AND EXPENSES OF RAILWAYS

TEN MONTHS OF CALENDAR YEAR 1919—CONTINUED

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses					Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
					Maintenance of									
		Freight.	Passenger.	Total (Inc. misc.)	Way and structures.	Equipment.	Traffic.	Transportation.	General.	Total.					
Northern Pacific	6,584	$60,200,635	$17,059,808	$83,246,512	$14,093,357	$14,313,467	$604,409	$31,079,279	$1,856,271	$62,784,658	75.42	$20,461,855	$6,253,877	$14,190,529	—$4,613,243
Northwestern Pacific	528	2,880,793	2,039,263	5,463,239	1,031,779	702,693	50,910	2,314,184	129,461	4,247,230	77.74	1,216,009	234,230	980,356	—468,665
Northern Alabama	112	797,870	134,581	960,795	217,104	56,799	13,459	582,697	17,853	887,752	92.39	73,043	34,700	38,335	—292,817
Oregon Short Line	2,347	23,766,964	5,907,058	31,619,028	4,860,210	5,235,060	165,215	9,223,556	930,202	21,003,409	66.42	10,615,620	1,653,587	8,959,789	80,881
Oregon-Wash. R. R. & Nav. Co.	2,070	16,166,775	5,654,629	23,604,722	4,152,769	3,598,254	284,139	9,293,511	943,360	18,521,568	78.46	5,083,154	1,137,971	3,941,931	—416,990
Panhandle & Santa Fe	772	3,859,584	1,028,598	5,121,281	939,920	1,704,314	39,829	2,302,866	147,021	5,121,651	100.00	—370	179,745	—181,303	—607,364
Penn. R. R., West	1,754	64,456,785	17,527,285	89,190,596	12,783,641	23,864,768	749,790	37,532,122	1,899,055	77,488,815	86.87	11,701,781	3,132,595	8,565,002	3,722,672
Penn. R. R., East	5,367	204,263,356	87,830,631	318,884,368	45,704,815	90,533,012	2,605,126	138,387,277	7,339,706	290,312,625	91.04	28,571,744	9,003,577	19,550,133	—3,410,611
Peoria & P. U.	19	218,770	37,215	1,018,199	181,081	405,751	7,772	751,321	53,552	1,399,476	137.44	—381,276	95,000	—476,276	—260,960
Pere Marquette	2,232	21,655,860	5,086,943	28,966,321	2,949,951	5,654,814	282,896	11,766,194	725,474	21,479,296	74.15	7,487,025	548,641	6,936,087	3,348,121
Perkiomen	41	797,750	82,926	913,021	59,524	43,238	208	361,905	3,261	468,344	51.29	444,677	17,627	427,050	48,209
Phila. & Reading	1,127	48,655,567	8,999,014	61,042,066	6,500,755	15,754,073	374,836	29,222,080	1,352,049	53,380,395	87.44	7,661,671	1,432,281	6,229,172	—5,154,592
Phila., Bethlehem & New England	71	.....	.....	686,436	80,476	123,278	3,522	449,981	10,752	668,009	97.31	18,427	12,743	5,684	—164,066
Pitts. & Lake Erie	224	19,593,756	2,191,909	23,594,510	3,767,029	7,070,546	148,708	8,346,142	440,353	19,784,357	83.85	3,810,152	744,500	3,065,417	—5,510,255
Pitts. & W. Va.	63	921,124	97,167	1,145,167	509,925	427,034	12,587	542,394	57,512	1,628,038	142.16	—482,872	116,430	—599,432	—447,977
Pitts. & Shawmut	103	939,364	41,723	994,737	324,386	393,549	15,578	362,420	30,293	1,126,226	113.21	—131,489	9,752	—141,241	—160,844
Pitts., Cinc., Chicago & St. Louis	2,383	52,294,128	18,464,780	77,920,045	10,735,032	24,077,541	885,612	34,339,229	1,777,772	72,539,526	93.09	5,380,520	2,413,213	2,964,130	—2,850,950
Pitts., Shawmut & Northern	205	881,945	59,887	973,211	249,693	491,182	9,755	400,846	71,656	1,223,173	125.68	—249,962	18,533	—268,513	137,519
Port Reading	21	1,322,642	.....	2,097,423	198,929	154,792	164	1,003,853	11,082	1,368,818	65.26	728,605	99,229	629,375	61,419
Quincy & Omaha & Kansas City	255	596,823	258,180	915,994	352,255	171,774	2,208	477,168	13,771	1,014,423	110.74	—98,430	30,437	—128,937	41,699
Rich., Fred. & Pot.	81	3,117,658	2,861,335	6,539,624	522,358	893,863	42,614	2,153,791	132,386	3,842,822	58.76	2,696,804	127,364	2,569,359	126,690
Rutland	415	2,129,336	1,146,900	3,974,859	683,075	969,644	64,170	1,856,162	114,809	3,696,800	93.00	278,059	192,257	85,738	—543
St. Joseph & G. I.	258	1,892,741	428,603	2,451,136	495,414	392,808	19,839	1,296,434	120,461	2,332,643	95.16	118,492	100,285	18,109	—43,936
St. L., Brownsville & Mex.	548	2,898,626	1,352,931	4,506,214	858,855	738,020	54,120	1,297,969	157,825	3,106,788	68.94	1,399,425	100,000	1,298,667	197,163
St. L. Merchants Bridge Term.	9	.....	6,280	2,554,056	538,747	429,918	7,445	1,839,323	61,421	2,876,853	112.64	—322,797	80,000	—402,806	—503,669
St. L.-San Francisco	4,761	42,509,736	18,561,759	64,353,484	10,217,353	12,625,707	538,057	24,255,772	1,756,376	49,239,155	76.50	15,124,329	2,257,208	12,845,482	2,993,310
St. L. Transfer	6	.....	.....	925,180	117,045	119,487	1,847	427,184	21,837	687,400	74.29	237,780	1,172	236,607	92,710
St. L., San Francisco & Texas	134	1,001,368	181,015	1,265,353	233,590	207,505	16,730	673,285	59,991	1,191,100	94.13	74,253	15,527	58,539	—111,510
St. L. Southwestern	939	8,593,307	1,817,679	10,876,735	1,822,227	2,376,979	165,112	3,318,328	374,079	8,114,347	74.60	2,762,389	418,339	2,341,843	—809,017
St. L. Southwestern of Texas	814	3,831,182	1,280,717	5,457,185	1,444,515	1,835,291	84,511	2,808,342	228,182	6,383,594	117.06	—931,410	210,000	—1,142,787	—873,323
San Ant. & Aransas Pass	736	2,372,124	1,048,862	3,649,245	1,052,986	1,091,802	61,997	1,973,149	169,103	4,345,903	119.09	—696,658	150,000	—847,995	—588,183
Seaboard Airline	3,563	20,418,031	10,573,378	33,956,086	5,182,319	7,282,314	619,048	16,034,388	1,062,770	30,445,960	89.66	3,510,126	1,350,000	2,155,159	—1,970,091
South Buffalo	11	336,437	.....	830,821	55,071	157,952	3,655	486,124	17,312	720,116	86.67	110,705	36,667	74,038	—194,064
Southern	6,982	66,526,381	30,897,560	105,782,844	19,838,203	22,856,272	1,246,481	45,718,052	2,684,360	93,148,742	88.06	12,634,102	3,288,935	9,279,613	—18,506,019
Southern in Miss.	278	879,631	480,521	1,458,682	382,246	200,852	23,399	777,523	41,873	1,425,892	97.75	32,790	90,000	—57,682	—49,883
Southern Pac.	7,049	93,195,943	35,804,001	139,322,831	70,883,277	27,053,115	1,209,049	52,022,903	2,403,483	106,216,224	76.23	33,106,607	6,110,000	26,971,085	—2,810,887
Southern Pac. S. S. Lines	.....	7,603,737	498,678	8,520,726	100,341	2,117,114	125,868	6,584,067	249,955	9,177,345	107.71	—656,619	103,572	—760,235	—1,050,410
Spokane International	156	755,022	167,543	948,301	188,276	83,112	17,405	315,551	44,016	646,215	68.14	302,085	44,042	258,043	2,227
Spokane, Portland & Seattle	538	4,167,667	1,536,017	6,124,342	990,904	830,854	59,870	2,043,987	199,275	4,148,626	67.73	1,975,716	592,000	1,383,284	—886,529
Staten Island Rapid Transit	23	864,359	798,098	1,897,671	260,622	266,866	10,445	992,772	91,207	1,621,913	85.47	275,759	141,000	134,712	30,235
Tennessee Central	293	1,506,014	484,143	2,099,195	737,829	507,393	29,300	1,016,752	64,570	2,355,063	112.18	—255,869	51,176	—307,249	—573,582
Terminal R. R. Association of St. L.	36	.....	33,331	3,247,077	710,897	558,606	8,083	1,447,191	52,566	2,811,748	86.59	435,329	277,140	158,038	—109,664
Texarkana & Ft. Smith	87	952,377	176,027	1,234,949	191,965	202,031	10,343	531,528	32,044	962,026	77.90	272,923	66,051	206,781	—22,503
Texas & New Orleans	469	4,384,282	1,696,534	6,646,996	1,216,182	1,857,228	45,751	2,358,341	141,776	5,902,432	88.79	743,514	213,556	525,603	—472,848
Texas & Pac.	1,946	19,295,480	8,489,237	29,310,819	4,103,015	6,250,272	250,997	12,947,087	722,283	24,518,975	83.65	4,791,844	909,823	3,876,241	363,299
Toledo & Ohio Central	293	6,782,022	668,606	7,869,533	1,279,693	2,294,444	64,217	3,276,312	167,957	7,109,002	90.34	760,532	319,397	441,083	—203,611
Toledo, Peoria & Western	247	809,993	491,018	1,372,806	276,660	395,019	20,657	705,083	53,823	1,448,667	105.52	—75,860	85,000	—160,860	—58,386
Toledo, St. L. & Western	454	5,912,797	409,259	6,650,029	1,244,223	1,437,464	58,481	2,740,854	116,600	5,595,129	84.13	1,054,900	264,000	790,773	—430,853
Trinity & Brazos Valley	368	841,978	211,859	1,105,615	433,151	447,343	18,153	600,760	73,929	1,573,337	142.30	—467,723	61,747	—529,572	—145,172
Ulster & Delaware	128	561,911	282,582	1,032,761	161,082	189,237	13,528	658,954	48,252	1,075,830	104.17	—43,069	48,000	—91,152	—68,281
Union R. R. of Pennsylvania	40	.....	.....	6,523,313	821,296	1,881,685	2,556	3,479,769	74,423	6,258,674	95.94	264,639	72,982	191,658	—165,292
Union Pacific	3,614	67,481,031	18,587,676	92,571,714	12,502,200	16,679,406	462,677	25,845,329	2,350,524	59,899,273	64.71	32,672,441	2,520,395	30,144,744	301,979
Utah Ry.	98	993,280	5,409	1,003,431	133,729	215,050	2,061	202,370	21,543	574,755	57.27	428,675	38,742	319,933	—184,882
Vicks., Shreveport & Pac.	171	1,738,774	794,500	2,733,680	461,275	595,309	40,000	989,058	95,870	2,206,746	80.72	526,933	122,312	404,203	113,190
Virginian	522	8,449,868	594,802	9,992,169	1,563,307	2,137,411	46,823	3,546,989	166,367	7,455,673	74.61	2,536,445	338,700	2,197,565	—22,841
Wabash Ry.	2,503	28,795,066	8,454,273	39,912,316	6,514,079	7,636,265	543,366	19,930,304	1,143,369	35,996,415	90.18	3,915,902	1,088,867	2,822,788	—2,686,595
Wash. Southern	35	1,249,757	2,000,070	3,890,099	336,698	433,545	23,544	1,179,028	55,765	2,051,627	52.73	1,838,472	65,121	1,773,310	367,243
W. Jersey & Seashore	361	2,988,100	6,725,542	10,397,484	1,939,075	2,009,876	82,183	4,936,206	212,257	9,232,071	88.79	1,165,413	476,423	688,308	99,314
Western Md.	700	10,427,986	915,877	12,375,594	2,278,064	4,067,717	176,842	4,805,921	452,817	11,903,917	96.18	471,677	432,000	39,677	791,796
Western Pacific	1,041	9,120,206	1,611,419	11,146,097	2,200,835	1,856,983	123,961	3,335,198	250,306	7,957,390	71.39	3,188,707	472,544	2,715,248	93,620
Western Ry. of Alabama	133	1,135,145	805,076	2,095,349	261,327	429,968	30,690	772,669	63,046	1,593,239	76.04	502,110	70,500	431,604	—74,838
Wheeling & Lake Erie	511	9,233,989	550,462	10,843,043	2,107,599	2,492,228	63,028	4,241,777	251,105	9,182,393	84.68	1,660,650	571,125	1,088,466	—624,266
Wichita Falls & N. W.	328	1,362,565	412,286	1,856,728	540,390	247,322	13,198	997,321	67,924	1,866,154	100.51	—9,426	95,268	—105,373	202,216
Yazoo & Miss. Valley	1,382	15,075,944	4,375,546	20,315,649	3,275,128	4,468,351	155,939	7,322,640	479,521	15,534,373	76.46	4,781,276	605,216	4,173,664	324,048

