

Electric Railway Journal

Published by the McGraw-Hill Publishing Company, Inc.
Consolidation of STREET RAILWAY JOURNAL and ELECTRIC RAILWAY REVIEW

Volume 50

NEW YORK, SATURDAY, DECEMBER 29, 1917

Number 26

The "Journal" Favors Steam Road Interchange

A HURRIED reading of the second paragraph of our editorial "The Industry Assumes a New Outlook and Responsibility," in the Dec. 15 issue, might cause a misinterpretation of the position the JOURNAL takes and always has taken in regard to the interchange of freight between the electric and steam railways. The editorial is correct as it stands, but it has been called to our attention in the above light, and we desire to make it clear that the JOURNAL very strongly advocates practical interchange with the steam roads. What it was intended to point out as undesirable was the apparent assumption of some electric railway men that they could expect the steam roads to haul a shipment a short distance to interconnect two electric lines not themselves connected, thus making an interchange necessary from electric to steam and another from steam to electric lines, when the steam road involved also reached direct the destination of the shipment and could therefore avoid one transfer. If the steam road did not serve the destination town direct, then the second transfer could as logically be made to an electric as to another steam line. It was also intended to point out that any co-operation with the steam lines which involved the use of their terminal facilities was not good, to speak generally, because terminals are the most congested points, and the electric railways are to find their real place in the nation's transportation system by the measure of their ability to relieve the steam road congestion. This means that terminals and other particularly congested points of the steam roads must be avoided to make interchange with the electric lines effective.

Intelligent Optimism Is a Vital Need of the Hour

DURING the period covered by the fifty volumes of this paper, completed with the present issue, horse, cable and electric railway managers have been called upon to solve many technical and operating problems. Those which confront them to-day are, however, more difficult than the problems of the past because more elements are involved. Automobile competition, increasing street traffic congestion, high costs and scarcity of labor and materials, increasing tax burdens and impaired credit are some of the things which have become more and more important in recent years. In spite of all these service must be maintained and improved. One might well be discouraged by taking too

close a view of the situation; it is necessary to study it in perspective to see the true proportions of the picture. The opening of a new year is an appropriate time for such a study. In making it there are three facts which may be considered vital. In the first place urban and interurban transportation on rails is a fundamental and continuing necessity of the country. Second, rapid strides will continue to be made in the improvement of equipment and operating methods. Third, the most economical service can, in general, be furnished under private rather than under public ownership and management, and in due course the public will permit earnings to be made that are commensurate with the service given. But the industry will need men of wide vision, rich experience, sound principle and indomitable courage. Moreover, the railways must pull together as they have only just begun to show signs of doing, and they must, while admitting their limitations and shortcomings, demand justice at the hands of the commissions on behalf of those who, in good faith, have invested their savings in this business.

Should the Government Take Over the Electric Roads?

UNDER the urgency of a great national necessity, President Wilson has taken over the steam railroads of this country. In this critical period what pleases him pleases us. The new plan, as far as it has been developed, seems fair, reasonable and workable, and if wisely administered by the government and enthusiastically supported by all parties concerned it should prove helpful in meeting the nation's needs.

But what of electric railways? They are specifically excluded from the proclamation of Dec. 26, but just as specifically they are declared to be subject to a subsequent proclamation "if and when it shall be found necessary or desirable" to take over possession, control or operation. If the government should so act its move could hardly be for the same immediate purpose as in the case of the steam railroads. In the latter case the government is primarily interested in gaining an immense increase of efficiency in the conduct of the war and the innumerable activities upon which its successful conduct depends. The maximum of unified efficient operation is the goal of steam-railroad control.

The operation of electric railways is to a much more limited extent concerned in the direct prosecution of the war, but such transportation agencies are important in connection with general low-cost production and are essential to community and general domestic vigor.

JAN 3 1918
RECEIVED
LIBRARY OFFICE

Were such carriers to be taken over by the government, the end in view would undoubtedly be the preservation of property and service. Is this likely to be necessary? Not if liberal fare increases are secured and all possible economies effected when needed. That is the crux of the question—will sufficient relief be obtained in time?

There are some who say, "No." In their opinion it would be better to have the electric railways operated on government account during the war, a fair return being guaranteed. Under such a system operating economies would be initiated under government orders, possibly through the commissions, in a nationwide manner. New construction and refinancing needs would be certified by such bodies up to the Treasury Department. Thus competition with government financial needs would be avoided and great savings made. The present financing problem is certainly serious, and some way of solving it must be developed. The whole plan of government operation, however, hardly seems necessary, provided commissions and railways alike act with broadmindedness and a spirit of unflinching co-operation.

But the preservation of the electric railway industry is imperative for the nation's welfare. If the various measures under way fail to secure the proper results, the government will not be able, nor should it try, to abstain from taking the necessary action.

How Much Should Fares

Vary with Cost of Service?

SHOULD an electric railway always be considered as a unit in a rate-making case? This question is of current importance, but it should not be answered with a hasty generalization which might embody a retrogressive step in rate-making or a dangerous attack upon the integrity of existing systems. Nor should the subject be dismissed after one cursory glance; there are many angles from which it needs to be viewed.

There is, of course, not an atom of sense in the frequent contention of city representatives that every part of an electric railway system—even portions of each line—must be considered as an independent unit when the return on operation is considered. Existing systems have not been built up under such a rule. Even the later franchises, requiring certain revenue assurances for new lines, do not go so far, for they recognize the equity of general aid for extensions under development. But is it wise to go to the other extreme, and say that every company should consider all its lines as a whole?

Manifestly such a statement has its exceptions. For example, it is not at all certain that varying flat rates of fare, based on different costs of service, could not justly be fixed for some lines operating in separate cities but under one management. If the railways were separately owned, their managements would expect each fare case to be decided upon its merits. The Public Service Commission for the Second District of New York, in granting some 6-cent and some 7-cent fares,

is so acting at the moment. Is it to be seriously asserted that the mere union of financial control of two lines, or their existence within a certain distance of each other, should always necessitate a disregard of local costs?

Furthermore, there is the case of unprofitable lines in urban service. If the generalization were accepted that an electric railway must without restriction be considered as a unit in rate-making, a company would have no ground upon which to ask to abandon a losing line. This is not a theoretical matter; we have in the last few months published report after report of lines being given up. Had the companies concerned considered themselves entirely as units, they would have been estopped from asking for the relief granted. But it may be argued the concept of unity applies to only the integral parts of a system, and undesirable tag ends here and there may therefore be eliminated. This is probably true, but the generalization thus proves defective in universality of application.

Similarly the generalization can hardly apply to a company doing a strictly urban and also a strictly interurban business. Between urban and suburban traffic the varying cost elements are not so readily distinguishable, but even these sorts of services should not be simply combined in one's thoughts and thereupon dismissed. Regulatory bodies, it is true, have held that few suburban extensions are paying at the start and the reasonableness of making additions must be determined largely by the profitableness of urban traffic; and also that suburban revenues and expenses, when closely connected with city operation, can seldom be considered as absolute criteria for the adjustment of fares. On the other hand, the United States Supreme Court, in the North Dakota lignite coal case of 1915, ruled that each class of traffic must pay its own costs and a reasonable return to the carrier. This doctrine might have a distinct bearing upon the establishment of electric railway fares to suburban points.

But to what extent could suburban operation meet its share of the cost of transportation? In the present state of development, this would seem to depend upon the fare system in use. A flat fare for urban and suburban operation does not permit adjustment to cover the cost of increasing long-haul traffic. As long as a company and the communities desire to use such a fare system, the demand is justified that urban and suburban territory be considered as a unit in establishing rates. If individual lines were operated on a flat-fare basis, the result would be discriminatory distortions of service and the destruction of various outlying unprofitable lines, integral parts of the system though they might be. In this general connection it is worth while to note that the Massachusetts Supreme Court has just denied a preferential fare to the city of Fall River below the general 6-cent fare authorized for urban and suburban territories of the Bay State Street Railway.

If a company and its public desire to introduce the distance factor—by means of central and outlying zones—each zone should be required to make its unit

contribution toward the total of terminal and movement charges. The respective contributions for urban and suburban traffic might not be absolutely proportionate to the cost of service, for even if these were accurately determinable expediency might require only a partial covering of the costs in the outermost zones, the inner area making up the deficits. To the extent that the suburban traffic did bring in additional revenue, however, there would be a recognition, as far as local electric railway operation might permit, of the principle of self-supporting classes of service enunciated by the highest court in the land.

What fare system a company should use is not the question here. As we have before stated, this is a matter which demands a more scientific investigation and a greater experimentation than heretofore. But note this: Whether or not an electric railway should be considered as a unit in rate-making depends on the fare system used, the classes of service offered, the location of the properties, the existence of unbearably costly sections of line, and other similarly relevant matters. Use sound judgment in interpreting local needs on this point, and don't rush into some uncalled-for generalization.

Just a Hint About What Bankers Are Beginning to Think

THE other day we were talking with the representative of a banking house which has a reputation for handling only the most conservative issues. We had been surprised to see among the issues offered by it the securities of an electric railway system about which there had been more or less concern. "Why are *you* selling such securities?" we asked. The answer was frank. "Well, we made the usual investigation, but there were certain features in the management which the engineering, banking and accounting examinations failed to disclose. One of them was the matter of public relations. They were not good, and the security sales suffered." And then the whole story came out. The bankers ceased to play-up the securities of this company, but they did not give up the case as hopeless. A member of the firm was elected to the railway directorate, and this man did all that he could to correct previous sins of omission and commission. In one instance, at considerable personal sacrifice, he helped to clear up a strike situation and otherwise assisted in bettering the condition of the company. Now things are much better than they were, but the bankers have learned a lesson. Never again will this house have anything to do with a financing proposition where the public relations are not of the best. Let us hope that the time is not far distant when the circulars of all banking houses will cover the point of public relations. What does it profit a man to purchase securities apparently satisfactory from the standpoint of the present earning power of a company, if he is not reasonably sure that the management has laid a good foundation for future harmonious relations with the public served? A dissatisfied public is no friend of the investor.

Ante-Rush-Hour Homeward Trips a Patriotic Service

ELECTRIC railway patrons who can be induced during the next few months to return homeward before the afternoon rush hour gets well under way will perform a real patriotic service in so doing. There is a close connection between a country-wide efficiency of urban transportation agencies at this time and the war tasks of the nation on this side of the ocean. This connection should be made clear to the general public by appropriate posters or other notices; it might well be the subject of publicity by some of the committees of civilians doing such good work in eliminating waste of resources. Of course, it is clear that the great majority of electric railway patrons are unable to choose the time of their home-going, but on the other hand there is in every city a class of shopping patronage from which not a little constructive assistance ought thus to be secured from patriotic motives.

It requires no extended argument to prove that anything which spreads a stated volume of travel over longer periods enables a company to handle it at a lower cost, not only to itself, but to the community. This reduced cost is expressed, not only in a smoother time card and in a platform working schedule of more regularity and less extreme peaks, and in reduced fuel consumption at the power plant, but also in a freer operation of cars, better punctuality of service and more efficient movement of population.

Every electric railway operator, beyond all doubt, knows well enough that early home-going brings its reward to the tired shopper in more comfortable transportation than is possible under the stress of rush-hour conditions, but this appeal in the past has not had the patriotic basis which should now be recognized and brought to the attention of the public. Every woman, for instance, who rides homeward before 4.30 p. m. does her bit in saving some of the fuel and labor required otherwise to transport herself and her sister shoppers in the peak hours. Paradoxical as it may appear to a layman, it is a fact that if the shopping load is distributed over the mid-afternoon hours rather than concentrated in the evening rush, less fuel will be required on a given system to handle the traffic and more men can be released for other service. The public does not realize that it is the peak which plays the mischief with economical operation on many systems, but this can be explained sufficiently to encourage the layman to try to form the helpful habit of early home-going if the manager cares to do it. It should not be forgotten that a large extra investment is entailed by rush-hour demands and that this increases the over-all cost of providing service.

It would require the formation of a general habit of early home-going materially to affect service cost from the investment standpoint, and this is hardly to be expected just yet; but if patrons the country over with free time co-operate along the line suggested, a real gain of patriotic import will certainly be susceptible of attainment.

Savona-Ceva (Italy) Mountain Railway Electrification

Operating Difficulties on This Road, Which Is of Great Economic Importance, Have Been Largely Overcome with Three-Phase Locomotives, Including the Use of Pushers—The Line Has an Average of One Tunnel per Mile

By W. LESNIEWSKI

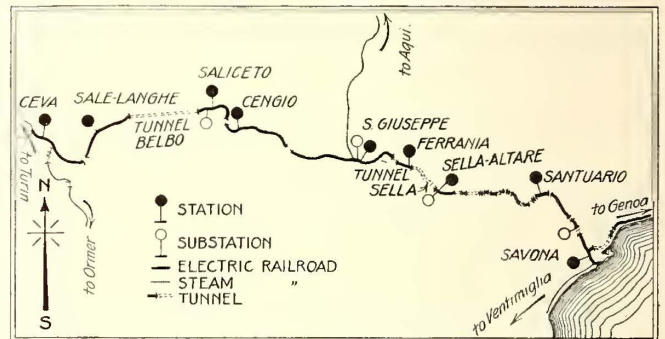
Electrical Engineer, Petrograd, Russia

ELECTRIC traction is widely utilized in Italy, more than 435 miles of the State Railways being electrified. This figure, however, conveys but a faint idea of the significance of electric traction in that country, for the electrified sections are in general of difficult profile, with steep gradients and numerous tunnels, and have heavy freight and passenger traffic. On these sections about 200 locomotives are used, most of which have a one-hour rating of 2200 hp. and the majority of the remainder 2600 hp. The three-phase system is almost universal throughout Italy, and as a consequence it has attained a high degree of perfection. Moreover, owing to the practicability of changing locomotives and other electrical equipment, as well as operators, working conditions are very satisfactory.

This article describes the Savona-Ceva Railway, the electrification of which is typical of most of the Italian electric railways. Notwithstanding its technical success, practically no literature pertaining to this electrification has been written, except a little in the Italian language. This neglect by the foreign press must be ascribed to the fact that the year of its completion marked the commencement of the war, when many technical matters on the continent were overshadowed. The Savona-Ceva line extends northwest from Savona, which it joins with the richest part of Piedmont, forming a long-distance line from Savona through Turin to France and Switzerland. About 70 per cent of the imports, consisting chiefly of coal destined for the northwest of Italy, Piedmont and Lombardy, as well as France and Switzerland, are carried by this road. The

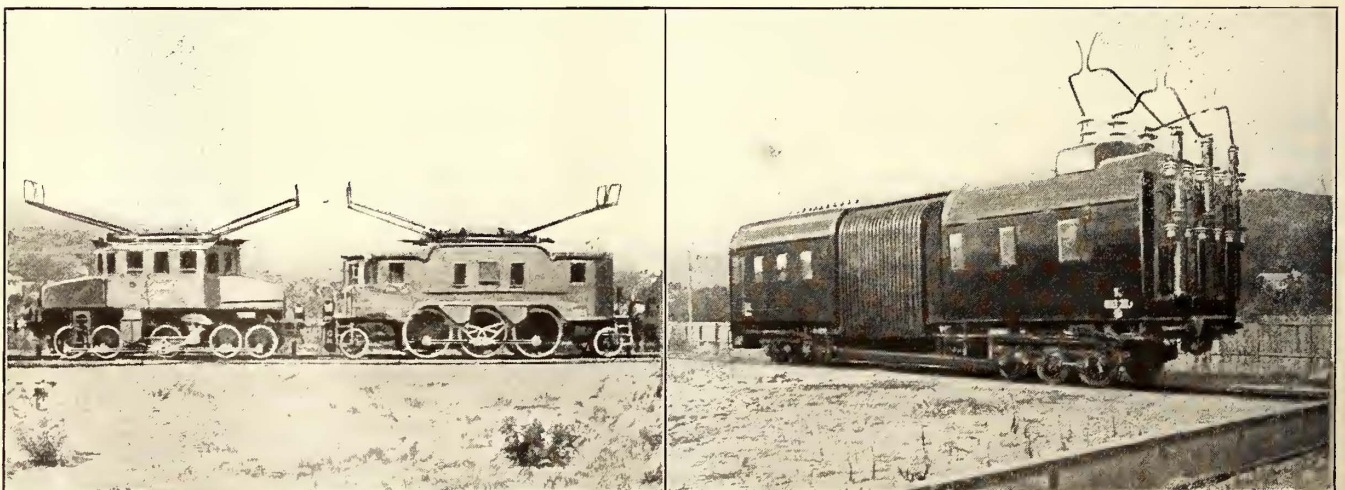
goods imported at Savona during 1913 totaled 1,620,000 tons.

The whole of the electrified section, 28 miles long, is single track and has numerous tunnels, and about 60 per cent of its total length consists of curves. The least curve radius is about 1300 ft., and the maximum gradient $2\frac{1}{2}$ per cent. The road traverses several mountains, as indicated by the accompanying profile,

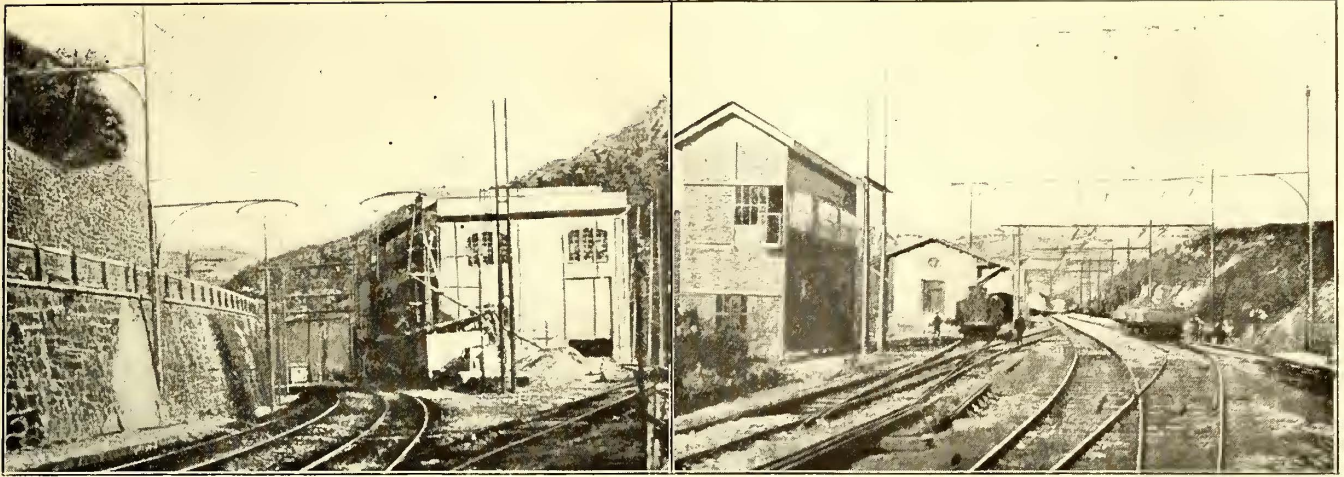


MAP OF THE SAVONA-CEVA ELECTRIFIED LINE

and attains an elevation of 1600 ft. Between Savona and Ferrania is a very difficult section, in which the elevation of the track varies more than 1000 ft. within a distance of 10 miles. A tunnel $1\frac{1}{2}$ miles in length is located on a curve at the end of this section. It hindered the traffic considerably during operation with steam, as did also the Belbo tunnel, which is $2\frac{1}{2}$ miles long. Almost the entire capacity of the line was



ITALIAN THREE-PHASE ELECTRIC LOCOMOTIVES. "GIOVI" TYPE, 2200-HP., FOR 31 M.P.H., AND TYPE 1-3-1, 2600-HP., FOR 62 M.P.H.—TYPICAL 100,000-VOLT, 2250-KVA. PORTABLE SUBSTATION ON ITALIAN STATE RAILWAYS



60,000/3700-VOLT, 2250-KVA. SUBSTATION ON SAVONA-CEVA RAILWAY AND SWITCHING POST AT SALICETO STATION

utilized under steam operation, and the problem of handling the ever-increasing freight traffic, coupled with the desire for higher speeds, led to the electrification of the road. The demands of traffic have been met successfully with electric traction.