Dissolution of the "Packers' Trust"

The government's anti trust action against the five large meat packing companies, Swift, Amour, Morris, Wilson and Cudahy, has been compromised under an agreement by which the packers will confine themselves hereafter to the meat and provision business. An injunction decree to which the packers have acceded will be entered in the federal courts and under its terms the companies have agreed to sell, under supervision of the United States District Court, all their holdings in public stock yards, all their interests in stock yard railroads and terminals, all interest in public warehouses, except as necessary for their own meat products, to abandon the use of the branch houses, route cars and auto trucks (comprising their distribution system) for any other than their own meat and dairy products, and to dissociate themselves from the retail meat business and "unrelated lines" of business.

Organized Labor Adopts a "Declaration of Rights"

The conference of officers of national and international unions affiliated with the American Federation of Labor and of the four railway brotherhoods of train service employees, held at Washington beginning on December 13, adopted a declaration of rights which asserted that "the right to cease work—strike—as a final means of enforcing justice from an autocratic control of industry must be maintained." The anti-strike provision of the Cummins bill and all similar proposed legislation were specifically denounced as "un-American, vicious in character and as establishing by legislation involuntary servitude." It was urged that the judges of federal courts shall be elected by the people for terms not exceeding six years. Regarding the railroads, the declaration includes the following:

"Since the government has not worked out a constructive railroad policy, we urge for and on behalf of the railway workers and of the general public, that the railroads be retained under government administration for at least two years after January 1, 1920, in order that a thorough test may be made of governmental operation under normal conditions.

"The common carriers of this country are the arteries of travel, commerce and industry. Transportation service and rates are intimately bound up with industrial production in all parts of the country."

Board Named to Consider Miners' Wages and Coal Prices

Members of the commission to carry out the government's plan for the settlement of the coal strike controversy were appointed by President Wilson on December 21 as follows: Henry M. Robinson, of Pasadena, Cal., as the representative of the public; John P. White, representing the miners, and Rembrandt Peale, representing the coal operators. In his letter asking them to serve on the commission the President said that if in their judgment a readjustment of the price of coal shall be necessary to meet any increase of wages beyond the 14 per cent put into effect to induce the striking miners to return to work he would clothe the commission with the powers vested in the Fuel Administration for that purpose, but only in the event of a unanimous decision by the commission.

The Bituminous Coal Operators' Association issued a statement denying an assertion made by the President that the operators had generally agreed to the terms of the settlement offered to the miners' union on December 6. The statement asserted that the operators had not been consulted and had not seen the memorandum of agreement. To this Attorney General Palmer replied that failure of the operators to agree now to the government's plan would be "an amazing repudiation of their own statements." The operators say they had agreed to the plan previously proposed by Dr. Garfield for a 14 per cent increase in wages with no increase in coal prices and that the attorney general had later compromised with the miners, while Mr. Palmer has taken the position that the government had forced a settlement.

Traffic News

The Governor of Kansas on December 14 sent urgent messages to Walker D. Hines, director general, and Hale Holden, regional director of the Central Western region, asking them immediately to investigate the car shortage situation which is causing enormous loss to farmers. The messages stated that 49 per cent of the wheat crop in the northwestern quarter of Kansas still is in the hands of the farmer, some of it on the ground. All elevators are said to be full and no cars available to move the wheat to markets.

According to a report on overseas traffic for the week ended December 10, 1919, made to Walker D. Hines, director general of railroads, 6,749 cars of commercial export freight were received at North Atlantic ports for this period, as compared with 1,041 cars for the same week of 1918. This shows an increase of 5,708 cars or 548 per cent, for December 10, 1919, as against the corresponding period last year. For the same period deliveries to ships increased 6,004 cars or 512 per cent. At South Atlantic and Gulf ports as of December 7, 1919, there were 13,228 cars of export freight on hand, as against 12,498 cars on December 1, an increase of 730 cars. On December 10, 1919, there were 11,978,708 bushels of grain stored in elevators at North Atlantic ports. There were received during the week 3,757,888 bushels, while 4,661,885 bushels were cleared. The total amount of grain in elevators at these ports on the date mentioned represents 60.7 per cent of the total elevator capacity, compared with 65.4 per cent for the week previous. At South Atlantic and Gulf ports there were stored in elevators on December 10, 1919, 8,416,109 bushels of grain, representing 82.6 per cent of the total elevator capacity.

Coal Restrictions Relaxed

Because of the increased production of coal incident to the return of a large proportion of the striking miners to work on December 15, the Railroad Administration has relaxed most of the restrictions on the distribution of coal and has allowed shipments to run practically as billed except as it has been necessary to divert shipments occasionally to meet emergency situations. Some local embargoes were necessary in the middle west for a time.

Seven Hundred Automobile Stock-cars

According to a circular issued by the National Automobile Chamber of Commerce, 700 loaded motor trucks have entered the stock yards at Indianapolis, Ind., in a single day, some of them having come from points 80 miles away. On one day recently the number of hogs delivered at these stock yards by motor trucks was 6,800, valued at $200,000. These animals were brought by about 500 vehicles and the total number of hogs was 2,000 more than the number received on the same day by steam and interurban railroads. It was estimated that the 500 trucks had traveled 2,500 miles and had consumed 300 gallons of gasoline. In the year 1918 the number of hogs received at Indianapolis by motor trucks was 462,313, more than 50 per cent greater than in 1917.

Receipts of hogs by motor truck at Sioux City, Iowa, are reaching enormous proportions. The number received at this point during January, February and March, 1917, totalled 9,655; for a similar period in 1918, this had increased to 13,750, while for a similar period in 1919, the amount had jumped to 26,195. It is expected that the figures for this year will be more than 90,000.

The vice-president of the St. Joseph (Mo.), stockyards reports the following receipts by motor truck:

Year	Cattle	Hogs	Sheep
1918	20,686	121,138	37,137
1917	15,043	56,529	31,094

This livestock is coming in from a radius of 50 miles. It is declared to be in better condition than ever before.

Commission and Court News

Personnel of Commissions

The Senate has confirmed the President's reappointment of Edgar E. Clark as a member of the Interstate Commerce Commission for a term expiring December 31, 1926.

Court News

Condemnation of Land for Connecting Track

The Illinois Supreme Court holds that a contract for joint use by the railroads and the consent and approval of the Public Utilities Commission are not conditions precedent to a railroad's right to condemn property for a connecting track.—Chicago, M. & St. P. v. Frauzen (Ill.), 122 N. E., 492.

Contributory Negligence of Volunteer

In an action by an infant for bodily injuries received on its acceptance of an invitation of an employee of the defendant railroad to couple engines, the Texas Court of Civil Appeals holds that in order to recover it must be shown that the infant was not capable of appreciating the danger.—Trinity Valley & Northern v. Scholz (Tex.), 209 S. W., 224.

Care of Passenger in Aisle of Car

The Texas Court of Civil Appeals holds that the conductor of a passenger train was not negligent in standing in the aisle about the middle of a car, bent over talking to someone as a woman approached, walking to the rear, and became overbalanced while attempting to stop to wait until the conductor would let her pass.—Gulf, Colorado & Santa Fé (Tex.), 209 S. W., 772.

Assisting Alighting Passengers

Whether or not a person comes within the excepted class of passengers who require assistance to alight as being sick or infirm is a question for the jury, the standard of the carriers' duty not being fixed but variable and shifting with circumstances; but the Oklahoma Supreme Court holds that where there is no evidence to bring the plaintiff within the exception, it is reversible error to submit the question to the jury on a purely hypothetical case.—Dickinson v. Tucker (Okla.), 176 Pac., 949.

Stop, Look, Listen Rule—Pennsylvania

The Pennsylvania Supreme Court holds that in an action for injury at a crossing, the railroad's point for a charge that it is a positive duty of an automobile driver approaching a grade crossing where there is restricted vision to stop, look and listen at a place where that will be effective, and that failure to do so is negligence per se, and that, if unable to get a sufficient view from his car, he should get out and go to a place affording a sufficient view, should have been unqualifiedly affirmed.—Knepp v. Baltimore & Ohio (Pa.), 105 Atl., 636.