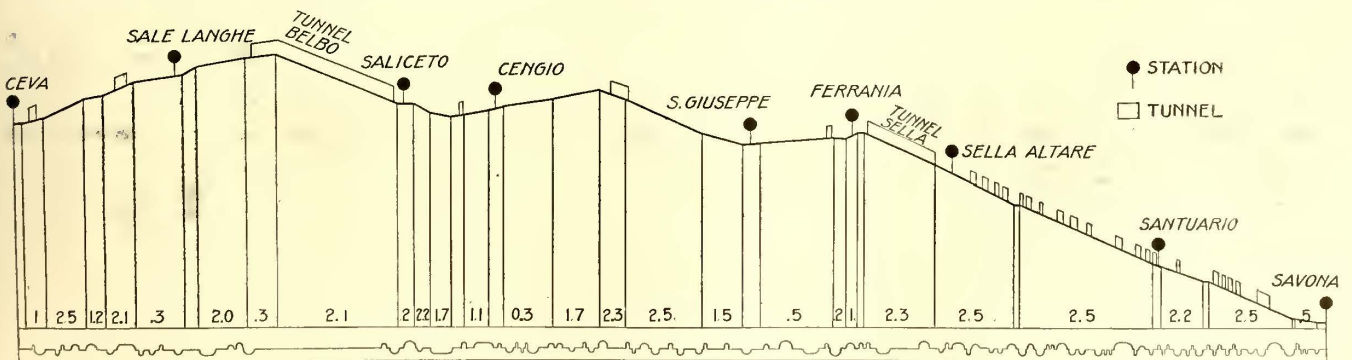
The three-phase system was selected with 3700 volts for the contact line and a frequency of 16.7 cycles. As mentioned above, the capacity of the road was considerably augmented after electrification, when the longest two tunnels ceased acting as "bottle necks," and even without forced ventilation there is now no essential difference between traffic conditions in the tunnels and out in the open. The schedule speed has been approximately doubled, the speed now maintained on the steepest ascent being 31 m.p.h., whereas especially powerful mountain locomotives of the "Dekapode" type were unable to exceed a speed of 15 m.p.h.

With a view to increasing the speed of express trains to 47 m.p.h., which was possible on the down grades by the use of regeneration, forty high-speed electric locomotives were ordered for this and other electric railways. In 1915, when the data contained in this article were collated, only sixteen of these locomotives were completed, all of which were appropriated for other lines. The express trains were consequently limited to a speed of 31 m.p.h. Drawn by electric freight locomotives of the "Giovi" type and making all the former stops, they reduced the time of the 28-mile trip by twenty minutes. On the Mont Cenis line, another Italian three-phase electric railway with curves of about 900-ft. radius, described in the *ELECTRIC RAILWAY JOURNAL* for Sept. 1, page 344, express trains attained a speed of 47 m.p.h. on an up grade of 3 per cent.

Therefore, from the technical standpoint, the attainment of such a speed is not exactly new.

The 1-3-1 type, 73-ton locomotives, made by the Societa Italiana Westinghouse, when running at 47 m.p.h. develop a tractive effort of about 21,000 lb. From a calculation of train resistance on a curve of 1200-ft. radius and gradient of 2½ per cent, it is found that the train can have a weight of about 210 tons. By using a pusher locomotive, 400-ton trains can be hauled along the profile assumed. This system of double traction—that is, a locomotive at each end of the train—was adopted for the Savona-Ceva line. One point worthy of mention is that the possibility of using double traction on a three-phase electric railway was formerly disputed, owing to the shunt or constant-speed characteristic of the three-phase motor. The experience gained in the operation of the Savona-Ceva line has gone much further than the results gained on other railways in disproving this contention. It has demonstrated conclusively that on a varying profile over undulating ground, and particularly with very steep gradients, a train can be handled successfully by two or more locomotives with shunt characteristics and quite safely at high speed.

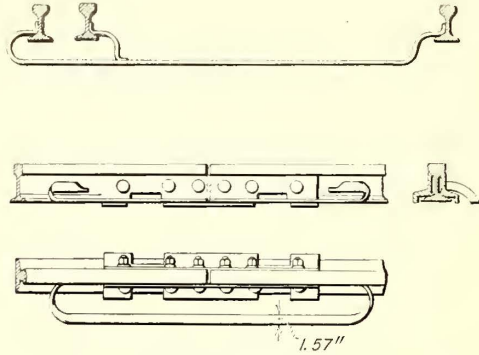
The limitation on the make-up of trains negotiating gradients as set by the strength of the rolling stock couplings applies particularly to Italian railroads, where the tractive effort exerted normally must not exceed 10 tons and on steep gradients advisably not more than 7½ tons. In the event of a locomotive developing a tractive effort nearly equal to the durability allowance of the couplings, the full tractive effort of a second locomotive at the head of the train cannot, of course, be



PROFILE AND CURVES OF SAVONA-CEVA RAILWAY—GRADIENTS INDICATED IN PER CENT

exerted. The weight of a train on the maximum gradient of the Savona-Ceva line under single traction can be 230 metric tons. With two leading locomotives the weight can be 260 metric tons. With a pusher locomotive, however, the weight of the train can be doubled, throwing upon each locomotive the same weight as under single traction, or 230 tons.

The Italian mountain electric railways go beyond this, however. The fact that a train permits "com-



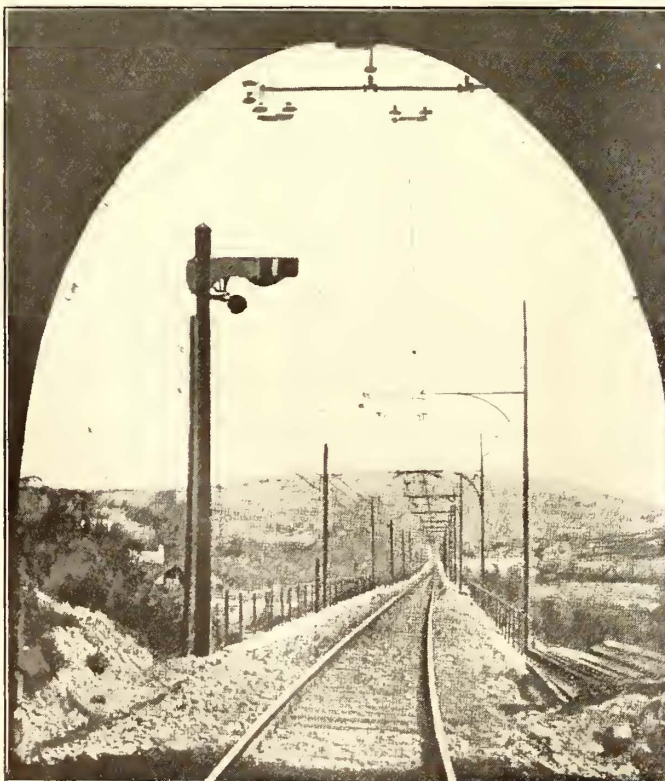
SOFT IRON RAIL BONDS APPLIED BY AUTOGENOUS WELDING, SAVONA-CEVA RAILWAY

pression" considerably in excess of the permissible strain in tension has led naturally to the placing of two locomotives at its rear on grades. Thus a triple traction is obtained. One objection, however, to the use of one locomotive at the head and two at the tail of the train on track of varying profile and where regeneration is in use is that the strain exerted by the rear two locomotives may, on a gradient, prove too great. Consequently triple traction is sometimes used on the Savona-Ceva line, but double traction has been more generally adopted, with single traction for trains of light weight. Since the freight cars on Italian railways do not have automatic brakes, the use of pusher

service decreases the possibility of accidents from the train dividing, as no part is left out of control.

As already pointed out, it is due to the shunt characteristic of the induction motor and its energy regenerating feature that such high speed is attainable and that the successful utilization of double traction is possible. With three-phase locomotives a train can traverse the whole distance at a speed which remains practically constant without being controlled by the driver. The power is automatically distributed proportionately between the locomotives while "motoring" on ascents, and on reaching a down grade the locomotives in turn automatically regenerate. Thus the train traverses the changes of profile smoothly and at high speed without pulling apart, even in the case of a heavy train, and without braking. A watt-meter on the locomotive indicates the power being used and shows when the locomotives change from "motoring" to "generating," or the reverse. Thus a constant speed of 31 m.p.h. was attained with most successful results, and it is intended to increase this later to 46 m.p.h. The use of regeneration has considerably reduced the energy consumption, but of not less importance is the greater degree of safety assured and the smoothness on the down grades as well as the reduction in the wear of the line, superstructure, rolling stock, tires and brakes.

Electric energy is purchased from the Negry & Maira Company. A large part of the energy is supplied from the St. Dalmazzo hydroelectric central station, situated nearly 100 miles from Savona. This station has a 40,000-hp. output, which will be increased in the near future to 60,000 hp. A steam central station stands as reserve. The power company constructed and owns the substations, of which there are five in all and located as shown on the accompanying map. Each substation contains four single-phase, 750-kva. transformers, continuous rating, and a corresponding switch-gear set.



VIEWS OF CONTACT LINE FROM TUNNEL AND CONTACT LINE SUSPENSION AT SAVONA STATION, SAVONA-CEVA RAILWAY

Three transformers are connected in delta, and the fourth is held as reserve. Upon occasions the substations have worked successfully with only two transformers operating. The switch-gear arrangement can be made to fulfill the function of a switching post for the 60,000-volt transmission line. To insure continuity of service each section of line is provided with a portable substation capable of replacing any of the stationary substations. These portable substations constitute one of the most remarkable features of Italian electric railway engineering.

The contact line is connected with the substation through special switching posts in charge of attendants. These switching posts are provided with oil switches, lightning arresters and power-measuring instruments for all outgoing feeders. They are placed at all the stations in order to disconnect the circuit at the station or any other adjoining section without interrupting the feeding of the other sections. The switch-

ing posts are connected with each other and with neighboring substations and the huts of the flagmen by telephone.

The contact line consists of two circular wires of hard-drawn copper having a diameter of 0.315 in., making the copper section per phase 200,000 circ. mil. No parallel feeders are provided either for the overhead contact wires or for the third phase, the so-called "return" rails, as the high voltage and the distance between the substations do not necessitate higher conductivity. This lends evidence to the fact that, owing to the small section of copper, the overhead system, the most complicated part of a three-phase railway, is often cheaper than that of other types.

The construction of the rail bonds on this railway is interesting and of a kind seldom used in these days. They are made of soft iron, and while amply meeting the needs in conductivity, their great solidity and cheapness render them valueless to thieves.

Quick Service Demands More Pay

Connecticut Commission Rules That Character of Electric Railway Freight Service Justifies Classification in Substantial Conformity with Express Company Classification
—New Rates, However, Are Moved Down a Notch

THE Connecticut Public Utilities Commission recently handed down a decision that is of marked importance in connection with the handling of freight by electric railways. The tenor of the decision is that the character of the expedited service rendered in handling station-service freight is such as to justify the use of substantially the classification legally established for express companies. The shipper of heavy and slow freight in less-than-carload lots should pay for the more prompt service rendered by the electric railway—in other words, he should not demand a special low rate by reason of steam railroad classification.

HOW THE QUESTION AROSE

The decision was rendered in the case of various petitioners against the Connecticut Company, New Haven, Conn. (Docket No. 2402.) In addition to its business of passenger transportation, this company has for some time been conducting a general freight and express business. For the purposes of the case under discussion this branch of the company's activities was subdivided into (1) carload freight, (2) station-service freight; and (3) pick-up and delivery express. The carload rates were not involved, the petition being directed against new station-service freight rates and new express rates. When the matter came to a hearing the petitioners did not press their objection to the express rates (a minimum charge of 25 cents and a flat rate of 50 cents per 100 lb.), and these were not specially considered.

As for the station-service freight rates, it appears that prior to May 21, 1917, the Connecticut Company had rates in effect applicable to goods shipped in less-than-carload lots from one station to another on its line and subject to a classification of commodities which was based roughly, but quite definitely, upon the freight

classification then in force upon the steam railroad lines operating in the same territory. This included four general classes, the rates applicable to the second, third and fourth classes grading down from the first-class rates. On May 21, 1917, the company cancelled the former tariffs and classification and published a new classification modeled after the official Interstate Commerce Commission classification for express companies doing business upon steam railroad lines.

The effect of this new classification was virtually to abolish the former second, third and fourth classes, most of the commodities formerly grouped therein being transferred into the first class. This continued to carry the rates previously applied to first-class commodities. A few light and bulky articles and livestock received rates higher than first class.

The petitioners asserted that the new schedule showed practically no classification at all, 90 per cent of the goods handled being included in one class. Furthermore, they said that the abolishment of the three lower classes with their corresponding lower rates resulted in an inequitable and excessive burden upon shippers of certain commodities formerly grouped in the lower classes.

COMPANY'S CLASSIFICATION IS DEEMED EQUITABLE

In supporting the reasonableness of its new classification the Connecticut Company claimed that the character of its expedited service justified a classification in substantial conformity with the legally established express-company classification. In ruling upon this point the commission said:

"There has gradually developed an apparent demand and an actual existence of a substantial volume of business, first in the handling of crushed stone and other carload shipments, and later in the carrying of sundry commercial and industrial products in less-than-carload

shipments for quick delivery, generally within a radius of from 10 to 50 miles. Frequent and unlimited slow freight transportation of heavy and bulky commodities which would naturally be transported on steam railroads is inconsistent with the use of public streets and the reasonable accommodation of passenger traffic in electric railway service.

"The actual service rendered by the electric railway in the handling of less-than-carload shipments is an expedited service in the interest of the public in the quick delivery of perishable and other daily required commodities, and corresponds more closely with express-company service than with steam-railroad freight business. If a shipper desires to use this service, on account of its expedition, for the transportation of heavy freight which would normally move by steam railroad, he should pay for the more prompt service rendered.

"The actual cost of handling heavy freight formerly carried under the lower classifications is substantially the same in this type of service as the cost of handling the so-called first-class shipments, and such heavy freight naturally increases the liability to damage of the lighter or more fragile shipments when moved in the same car. A special low rate by reason of classification should not be given to heavy and naturally slow freight at the expense, if not the entire abolishment, of the expedited service natural to electric railway operation. The commission finds that the classification established by the company along the lines of the official express company classification is reasonable and equitable."

DIFFICULT TO DETERMINE INCOME AND INVESTMENT

To the contention of the petitioners, however, that the abolition of the second, third and fourth classes with their lower rates and the general adoption of the first-class rate resulted in an undue burden upon shippers, the commission gave partial assent. In discussing the reasonableness of the new rate, the commission said that it must be recognized that there was no present basis for determining accurately, or even with any fair approximation, either the gross return to be secured under the new rate structure or the value of the company's property used for station-service freight and entitled to a reasonable and fair net return from such employment.

According to the commission, it had been admitted by petitioners that since May 21 certain former patrons of the freight service had generally sent their short-distance shipments by automobile trucks in an endeavor to save on transportation charges, and possibly, by boycott, to induce the company to resume the former classification. The company had frankly admitted also that the new arrangement was designed to some extent to divert from the electric lines to the steam railroads heavy and bulky shipments conceived to be legitimate steam-railroad freight.

It might be claimed, the commission remarked, that the new rate structure, in so far as it increased by large percentages the charges on certain classes of commodities, would so restrict and discourage electric railway shipment of such commodities as to result in a serious falling off in revenue from this freight business. On the other hand, it might develop that the present limitations of the freight-handling facilities of the steam carriers at a time when expedited service is more than

ever demanded by both peace and war industries would divert to the electric railways an unusual amount of all kinds of intra-state freight. In the commission's opinion, therefore, the amount and kind of freight carried by the Connecticut Company under the old classification and graded rates could be used safely only as a very general indication of what might be expected to result under the new conditions.

Moreover, the commission said that it was perhaps futile to assume that any figures available could be taken as a trustworthy guide for the value of the station-freight equipment and facilities. The Connecticut Company is a composite of a large number of original companies purchased and combined at prices which should not, in the commission's opinion, be taken as indicating to-day the fair value for rate-making purposes. On the basis of book values, however, a painstaking effort was made to segregate and allocate the portions applicable to the service in question.

NEW RATES CUT TO OLD SECOND-CLASS FIGURES

According to the company's figures about \$44,000 additional annual revenue would be needed to assure an 8 per cent return from the station-service freight and express business combined (the investment for these two classes of service not being separable). If the express business could be relied upon to produce \$15,000, the station-service freight must yield \$29,000, or a 10 per cent increase. In this connection the commission added that if the company was allowed to earn a net return of at least 8 per cent on the investment, no additional allowance out of current income for what were properly capital expenditures would be necessary. That is to say, if the company secured an additional 10 per cent net revenue from the station-service freight business it would be earning as much as it could justly claim to be a reasonable return.

The new rates, as they were increased by the company, would, to the commission's mind, give an average rate increase of 33 per cent, which would probably yield very much more of a revenue increase than the 10 per cent needed for a fair return. If the company, however, had used the old second-class rates rather than the first-class as the basis for the new rates and had abolished all except such second-class rates, the average rate increase would be approximately 14 per cent. Even on this basis, the commission stated, there would be a possibility of something more than the necessary 10 per cent revenue increase. In view of constantly mounting expenses, the additional taxes which would accompany increased revenue and the uncertainty as to the quantity of freight which would be offered under higher rates, however, there would be perhaps no excess margin between the 14 per cent estimated increase in rates and the 10 per cent increase in the company's revenue.

The commission decided, therefore, that the new rates of the Connecticut Company on station-service freight were unreasonable, and it ordered the company to make effective on and after Jan. 1, 1918, a new schedule of first-class rates based upon, and in no case to exceed between any two points, the former second-class rates. The company's official classification effective May 21, 1917, must not, without approval of the commission, be modified so as to bring about by means of reclassification additional rates or charges upon any com-

modity. The order, however, does not prohibit the company from charging rates in excess of the maximum first-class rates prescribed, if such excess charges result solely from the application of the rules contained in the official classification of May 21.

Proper Uniform for Women Workers

Chester B. Lord, general superintendent Wagner Electric Manufacturing Company, St. Louis, Mo., declared at the recent New York convention of the American Society of Mechanical Engineers that overalls for women workers are not only unnecessary but the women who consent to wear them are of the masculine type and

lacking in sex consciousness. He believes, however, that all women workers in a plant should dress alike, and has found from his experience that the best dress is a dark skirt with a fadeless blue linen waist and apron, both of standard design. The women are usually willing to obey such rules about their clothing, provided the rules apply to them all.

Mr. Lord said further that the successful employment of women depends on many little things which contribute to their contentment of mind, without which they are inefficient. In the Wagner plant all the machines are painted white in the shops employing women, and special attention is given to cheerfulness and cleanliness throughout.

When the Mark Twains Become Buffalo Bills

BY THOMAS DREIER

Assistant to President Bay State Street Railway

Mark Twain loved to tell this story:

"I knew you as soon as I saw you," said a little girl who ran up to him as he walked up Fifth Avenue, her eyes shining with joy.

Flattered, delighted by the compliment paid by the child, Mark asked, "And who am I?"

"Why," answered the little girl, "you—you are Buffalo Bill."

I could not help think about this story the other day when I heard a street railway president complaining about the people of his city. "They don't understand," he said. "Here I have been talking to them whenever I got a chance, telling them about my problems. But look at them. Their ignorance astonishes me."