Indorsement of "Order" Bill of Lading

The Georgia Court of Appeals holds that where an "order notify" bill of lading contains a provision requiring the surrender of the original bill of lading, properly indorsed, the fact that the shipper, by mistake, sends the original bill of lading (instead of the memorandum bill of lading) direct to the party to be modified, but sends it unindorsed, does not relieve the carrier from requiring it to be properly indorsed before delivering the shipment; and where, under such circumstances, the carrier so delivers the property, without requiring such indorsement, and the party to whom delivered obtains the shipment and subsequently becomes insolvent, without having paid the purchase price of the property, the principle of law that, where one of two innocent persons must suffer for the act of a third person, he who puts it in the power of the third person to inflict the injury must bear the loss, does not apply. The antecedent error of the shipper in sending the original bill of lading to the wrong party did not put it in the power of that party to inflict the injury, as its possession of the unindorsed bill of lading did not vest it with any apparent right to the property. The loss resulted from the negligence of the carrier in failing to require the proper indorsement of the bill of lading—Southern R. v. Massee, etc., Lumber Co. (Ga.), 98 S. E., 106.

Sale of Freight to Pay Demurrage

The South Carolina Supreme Court holds that a shipper was not entitled to recover the value of lumber sold by the terminal carrier to pay freight and demurrage charges, where the new consignee to whom the plaintiff shipper directed the initial carrier to divert shipments defaulted in giving instructions, and where the instructions finally received gave notice that no demurrage charges would be paid after a certain day.—Thomas v. Northwestern of South Carolina (S. Car) 98 S. E. 336.

What a Right of Way Condemnation Award Includes

The Virginia Court of Appeals affirms the rule that the conveyance to a railroad of a right of way vests in the company the same rights as though the land had been acquired by condemnation, and the grantor cannot recover for any damages to the remainder of his land resulting from a proper construction, use, and operation of the property conveyed; and where part of a tract of land is taken by condemnation proceedings for a right of way, the award includes damages to the residue of the tract which are due to the construction and operation of the railroad on a grade different from the natural surface of the land.—Pamplin v. Norfolk & Western (Va.), 98 S. E., 51.

Warning Signals on Bridge Under Repair

The Alabama Supreme Court holds that a pedestrian who saw barriers and red lights intended to warn against the use of a bridge maintained by a railroad under authority of a city and which was being repaired, was conclusively charged with knowledge that the barriers and lights were placed to warn him not to attempt to cross. Although they were insufficient, a pedestrian, who saw both, and attempted to cross without looking for holes and defects, could not recover for injuries sustained. The mere fact that he saw others using the bridge did not justify him in disregarding the signals and red lights, and when he did he assumed the risk.—Morgan v. Mobile & Ohio (Ala.) 80 So. 845.

Promise to Pay Claim Not Binding Without Consideration

The Texas Court of Civil Appeals holds that a mere promise by a railroad to pay for goods lost, for which it was not liable, and which was not in the nature of a compromise, is not binding on the railroad, because it was without consideration. This rule was applied where the shipper presented a claim to the receiver of the M., K. & T., which stamped it "vouchered," meaning that the claim had been passed upon, approved, and ordered paid by the receiver, acting through the claim department. It was held that if the M., K. & T. was not liable on the claim, its promise to pay was without consideration and not binding on it.—Mistrort-Calahan Co. v. M., K. & T. (Tex.), 209 S. W., 775.

Interstate Shipment—Innocent Purchaser of Bill of Lading

The Texas Court of Civil Appeals holds that a car of grain carried from St. Joseph, Mo., to Temple, Tex., was an "interstate shipment" as between carrier and shipper, though the bill of lading indicated it was intrastate; but the carrier was held estopped from asserting the interstate character of the shipment as against the purchaser, who paid the draft drawn on him to which the bill of lading was attached, without knowledge that the grain was originally shipped from another state.—Missouri, K. & T. v. Clement Grain Co. (Tex.) 211 S. W. 347.

Railroad's Title to Lands Acquired

Under the Texas statutes, a railroad may condemn property, not only for right of way, but for other necessary uses. But it also has the right to acquire real estate without limitation or restriction in use; and, when so acquired, its title is as absolute as that of a private individual, at least insofar as concerns immunity from attack by anyone but the state. It may, of course, often be a question whether or not the deeds when properly construed convey a fee upon condition or limitation, or merely an easement in the property. The Texas Commission of Appeals holds that deeds by trustees to a railroad on condition that the premises shall be used exclusively for railroad purposes, and that after they shall cease to be used for such purposes they shall revert to the grantors or their "successors," naming a small consideration, the real consideration being expected enhancement in value of the grantors' adjoining property, conveyed a fee upon condition subsequent, and not upon limitation, and the railroad took an indefeasible title after the grantors' sale of the adjoining land.—Stevens v. Galveston H. &. S. A. (Tex.) 212 S. W. 639.

Decisions Under Federal Employers' Liability Act

The New Hampshire Supreme Court holds that a locomotive engineer, acting under two orders, one to help an interstate freight train to a summit and the other to return with his engine, was within the federal act when injured on his return trip.—Callahan v. Boston & Maine (N. H.) 106 Atl. 37.

The New Jersey Court of Errors and Appeals holds that a workman of an independent stevedoring corporation contracting with a railroad at a stipulated charge per ton to load and unload freight at a water front terminal and which selects, pays and directs its men, is not an employee of the railroad while engaged in such work, within the meaning of the act, and is not entitled to the benefits of the act in an action against the railroad.—Drago v. Central of New Jersey (N. J.) 106 Atl. 803.

The Pennsylvania Supreme Court holds that where a local train operating entirely within the state, while switching an empty freight car from one track to another in a private yard, attached it to the rear end of a train, the mere fact that several cars in the train were consigned from points without the state to the owner of the yard was not sufficient to sustain a finding that a brakeman injured by an alleged defective brake, while riding on the empty car, was engaged in interstate commerce as distinguished from a mere local switching operation.—Murray v. Pittsburgh C. C. & St. L. (Pa.) 107 Atl. 21.

The Illinois Supreme Court holds that a locomotive boiler washer shot and killed by another employee of the railroad while engaged in washing a boiler on a locomotive, not assigned to any particular train or work, but standing in the yard ready to be assigned to either intrastate or interstate commerce, is not engaged in interstate commerce.—Rock Island v. Industrial Commission (Ill.) 123 N. E. 278.

The North Dakota Supreme Court holds that an employee of an interstate railroad who is injured while removing snow from a track over which interstate trains are being run regularly, is engaged in interstate commerce within the act.—Koofors v. Great Northern (N. Dak.) 170 N. W. 859.

The Iowa Supreme Court holds that a freight conductor employed on a line entirely within the state, who fell from the platform of the caboose and was killed while taking the caboose and motor to the barn, subsequent to reporting at the yard office after having uncoupled from a train containing one car consigned to a point in another state, was not engaged in interstate commerce.—Smith v. Interurban (Iowa) 171 N. W. 134.

The New York Appellate Division holds that the watchman of a lot of freight placed upon a pier after its interstate shipment, who was killed while so employed before the consignee had taken possession or paid freight charges and before the expiration of the 48-hour period allowed in which to remove the goods, is not entitled to an award under the state Workmen's Compensation Act, having been killed while guarding an interstate shipment.—O'Brien v. Pennsylvania, 176 N. Y. Supp. 390.

Foreign Railway News

The railway delegates of all the states of the Australian Commonwealth have passed, says *Modern Transport*, a resolution demanding a share in the management of the railways.

South African Railway Rates Increased

Increases in railway rates have recently been made effective in South Africa as follows: Passenger fares, 10 per cent.; luggage, parcels and live stock 25 per cent., goods 25 per cent., except coal for export and coal for local consumption conveyed less than 500 miles.

Road Transport Cheaper Than Rail Transport?

Francis White, borough engineer and surveyor of Blackpool, stated in a paper before the Road Transport Congress recently that motor car-a-bancs could be run at a substantial profit at a two cents per mile per passenger as compared with three cents per mile on railways.

Råilway Station Roof Air Signs

Airplane travel in England has now reached such an importance as to bring out the recent notice to airmen by the Air Ministry: "The roofs of the following railway stations are now marked with the name of the place in large white letters: Redhill, Tonbridge and Ashford (South Eastern and Chatham Railway), and Hitchin (Great Northern Railway).

22,600 New Wagons for English Railways

In reply to a question asked in the House of Parliament, Sir Rhys Williams, Parliamentary Secretary to the Ministry of Transport, stated that from the beginning of the year to the end of September 8,480 railway wagons had been constructed in the United Kingdom. Orders for the construction of 22,600 wagons had been placed with the railway companies, including contracts with outside firms for 5,400. No wagons have been ordered by the Ministry of Transport.

Cost of Government Locomotives

Three hundred and five Great Central railway type, ten New South Wales Government type and fourteen tank engine Dutch railway type superheated locomotives were built in Great Britain and sent to France. The average cost of these locomotives varied between £5,500 and £8,300. The tank engine Dutch railway type locomotives were sold for 200,000 francs each (approximately £8,000). The others are being allocated to the British railway companies under a pooling arrangement under the direction of the Ministry of Transport; 154 having already been allocated. About one hundred of the locomotives built for government use have been sold. The bulk of these engines have been sold to the Great Western and Great Eastern railways, while a few have been disposed of to the South Eastern & Chatham.

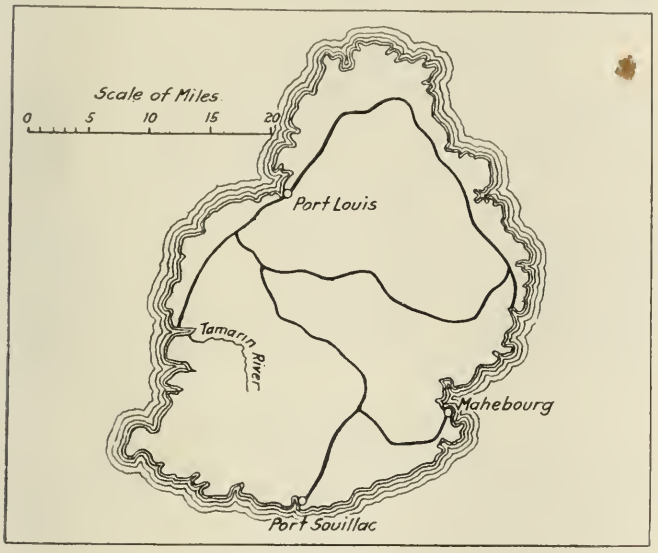
A Bill to Prevent "Lightning Strikes"

The Liberty and Property Defence League of England has prepared for immediate presentation to Parliament a bill under the title of the Trade Disputes Bill, with the double object of securing an interval for reflection before a trade dispute is allowed to develop into a strike or lockout, and of vesting in the members of a union (as distinct from the executive) the right to say whether the authority and funds of the union shall be employed for the purpose of a strike or lockout. It is proposed to provide that a strike or lockout, whether or not a union is concerned, shall not take place until 14 days after a statement relative to the dispute has been published by the Minister of Labor, and that a union shall not be concerned in a strike or lockout until it has obtained the approval of the members. It is not intended to interfere with the right of members of the union

to strike or not to strike, whatever the result of the ballot, but if the ballot went against the strike they could not receive strike pay from the union.

Electrification of Mauritius Railways

Major G. McAlpine, who was electrical adviser to the Government of Mauritius, drafted a report in 1904 recommending the electrification of all the Mauritius railways. This island in the Indian Ocean has about 120 miles of standard gauge railway. Major McAlpine showed in his report that power could be obtained by utilizing the waterfalls, which are numerous on the island. The plan met with favor in the legislative council, and now that the island's finances are in a prosperous condition, the matter has been brought forward for re-examination. A committee has been appointed to go into the whole question over again, but owing to the popular feeling in favor of the change



The Railways of Mauritius

its recommendation is a foregone conclusion. It has been computed that one of the waterfalls—that of Tamarin—will alone suffice to provide the power required to supply the whole of the island with electricity as well as to work the railways electrically. Eleven of the 132 villages and towns of the colony are already lighted by electricity, and authority has just been given by the legislative council to extend the services to seven other towns. Difficulty is, however, being experienced by the two local electric undertakings as well as by the municipality of Port Louis, in getting supplies of wire lamps and meters from England. Inquiries have been made in the United States by one newly-established firm in Port Louis to meet the demand, but the response so far, it is reported, has not been favorable.

New Fuel for French Locomotives

The Paris, Lyons & Mediterranean has decided to adapt 200 of its locomotives to crude oil or Mazout. The modification is expected to be effected at the rate of two engines a day. Reserve tanks will be set up at suitable points on the system to hold between 40 and 100 tons of fuel.

The plant modifications are neither difficult nor costly, being simply a reservoir in place of the coal bunkers, conducting tubes to the burners and refractory bricks in the firebox.

At an official test held at Bercy on November 25, the locomotive drew a heavy goods train upon approximately half the weight of fuel which would have been necessary for the work if coal had been used. There is practically no smoke and it is expected that this fuel will save much labor in the engine houses.

The International Commission of the Rhine

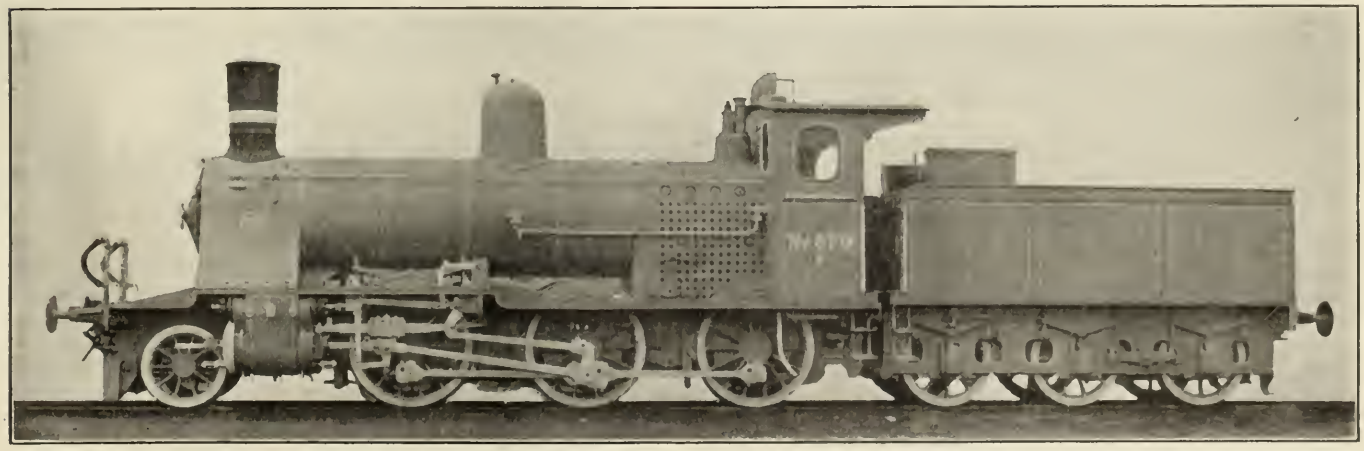
It appears, said La Presse de Paris, in its issue of November 21, that when the Treaty of Versailles goes into effect, M. Claveille, Minister of Public Works, will be appointed president of the International Commission of the Rhine. M. Cels, deputy from the Department of Lot and Geronne, at present assistant secretary of state at the Ministry of Public Works, will probably succeed M. Claveille at the head of this Ministry.