What I wanted to say to him (but didn't) was this: "Do you expect all the citizens of your city to be professional mind readers? Mark Twain, one of the most advertised men of his time, with his pictures printed hundreds of thousands of times, was not Mark Twain but Buffalo Bill to the little girl on Fifth Avenue, and there were millions of men and women who never heard his name.

"You have talked your little talk, have button-holed a few bankers and prominent citizens, have had a few scattering articles printed in the local papers. But what have you done day after day and week after week to educate your car riders? What have you done to educate your own employees? How much, as a matter of fact, do the people in your own offices know about your problems? Can half of them answer questions intelligently?

"If your own employees, if those in your own offices cannot tell your story convincingly, what right have you to blame the thousands of car riders who have no personal interest in you and your affairs beyond getting the best service for the least money?"

It is a fine thing for street railway men to get together and tell one another how bad every-

thing is, and how the roads are going to the demnition bow-wows. But when they do that they remind me of the young fellow who told his friends he feared that he could not win the hand of a certain maiden. "Have you asked her?" questioned the friend. "No," mumbled the love-sick youth, "I sort of had an idea she ought to feel it without making me tell it."

Street railway men must understand that they cannot get results unless they get public opinion on their side. The folks who make up the mass of car riders are ordinary men and women, amenable to suggestion, open-minded to those ideas that are presented intelligently, and are disposed to do the fair thing at least ninety-eight times out of a hundred.

Favorable public opinion cannot be won in a day or a month. The big national advertisers have discovered that fact. These "Assyrian came down like a wolf on the fold" campaigns, these hip-hip-hurray-let-us-do-a-fast-job advertising stunts are fine things—for the printers and the advertising men.

But the hundreds of thousands of car riders are in no hurry. They take their time. They have other things to think about besides street railways and their troubles. Ideas must be put into their minds as painlessly as possible. Ideas must be dropped on these people like the snow—each flake is small, almost insignificant. At first no impression is made. Soon little patches of the ground are covered. After a while the earth is covered with a white blanket. Eventually heavy loads may be hauled over it.

So is it with ideas dropped on the public mind.

Plan ahead. Give yourself time. Tell the truth. And always and forever remember to be sincere. What is in your heart will write itself into your copy and make itself heard in your speech.

Do these things and your Mark Twain problem will not be a Buffalo Bill.


Getting Employees to Make Suggestions

How the Denver Tramway Through its Suggestion Campaign with Prize Awards Has Stimulated the Co-operation of its Men in Solving Various Problems

THE Denver (Col.) Tramway has launched among employees a "suggestion campaign," which has every indication of being a marked success. The idea of the campaign was taken from a system used by the Chalmers Motor Company in awarding prizes for good ideas. A few other companies were also consulted with regard to the results secured by them in using suggestion campaigns. After making a study of what had been found to be either the snags or the strong points of such campaigns, the Denver company evolved the detailed plan described herewith.

ANNOUNCING THE CAMPAIGN BY POSTERS


The general outline of the campaign was announced in large posters which were put up in convenient and conspicuous places on the company's property and buildings, so that all employees could see them. The posters,



The Denver Tramway Company

SUGGESTION BLANK

Be sure to fill out each section of this blank and to sign and date it.
Put in suggestion box.



1. What is the present condition about which you are making your recommendation?

2. What is the reason for the above condition?

3. What is your suggestion?

Use other side if necessary

Sketches should be made on back of this sheet if possible.

Date _____

Form No. 1-2

Signed _____

Department _____

SUGGESTION CAMPAIGN—FIG. 2—BLANK FORM USED BY EMPLOYEES IN MAKING SUGGESTIONS

one of which is shown in Fig. 2, stated that the company intended to give prizes for the best ideas advanced by employees. The rewards would be divided into two classes—grand annual prizes and monthly prizes. In the first group the leading prize was one month's extra wages; the second prize, two weeks' extra wages, and the third prize, one week's extra wages. The monthly prizes consisted of \$20, \$15 and \$5 in gold for first, second and third prizes respectively. The poster also promised that 50 cents would be paid for every suggestion that was judged worthy and practical.

According to the poster, the sort of idea desired by the company was as follows:

1. Where can expenses be reduced or eliminated?
2. Where can a reduction in cost be made?
3. What improvements can be made in existing mechanical devices used on construction and maintenance work?

4. What improvements can be made in general arrangement of machinery facilities in shops, power-plant, tool-room and carhouses?

5. What improvements can be made in methods of handling materials, so as to increase the efficiency of workmen and facilitate the completion of jobs?

6. What precautionary measures can be taken to prevent, error, fire and accident?

7. What improvements can be made in light, heat, ventilation, sanitation and all other matters which will promote the health, safety and comfort of employees? (Wash-room and toilet facilities, lunch and rest rooms for women, etc.).

8. What economy can be practised in electric light, steam, power and use of material?

9. What improvements can be made to any part of the street car coaster savings?

10. What new features can be introduced tending to improve street cars?

11. How can the shop, track, bridges and buildings, power plant, overhead and bonding be better planned?

12. What improvements can be made in employees' record system, statistical records, correspondence filing, cost system, piece-work and time-keeping system?

13. What reduction can be secured in the cost of transportation of company employees, materials, express and mail?

14. What new or novel advertising ideas can be introduced?

15. How can the sale of street car service be increased?

16. How can co-operation be increased?

17. How can the service to the public be improved?

18. Where is unnecessary work being done and where is work being duplicated?

19. What improvements can be made in blank forms?

20. What instances can be cited where expensive tools or operations are being used on work which might be done as well with cheaper tools or operation?

The poster stated that all employees of the company might compete, with the exception of officers, department heads, division superintendents, assistants in charge of power, line, bridge and buildings, and track; the mechanical engineer, the field engineer, the superintendent of planning and the office engineer or draughtsmen. Draughtsmen, however, might make recommendations that had to do with matters not pertaining directly to their work.

HOW SUGGESTIONS ARE HANDLED

The suggestions made by employees may be sent to the company by placing them in the regular tramway mail or United States mail or by dropping them into suggestion boxes put up in the various buildings. These boxes are locked, and the secretary of the committee on suggestions is the only person having a key to them. This committee, which receives all suggestions, is composed of seven officials of the company.

On top of each suggestion box is a rack, in which is kept a supply of blank forms used by the employees. The employee writes his suggestion, dated and signed, on the blank shown in Fig. 1. On this, it will be noticed, there are general questions asked, as follows: "What is the present condition about which you are making your recommendation? What is the reason for this condition? What is your suggestion?" These questions are aimed to help the men reason systematically and also to standardize to some extent the suggestion procedure.

When the employee has written out his suggestion, he places the form in a prepared envelope addressed to the secretary of the committee on suggestions. This envelope is marked personal and also bears the following statement in the upper left-hand corner: "The secretary is the only person permitted to see original suggestion with name attached. Others please do not open." On receiving the suggestion the secretary acknowledges it with the statement shown in Fig. 3. He then gives the suggestion a number and makes an entry corresponding upon the employee's record card (4 in. x 6 in.). This shows at the top the name and the department of the employee, and has five columns for the following: Number, date, filing subject, points, and action taken.

After the suggestion is thus entered, the secretary copies it without signature on a yellow letter-size sheet which bears only the date and the suggestion number. He then files the original suggestion in his private file, and no one else has access to it. Thus, when the suggestion is taken up by the committee the members do not know who submitted it. The committee goes over all of the suggestions on the fifth day of each month and reports on each one, either favorably or unfavorably.

If any of the suggestions is not accepted, the report shown in Fig. 4 is sent to the employee, a full notation being made thereon as to why the suggestion was not found suitable. With it is sent a certificate of acknowledgment (Fig. 6), which states that the employee has been awarded a one-half credit for a suggestion made "for the betterment of service, operation or efficiency in a department of the company." This gives the employee some reward for his effort in spite of the rejection of the sug-

SUGGESTIONS WANTED

**FROM TRAMWAY EMPLOYEES
BIG PRIZES FOR GOOD IDEAS**

GRAND ANNUAL PRIZES
FIRST PRIZE
A MONTH'S EXTRA WAGES
SECOND PRIZE
TWO WEEKS' EXTRA WAGES
THIRD PRIZE
A WEEK'S EXTRA WAGES
MONTHLY PRIZES

1st **\$20** In Gold 2nd **\$10** In Gold 3rd **\$5** In Gold
Also **50¢** for every suggestion that is judged worthy and practical. Open to Tramway employes only

HOW SUGGESTIONS ARE HANDLED IN THE COMPETITION; PRIZES

Write your suggestion on the "Suggestion Blank" form and return to the Secretary of the Committee on Suggestions, Room 1010, 17th Street, Denver, Colorado. The suggestion must be dated and signed. The prize is awarded to the author of the suggestion. The suggestion must be practical and of benefit to the company.

Rules Governing Suggestions

All employees may compete, with exception of officers, department heads, division superintendents, Assistant in Charge of Power Line Bridge.

Date and sign all suggestions. Anonymous suggestions will not be considered.

Awards of prizes will be made monthly, the second month after suggestions for any monthly period are received.


Nature of Ideas Desired

1. Suggestions for betterment of service, operation or efficiency in any department of the company.
2. Suggestions for betterment of safety of employees or passengers.
3. Suggestions for betterment of economy in the operation of the company.
4. Suggestions for betterment of the appearance of the company's property.
5. Suggestions for betterment of the health and safety of employees.

SUGGESTION CAMPAIGN—FIG. 2—POSTER ANNOUNCING DETAILS AND RULES OF PRIZE AWARDS

gestion, but the reward is so small that there is no chance of his winning a big prize through mere rejections. Reinvestigation of a rejected suggestion will be made if the employee requests such action.

If the committee accepts a suggestion, it so reports by means of the blank shown in Fig. 5. This states that the suggestions, including the one in question, which were accepted that day will be considered within the next thirty days and the monthly prizes for the best adopted suggestions will be awarded at the end of that period. With this

 The Denver Tramway Company

ACKNOWLEDGMENT


We are pleased to acknowledge receipt of your suggestion

It will be copied without signature, and referred to the Committee on Suggestions, and if your idea is accepted you will be notified.

We thank you for this suggestion, and hope you will send in others.

SECRETARY COMMITTEE ON SUGGESTIONS.

Form No. 45

 The Denver Tramway Company

REPORT ON SUGGESTION No. _____


Regarding _____ Date _____

We regret to report that we are unable to accept the above suggestion for the following reasons:

If the above is not perfectly clear, drop us another note or come in to the office and talk it over. Thank you for the spirit of your suggestion. Please try again. Enclosed is your Certificate of Acknowledgment awarding you one-half credit.

COMMITTEE ON SUGGESTIONS.

Form No. 75

 The Denver Tramway Company

REPORT ON SUGGESTION No. _____

Regarding _____ Date _____

We wish to thank you again for the above suggestion and are glad to tell you that we have reported favorably on it for further investigation.

Enclosed you will find an order on the Treasurer for fifty cents, and a Certificate of Credit awarding you two credits.

The suggestions, including yours, which have been accepted today, will be considered within the next thirty days, and the monthly prizes for the best awarded at the end of that period.

Keep it up; we hope to receive many more valuable suggestions from you.

COMMITTEE ON SUGGESTIONS

Form No. 60

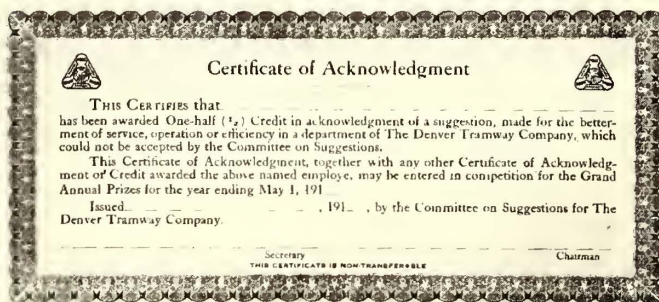
SUGGESTION CAMPAIGN—FIG. 3—ACKNOWLEDGMENT SENT UPON RECEIPT OF SUGGESTION FROM EMPLOYEE. FIG. 4—REPORT SENT UPON REJECTION OF SUGGESTION. FIG. 5—REPORT SENT UPON ACCEPTANCE OF SUGGESTION

report is inclosed an order on the treasurer for 50 cents, which may be cashed at once, and a certificate of credit valued at 2 points. The latter is similar to the certificate shown in Fig. 6.

AWARDING THE PRIZES

The gold prizes are awarded each month, the second month after suggestions for any month period are received. These prizes are based not on credits but on the merit of the suggestions. The accepted suggestions are forwarded to the proper departments for full investigation, and those adopted are considered eligible for the prizes. The employee submitting the best adopted suggestion receives \$20 and a certificate awarding three credits. The employee submitting the next best suggestion receives \$10 and a certificate awarding one credit, and the employee submitting the third best suggestion receives simply \$5.

The grand annual prizes are awarded to the employees who have earned the highest number of credits in the year. A month's wages is considered as the total



SUGGESTION CAMPAIGN—FIG. 6—CERTIFICATE OF ACKNOWLEDGMENT ACCOMPANYING REJECTION REPORT

year's earnings divided by twelve, and a week's wages as the year's total divided by fifty-two. When the same suggestion is received from two or more employees, the first one submitting it receives the credits, the date on the original suggestion being taken as the basis for the award.

In connection with the award of prizes, there is a provision covering a man who sends in a new plan or suggests a change in method which cannot very well be taken care of in the general scheme, but which is really of much value to the company. For instance, one man drew up a wiring diagram that eliminated a great many lights and will result in the saving of hundreds of dollars to the company each year. This will be handled as a special case, and the chief engineer will decide how large a check should be sent to the employee. This part of the program, however, is not advertised.

In carrying out its campaign, the company makes it a private affair with each employee. Thus it avoids some of the snags that one or two other companies have encountered in trying out such a system of prizes.

HOW THE PLAN IS WORKING OUT

The awarding of the first month's acceptances and the prizes was delayed on account of the flood of suggestions brought in by the announcement of the contest. A great many suggestions presented new, constructive ideas of the finest kind, and they received careful study. In many cases they had to be referred to several different departments for consideration and decision as to their practicability. Actual tests on the

road or in the shops had to be made on others. A few necessitated working models, which were made, developed and improved at the company's expense.

Quite a few of the suggestions were rejected, the causes being of various kinds. Some suggestions were impractical; many were old ideas that had been tried out on the tramway and other electric railways and proved undesirable or impossible; still others were already in use, and a few had to be rejected because some other contestant made the same suggestion first. By far the largest number of rejections, however, was caused entirely by the fact that the contestant made no suggestion. He would state the facts regarding some condition that ought to be improved, and then his suggestion would be to the effect that the whole thing was wrong and ought to be changed in some way. It has now been explained through the employees' publication that each contestant must tell exactly how any condition can be improved.

The suggestions already submitted have been found to display more thought on the part of the employees and a remarkable increase in value to the company. While there were 150 suggestions the first month, their value could be rated—to fix an arbitrary percentage—at only 40 per cent. The suggestions the next month can be rated at 70 per cent, although there were fewer submitted. It is felt, therefore, that the ideas in the suggestions are going to improve splendidly as time goes on and the men become accustomed to using their brains in this direction.

The company is pleased with the results and finds nothing in the campaign that it would change. The plan has proved to be an excellent stimulant to department heads and to employees. It has been particularly valuable in eliminating the excuse for the rank and file to sit on a bench, tell each other what they would do if they were boss and let it go at that. With the suggestion campaign in operation the men have a fine opportunity to tell seven different officials of the company what they think ought to be done, with the possibility of getting paid for doing it.

Byllesby Properties to Assist in Sale of War Savings Certificates

Application has been made by the bond department of H. M. Byllesby & Company to have the many offices of Byllesby utilities throughout the country appointed special agents for the sale of War Savings Certificates and Thrift Stamps. W. H. Clarke, manager of the bond department, says in this connection:

"Public service company offices which handle cash and come into intimate contact daily with all classes afford admirable facilities for assisting in this campaign. In the many towns we serve a large number of people are accustomed to coming to our offices for investments. Thousands have made their patriotic purchases of Liberty Bonds through our representatives at the properties as well as notes and preferred stock of our operating companies offered under our customer ownership plan. The war savings plan offers a means by which every individual may assist in winning the war by investing his or her savings in amounts of 25 cents and multiples thereof, and we are going to do everything in our power to assist in distributing and popularizing the war stamps."

Railway Service Must Be Preserved

Report of Special Investigator Says Jitneys in British Columbia Territory Must Go—Company Should Have Aid in Form of Suburban Rates Bearing Approximate Relation to Cost of Service—One-Man Car Operation Recommended for Shuttle and Light Lines

THE railway service of the British Columbia Electric Railway, Vancouver, B. C., cannot be maintained efficiently under the present condition of competition with jitneys. The jitney, therefore, should be eliminated, for it cannot meet transportation requirements. But the railway finances should be helped in other ways, too, as through a fare readjustment so that suburban districts outside of some central area would bear part of their cost of service. Moreover, the operation of one-man cars should have a fair trial with the view of reducing costs and maintaining a better service on shuttle and outlying light lines, and the company should be authorized to increase the speed limit and also to give through service to certain patrons.

Such is the substance of the recommendations just made by Adam Shortt, Ottawa, appointed on July 11 as special commissioner to investigate the economic conditions and operations of the British Columbia Electric Railway. The immediate cause for Mr. Shortt's appointment was the strike of more than a week's duration last June, when the employees refused the company's offer of a wage increase of \$100,000 a year. Following a meeting of representative citizens called with the object of securing the resumption of car service, negotiations were opened by the City Council of Vancouver, and the company stated that it was impossible for it to pay the wages asked and at the same time compete with the jitneys.

It was decided at this meeting that the company would meet the wage demands and resume service, and that both the city and the company would agree to abide by the decision of a commissioner to be appointed by the Provincial Government. An order-in-council was subsequently passed by the Provincial Government appointing Mr. Shortt, who held sessions in Vancouver and Victoria from July 16 to Aug. 21. His report has just been published by the company in a 61-page printed booklet. The following paragraphs contain a résumé of his comments upon the general questions involved, and the panel on the next page is a substantially complete reproduction of his basic summary of the situation in British Columbia.

SERIOUS REACTION FOLLOWED BOOM

When in 1897 the company undertook to develop a comprehensive system of transportation, the population of the Vancouver district was limited. During the ensuing boom period, however, railway expansion was not only permitted and justified, but even demanded with ever increasing importunities. Operating in an atmosphere of phenomenal growth and optimism for more than fifteen years, when, with the exception of a temporary pause in 1907-08, almost every year surpassed the last both in volume and in ratio of growth, the company expanded far. Mr. Shortt is only sur-

prised that the company had not more fully outrun the existing needs of the districts which it served.

Early in 1913, when the driving force of the boom was spent, the company was not unreasonably in advance of the actual requirements. But a heavy reaction then set in. Population diminished, and activities in the newer districts ceased. Then the war broke out, and the exodus of population increased. The company, therefore, found itself confronted with the maintenance of service in outlying districts where growth had been arrested before sufficient population had been established to meet the primary costs of service.

1916 RATE OF RETURN WAS ONLY 2.13 PER CENT

After setting aside the usual percentage for renewals and maintenance reserve, the net revenue fell from \$2,287,556 in 1914 to \$875,182 in 1916, through \$1,247,890 in 1915. The rate of return on the capital invested was as follows for the three years: 1914, 4.69 per cent; 1915, 2.60 per cent, and 1916, 2.13 per cent.

With bond and debenture interest in 1916 amounting to \$987,681, there was a deficit of \$112,499 in relation to the fixed charges for the year, there being no return whatever on the share capital of about \$21,000,000. The company withdrew from reserve about \$350,000 to meet its debenture charges.