It is known that the Treaty of Peace stipulates that the Mannheim Agreement of October 17, 1868, will continue to regulate the navigation on the Rhine. Within six months of the date upon which the treaty goes into effect, a central commission will convene for the revision of this Mannheim Agreement. Germany has already agreed to abide by the decisions of this commission which will be composed of 19 members—two representatives of each of the following countries: Holland, Switzerland, Great Britain, Italy and Belgium; four for the German States on the river and four for France which will, moreover, name the president of the Commission.

The duty of this Commission will be to assure the freedom of navigation on the Rhine which will become an international river. It will also control the execution by Germany of the handing over of the tugs and boats, as well as its installations, in the Port of Rotterdam.

France alone, may take from the Rhine the water required for the operation of its lateral canals. That country will have an exclusive right to the power produced by the river.

M. Claveille has prepared a vast project to make the most of these advantages granted France by the Treaty, either by the use of the navigable waters of the Rhine for importing



Mogul Locomotive Built for the Danish State Railways by the Baldwin Locomotive Works.

This is one of an order for 16. The locomotive is built for standard gage, has 460 mm. by 610 mm. cylinders, a total weight in working order, engine only, of 44,630 kgs.; a weight on drivers of 36,470 kgs., and is superheated. It burns coal and is intended for freight service.

and exporting between Basle and Rotterdam, or by the creation, along the river, of large hydro-electric plants to furnish electric power for the whole Parisian Region, thus doubling the producing capacity almost without expense

Woolwich Arsenal to Manufacture Railway Rolling Stock

Lloyd George, Prime Minister of Great Britain, recently visited the Woolwich Arsenal in order to make himself acquainted with the view of the men on the question of discharges and to inspect certain parts of the works which are now being used for civil work. During the war about 110,000 men were employed and the number has now been reduced to 30,000. One of the main points of the men's case is that there are thousands of men who are skilled at their own particular work in the Arsenal but who, if they were discharged, would have to face the labor market as practically unskilled men. By utilizing their labor in the Arsenal in other directions, such as in the work of repairing railway wagons, locomotives, etc., these men would be doing useful work and at the same time their presence in the Arsenal would be a kind of war insurance. In the event of emergency they could be readily turned on to the special munition work in which they are skilled.

This plant has, since the armistice, turned out 10,000 milk churns, freight car repair work is in progress, orders have been received for 2,500 new railway freight cars and one hundred 100-ton standard gage locomotives. The Prime Minister informed the committee that Woolwich is to be developed for the manufacture of locomotives and cars.

Sale of Railway Material by British Government

Among war material offered for sale by the British Government were the following:

Locomotives.
Six 0-6-0 type, 4-ft. 8½-in. gage, by Kerr, Stuart & Co. Cylinders 17-in. by 24-in. stroke.
A number 0-4-0 type, 4-ft. 8½-in. gage, by Baldwin Locomotive Co. Cylinders 16-in. by 24-in. stroke.
A number 0-6-0 type, 4-ft. 8½-in. gage, by Baldwin Locomotive Co. Cylinders 16-in. by 24-in stroke.
A number 0-6-0 type, 4-ft. 8½-in. gage, by Manning, Wardle & Co. Cylinders 12-in. by 18-in. stroke.
A number 0-4-0 type, 4-ft. 8½-in. gage. Cylinders from 8-in. diameter to 12-in. diameter with stroke from 8-in. to 24-in.
Two 1 side tank and one saddle tank, rebuilt by J. Wake, of Darlington. 3-ft. 6-in. gage.
18 side tank engines, 2-ft. 6-in. gage, built by Hunslet Engine Co., Leeds. Cylinders 9½-in. by 12-in. stroke.
One 2-6-2 type, 2-ft. 6-in. gage, by the Yorkshire Engineering Co. Cylinders 6-in. diameter by 14-in. stroke.
Three 0-4-2 type, 2-ft. gage, by Kerr, Stuart & Co. Cylinders 8-in. by 12-in. stroke.
Two 0-4-0 type, 2-ft. gage, by Kerr, Stuart & Co. Cylinders 5-in. by 9-in. stroke.
Three 0-4-0 type, 2-ft. gage, by R. Hudson & Co. Cylinders 6-in. by 9-in. stroke.
One 0-4-0 type, 2-ft. gage, by Avonside Engineering Co. Cylinders 8-in. by 12-in. stroke.
A number of 0-4-0 type, 60 c/m gage, by W. G. Bagnall. Cylinders 6-in. by 9-in. stroke.
A number of 4-6-0 type, 60 c/m gage, by Hunslet Engineering Co. Cylinders 9½-in. by 12-in. stroke.
A number of 4-6-0 type, 60 c/m gage, by Baldwin Locomotive Co. Cylinders 9-in. by 12-in. stroke.
Two 2-6-2 type, 60 c/m gage, by American Locomotive Co. Cylinders 9-in. by 14-in. stroke.
One 0-4-0 type, 1 ft. 8-in. gage, by W. G. Bagnall. Cylinders 5-in. by 7½-in. stroke.
Wagons.
Four-wheeled open wagons, 60 c/m gage. Weight 1,868 lbs. Loose sides and ends.
Four-wheeled open wagons, 60 c/m gage. Weight 2,016 lb. Folding sides and ends.
Bogie low-sided wagons with falling doors, 60 c/m gage. Weight 5,040 lbs.
Bogie tank wagons without tanks, 60 c/m gage. Capacity 1,500 gal.
Four-wheeled light ration wagons with falling sides, 6 ft. 8 in. long by 4 ft. 10 in. wide.
Spare wheels and axles with roller bearings for tip wagons.
Spare parts for all above mentioned rolling stock.
40 4-ft. 8½-in. gage covered vans.
80 3-ft. gage timber frames and sheet-iron lined side tip wagons, 1½ cubic yards capacity.
16 flat-topped 3-ft. gage timber framed bogies.
Track.
10,025 tons of rails, 75-lb., F/B., B.S.S.
650 tons Fishplates, 75-lb., F/B., B.S.S.
202 tons Fishbolts, 75-lb., F/B., B.S.S.

Equipment and Supplies

Locomotive Deliveries

The following locomotives were shipped during the week ended December 6:

Works	Road	No.	Type	Individual engine No.
American	T. & P.	2	Pacific	709-10
		2		
Baldwin	B. & O.	7	U. S. R. A Mall.	7153-59
	P. & R.	6	U. S. R. A. Consol.	1689-94
	L. V.	1	Santa Fe	4066
		14		
	Total	16		

Locomotive Shipments in November

The Railroad Administration has issued the following statement of locomotives shipped in November:

Road	On order prior to Federal control		U.S.R.A. Orders		Constructed in Railroad shops		Total Builders
	Type	No.	Type	No.	Type	No.	
B. & O.	.....		U.S.R.A Mallet	88	.....	8	Baldwin
C. C. & O.	.....		U.S.R.A Mallet	1	.....	1	Baldwin
L. V.	Santa Fe	3	.....		.....	3	Baldwin
Mo. Pac.	.....		U.S.R.A. Mount.	2	.....	2	American
N. & W.	Mallet	1	.....		.....	1	Baldwin
P. R. R.	.....		.....		Pacific	8	8 Penn. R.R.
P. L. W.	Santa Fe	2	.....		.....	2	Baldwin
P. & R.	.....		U.S.R.A. Consol.	13	.....	13	Baldwin
Sou. Pac.	.....		.....		Switch	1	1 So. Pac.
Sou. Pac.	.....		.....		Switch	1	1 So. Pac.
Total		6	.....	24	.....	10	40

Freight Cars

The Sinclair Refining Company, Chicago, is inquiring for three dump cars.

Frederick W. Glardon, 165 Broadway, New York, is inquiring for one 30,000-gal. tank car for export.

The Sterling Coal Company, Philadelphia, Pa., has ordered 100 mine cars from the Pressed Steel Car Company.

The Bagdad Lumber Company, Bagdad, Fla., has ordered 40 steel logging cars from the American Car & Foundry Company.

The Jamison Coal & Coke Company, Greensburg, Pa., has ordered 180 mine cars from the American Car & Foundry Company.

The Greenleaf-Johnson Lumber Company, Norfolk, Va., has ordered 15 15-ton logging cars from the American Car & Foundry Company.

The Eastern Steel Company, Pottsville, Pa., has ordered five 50-ton steel gondolas and 17 50-ton steel hopper cars from the American Car & Foundry Company.

Machinery and Tools

The Greenville Steel Car Company, Greenville, Pa., is inquiring for tool equipment for an additional machine shop which it contemplates building at Greenville.

Comity Between Competitors.—Erie Railroad commuters yesterday told a story of an obliging engineer who stopped their train to give away hot water. At Heller Field, the eastern landing field of the aerial mail service on the West Orange (New Jersey) branch, Pilot P. W. Smith was ready to start with the Chicago mail when it was discovered that the water pipes at the field were frozen and there was not enough hot water on hand to start his motor. As the train came in sight, someone flagged the train, and told the engineer of the pilot's trouble. "Glad to help you out," said the engineer. Two fifty-gallon tanks were rolled up the railroad embankment and the obliging engineer filled both with hot water.—*New York Times.*

Supply Trade News

The Van Dorn Girder Plate Company, manufacturer of railway car appliances, has removed its general offices from 2325 South Paulina street, Chicago, to 608 South Dearborn street.

The United States Railway Supply Company has been incorporated at Mobile, Ala., with a capital of $100,000, by **J. M. Walsh** and **George L. Kilmer,** of Mobile, and **George L. Morton,** of Atlanta, Ga.

The Mid-Continent Equipment & Machinery Company has been organized at St. Louis, Mo., to deal in railway supplies. **F. W. Glauser** is president, **R. H. Wilson,** vice-president, and **J. B. Fidler** is secretary-treasurer. The offices of the new company will be in the Security building.

J. M. Fitzgerald has disposed of his interests in the **Alger Supply Company,** Chicago, dealers in railway supplies and concrete products, to his former partner, **O. S. Flath,** and the latter has incorporated the **O. S. Flath Company, Inc.,** retaining the same offices in the Peoples' Gas building.

Herbert S. Crocker and **Francis S. Crowell,** civil engineers, have associated under the firm name of Crocker & Crowell with offices at 101 Park avenue, New York City, to engage in the design and supervision of industrial and engineering projects and the investigation of engineering features of proposed investments. They will also act as owners' representatives in the administration of contract work let on a percentage basis.

D. L. Eubank has been appointed district manager in charge of the Cincinnati office of the Galena-Signal Oil Company. Mr. Eubank was born November 24, 1869, and was in the employ of the Chesapeake & Ohio from September, 1889, to February 1911, as locomotive fireman, locomotive engineer and road foreman of engines. In February, 1911, Mr. Eubank accepted a position as mechanical expert with the **Galena-Signal Oil Company.**

Lester W. Collins, recently refrigeration technologist for the United States Department of Agriculture in charge of the development of a standard heater car for the Refrigerator Car Committee appointed by the United States Railroad Administration, has been appointed chief engineer of the **Refrigerator Heater & Ventilator Car Company,** St. Paul, Minn., with office in that city. For seven years prior to his government service Mr. Collins was assistant to the engineer of tests on the Atchison, Topeka & Santa Fe.

The Chicago Pneumatic Tool Company reports, for October, an influx of orders in excess of the record of any previous month since the armistice. The same is true of the company's English and German subsidiaries. Following this country's entrance into the war the German subsidiary was seized by the German government and has been run under "compulsory administration," but that administration has now been abolished and the management is being transferred back to the company through the courts of commerce.

The Sinclair Refining Company, Chicago, has organized an asphalt sales department at its Chicago office to handle the output of the Meraux (La.) refinery, formerly owned and operated by the Freeport & Michigan Fuel Oil Corporation. **E. F. Fitzpatrick,** assistant sales manager of the general oil section of the **Sinclair Refining Company,** has been appointed manager of the new department. **J. M. Woodruff,** general manager of the Southern Asphalt Association, Atlanta, Ga., and formerly manager of the paving and publicity departments of the Standard Asphalt & Refining Company, has been appointed assistant manager. The headquarters of the department will be in the Conway building.

Railway Financial News

Augusta Southern.—See Georgia & Florida.

Baltimore & Ohio.—The directors have declared the usual semi-annual dividend of 2 per cent on the preferred stock.

Boston & Maine.—A special meeting of the stockholders has been called for December 23 to authorize the issuance of bonds to the amount of $2,273,000, to be secured by the company's present mortgage with the Old Colony Trust Company and another as trustees, dated December 1, 1919.

The proceeds of the issue will be used solely in taking up the 6 per cent bonds issued to the director general of railroads. Stockholders will also be called upon to authorize an issue of $10,000,000 bonds, the proceeds to be used in paying the government money expended for improvements and additions, and an issue of $620,000 bonds, the proceeds to be used for the purpose of paying notes of the Boston & Lowell Railroad.

Stockholders will be asked to amend the by-laws of the company to the effect that the directors may provide for the election by their board or appointment by the president of five or more of their members to constitute an executive committee which may exercise all powers of the board of directors in the management of the business, and that the president of the railroad shall act as chairman of this executive committee.

Chesapeake & Ohio.—H. E. Huntington has been elected chairman of the board of driectors to succeed Frank Trumbull, resigned. Mr. Trumbull will continue as a director and a member of the executive committee of both the Chesapeake & Ohio and the Hocking Valley companies.

Georgia & Florida.—Judge Hammond of the Richmond County Superior Court of Georgia has ordered the sale of this road on Tuesday, February 3, 1920. The sale will include the Augusta Southern Railway, which is owned by the Georgia & Florida.