While the situation has improved somewhat since 1915-16, up to the end of May, 1917, the railway system was still operating at a considerable loss. At the present time, Mr. Shortt remarks, it is not a question as to whether the company can pay dividends of even the most modest size, but whether it can maintain an equilibrium between income and fixed charges.

During the last three years the heaviest losses were incurred in Vancouver City and the New Westminster interurban services. This is where the jitney opposition, which started in November, 1914, has been most severe. For the city and suburbs of Vancouver the aggregate amount lost to the company through jitney competition for 1916 was \$261,278. The actual railway receipts from this area during the year were \$1,237,058. The extent, therefore, to which the jitney cuts in upon the income of the company is quite sufficient to make the difference between the possibility and the impossibility of financial soundness for the electric railway system.

JITNEYS CANNOT TAKE THE PLACE OF STREET CARS

Assuming that the majority of the citizens of Vancouver and Victoria and their adjoining municipalities, even if favoring the municipal ownership and operation of public utilities, are no more prepared than those of Edmonton and Calgary to permit private jitney competitors to take the cream of the city's revenue, Mr. Shortt says that the question simply narrows itself down to whether the jitney service or the

electric railway service is to operate in the coast cities of British Columbia.

On this point the commissioner says:

"An open-minded examination of the jitney service as it at present exists should convince any one that, while it may be a useful supplement to electric railway service, it cannot possibly take its place. All that is left is the vague possibility that the jitney service might result in some form of trackless motor vehicles which might some day take the place of the street cars.

"Though there have been several experiments with different types of motor cars in American cities, they have not been able to compete successfully with the street cars. It is true that motor-bus services have been successfully developed in some of the older and larger cities of Europe, where the contour and the varying widths of the streets do not lend themselves to the operation of electric cars; also in some of the larger cities of America, where, as in New York and Chicago, every possible form of transportation is employed to deal with the ever increasing volume of traffic. In these cities, however, the trackless trolley bus is employed as a supplementary service, especially on streets where it is not convenient or desirable to have wires and tracks.

"In other large cities, especially those like San Francisco, where municipal ownership of the street-car service is making headway, the bus is occasionally adopted as a supplementary service in order temporarily to meet the requirements of the newer city and suburban districts where it would not be profitable, for a time at least, to lay and operate the regular electric lines. In all such cases, however, experience shows that neither the jitney nor even the motor bus is seri-

ously regarded as a practical alternative to the regular street car service.

"It may be noted that while there is throughout the United States and Canada a very general agitation for an increase in transportation rates, both local and general, in order to meet the increasing cost of labor and equipment, yet in all the necessary expansions of the electric railway service there has been no serious suggestion, in America at least, as to the substitution of other methods of transportation for the street car."

FARE AND SERVICE IMPROVEMENTS RECOMMENDED

Having decided it to be in the best interests of the public to maintain the service of the British Columbia Electric Railway and eliminate the jitneys, therefore, Mr. Shortt turns his attention to possible readjustments in fares and service of the railway. His recommendations are along the following lines:

1. *Suburban Rates Based on Cost of Service*

It is not recommended that the present standard fares in the city of Vancouver be increased. As a result of the hasty and tentative arrangements entered into during the days of rapid expansion and the overflow of municipal boundaries, however, there is an intricate and impracticable system of normal fares, with all manner of special concessions and privileges. It is impossible, Mr. Shortt states, to summarize this tangle of rates within limited compass, but certain general conclusions may safely be derived. In the first place, these rates must be revised and simplified with a view to rendering them more uniform and equitable alike to the company and the citizens.

As a basis factor in the rearrangement, a central

How Mr. Shortt Analyzes the Situation in British Columbia

1. The financial condition of the railway division of the British Columbia Electric Railway is impossible of continuance on the basis of the past three years or the immediate prospects for the future.

2. The urban and interurban business, as proved by long and wide experience, cannot be conducted upon a basis of free competition. It is a public utility and as such essentially a natural monopoly, to be conducted on well-recognized principles as a unified service, the various portions furnishing mutual support. In the case of public utilities free competition has never proved a permanent protection to public interests—quite the reverse. A public utility commission is the only practicable safeguard for the general interest.

3. Jitney competition on a considerable scale in conjunction with a prolonged period of depression and loss of population has destroyed the normal basis on which the railway system was built up and can alone be maintained. As a jitney service it cannot take the place of the railway service. Any of the possible alternatives to the railway which would be adequate to replace its varied services, as for instance a motor-bus development, would involve the reproduction of all the essential features of the British Columbia Electric Railway as an organized capitalistic business corporation. Such a company in turn could not maintain an extended and satisfactory service in competition with the free-lance jitneys, confining themselves, as now, to the cream of the business.

4. The jitneys in competition with the street cars must be eliminated and until more prosperous conditions return certain other changes and economies introduced, or the street cars must go out of business; or, if forced to operate on a basis permitting them to meet competition of jitneys, they must at least abandon the

outlying and more unremunerative sections of their lines, reduce the frequency of the service on others, discontinue all transfers, and exact a 5-cent minimum fare for all persons, including children under twelve years, school children, workmen, etc.

5. As a general alternative the cities of Vancouver and Victoria, under arrangement with the adjoining municipalities, may take over the railway systems in their respective centers and conduct them as municipal enterprises, leaving the jitneys their present freedom to take what they please of the street-car revenues.

6. If the jitney competition is eliminated as the chief source of the annual losses of the company, then as regards the Vancouver district the remainder of the losses, due to the prevailing war conditions and the diminished population, might be fairly well met until more prosperous times recur by the fixing of a city population area within which present rates and transfers should continue, while beyond that area a readjustment with reference to rates, frequency of service, etc., could probably be effected in conference between representatives of the adjoining municipalities and the management of the company.

7. As regards Victoria (on Vancouver Island), apart from the elimination of jitney competition in the districts served by the street cars and the revision of the company's charter in order to bring it into harmony with the more modern charters of the mainland, practically no change in existing fares, transfer privileges, etc., would be needed.

8. In both districts special economies, such as the one-man cars on specified routes, to be agreed upon by the city and the company, should be carefully considered and if possible approved.

area should be determined. In prescribing such an area, within which uniform rates for the various classes of city tickets should be established, with free transfers on continuous trips to all other parts of this area, the population limits should be taken, not the restricted municipal limits of Vancouver City.

Beyond this area would lie the suburban areas proper, and for these rates must be arranged which would bear, not the full, but some approximate relation to the cost of the service rendered. In practically all cases this would involve the cancelling of transfers from outlying lines to those within the city population area.

An adherence to the letter of the charters, Mr. Shortt avers, will afford no solution of the present difficulties, which involve the alternatives of an insuperable financial loss to the company or an entire suspension of street-car transportation to the suburban districts in question. In the face of such a situation, the only reasonable solution appears to be that the representatives of the municipalities affected confer with the management with a view to the recognition of the limits of the city population area and the consequent readjustment of fares, transfers and time tables.

When improved conditions return for any or all of the suburban districts, a corresponding improvement in fares, frequency of service and transfer privileges should be made. In the meantime, should a public utilities commission be appointed, as Mr. Shortt recommends, it would naturally be the proper authority to fix suitable times and conditions for a return to lower rates and more extended privileges.

2. One-Man Cars for Shuttle and Light Lines

In regard to economies which the company may be able to introduce with a view to lowering costs of operation without materially reducing the quality of the service, Mr. Shortt recommends that trial be made of the one-man car. This could be tried at least on all the shuttle lines operated, and as far as possible on the outlying routes where the lightness of the traffic should render it quite possible of operation. One may doubt, the commissioner remarks, the possibility of such cars handling the traffic in congested areas of a city of any considerable size. As to the practicability of the plan, however, for outlying and more sparsely settled districts, there can be little question, while as to the advantage in point of economy there is still less.

Mr. Shortt notes that the employees look upon such a change with disfavor. That it would involve some reduction in the number of employees is obvious, though were the jitney competition abolished the balance would probably be readjusted. It would be better, however, in Mr. Shortt's opinion, to reduce the number of men, while increasing somewhat the remuneration of those operating the one-man car, than to permit loss of employment for a considerably larger number by virtue of the enforced closing of sections of line on account of the heavy loss in operation.

In summing up their position the employees claim that the one-man car "where at present in operation has been a failure and is opposed by both the public and the men who operate them." This conclusion, to Mr. Shortt's mind, like many of the other claims as to certain elements of danger, does not seem to be borne out by the facts, either in Canada or elsewhere. Besides the experience of Calgary, where one-man cars

were much opposed at first but are now quite favorably received, there are numerous reports from various places in the United States as to the acceptable nature of the service rendered by them, with diminished accidents.

3. Speed Limit Too Low; Stops Too Frequent; Through Service Recommended

A desirable improvement in suburban traffic would be a reduction in the time taken to reach certain outlying districts. While the present speed limit prescribed in some of the charters is obviously too low, part of the delay, especially between Vancouver and New Westminster, is due to the constant stoppages at street corners in the Vancouver City area.

Pending further and more far-reaching plans for an improved through service, the present service might be bettered by a combination of higher speed and the skipping of many ordinary street corner stops. Were these improvements introduced, they would greatly facilitate the through service on the most important interurban route of the company and practically take away any advantage which the through motor cars have in point of speed.

National Engineering Societies Organize for Closer Co-operation

For economy of administration and to promote co-operation the United Engineering Society, the Engineering Foundation and the Engineering Council have decided to join in one suite of offices and engage a joint secretary. Alfred D. Flinn, now deputy chief engineer of the Board of Water Supply of the City of New York, has been chosen secretary. Mr. Flinn has, during the period since his graduation from the Worcester Polytechnic Institute, twenty-four years ago, been engaged on many important engineering problems connected with water supply. He was also for two years managing editor of *Engineering Record*. He is well known to readers of this paper as a member of the American Committee on Electrolysis.

The United Engineering Society was formed some years ago by the national societies of civil, mining, mechanical and electrical engineers to co-ordinate joint activities and provide for holding property in common. This body acts as the holding company for the four founder societies and is landlord of the Engineering Societies' Building in New York, in which the founder societies have headquarters. In it also is vested the title to the library housed in the same building, now the most important engineering library in the country.

The Engineering Foundation Board was created, as a department of the United Engineering Society, to administer the endowment made by Ambrose Swasey three years ago for the support of engineering research for the benefit of the profession and of humanity. The large sum of money he gave will form, it is hoped, the nucleus to which other gifts will be added.

The Engineering Council was created to handle matters affecting engineers which could not be properly handled by any one of the individual engineering professional societies. Its function is "the proper consideration of questions of general interest to engineers and to the public, and to provide the means for united action upon questions of common concern to engineers."

Editors Hear About Coal Status

Editorial Conference of Business Papers in Washington on Dec. 13 Was Addressed by National Fuel Administrator and Others on Coal Situation

A WELL-ATTENDED meeting of the editors of the various business and technical papers of the country under the title of Editorial Conference was held in Washington, D. C., on Dec. 13, to hear the heads of various governmental departments discuss matters under their jurisdiction. The following is a summary of some of the addresses of particular interest to electric railway companies.

ADDRESS OF DR. H. A. GARFIELD

Dr. H. A. Garfield, fuel administrator, described the organization of that department, which includes the federal administrator, and State county and municipal administrators, all under direction from Washington. Such a federal administration, in the speaker's opinion, is necessary so that the fuel resources of the country can be made available in all states, whether they produce coal or not.

Of bituminous coal, Dr. Garfield said that about 50,000,000 more tons were produced during the current year than last year. The shortage which has occurred in spite of this fact is because of the extra demands for fuel from manufacturing enterprises, railroads, etc., to say nothing of the normal increase in the call for domestic coal. Continuing, the speaker said:

"There are three factors entering into the production—first, the operators, then the mine employees, and third, the railroads. Unless each one of those is working at full efficiency, we shall not have maximum results in output. A large part of my time was spent during the first two months, and, indeed, much of my time is still occupied, with bringing together operators and representatives of labor who in certain fields of the country are not able quickly to adjust their differences. To them I have just one theme to present, and it is this: Whatever your controversy, wherever the right lies, make sure that production continues and is not interrupted by reason of your dispute. That theme cannot be overemphasized."

Turning then to the anthracite field, he said: "It is a significant fact that with the normal amount of labor in normal times, something like 175,000 men and boys at the mines are employed. This number has now been reduced by 25,000 because of the draft and because of the fact that employment elsewhere has appeared more attractive. But in spite of the fact that there are only 150,000 men and boys laboring in the anthracite field this year, against the 175,000 formerly, the anthracite mines have produced something like 20 to 22 per cent more coal than they produced a year ago. That plainly is a tribute both to labor and to those who are conducting the mines.

"There is, however, an element in human nature that we ought not to lose sight of, and that is the selfishness of human nature. There has been a great deal of that sort of thing this year. It has extended into the households, people buying more coal than they quite needed. It has found its way into the factories anticipating an increase of business, and the result is that some—many, indeed—have more coal than usual, some have more coal than they need for the entire year and

some less provident, possibly because they could not provide the store ahead, are without coal."

In the discussion following, Dr. Garfield explained, among other things, that the administration has made every effort to see that the utilities are supplied with fuel. He said: "The moment we receive the information that a public utility is out of coal, or in danger of being out of coal within a few days, we issue the orders to send coal to that utility." Such a request, he said, should be sent to the state fuel administrator. He also remarked that he had been disappointed with the savings effected by cutting out illuminated display signs and that it was likely that the order on this matter would be changed.

In answer to another question, Dr. Garfield said that he believed that the state public service commissions would be willing to co-operate with the federal department in regard to the economies suggested by the department for public utilities, but no sufficient return from the commissions had yet been received actually to determine this matter.

SECRETARY OF COAL OPERATORS' ASSOCIATION DEFENDS OPERATORS

J. D. A. Mora, secretary of the Coal Operators' Association, made an address in which he claimed that the primary cause of the difficulty of scarcity of fuel was the lack of transportation. He read a number of telegrams from sectional coal organizations complaining of shortage of cars and consequent necessary closing down of mines. He said that the coal operators had done all they could do, that the fuel administration had done all that it could do and that decisive immediate action in regard to transportation was necessary. The speaker thought that if priority of movement should be given to coal and the mines should receive a preference in the supply of cars for thirty days the conditions would be righted. He realized that the railroads were operating in many cases short-handed and with insufficient equipment.

SENATOR POMERENE CRITICIZES COAL OPERATORS

Senator Atlee Pomerene of Ohio, in discussing the subject of "Governmental Price Setting," had a word to say about profiteers in coal. He said he knew of cases where coal operators, who had contracted to deliver the entire supply of coal required by manufacturing plants and municipal corporations, had consigned the coal, but while it was on the way to its destination it would be reconsigned and sold in the public market as spot coal. At the very time that the business men were complaining of the shortage of coal, the coal operators were using coal cars for storage purposes in the yards of different Ohio cities and towns. In one case an operator kept a number of cars on the tracks in storage and paid the demurrage charges amounting in one week to \$400 while prices were being boosted. Later he sold the coal at a net profit of \$1,600.

F. C. DELANO DESCRIBES WAR CERTIFICATES

Another speaker was F. C. Delano, a member of the Federal Reserve Board, who explained that the present thrift certificates were a modification of the English plan, the principal difference being that the War Savings Certificates all mature at fixed date, Jan. 1, 1923, whereas the English plan was to make them all mature

at five years from the date of purchase. One disadvantage of the American plan is that the price at which the certificates can be purchased varies according to the month. Its principal advantage is that a holder is able to cash all of his stamps at one time, and Mr. Delano suggested that the government ought then to offer the holder several alternatives, namely, first, cash; second, a register or coupon bond, and third, an annuity. The annuity plan, although a novel idea here, is very common in France. In spite of the intensive campaign for the sale of Liberty Loan bonds, they were sold to less than 10,000,000 people, leaving a population of something like 95,000,000 to whom, it is hoped, the War Savings Certificates will appeal.

Coal Shortage Forces Co-operation and Service Economies

Skip Stops, Service Reductions and Fine Spirit on Part of Employees Figure in This Week's News on the Power Situation

THE coal situation continues to be critical, but the acuteness of the emergency is bringing about a fine co-operation among all who can assist in saving fuel directly and indirectly. Reports from several sources are epitomized in the following paragraphs.

EVENING AND OWL SERVICE CUT AT GRAND RAPIDS

The Grand Rapids (Mich.) Railway on Dec. 9 began to reduce its evening service on all lines except the Division-Plainfield route, its heaviest line, to a fifteen-minute headway, beginning at 8.30 p. m. Also, the 12.30 and 1 o'clock a. m. owl service has been entirely dispensed with, and the midnight cars, which are now the last ones, have been held at the central transfer point in the downtown district until 12.05 to give the 12 o'clock workers an opportunity to catch the last car. No particular remonstrance to these cuts in service have been manifest by the public, so that the company has concluded that the change has made no great inconvenience. Both these service cuts were made to save coal. The Consumers' Power Company, from which the railway purchases its power, is dependent on coal for approximately two-thirds of its output, the remainder coming from water-power sources in the State.

A 100 PER CENT RESPONSE AT LOUISVILLE

On receipt of the request from the Electric Railway War Board for co-operation in fuel saving, the Louisville Railway secured the signatures of all of its motormen and conductors to a coal-saving pledge card. This was in part the result of the posting of a carhouse bulletin containing, among others, the following statements:

"Coal saving can be accomplished by the proper operation of the controller and brakes, allowing the car to coast as much as possible, by burning lights only when needed, by not having heat turned on in the car except when necessary, and in the proper care and maintenance of the fires in stoves used for car heating.

"It is necessary and vital to save as much coal as possible. Coal is difficult to obtain. Already in some cities street car service has been temporarily suspended by reason of inability to obtain coal. This situation may confront us in Louisville if we do not unite in saving coal.

"Coal must be saved: First, to win this war; second,

to give continuous car service to the people of Louisville, and third, to give continuous work to motormen and conductors.

"Whether the agitation of the proposition results in any saving of coal or not, it is believed by the management of the Louisville Railway that the pledge card which the men are asked to sign will help because it will aid in impressing them with the fact that the country is at war."

SKIP STOPS TO SAVE FUEL

In accordance with the request of the United States Fuel Administration that electric railways co-operate in all possible ways in the movement to save fuel, the Columbus Railway, Light & Power Company, Columbus, Ohio, has secured permission from the City Council to install a skip-stop system as one means to this end. The new method of operation, which went into

SKIP-STOP

EFFECTIVE SUNDAY, DECEMBER 16, 1917.

Acting under advice of the United States Fuel Administration, the City Council has authorized the inauguration in Columbus of the skip-stop system as one means of conserving the coal supply.

Approximately one-half the car stops will be eliminated by arranging them in such a manner that outbound and inbound stops will not be made at the same places.

No change will be made in the central district of the city, extending from Livingston Avenue to Goodale Street and from Front Street to Fourth Street.

The full co-operation of the public is necessary to make the skip-stop system a success. The success of this plan will mean faster schedules, thereby saving the time of the car rider.

Cars will stop only at points where car stop signs are located.

You can give the greatest assistance by familiarizing yourself with the location of car stop signs in your locality.

THE COLUMBUS RAILWAY, POWER & LIGHT CO.

ANNOUNCING SKIP STOPS TO CONSERVE COAL

effect on Dec. 16, was announced to the public in the poster reproduced above.

No change was made in the central district of the city, but outside of this about one-half of the car stops were eliminated. The system is so arranged that outbound and inbound stops are not made upon the same street corner. Signs are used to designate the stopping places.

Besides pointing out the usefulness of the skip-stop system in helping to conserve the coal supply, the poster emphasizes the point that the success of the plan means faster schedules and consequently the saving of time for the car riders.

COAL CONFISCATION AGREEMENT REACHED IN KANSAS AND MISSOURI

For the first time since the fuel administrators have had charge of the coal distribution in Kansas and Missouri there was reached on Dec. 22 a definite agreement

between railroads, administrators and mine operators on the confiscation of coal for railway use. As a result it is agreed that where the roads have to confiscate fuel it shall not be from the priority orders, which are the emergency shipments from mines. The situation in and around Kansas City is unique in that the Southwestern Coal Operators' Association is entrusted with the distribution of coal for the government, being first furnished with the emergency orders by the administrators, who make a daily canvass through their county chairmen of the two states. The rule existing for emergency orders is that in towns where dealers have coal no emergency exists. In that manner of handling the situation the matter of coal shortage is checked up to the consumers, the government and the operators without consulting the local dealers. No opportunity for forcing an emergency call exists by this arrangement.

Until Saturday some railways had confiscated coal for their own use from emergency orders, but hereafter all confiscating will be done from other sources if the railways find themselves short of fuel.

A new phase of the fuel situation in Kansas and Missouri is that pertaining to the surplus amount of coal allowed various industries, including the government army cantonment at Camp Funston, Kan. Priority orders give the cantonment preference, the officials of the operators say, so there would be no danger of a shortage there. But a demand from the cantonment for a thirty-day surplus has called out much of the available railroad service and coal that should, the operators feel, be going to cities and towns that are without coal.

BAY STATE RECEIVER MAKES STATEMENT

In an advertisement printed last week Wallace B. Donham, receiver of the Bay State Street Railway, explained the situation in the following words:

The Bay State Street Railway is short of coal and must cut down its service largely, except in rush hours, and some cut in rush hour service may be necessary. This action is taken at the request of the United States Fuel Administrator, and of Mr. Storow.

So far as possible the new emergency schedules will take care of people going to and from work, and the public will be inconvenienced as little as is consistent with the necessary saving of coal.

I realize that it is most unfortunate that my first official act as receiver of this property must be to make a big cut in service, but the choice is plain.

I must order at once such a cut where it will do the least possible harm, or I must take the responsibility for a complete shutdown of our biggest power plants within a few days.

Eighty per cent of our power will be shut off within a week if we do not get more coal. What we have on hand and in sight must be made to last as long as possible.

We have contracts for six months' supply of coal, but contracts are not coal, and coal is necessary to create power. The mines say they have the coal, but we can't get it. We have asked the United States authorities for help, and priority orders have been obtained for a limited supply of coal, but the federal authorities cannot and will not supply coal for 100 per cent service.

Schedules for the reduced service will be posted in the cars.

The Texas Electric Railway, Dallas, Tex., has remitted to the United States Treasury \$11,424.50 as war taxes on tickets sold over its lines during November. Tickets amounting to \$154,228.50 were sold, not including those sold for less than 40 cents.

AMERICAN ASSOCIATION NEWS

War Board Considers Many Committee Reports

The Electric Railway War Board met in Washington on Dec. 21 and adjourned to meet again at Washington headquarters (Munsey Building) at 11 a. m. on Jan. 4. The most important items of business were as follows:

President J. J. Stanley referred to the board the question of the advisability of holding a mid-year meeting. The matter was held for further consideration.

L. S. Storrs stated that on Dec. 12 he had addressed the Massachusetts Street Railway Association on the work of the board.

Director C. Loomis Allen stated that P. H. Gadsden and he had attended a conference of the war service committee of industries of the U. S. Chamber of Commerce, and he explained the purpose of this committee.

The board agreed actively to co-operate in the war savings work of the Treasury Department as soon as press of other duties will allow.

Mr. Allen also reported progress on the studies being made by J. F. Layng and M. B. Lambert, assisted by Clarence Renshaw, on possible fuel savings on the local railway lines in Washington. The savings are being put into terms of tons of coal, and are estimated at 25,000 tons annually. They involve skip stops, elimination of needless service and of car heating in the rush hours, etc. Their report will be submitted to the Bureau of Standards committee on conservation (W. F. Durand, Gano Dunn and L. B. Stillwell) for verification.

The transportation-engineering committee (J. P. Barnes, L. H. Palmer, G. H. Kelsay, M. B. Lambert and J. F. Layng) presented a report which bore the approval of the Fuel Administration. The board indorsed it as the basis of a circular to be sent out promptly.

A draft of Bulletin No. 3 was approved. This will contain the request of Fuel Administrator Garfield that fuel-saving pledges be secured from motormen, together with the recommendations of the board.

Secretary E. B. Burrirt stated that a committee on fuel conservation had been appointed in Illinois, and that a report had been submitted to the University of Illinois for verification.

Mr. Allen stated that Chairman Seymour Van Santvoord, of the New York State Public Service Commission for the Second District, had requested electric railway representatives to meet at Albany on Jan. 3 to consider recommendations in the Board's Bulletin No. 1.

Mr. Burrirt said that progress is being made in the formation of the traffic committee.

Mr. Gadsden read a report on a conference held in New York to prepare suggestions to be submitted to the Bureau of Internal Revenue in regard to the application of the excess profits section of the war revenue act. He will represent the board and the association in presenting certain suggestions to the Commissioner of Internal Revenue.

Chairman T. N. McCarter and Mr. Gadsden were appointed a sub-committee to confer with representatives of the N. E. L. A. committee on gas and electric service to further co-operation between the two bodies.

EQUIPMENT and MAINTENANCE

HAVE YOU A GOOD WAY OF DOING A JOB?

—*Pass It Along*

These Articles Have Been Selected to Provoke Thought and Stimulate Discussion. All of the Technical Departments Are Represented

Rail for Use in Paved Streets

The Author Reviews the Advantages of Tram Girder Versus Grooved Girder Rail Sections by Way of Adding to the Discussion Begun Last Week

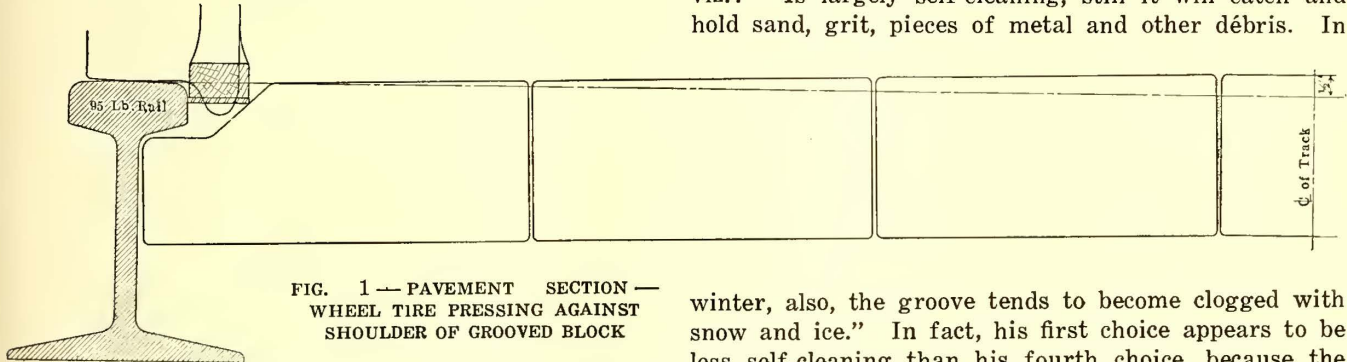
BY W. R. DUNHAM, JR.,

Engineer Maintenance of Way The Connecticut Company, New Haven, Conn.

Referring to the article by Mr. Schreiber in the Dec. 1 issue of the *ELECTRIC RAILWAY JOURNAL* on the use of the tram girder rail, it appears to the writer that, considered as a rail only, there can be very little question as to the advantage of the tram girder as against the grooved type. The tram girder is practically a T-rail with a lip on it, and, if I am not mistaken, was

the most suitable for them. It must fit in with the whole pavement, forming a composite pavement best suited for all the users of it. Incidentally one particular part, the rail, must be of such type as will break up the pavement the least. Taking this into consideration, from the viewpoint of the general public the question is not so much the type of rail as it is the effect on the pavement as a whole, and from this arises the paradox that, for paved streets, the question of the rail is a pavement question, and the maintenance of track is a pavement maintenance.

Mr. Schreiber shows but one paving material, and the illustrations seem to indicate that his first choice would have the same fault that his fourth choice has, viz.: "Is largely self-cleaning, still it will catch and hold sand, grit, pieces of metal and other débris. In



evolved from the old flat tram rail, which, spiked to a timber stringer, was one of the first rails used in paved streets.

The necessity of the tram in this flat rail was to provide an increased bearing surface on the stringer and thus diminish the crushing of the timber and also furnish a means for spiking the rail to the stringer. Incidentally it furnished a smooth run for horse-drawn vehicles which, in the good old days of rough cobble, Belgian or block pavements, was a distinct luxury to vehicular users. This use of the tram by vehicles was the cause of ordinances in some cities regulating the gage of tracks to conform to the wheel gage of horse-drawn vehicles so that all four wheels would have a smooth path.

With the growth in the art of rail making, it became feasible to roll a tram rail head on top of a girder, which brought the tram girder rail into existence, and this evolution in rails came when stiffer rails were required, due to increased weights and speed of cars.

A rail provides a pavement or track for one class of vehicles only, and, when included in a pavement suitable for all classes of vehicles, the type of pavement as a whole should determine the type of rail. This brings up the fact that a track for cars cannot necessarily be

winter, also, the groove tends to become clogged with snow and ice." In fact, his first choice appears to be less self-cleaning than his fourth choice, because the stone would make a rougher groove than the steel groove and so would be harder to clean. The flangeway in his third choice would also tend to clog up, especially with snow and ice, which leads us to one more conclusion, viz.: that in addition to being a paving question, the rail question involves to a degree the crown of the paving between the rails.

Probably all engineers agree that the T-rail is the first choice as rail; perhaps none of them agree as to the first choice in pavements, but some will agree that a paving section which permits easy turnout for vehicles when following the rails and nearly a minimum obstruction when they cross the rails diagonally and which offers no inducements for vehicles to follow the rails has a great deal of merit. It seems to me that Mr. Schreiber's second choice does all these things.

With a flange depth of $\frac{7}{8}$ in. and a crown at the center of the track of $\frac{1}{4}$ in. to $\frac{3}{4}$ in. above the rail heads, a smooth crossing is made for vehicular traffic, and no deliberate flangeway is provided to interfere with the operation of the cars nor to invite vehicles to follow the rails. I believe if the tram girder rail is used the same crown should be maintained, which would bring the edge of the paving $\frac{1}{4}$ in. above the lip instead of $\frac{1}{2}$ in., as stated in the article. This would leave

that much less room for snow, ice and other foreign material in which to accumulate.

As for the grooved rail, there are no arguments in its favor from the street railway standpoint, though

vehicle wheel crossing diagonally and the slight drop of $\frac{3}{8}$ in. from the rail head.

The remaining figure shows a standard track grating which conforms to the paving section very closely and provides for drainage at the flangeway. This grating

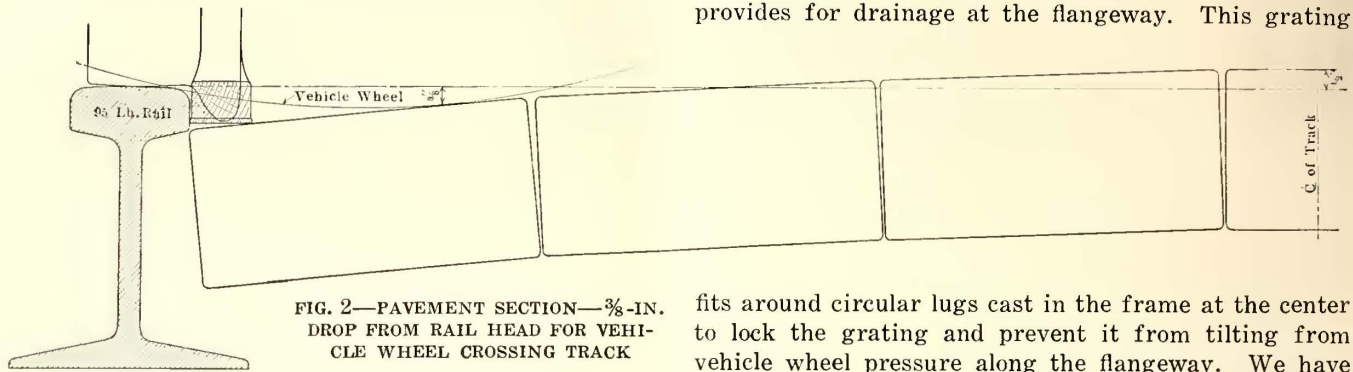


FIG. 2—PAVEMENT SECTION— $\frac{3}{8}$ -IN. DROP FROM RAIL HEAD FOR VEHICLE WHEEL CROSSING TRACK

we are forced to use it, sometimes from public sentiment.

I do not agree with the editorial in the ELECTRIC RAILWAY JOURNAL of Dec. 8 as to its being unfortunate that the grooved rail has been standardized, unless it is on account of the proposed change from a plain to a curved head. I think that perhaps the tram girder should be recognized and standardized also, thus giving three standards for rails, viz.: best, T-rail; alternate, tram girder; worst, grooved girder; and in addition there should be a standard paving section, irrespective of material, which will best fit the first two rail standards. As for the last type of rail, a flat paving section across the track laid a trifle higher than the abutting edge of the rails will probably answer.

In conclusion regarding the paving section, why not make a standard track basin to conform to the paving section and provide for drainage in the flangeway?

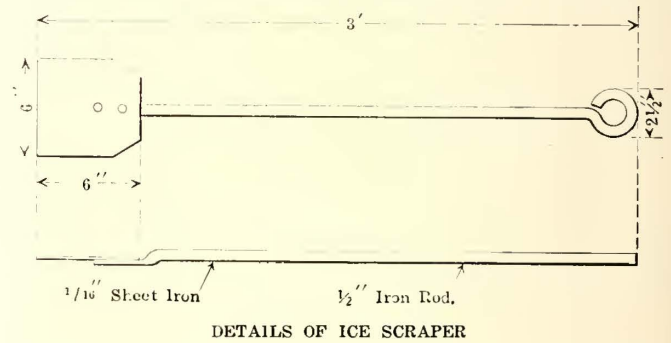
In Fig. 1 is shown a section of pavement with a grooved block against a T-rail on which is indicated a steel-tired wheel. This shows the bearing of the edge of the steel tire against the shoulder of the block which is soon abraded, forming a deep rut exceedingly hard to turn out of and inviting driving along the rails to the rapid deterioration of the pavement.

Fig. 2 shows a plain block laid to a crown to accommodate the wheel flange. It shows, also, a part of a

fits around circular lugs cast in the frame at the center to lock the grating and prevent it from tilting from vehicle wheel pressure along the flangeway. We have installed a number of these basins during the past two seasons with good results.

Ice Scraper for Cleaning Car Platforms and Steps

The Beaver Valley Traction Company, New Brighton, Pa., is among the roads that are particular about keeping their platforms and steps free from snow and ice



DETAILS OF ICE SCRAPER

during the winter months. Each car carries a tool similar to the one shown in the accompanying sketch. This serves to remind the men to clean off the snow and ice and provides a means of doing this with a minimum amount of effort.

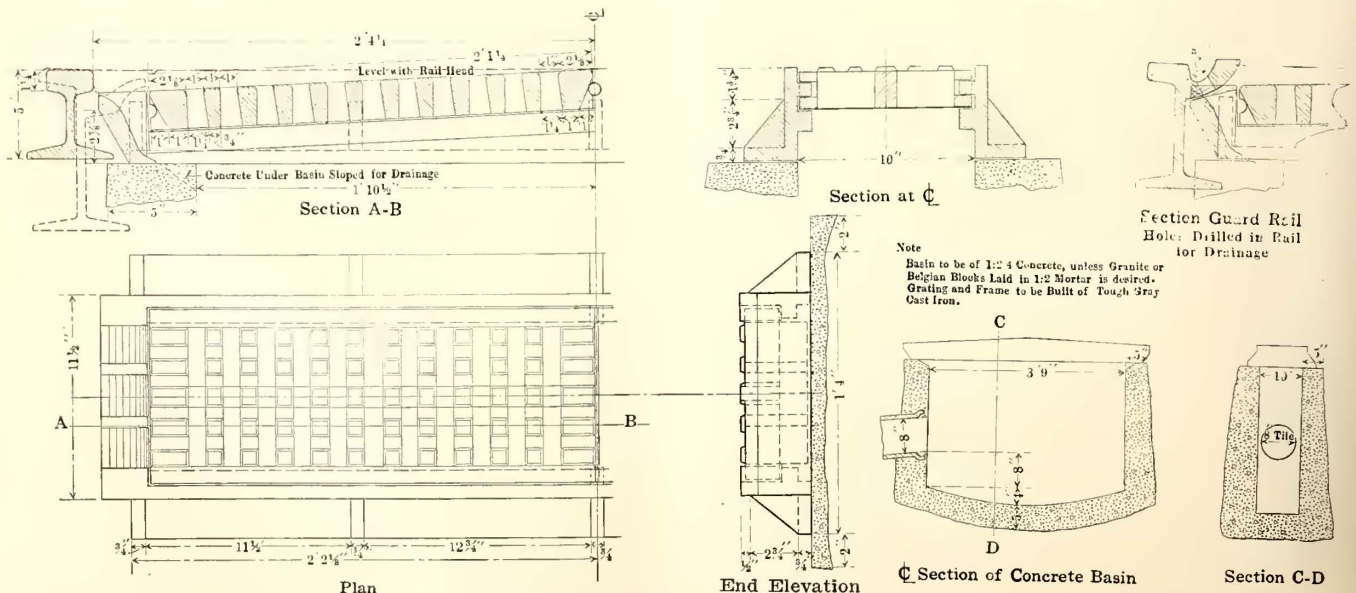


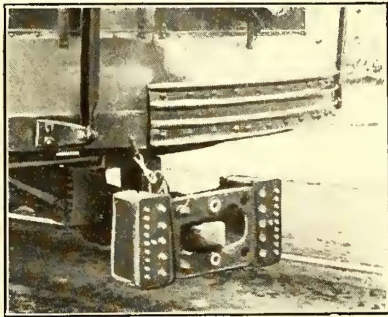
FIG. 3—STANDARD TRACK BASIN DESIGN OF THE CONNECTICUT COMPANY

Boston Elevated's Latest Surface Cars

Several New Low-Floor, Multiple-Unit Surface Cars Now in Service on Boston Elevated Railway—Active Trolley at Front End a Special Feature

The Boston (Mass.) Elevated Railway is placing in service as it receives from the manufacturers 100 center-entrance, low-floor, multiple-unit motor cars, which represent a noteworthy advance in surface rolling stock design as compared with the company's previous equipment. A brief description of the new cars appeared on page 879 of the *ELECTRIC RAILWAY JOURNAL* for May 12. In appearance they resemble the center-entrance trailers which have been in use in Boston during the last two or three years. The new cars already received are being operated on the Orient Heights-East Boston tunnel route, and their liberal size, combined with their convenient use in trains during rush hours, has greatly improved service in the tunnel.

Fifty of the cars were built by the J. G. Brill Company and fifty were supplied by the Laconia Car Company. They are equipped with four GE-247, 40-hp. motors, Westinghouse air brakes and hand brakes of the latest type made by the Horne Manufacturing Company. The car bodies, which are 48 ft. 9½ in. long over all and of steel construction, are placed on two Laconia "Diamond"



VIEW OF AUTOMATIC COUPLER ON BOSTON CARS

trucks with 5½-ft. wheelbase and 24-in. wheels, the distance between truck centers being 24 ft. To get rapid car movement the starting signals and control are automatic, the latter being obtained with PC-5 control equipment, in which the contactors are mechanically operated. This control was described on page 827 of the *ELECTRIC RAILWAY JOURNAL* for Nov. 3. The Tomlinson automatic car coupler, furnished by the Ohio Brass Company, is used, which makes both the air and electrical connections, caring for fifteen electrical circuits.