London Motor Bus Stops.—In spite of the arduous nature of their work, the number of involuntary stops made by motor buses on the London streets during the last twelve months works out at the extremely low figure of one stop for every 10,000 miles run.

The Switchman as "Salesman."—How can a switchman become a good salesman? . . . When the yardmaster gives you work to do get it done and when you have completed the job report to him for another one. If you happen to be working on a lead keep the engine moving. Don't think that you can stay down in the track thirty minutes each time you go after a "cut" and be a good salesman. You are "skinning" the buyer. Better be honest and have the good will of the yardmaster, because you cannot tell when you will need his help. One night I was the direct cause of a passenger train "side swiping" some cars. Fortunately the accident caused but little damage and delay. The damage amounted to about $500. I fully realize what $500 means to the average man and that a few $500 credit on his bank book would put him on "Easy Street," yet it doesn't take much of a wreck to cost your employer $500. I fully realized the seriousness of my position and I fully expected to be discharged. I knew that the accident was caused by misjudgment and not by gross carelessness, but how was I to convince my employer? I wasn't discharged. I had always sold my yardmaster the best I had and he showed his appreciation by fighting for me. He was so successful in his fight for me that I did not lose a minute's time. It was some time before I found out why I wasn't discharged and I can assure you that I resolved more than ever to be a better switchman. You often hear of cases like this and you wonder, "How he got by with it." Put in a good line in place of the stuff you are selling the yardmaster and he will help you as he did me.—*Duit Wright.*

Railway Officers

Railroad Administration

Operating

C. A. Turney has been appointed trainmaster of the Northern division of the Chicago, Milwaukee & St. Paul at Milwaukee, Wis., succeeding A. Mallum, assigned to other duties.

C. L. Wilson, trainmaster of the Western division of the Toledo & Ohio Central at Columbus, Ohio, has been appointed to the newly created position of superintendent of terminals at Toledo, Ohio; Harry M. Rittenhouse, trainmaster of the Kanawha & Michigan at Charleston, W. Va., has been appointed Mr. Wilson's successor. Ira B. Chadwick, assistant superintendent at Bucyrus, Ohio, has been transferred to Columbus.

Traffic

James Cameron has been appointed chief of the tariff bureau of the Grand Trunk, Western Lines, with headquarters at Chicago, Ill., succeeding S. L. Strauss, notice of whose death appears in this issue.

J. M. Wooddall has been appointed assistant general passenger agent of the Georgia at Atlanta, Ga.; F. L. Nelson has been appointed passenger service agent and E. O. Pritchard freight service agent, also at Atlanta.

Engineering and Rolling Stock

P. G. Winter has been appointed mechanical valuation engineer of the Chicago, Milwaukee & St. Paul at Chicago, succeeding W. F. Lynaugh, assigned to other duties.

S. E. Mueller, general foreman in the locomotive department of the Chicago, Rock Island & Pacific, at Cedar Rapids, Iowa, has been promoted to master mechanic of the Dakota division, at Estherville, Iowa, succeeding R. J. McQuade, who has resigned.

R. C. Bennett, master mechanic of the Pennsylvania at Pittsburgh, has been appointed superintendent of motive power, Eastern Pennsylvania division, succeeding E. W. Smith, notice of whose transfer appeared in the *Railway Age* of October 10 (page 764). F. S. Robbins has been appointed Mr. Bennett's successor.

Corporate

Executive, Financial, Legal and Accounting

J. H. Hustis, receiver for the Boston & Maine, has been elected president of the newly organized company. Woodward Hudson, president during the period of Railroad Administration, has been elected vice-president and general counsel. Both will have their headquarters in Boston.

John Leistad, of Atlantic, Iowa, has been elected vice-president of the Atlantic Northern, with headquarters at Atlantic, and Bertel Christensen, of the same city, has been elected treasurer. The elections were to positions which have been vacant since the government took control of the roads. A refinancing fund of $110,000 has been raised, saving the road from receivership. S. C. Pederson, Kimballton (Iowa) banker, has again been chosen president of the road, and C. E. Spar been re-elected secretary, general manager, auditor and general freight agent.

Operating

G. G. Dodge, freight claim agent of the United Railways of Havana, has been appointed assistant to E. M. Wise, general manager of the Guantanamo & Western, at Guantanamo, Cuba.

Traffic

J. A. Simmons, general freight agent of the Cincinnati, Indianapolis & Western, with headquarters at Indianapolis, Ind., has been appointed general traffic manager of the Cincinnati, Indianapolis & Western Railroad Company, with the same headquarters, the position he held prior to government control.

Obituary

Sidney L. Strauss, chief of the tariff Bureau of the Grand Trunk, Western Lines, with headquarters at Chicago, died on December 8, in that city.

Joseph M. Denyven, general freight agent of the Mobile & Ohio, died suddenly of apoplexy, December 18, at his office in the Fullerton building, St. Louis, Mo.

John H. McEwen, auditor of disbursements of the Nashville, Chattanooga & St. Louis, died at his home in Nashville Aug. 27. Mr. McEwen was born in Nashville in 1862 and educated in the public schools of that city. He began railroad work in 1895 as clerk in the car accountant's office of the Nashville, Chattanooga & St. Louis, where he remained until 1897 when he became clerk in the disbursement office of the same road. In September, 1900, he was appointed auditor of disbursements, the position he held at the time of his death.

John H. McEwen

Garret Iseman is reported dead at Sparkhill, N. Y., at the age of 95. Mr. Iseman was a locomotive engineman on the Erie Railroad as far back as 1847, and continued in that service for about 40 years. As a boy he was engaged with the workmen who laid the track of the Erie Railroad in the region of Piermont, about 1836.

Col. Henry W. Hodge, consulting bridge engineer, died at his home in New York, on December 21. Col. Hodge was born in Washington, D. C., on April 14, 1865, and was graduated from the Rensselaer Polytechnic Institute in 1885. He began his engineering work in the engineering department of the Chesapeake & Ohio and entered the employ of the Phoenix Bridge Company as assistant engineer. In 1893 he began practice as an independent engineer. In 1895 he entered the employ of Alfred P. Boller, becoming a partner to Mr. Boller in 1899, under the firm name of Boller & Hodge, which lately became the firm of Boller, Hodge & Baird. Among some of the railroad bridges which he designed and built were the Great Northern bridge at St. Louis, Mo., the Chicago, Rock Island & Pacific bridge at Duluth, Minn., the bridge of the Choctaw, Oklahoma & Gulf, now part of the Chicago, Rock Island & Pacific, the cantilever bridges of the Wabash-Pittsburgh Terminal Company at Pittsburgh, Pa., and Steubenville, the Pecos Valley viaduct of the Southern Pacific, the Harlem river 4-track drawbridge of the New York Central and all the structures on the National Railroads of Mexico. Col. Hodge also was retained by the Canadian Government as a consulting engineer on the Quebec bridge. In 1916 he was appointed Public Service Commissioner of the first district of New York, from which position he resigned in July, 1917, to go to France on the request of General Pershing, being commissioned Major in the Engineering Corps; later Lieutenant-Colonel and then Colonel. Col. Hodge was attached to General Pershing's staff in France as Director of Military Railroads and Bridges.