The center doors, which are 6 ft. 6 in. wide, are the only ones provided. These are of the sliding type, and are operated with the Consolidated Car Heating Company's door engines. The entrance step is 15 in. high



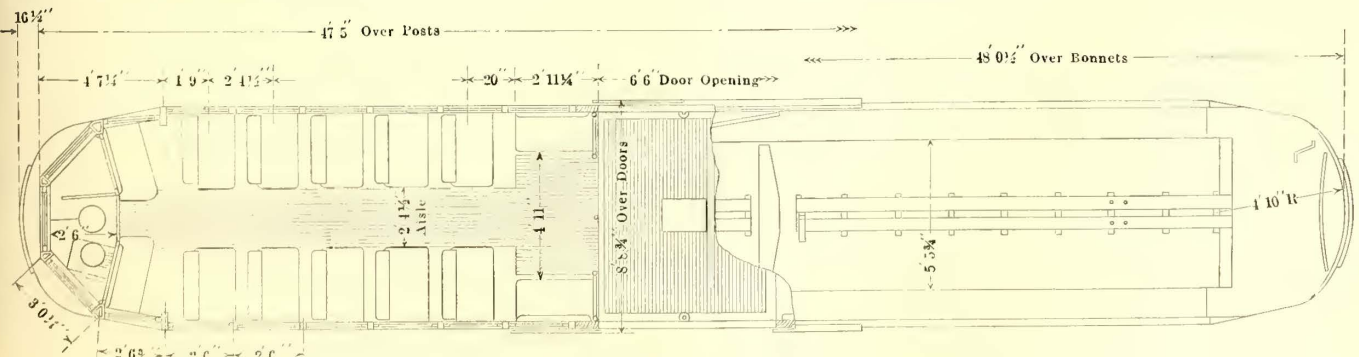
NEW LOW-FLOOR CAR OF BOSTON ELEVATED RAILWAY

and the center well, where the conductor's stand is located, is ramped toward the center to give a rise of 13⁄8 in. At each side of the entrance well is a 10-in. step, and 4 in. ramps lead from them to the main floor level, which is 30⁄8 in. above the rails. Experience gained by the company in the use of articulated cars has been utilized in the location of the active trolley at the front end. The trolley rope, which extends down through a hatch in the roof, is thus placed near the conductor's position.

The seating capacity of the car is fifty-eight when used singly or as a motor unit and sixty when used as a trailer. Heywood-Wakefield cross seats are provided in each half of the car and on both sides of the center aisle, with short longitudinal seats adjacent to the center well. Provision is made for passengers to occupy seats in the cab when it is not being used by the motorman. Metal panels, which slide vertically, cut off from the cab the interior light of the car.

The emergency lighting system deserves special mention. In the event of the trolley leaving the wire a set of 12-cp. incandescent lamps is connected, through a relay, across a storage battery of twelve Exide cells located under the seats. These lamps are installed under the monitor on the inside of the car, and also beside the regular 23-watt lamps.

The Iowa Railway & Light Company of Cedar Rapids recently pulled in 2800 ft. of 600,000-circ. mil lead-sheath cable with a truck without interposing a winch in the pulling-in line. An ordinary wire cable grip was used. The manholes were each fitted with pulling irons. When a pull was made the truck was operated in reverse to get more power and less speed.



PLAN OF BOSTON ELEVATED RAILWAY LOW-FLOOR, CENTER-ENTRANCE CAR

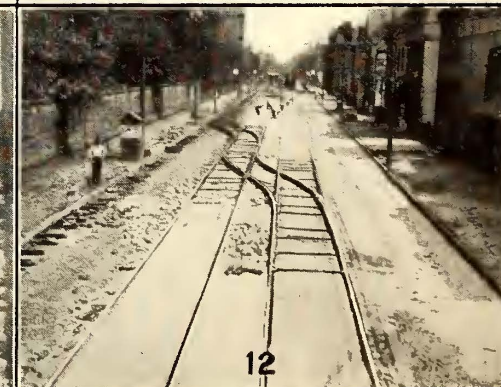
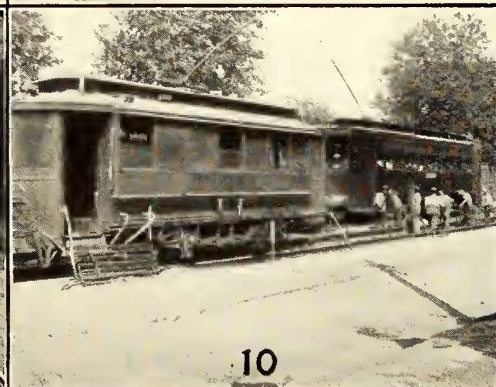
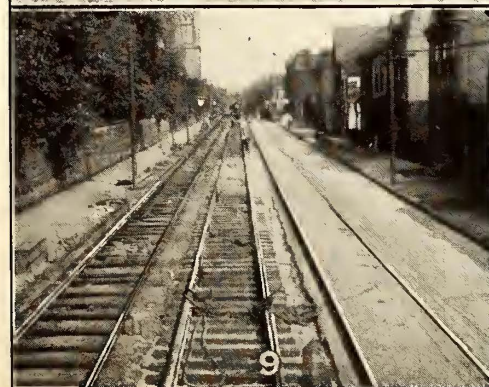
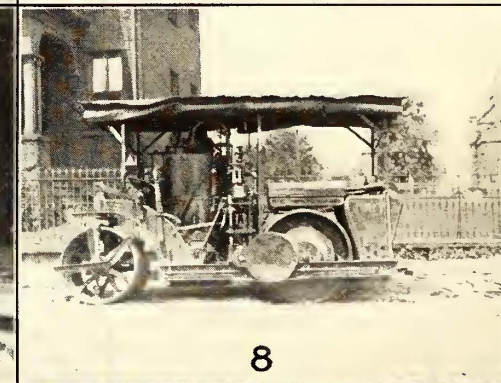
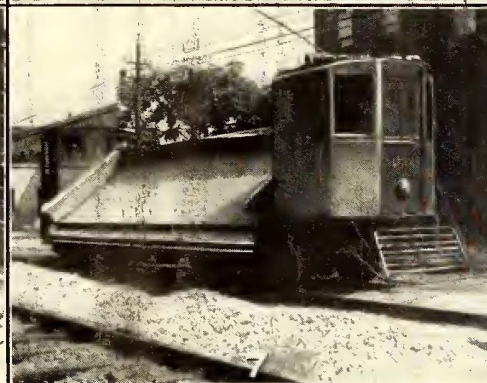
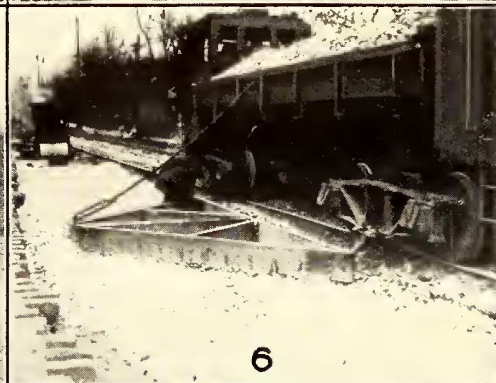
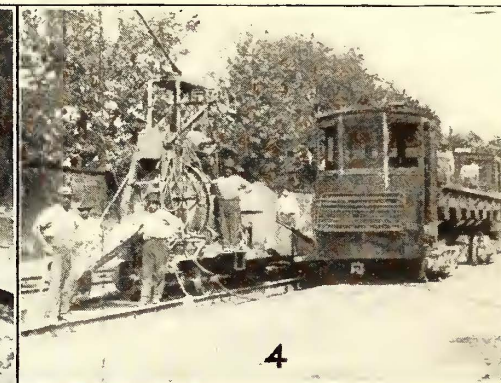
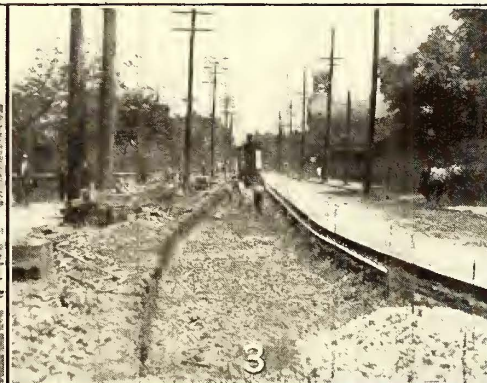
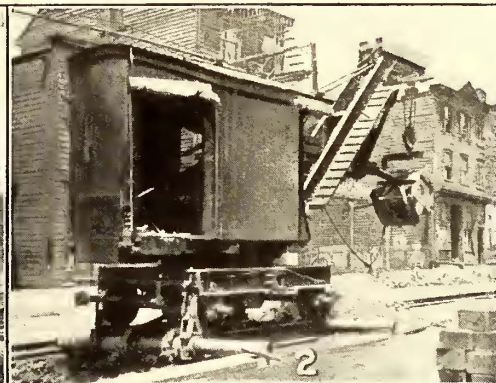


Fig. 1—Electric shovel loading steel dump car.
Fig. 2—View of electric shovel on propelling cradle.
Fig. 3—The path of the electric shovel.

Fig. 4—Charging concrete mixer from dump car.
Fig. 5—Dump car unloading ballast.
Fig. 6—Harrow pulled by dump car for spreading ballast.

Fig. 7—View of empty dump car.
Fig. 8—Steam roller for rolling subgrade and stone ballast.
Fig. 9—View of section of track under construction.

Fig. 10—Air compressor car and pneumatic tie tamper at work.
Fig. 11—Handling rails with electric crane car.
Fig. 12—Cross-overs built of 80-lb. T-rail.

Track Construction Scenes and Labor-Saving Machinery Used on Pittsburgh Railways

Doing a Big Track Construction Job with a Minimum of Labor

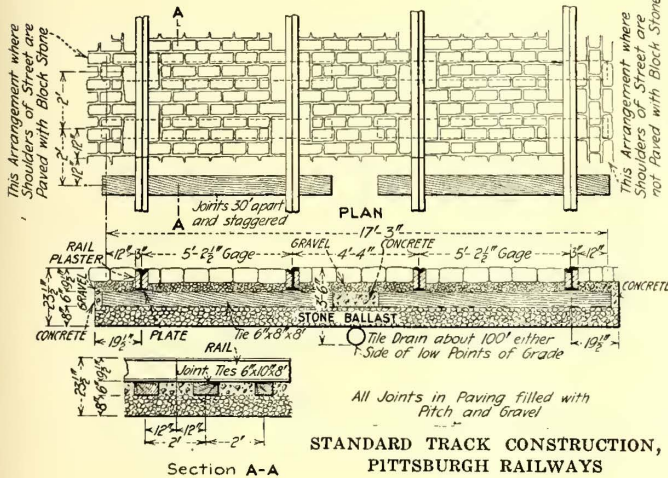
BY G. W. EMORY

Assistant Engineer Maintenance of Way, Pittsburgh (Pa.) Railways

Some of the methods of our company in track construction work may be of interest. The following brief description, together with the views of the work while in progress and some labor-saving machinery used, will give an idea of the work done recently on Penn Avenue.

The subgrade was taken out to a depth of 23½ in. below the grade of the finished street with a Thew electric shovel and the material was loaded into Clark steel dump cars. In operating the shovel a T-rail track was laid on the flank of the street, using the Kerwin T-rail turnouts and crossovers to make connection to the girder rail track at either end of the section where work was in progress. These sections were usually about 1000 ft. long. Traffic was diverted to this temporary track so that the old track adjacent to the one being graded could be used by work cars for taking away the old material and delivering the new.

After the subgrade had been removed to the required depth and a 6-in. tile drain placed in dummy 42 in.



below the top of the rails, the bed was rolled with a 10-ton tandem Buffalo steam roller. All soft spots were dug out until a good foundation was reached, and the extra depth was filled with ballast. Upon this new subgrade was placed 8 in. of stone ballast, which in turn was rolled, and upon the rolled ballast 6 in. x 8 in. x 8 ft. white oak ties were spaced 2 ft. between centers, except at the joints where two ties 10 in. wide were used. The 9-in. girder rails, which were either Lorain Steel Company section No. 134-470 or Pennsylvania Steel Company section No. 134-406, were fastened with 5½-in. x 9/16-in. spikes, with a ½-in. shoulder tie plate on each tie.

The joints were made with 32-in. angle bars and twelve 1 1/16-in. turned bolts. The holes in the angle bars and rails were reamed so that all bolts made a driving fit. A thermit shoe was placed on the base of the rail, and no allowance was made between rails for expansion. These joints were bonded with two No. 0000 concealed compressed bonds. The track was then aligned, surfaced and tamped. The tamping was done with Ingersoll-Rand compressed-air tie tampers.

The next operation was filling in with concrete,

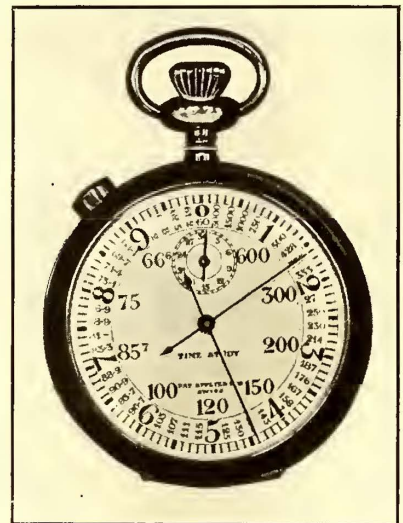
1:3:6 mixture, from the bottom to the top of the ties between rails, in dummy and one foot outside the curb rails. The concrete was mixed with a Marsh-Capron mixer. A 2½-in. sand cushion was spread over this concrete base and Ligonier block stone laid on this cushion. After the stones were rammed to an even surface they were grouted with a 1 to 1 mixture, which was also prepared with the Marsh-Capron mixer, and broomed into the joints until they were thoroughly filled flush with the surface of the blocks. Immediately after this the entire pavement was broomed to a smooth surface. All joints where the height of two abutting rails was not the same were ground with a Goldschmidt grinder.

The average cost of track constructed as described runs between \$6 and \$7 per lineal foot of single track. In connection with the appliances used on this work, I would call special attention to a ballast spreader and the cradle on which the electric shovel sets while at work and by which it propels itself. Both of these have proved to be great labor savers and are the inventions of our general manager, P. N. Jones. The ballast spreader was described in the ELECTRIC RAILWAY JOURNAL for Feb. 3, 1917, page 215.

Decimal Split-Hand Watch for Motion Study Work

With the development of time and motion study in electric railway shops, a need has been felt for a split-hand watch which at one observation would indicate the productive and non-productive time of an operation. Such a watch has been brought out by Mortimer J. Silberberg, Chicago, Ill. The improvement in this watch over previous time-study watches is that the decimal computed dial has been combined with a high-grade split-hand watch. On this dial, which is divided into tenths and hundredths of a minute, figures are spaced two-hundredths of a minute apart, indicating at any point of elapsed time exactly what the corresponding hourly production would be. The computations on the dial designate pieces or operations per hour.

The watch has two hands, one of which is controlled by the side plug and the other by the crown. If it is desired, both hands can be used as a unit and controlled by the crown. The crown-controlled hand can be used individually to determine the gross time, and the one controlled by the side plug to subtract the non-productive time or delays. By the combination of the two, therefore, an observer is able to obtain at one reading both the gross and net time for an operation.



DECIMAL SPLIT-HAND TIME STUDY WATCH

Cost Data on Special Work Construction—I

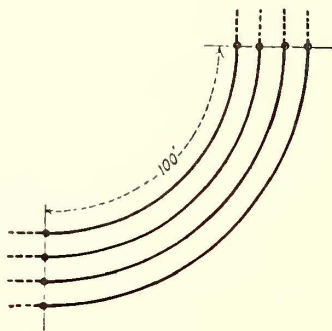
By M. BERNARD

Assistant Engineer Way & Structures Department,
Brooklyn (N. Y.) Rapid Transit System

Supplementing the series of plates giving Cost Data on Special Work Renewals, the author has compiled a few cost data on original installations of special work. The following four units are of the same types as those covered in the issues for Aug. 18, page 279, Fig. 4; Sept. 8, page 406, Fig. 8; Sept. 29, page 588, Fig. 14; Dec. 8, page 1043, Fig. 30.

Fig. 1—Double Track—Plain Curve (90 Deg.)

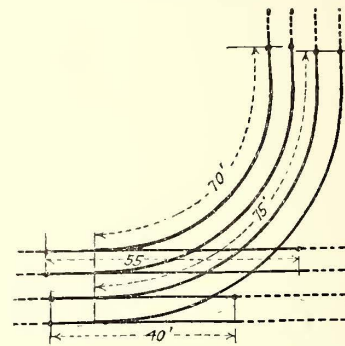
Length—200 ft. single track
New construction—7-in. girder construction—5-in. granite on concrete
Old construction—street graded, unpaved



	No. Traffic
Labor	\$260.00
Handling	120.00
Miscellaneous	30.00
Total (except materials)	\$410.00
Cost per single track foot	2.05

Fig. 2—Double Track—Branch-off (90 Deg.)

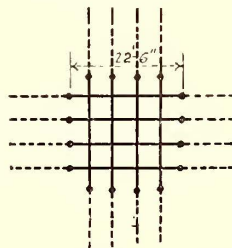
Length—240 ft. single track
New construction—7-in. girder rail*—5-in. granite on concrete.
Old construction—Streets graded, unpaved. Existing track—7-in. girder rail.



	Light Traffic	Average Traffic	Heavy Traffic
Labor	\$340.00	\$380.00	\$420.00
Handling	110.00	120.00	130.00
Miscellaneous	45.00	50.00	55.00
Total (except materials)	\$495.00	\$550.00	\$605.00
Cost per single track foot ..	2.06	2.29	2.52

Fig. 3—Double Track Crossing (90 Deg.)

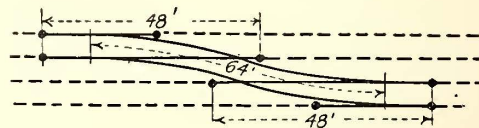
Length—90 ft. single track
New construction—7-in. girder rail*—5-in. granite on concrete.
Old construction—8-in. granite on sand. Existing track—9-in. girder rail.



	Light Traffic	Average Traffic	Heavy Traffic
Labor	\$190.00	\$210.00	\$230.00
Handling	60.00	70.00	80.00
Miscellaneous	40.00	45.00	50.00
Total (except materials)	\$290.00	\$325.00	\$360.00
Cost per single track foot ..	3.22	3.61	4.00

Fig. 4—Right Hand Cross-over

Length—160 ft. single track
New construction—7-in. girder rail*—5-in. granite on concrete.
Old construction—7-in. girder rail—5-in. granite on concrete.



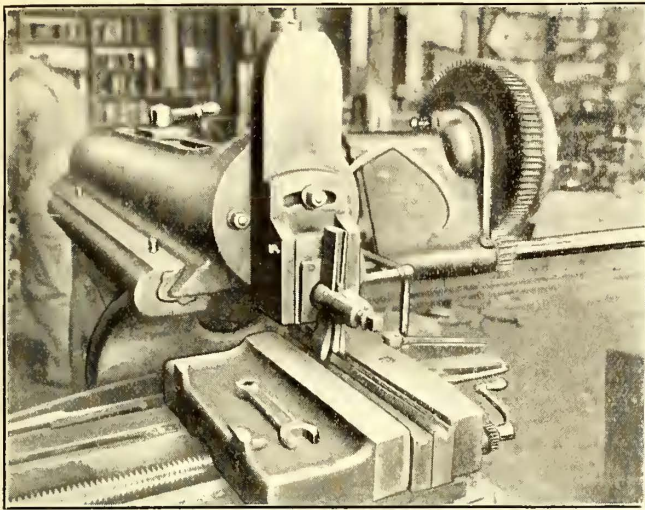
	Light Traffic	Average Traffic	Heavy Traffic
Labor	\$280.00	\$310.00	\$365.00
Handling	75.00	80.00	95.00
Miscellaneous	45.00	50.00	60.00
Total (except materials)	\$400.00	\$440.00	\$520.00
Cost per single track foot ..	2.50	2.75	3.25

*Hard-center construction. *Explanation:* By "light traffic" is meant either the divergence of cars during progress of work or a traffic of not more than 150 cars per day of twenty-four hours. "Average traffic" denotes the passage of about 325 cars per day of twenty-four hours, and "heavy traffic" that of 750 or more.

By "labor" is meant the labor cost of tearing out the old paving and special work and installing the new at the location where the work is done. "Handling" signifies the cost of loading the necessary materials at the various storage yards as well as the unloading of same at the place of renewal. It also includes the cost of transportation and the cost of removal of old or left-over material. Since the transportation

is done by a subsidiary company, which adds profit and overhead expense to the net cost, this item may differ considerably from that obtained on other railways. Under "miscellaneous" are included the expense of city inspectors, expense incurred when portable crossovers are used for divergence of cars during renewal, watchmen's wages, and incidental engineering expense. The total of these three items—labor, handling and miscellaneous—therefore includes everything except the cost of materials.

On account of the unsettled labor conditions prevailing since the beginning of the war, the costs given are based on pre-war wages, the average track labor on which these costs are based is 20 cents per hour, including the foreman's wage.



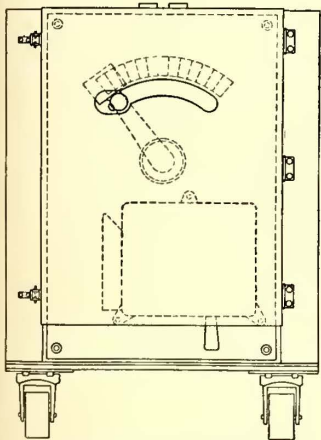
GROOVING TROLLEY EARS IN SPOKANE SHOPS

Trolley Ears Made with Shaper.

The Washington Water Power Company, Spokane, Wash., has its own design of trolley ears. For cutting the grooves for the wire, R. A. Willson, general superintendent, designed the special tool shown in the illustration. This tool in one operation perfectly cuts the groove to receive the trolley wire and at the same time it brings up the sides to a feather edge so that they can be hammered over the wire. It is notable that a shaper is used for this work, the grooves being cut instead of milled. Special form blocks are used to hold the ears in place in the shaper. The facing and tapping is done on a turret lathe, a special check being used. The ears are made in three sizes, No. 0, No. 00 and No. 0000.

Portable Outlet Panels for Electric Welding Service

An electric welding outfit, to be of maximum service, must be so arranged that it can be transported to the work regardless of location. One solution of this problem would be the location



PORTABLE OUTLET PANEL FOR ELECTRIC WELDING SERVICE

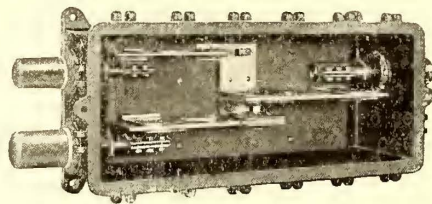
of an outlet panel of suitable type wherever it is anticipated that electric welding may be desired. This is, however, a rather expensive proposition and the same result may be accomplished in a more simple manner. The Westinghouse Electric & Manufacturing Company has developed portable outlet panels, mounted on light trucks, to take care of this situation. The outfit consists of a control panel having overload release with magnetic blowout and a thirteen-point face plate connected to a resistor mounted in the rear of the panel. The face of the panel is protected by a metal cover through which the handles of the rheostat and circuit-breaker project. The re-

sistor is made up of grids and is protected by a cage of expanded metal.

When an electric welding system using these portable panels is installed, the company suggests that an arc-welding motor-generator set be placed at some central point. If suitable low resistance ground connection can readily be made throughout the shop, as for instance in a railway shop where the track system can be used, only one connector need be extended to the various receptacles. The track rails can be bonded by arc-welding the fish plates to the rails and receptacles of the capacity appropriate for the service for which they are intended provided at suitable points throughout the shop. These receptacles can be mounted out of doors if they are provided with protection from the weather. Single-pole receptacles and a single wire cable to the portable panel should be provided, this cable being of sufficient length to place the panel as near as possible to the work. The flexible cable leading from the panel to the electrode holder should be as short as is consistent with the class of work to be done.

Underground Switch Box for Trolley Feeder Connection

An underground cable switch box has been designed especially for electric railway service by the Standard Underground Cable Company, which makes possible the disconnecting and sectionalizing of different parts of a live circuit by simply opening one or more quick-break knife switches. The box is waterproof and is mounted on the wall of the manhole. The cables enter the box through nipples which are mechanically connected to the lead cable sheath by a wiped soldered joint. The main feeder cable passes into the box through the nipples shown at the right end and at the lower left-hand corner in the accompanying illustration. The other nipple is for the feeder tap to the trolley. The box is



INTERIOR VIEW OF CABLE JUNCTION BOX

designed for main feeders up to 2,000,000 circ. mil. and for 500,000 circ. mil. side-tap feeders. The switches in the main feeder circuit have a capacity of 1000 amp., and the side-tap switch has a capacity of 400 amp. All live parts in the box are mounted on non-inflammable insulating material and separated by ample air gaps.

An important feature of this junction box is the patented bimetallic nipple, the rigid portion of which is brass and the malleable portion lead. The wiped joint is thereby made between the lead of the nipple and that in the cable sheath, which requires much less heat and less skill than in making a similar joint between brass and lead. The nipple is also designed to permit all cable connections to be made away from the box where there is more room to work and no metal wall to conduct the heat from the parts to be joined. After all connections are made to the cable the nipple is inserted and clamped in position.

News of Electric Railways

Traffic and Transportation

Financial and Corporate

Personal Mention

Construction News

Railways Under Government Control

Street and Interurban Railways to Be Taken Only
If It Shall Be Found Necessary or Desirable
Later On

President Wilson on Dec. 26 issued his proclamation putting the railways of the country under government control and appointing Secretary of the Treasury McAdoo director general of railroads. The street and interurban railways are expressly exempted for the present from the proclamation in the following terms:

"Nothing herein shall be construed as now affecting the possession, operation, and control of street electric passenger railways, including railways commonly called interurbans, whether such railways be or be not owned or controlled by such railroad companies or systems. By subsequent order and proclamation, if and when it shall be found necessary or desirable, possession, control, or operation may be taken of all or any part of such street railway systems, including subways and tunnels, and by subsequent order and proclamation possession, control, and operation in whole or in part may also be relinquished to the owners thereof of any part of the railroad systems or rail and water systems, possession and control of which are hereby assumed."

Mr. McAdoo is directed as soon as may be possible after having assumed possession and control of the roads, to enter upon negotiations with the several companies looking to agreements for just and reasonable compensation for their possession, on the basis of an annual guaranteed compensation above accruing depreciation and the maintenance of their properties, equivalent, as nearly as may be, to the average of the net operating income thereof for the three-year period ended June 30, 1917. The result of such negotiations are to be reported to the President for such action as may be appropriate and lawful.

Cleveland Interurban Men Return

The efforts failed which were made on Dec. 14 and 15 by the Chamber of Commerce of Elyria, Ohio, to settle the strike of the motormen and conductors of the Cleveland, Southwestern & Columbus Railway, but on Dec. 20 the employees of the company voted to return to work at the present scale and then take up negotiations for an increase. Under this plan service was resumed on Dec. 22.

Officers of the company and representatives of the employees were present at the conferences on Dec. 14 and 15. It was intimated that the men might accept an increase of 5 cents an hour in their wages, but the company could offer them only 4 cents. The original demand of the men was for 8 cents.

The men were under contract until April 1, 1918, and the officers of the company said that they could view the matter in no way other than that the contract had been broken. The men simply walked out because the company refused to pay 8 cents an hour more than their contract provided for, although the company had consented to meet them half way by the payment of 4 cents an hour in addition to what they are receiving at the present time. Service was discontinued on Dec. 10.

Owing to the fact that the coal supply had been diverted during the strike, the road could not be put into operation until the morning of Dec. 22. The previous day was spent in clearing the tracks of snow and ice and securing coal, a sufficient quantity being obtained to last for some time. Neither passenger nor freight cars were operated on the road while the men were on strike. No attempt was made to secure substitutes.

Toledo Men Appeal to Washington

They Ask the Government to Make a Thorough Investigation and Outline Terms of
Wage Settlement

Employees of the railway and electrical departments of the Toledo Railways & Light Company, Toledo, Ohio, have taken the unusual course of appealing to the federal government to investigate and adjust their demands for an increase in wages. They sent a telegram to Secretary of Labor William B. Wilson on the evening of Dec. 20, after a conference between Henry L. Doherty and representatives of the unions had failed of results. This telegram follows:

THE TELEGRAM TO THE SECRETARY OF LABOR

"A strike is threatened on the railway properties of Toledo by 2000 trainmen and electricians. This company furnishes power to many of the large industrial plants of the city, in addition to its railway business.

"Contracts between the company and the organizations of railway men and electricians exist and will not expire for another year. These contracts were made nearly two years ago at a time when neither side realized the enormous cost of living that now prevails.

"The present wages are low and do not compare with the wages prevailing in other lines of employment; the employees contend that they cannot continue to live upon them. Company officials admit that the wages are too low to meet the present conditions, but contend that their financial condition will not permit them to increase wages.

"This is a serious situation. The officials of both organizations have exhausted every effort to reach a settlement.

"We do not want to see a suspension which will inconvenience the public and retard government work, and we feel that the only hope of preventing a suspension is for the United States government to make a thorough investigation of the situation and outline terms of a settlement. We therefore jointly appeal in the name of our organizations to you to at once take up this matter and order the investigation. Awaiting your reply we remain."

MR. DOHERTY STATES THE COMPANY'S CASE

When informed of the step that had been taken Henry L. Doherty, chairman of the board, said:

"I am not surprised to hear of the step taken by the representatives of the men. It is certainly an unusual proceeding. The company will, however, render every aid possible to a government investigator of conditions if one comes. It will turn over its books and papers and afford every opportunity for a thorough analysis of the situation. I hardly see how the government can step in, but I have no objection whatever. Of course, I realize we are furnishing power to plants which are turning out government work, and I suppose that the federal investigation will be made on this ground."

The men are under contract until April, 1919. They base their plea for an increase in wages upon the advance in the price of all foods and other products necessary for support. An increase of 10 cents an hour has been demanded by the men in the railway department. The electrical workers have asked for a graduated increase based upon the present scale. At several conferences held during the week ended Dec. 22 Mr. Doherty tried to make it plain to the representatives of the men that an increase in wages could not be made unless the rate of fare was raised sufficiently to cover the additional amount of money this would involve. Prices of materials and cost of operating have increased so tremendously that it is impossible to take the one step without the other.

Work for the Engineer in France

Both Reconstruction and Welfare Work of Vast Magnitude Waits to Be Carried Out

C. O. Mailloux, the well-known consulting electrical engineer, has contributed to the New York *Evening Post* a series of two articles showing the important part American engineers can take in reconstruction work in France. He has surveyed the field and cites specific opportunities in many branches of engineering for American co-operation. According to Dr. Mailloux the work of reconstruction to be done will be of two general classes: that which concerns human welfare; and that which concerns industry. In some small rural communities the work of welfare character can be carried on alone, because the problem is that of providing homes only. In industrial districts the two classes of reconstruction work must be carried on together, to a great extent, because industries must be revived there to give employment to the inhabitants as fast as homes are provided for them. The author says that the amount of work involving engineering that there will be to do and that ought to be done, in France, and also in Belgium, immediately after the end of the war, is so enormous that even long rows of figures fail to give an adequate idea of it.

In commenting on electric railway and water-power needs, Dr. Mailloux said in part:

MORE ELECTRIC RAILWAYS NEEDED

"The war has shown the desirability of more suburban electric tramway lines in many places, more especially where there are works located outside the limits of cities and towns which draw their labor from the urban population. Experience in America has shown that employees who are obliged to travel some distance in electric cars in going from their homes to their work and back, acquire the 'riding habit.' The development of this habit has caused the development of many suburban and interurban lines in America. It is possible that the same condition will result in France.

DEVELOPMENT OF WATER POWER A WAR MEASURE

"It was in France that the hydraulic turbine was invented and received its early applications in the development of water powers, both of low and of high heads; and it was also in France that the first practical demonstration of high voltage and long-distance electric transmission on a working scale were made. The field of hydroelectric power remains large, in spite of the relatively great activity which has existed in it in the last twenty years or more. It presents the greatest interest at the present time, and it offers good opportunities for the utilization of American business enterprise, financial resources, and engineering ability, in a way that would benefit France and incidentally bring fair profits to the concerns engaging in the work.

"Of the total available water power in France—estimated at from 6,000,000 to 10,000,000 hp.—only about one-tenth, or somewhat under 1,000,000 hp., has been developed. The desirability and importance of further development of this available power, which were already appreciated before the war, have been realized very strongly since then, as a means of reducing the demand or meeting the shortage for coal. Before the war, France consumed annually about 60,000,000 tons of coal, of which her mines produced about two-thirds; and she imported the rest, or about 20,000,000 tons. At the very beginning of the war, her best coal mines fell into the hands of the Germans, and thus her domestic production was curtailed very seriously, at the same time that the coal coming from other countries became scarce and costly. Under the circumstances the development of water power became a war measure of importance.

HOW THE ENGINEER SHOULD WORK

"It may be presumed that American electrical engineers would have less difficulty than their colleagues of other engineering specialties in going to France to do engineering work. In this case, as in most other cases of engineering work done in France, the American engineer will work more efficiently as part of or under an American group than under French auspices."

Inter-Community League Meets

Representatives from Commercial Bodies in Missouri, Oklahoma and Kansas Organize to Discuss Transportation and Other Problems

The Inter-Community League, embracing Missouri, Oklahoma and Kansas, was formed in Kansas City on Dec. 5, by 100 representatives of commercial bodies of these states. While problems directly resulting from the war will be handled first—especially transportation—the league plans to effect active co-operation among the communities of the three states through their Chambers of Commerce. Divisions were established for these five general topics: Agriculture, transportation, civics, industry and commerce. The subject of power sources, for instance, was frequently mentioned, and the experience of each will be at the service of all. Public utility questions will also be handled, in the same way—though there is a hint at effective help to be given on special occasions, in the fact that a community that has solved a problem will be called upon to help its fellow-member of the league solve a similar problem.

SUBSTANTIAL RESULTS AT THE FIRST CONFERENCE

One instance of the substantial results of the first conference is the way the delegates received a suggestion from the secretary of the Wichita (Kan.) Chamber of Commerce on assignments of club work. Wichita had given the chairmanship of its division on new industries to the manager of the electric interurban railroad, who had much experience in gaging the needs as to location of various industries. Many of the secretaries and presidents of Chambers of Commerce present intimated that upon returning home they would get busy and put the officials or representatives of their local public utilities to work.

There was an occasional remark among the delegates as to a possible campaign for municipal ownership of certain utilities, though it is definitely stated that the league is not on record as favoring such action. If any community seeks municipal ownership, the other communities would be asked to give their opinions and experience.

Harry W. Graham, secretary of the Chamber of Commerce of Chillicothe, Mo., was elected president, and H. B. Ober, president of the Lawrence (Kan.) Chamber of Commerce, was elected secretary.

Gas-Electric vs. Steam Service

San Diego Line Increases Traffic and Reduces Operating Costs by Substituting Motor Cars for Steam Equipment

The San Diego & Southeastern Railway, San Diego, Cal., a steam line with branches serving several districts adjacent to San Diego, was so seriously crippled by jitney competition that the Railroad Commission had recommended the abandonment of service on the line and the owners were considering the matter of acting on this advice. At this juncture the expedient of substituting motor cars for the steam equipment was determined upon, and two 50-ton gas-electric motor cars were purchased. Later a third car of the same type was added. These cars were overhauled and put in excellent condition and the steam equipment was then disposed of.

The steam operation, with locomotives burning oil, cost 85 cents per car-mile. With the motor cars in service the operation cost has been reduced to 20 cents per car-mile. In arriving at this latter figure the assumption is made that the motor cars will be obsolete within ten years and that therefore 10 per cent of their cost price of \$25,000 each should be charged to each year's operation. In addition to this depreciation, the figure includes all maintenance, fuel, supplies and wages.

With the increased flexibility which the motor cars afforded it was possible so to improve the service that with progressive advertising methods the traffic more than doubled.

The rehabilitation has been effected under the direction of E. J. Burns, general manager.

Plan to Hasten New Seattle Line

Council Adopts Plan for the Construction of an Elevated Railway to Connect Present Municipal Lines

The public utilities committee of the City Council is considering a proposal to hasten the construction on the proposed Seattle municipal elevated railway along the waterfront and south on Whatcom Avenue and the construction of a spur of the municipal line on East Marginal Way 1½ miles south to Michigan Street, as a solution of the problem of supplying transportation in the shipyard district. The public utilities committee recently held a conference with the Chamber of Commerce and Commercial Club at which the subject was discussed in all its ramifications. Oliver T. Erickson, chairman of the utilities committee, proposed that the voters at the March election be asked to authorize the transfer of the \$375,000 remaining in the original municipal railway bond issue of \$800,000 to a fund for the construction of the elevated line. Mayor H. C. Gill suggested that construction work might be started immediately after the election. R. H. Thomsen, Councilman, suggested an alternative to the construction of the elevated line. This was that the spur be built by the city of Seattle on East Marginal Way, but that arrangements be made with the Puget Sound Traction Light & Power Company for the routing of the city's cars on First Avenue south between King Street and Spokane Street.

SEATTLE M. O. VOTE IN MARCH

The City Council will submit to the voters of the city on March 6, 1918, the question of utilizing the \$375,000 remaining unsold from a bond issue of \$800,000 authorized in 1911 for the purchase or paralleling of the Seattle & Rainier Valley Railway, for the construction of an elevated railway on Railroad and Whatcom Avenues from Washington Street to Spokane Street. This is in line with furthering the proposed plan for the connection of the city's two municipal car lines, one ending at Third Avenue and Pine Street, and the other at Riverside, on the west side of the West Waterway. The use of the Renton line tracks on Fourth Avenue is contemplated.

The plans which have been adopted by the Council call for the construction of an elevated railway on Washington Street from First Avenue South to Railroad Avenue; on Railroad Avenue and Whatcom Avenue from Washington Street to Spokane Street, and on Spokane Street from Whatcom Avenue to the West Waterway Bridge. A. H. Dimock, city engineer, estimates the cost of the elevated portion of the line at \$330,000 for wood construction, and \$1,500,000 for steel construction. By building this road the city would be enabled to operate its Lake Burien line over the elevated road to First Avenue South and Washington, connecting with the present Division A at Third Avenue and Stewart Street, by exercising common user rights on Fourth Avenue and Washington Street.

Partial Rapid Transit Operation

Construction Material Brought from Pittsburgh by Motor Truck

Announcement has been made by the Public Service Commission for the First District of New York that it is hoped to have the Lexington Avenue subway and the Seventh Avenue subway in full operation, in connection with the first subway, as soon after April 1 as is possible. In the meantime, according to Frank Hedley, vice-president and general manager of the Interborough Rapid Transit Company, which will operate these lines, the earliest date at which partial operation may be expected is on or about March 1, with the hope, however, that partial operation in Lexington Avenue may be had a week or so before that date. Mr. Hedley stated that delays in material were responsible for the inability of the operating officials to have the lines ready with operating equipment before that time. General construction work under the auspices of the Public Service Commission is practically completed and only the equipment details are lacking. Some of these materials come from points far distant from New York, and in the present congestion of railroad traffic, shipments have been difficult to obtain. In some cases it has been necessary to ship carloads of materials by express in passenger

trains, while other materials have been loaded in motor trucks and brought to New York all the way from Pittsburgh. Mr. Hedley stated that the program of temporary operation as outlined could be carried out in the event that other and more serious delays did not occur.

Meetings with Mr. Brinkerhoff Concluded

At the meetings of the local transportation committee of the Chicago City Council, held on Dec. 18 and 19 and attended by H. M. Brinkerhoff, who served as chief engineer of the Chicago Traction & Subway Commission, as counsel to the committee, the time was occupied principally by a review of the physical plan and its meaning in detail to each section of the city. The financial plan was discussed to a limited extent, but consideration was devoted more especially to the physical plan.

The members of the City Council had been invited to attend, but only three of them appeared. No particular opposition to the plans developed, except from two Aldermen in whose wards no extensions were provided for in the first six years of the Subway Commission's plan, and for which there was nothing definite planned even after that. The committee adjourned after two days of these discussions, and the next step will be to hold a meeting at which representatives of the Chicago traction companies will be present to express again their willingness to carry out the plans as laid down.

Utility Legislation for Texas

A special committee of the Legislature of Texas is engaged in framing a public utilities bill which will come before the next session of the Legislature, either special or regular. The regular session will convene in January, 1919. It is proposed to create a corporation commission, based on the present Railroad Commission, with authority over all corporations in the State, but more particularly over railroads and utility corporations.

The committee has had representatives of electric light and power companies and the interurban and city railways before it and has received the recommendations of these utilities as to what the proposed law should contain. Legislators and representatives of the utilities agreed that the law should give the proposed utilities commission authority to regulate rates and require good service, and that this authority should extend to interurban and city railways. There was a difference of opinion, however, on the question of authority over the issuance of stocks and bonds.

Philadelphia Lease Reported Out

Joint Finance Committee of Councils Reports Favorably the Proposed Lease with the Philadelphia Rapid Transit Company

The joint finance committee of Councils of Philadelphia reported out with favorable recommendation the proposed lease of the unified transit lines presented for final action at the session of the committee on Dec. 21. There was one further amendment in the proposed lease, however. Councilman Hetzel's suggestion that the board of engineers be constituted as originally provided for in the first city plan, viz.: three members, one appointed by the city and one by the company with the third chosen by the two, was approved and the change will be made in the final lease form before presentation to Councils. Under this latest revision the members of the board will receive a salary the amount of which is to be fixed by the Mayor of the city and the president of the Philadelphia Rapid Transit Company. The proposed amendment that all exchange tickets be abolished sixty days after the company signed the contract, was defeated. Likewise Councilman Trainer's amendment providing the company shall be compelled to extend the Delaware Avenue elevated line southward with the development of the city to within five blocks of the extreme southern end of the improved section. Final action is planned in Councils on Jan. 4.

Increase in Wages in Pittsburgh.—The Pittsburgh (Pa.) Railways decided on Dec. 21 to raise the rate of pay of its motormen and conductors 2½ cents an hour, the change to be effective immediately.

Strike Called Off.—The employees of the Gulfport & Mississippi Coast Traction Company, Gulfport, Miss., who went on strike on Dec. 5 when the company refused to recognize their newly organized union and grant wage increases, returned to work on Dec. 7 and agreed to arbitrate the wage question later.

Preparing for Damage Suit Hearing.—W. G. McClaren, attorney for the Duwamish Waterway District, Seattle, will represent that district in Washington, D. C., in the case of the Puget Sound Traction, Light & Power Company vs. the Waterway District. The company asks \$500,000 for damages to its lines as the result of dredging and river improvement work. The case was tried in the King County Superior Court and appealed by the plaintiff to the Supreme Court.

Municipal Ownership Agitation in Central New York.—The Aldermen of Syracuse, N. Y., are discussing the matter of municipal ownership of the local railway lines. The adjacent villages are said to be in sympathy with the movement. The hope is expressed that the discussion now going on will bring about a bill authorizing municipal ownership of railways or result in an amendment to the legislative measure now being prepared by Senator Robert F. Wagner authorizing municipal ownership in Syracuse.

Armed Guards Asked for Trains.—A petition has been filed with the Public Utilities Commission of Illinois asking that the East St. Louis & Suburban Railway, East St. Louis, Ill., be required to place armed guards on trains running to the plant of the St. Louis Smelting & Refining Company. The petitioner states that owing to unsettled labor conditions and strikes in progress the guards are necessary for the protection of the patrons of the road. This is the first petition ever filed with the commission demanding armed guards on trains of any carrier.

Increase in Wages in Tampa.—The Tampa (Fla.) Electric Company has increased the pay of its trainmen 2 cents an hour, effective on Jan. 1. This is the third increase in a little more than a year and means an advance of 30 per cent within this period. In announcing the increase the company said: "This increase is made for the purpose of relieving the high cost of living, a situation brought about by the war, and not because the company can afford to pay its trainmen more money. The company is having just as hard a time to exist as its employees have to live. In view of this, the company feels obliged to consider this increase in the nature of a war bonus, which will be continued as long as conditions permit."

Program of Association Meeting

Pacific Claim Agents' Association

At a meeting of the executive committee of the Pacific Claim Agents' Association and the Pacific Claim Agents' Index Bureau at Portland, Ore., on Dec. 14 it was decided to hold the next annual convention in Portland on May 1, 2 and 3, 1918. The program of papers decided upon is as follows:

"Prevention of Grade Crossing Accidents," by S. A. Bishop, Los Angeles, Cal., and A. M. Lee, Seattle, Wash.

"Automobile Accidents in Cities and Towns, Causes and Means to Their Prevention," by W. H. Moore, San Diego.

"The Effect of New Labor Conditions on Accident Causes and Prevention," by J. H. Handlon, San Francisco, Cal.

"Obtaining Co-operation from the New Employee and the Old One Under Present Conditions," by H. G. Winsor, Tacoma, Wash.

"How Will the Employment of Women in Railway Work Affect the Claim Department?" by Thomas G. Aston, Spokane, Wash.

"What Is Being Accomplished Along Safety Lines and Accident Prevention," by B. F. Boynton, Portland, Ore.

"The Value of Courtesy," by F. M. Hamilton, Seattle.

The secretary-treasurer of the associations is B. F. Boynton, claim agent of the Portland Railway, Light & Power Company.

Financial and Corporate

Annual Report

Bay State Street Railway

The income statement of the Bay State Street Railway, Boston, Mass., for the year ended Dec. 31, 1916, follows:

	Amount	Per Cent	Increase for Year
Operating revenue	\$10,413,618	100.0	\$854,783
Operating expenses	7,972,800	76.5	740,247
Net operating revenue	\$2,440,818	23.5	\$114,536
Taxes	626,251	6.1	712
Operating income	\$1,814,567	17.4	\$113,824
Non-operating income	62,430	0.6	*1,510
Gross income	\$1,876,997	18.0	\$112,314
Deductions from gross income:			
Rent of leased roads	\$192,667	1.8	\$8,524
Interest on funded debt	1,050,774	10.1	14,943
Interest on unfunded debt	68,775	0.7	*40,957
Miscellaneous	30,627	0.3	3,965
Total deductions	\$1,342,844	12.9	*\$13,523
Net income	\$534,153	5.1	\$125,836
Dividends:			
First preferred stock	\$175,951	1.7	\$11,035
Common stock	102,586	0.9	102,586
Total dividends	\$278,537	2.6	\$113,621
Surplus for year	\$255,616	2.5	\$12,215

*Decrease.

The fiscal year of Massachusetts electric railways (in conformity with a recent act of the legislature) now ends on Dec. 31. The current report of the controlling organization, the Massachusetts Electric Companies, therefore, includes figures for the Bay State Street Railway only for the calendar year 1916. Any attempt to state at the present time the operating results of the present calendar year would depend upon estimate and be inaccurate. It is said, however, that the net, after cost of operation and fixed charges for the first ten months of this year, amounts to \$436,881, while that for the same months of 1916 amounted to \$806,409.

The expenditures during 1916 for improvements and reconstruction amounted to \$883,350. The principal items in this total were \$378,269 for track reconstruction and State and municipal requirements; \$147,523 for track construction and \$165,123 for electric lines and feeders. For the first nine months of 1917 the expenditures amounted to \$464,713, including \$167,197 for track reconstruction and government requirements, \$60,646 for car reconstruction, \$69,501 for electric lines and feeders and \$85,925 for power stations.

On the matter of capital expenditure the report says:

"This has resulted in a heavy burden on the finances of the company, and the work so done has been of a kind which, in general, adds nothing to economy of operation or to better service. Consisting, as it does, largely of rebuilding of bridges, abolition of grade crossings, and the putting of wires under ground, it may be said to benefit the public without any corresponding benefit to the street railway. The case is quite different with the 200 new cars and the new dynamo for the power station at Quincy, mentioned in the last report; both of these are most important for economy and for improved service."

During 1917, underlying bonds aggregating \$907,000 fell due and were paid, excepting a few not yet presented. Bonds of the Boston & Northern Railway and Old Colony Street Railway have been issued to the Bay State Street Railway in place of the underlying bonds paid. In addition, \$764,000 of the same bonds were issued under approval of the Public Service Commission. The condition of the security market has been such that to sell new bonds would have resulted in serious sacrifice. The emergency was met by an issue of \$850,000 of one-year 5 per cent notes dated March 15, 1917, and secured by \$1,147,000 of the above mentioned bonds. There remain in the treasury of the Bay State Street Rail-

way as of Dec. 1, 1917, \$377,000 bonds of the Boston & Northern Railway and Old Colony Street Railway. During 1917, 5300 shares of first preferred stock of the Bay State company were issued, all of which were taken at par by the trustees of the controlling organization.

As to the various fare adjustments that have been secured by the Bay State Street Railway, the report states that these have resulted in a substantial amount of relief. The gross passenger earnings for the first eleven months of 1917, with no increase in car miles run, exceed those of the previous year by \$444,268. However satisfactory these figures might have been under normal business conditions, the increases in gross have not been sufficient to cope with the increased cost of operation. Increases in fares have been constantly overtaken and passed by the rise in wages and material costs. Having in mind the various unfavorable circumstances which are gathering around all electric railway operations the trustees of the Massachusetts Electric Companies are said to view the situation of the Bay State Street Railway with grave concern.

\$210,500,000 Utility Maturities in 1918

Larger Amount Than Any in Past Five Years, and \$126,500,000 More Than in 1917—Maturities in the Railway Field in 1918 Will Total \$126,817,000

The aggregate of public utility securities which will mature in 1918 amounts to \$210,500,000, according to the *Wall Street Journal*. This is \$126,500,000 more than matured in 1917 and is larger than any amount in the past five years. As usual in recent years, the preponderance of issues coming due next year is notes running from one to five years. The largest single item to mature in 1918 is \$57,735,000 six-year 5 per cent notes of the Brooklyn Rapid Transit Company, due on July 1. Below are given the various railway issues maturing in 1918, issues less than \$200,000 not being shown.

More Massachusetts Electric Committees

Affairs of Massachusetts Electric Companies Are Said to Be in Exceedingly Precarious Condition

The committee representing the noteholders of the Massachusetts Electric Companies, Boston, Mass., has been increased by addition of George H. Stuart, third, treasurer of the Girard Trust Company, Philadelphia, Pa., and J. C. Neff, vice-president of the Fidelity Trust Company, Philadelphia, Pa. The committee has issued a statement to the noteholders as follows:

"The financial affairs of the Massachusetts Electric Companies are in an exceedingly precarious condition, owing to the probable necessity of readjusting the financial structure of the Bay State Street Railway (common stock of which is owned by your company) due to lack of working capital and early approach of maturing obligations, a condition brought about by increased expenses of the Bay State Street Railway and its inability to obtain authority to increase correspondingly its revenue.

"Since the protective committee has been formed in the interests of the preferred and the common stocks, it seemed necessary to form a committee to protect the interests of the noteholders. We believe it is essential to your best interest to deposit your notes at once with the International Trust Company, Boston, Mass., or the Girard Trust Company, Philadelphia, Pa."

A committee has been formed to represent the holders of the 4 per cent bonds of the Boston & Northern Street Railway bonds, due in 1954, and the 4 per cent bonds of the Old Colony Street Railway, due in 1954. This committee consists of John R. Macomber, chairman; James Dean, Frederick H. Ecker, William L. Garrison, Jr., John E. Oldham, Philip Stockton, Frederic B. Washburn and W. Eugene McGregor, secretary. The committee requests deposits of bonds to be made with the Boston Safe Deposit & Trust Company.

ELECTRIC RAILWAY SECURITIES MATURITY IN 1918

January		%	Amount	July		%	Amount
Lorain Street, 3-year notes.....	6		\$200,000	Brooklyn Rapid Transit notes.....	5		\$57,735,000
Milford & Uxbridge St. Ry. 1st.....	5		335,000	Kansas City Rys. Co. 3-yr. notes.....	5½		7,922,000
M., St. P., Roch. & Du. El. tr. notes.....	6		750,000	Oklahoma Railway notes.....	6		500,000
United Light & Railways Co. notes.....	6		750,000	Oakland Transit Co. consol.....	6		1,121,000
Winnipeg Elec. Ry. 2-yr. notes.....	6		750,000				
Total			\$2,785,000	Total			\$67,278,000
February				August			
Oak, Ant. & East. R. conv. notes.....	6		\$317,500	Carolina Power & Light Co. notes.....	5		\$202,000
Philadelphia Co. col. notes.....	6		250,000	Hudson Cos. secured notes.....	6		1,500,000
Toledo Trac., Light & Power 1st.....	6		7,013,000	Missouri Elec. R. R. pur. money.....	5		700,000
Toledo Trac., Light & Power 2d lien.....	6		1,200,000	Newport & Fall River St. Ry.....	5		240,000
Total			\$8,780,500	People's St. Ry., Pa.....	6		200,000
March				Philadelphia Company notes.....	6		250,000
Aurora, Elgin & C. R. R. notes.....	6		\$800,000	West End St. Ry. ser. deb.....	5		1,581,000
Eastern Power & L. Co. conv.....	5		2,350,000	Total			\$4,673,000
Lewiston, Bruns & B. Ry. 1st.....	5		845,000	September			
Total			\$3,995,000	Chicago & West Towns Ry. 1st.....	6		\$556,000
April				Ohio Traction Co. coupon notes.....	6		300,000
Cinn. & Hamilton El. Ry. 1st.....	6		\$400,000	Total			\$856,000
Mansfield Railway, Light & Power.....	5		742,000	October			
Massachusetts Electric Cos.....	5		3,000,000	Christopher & Tenth St. R. R. 1st.....	4		\$210,000
U. S. Public Service Co. notes.....	6		1,200,000	Clev., Pains. & East. R. R. 1st con.....	5		1,131,000
Wilmington & Chester Traction.....	5		2,305,000	Clev., Pains. & East. R. R. 1st ext.....	5		500,000
Joliet Railroad general gold.....	5		400,000	Phila. & West Chester Trac. 1st.....	5		400,000
Total			\$8,047,000	Quincy Horse Ry. & Car Co. 1st.....	5		400,000
May				Twin State Gas & Elec. Co. deb.....	5		300,500
Charleston Interurban notes.....	6		\$450,000	Total			\$2,641,500
Commonwealth P., R. & L. conv.....	6		8,081,000	November			
Fort Smith Light & Traction deb.....	6		300,000	General Gas & Electric notes.....	5		\$525,000
Portland (Ore.) Ry., Lt. & Power notes ext.....	5		4,000,000	Total			\$525,000
Sutter Street Ry. 1st.....	5		1,000,000	December			
Detroit United Ry. coup. notes.....	5		3,500,000	Bay State St. Ry. coupon notes.....	6		\$357,000
Total			\$17,331,000	Eastern Texas Electric notes.....	6		500,000
June				Pan Handle Trac. Co. notes.....	6		309,530
Lewiston, Augusta & W. notes.....	5		\$614,000	Toronto Railway notes.....	6		750,000
Manchester Trac., L. & P. notes.....	5		1,000,000	Wyandotte & Detroit River Ry.....	5		425,000
New Orleans Ry. & Light notes.....	6		3,250,000	Easton, Palmer & Bethlehem St. Ry.....	5		200,000
Tenn. Ry., Light & Power notes.....	5		2,500,000	Total			\$2,541,530
Total			\$7,364,000	Total for railways			\$126,817,030
				Grand total—all maturities.....			\$210,427,780

Electric Railway Statistics

Comparison of Returns for Nine Months, January-September, 1917, with Those for 1916, Shows That Increases in Expenses Are Outrunning Revenue Gains

A comparison of electric railway statistics for the nine months, January-September, 1917, with figures for the corresponding months of 1916, made by the bureau of statistics and information of the American Electric Railway Association, indicates that expenses have increased out of all proportion to the gain in revenues.

Data for the nine months, representing 7450 miles of line of companies scattered throughout the country, figured on the per-mile-of-line basis, indicate an increase in operating revenues of 5.87 per cent, an increase in operating expenses of 11.02 per cent, and a decrease in net earnings

of 2.17 per cent. Data representing approximately 75 per cent of this mileage indicate an increase in the amount of taxes paid of 8.78 per cent and a decrease in operating income of 6.38 per cent.

The returns from the city and interurban electric railways as shown in detail in the appended tables, have been classified according to the following geographical grouping: Eastern District—East of the Mississippi River and north of the Ohio River. Southern District—South of the Ohio River and east of the Mississippi River. Western District—West of the Mississippi River.

All of the three groups show a far greater percentage increase in operating expenses than in earnings. Returns for the Eastern, representing 5023 miles of line, indicate an increase in operating revenues of 6.67 per cent, an increase in operating expenses of 13.83 per cent and a decrease in net earnings of 4.06 per cent. Taxes paid by companies represented by approximately 70 per cent of this mileage

TABLE I—COMPARISON OF REVENUES AND EXPENSES OF ELECTRIC RAILWAYS FOR NINE MONTHS, JANUARY-SEPTEMBER, 1917 AND 1916

ACCOUNT	United States				Eastern district				Southern district				Western district			
	Amount, January-September, 1917	Per mile of line			Amount, January-September, 1917	Per mile of line			Amount, January-September, 1917	Per mile of line			Amount, January-September, 1917	Per mile of line		
		1917	1916	% Increase		1917	1916	% Increase		1917	1916	% Increase		1917	1916	% Increase
Operating revenues.....	\$129,459,101	\$17,376	\$16,412	5.87	\$86,109,064	\$17,142	\$16,070	6.67	\$9,591,263	\$11,660	\$11,610	0.43	\$33,758,774	\$21,042	\$19,837	6.07
Operating expenses.....	\$2,759,119	11,108	10,005	11.02	55,127,582	10,974	9,641	13.83	5,527,235	6,719	6,644	1.13	22,104,302	13,777	12,793	7.69
Net earnings.....	46,699,982	6,268	6,407	↓2.17	30,981,482	6,168	6,429	↓4.06	4,064,028	4,941	4,966	↓0.50	11,654,472	7,265	7,044	3.14
Operating ratio, per cent	1917, 63.93; 1916, 60.96				1917, 64.02; 1916, 59.99				1917, 57.62; 1916, 57.23				1917, 65.47; 1916, 64.49			
Av. No. miles of line represented.....	1917, 7,450; 1916, 7,358				1917, 5,023; 1916, 4,991				1917, 823; 1916, 778				1917, 1,604; 1916, 1,590			

COMPANIES REPORTING TAXES

Operating revenues.....	\$84,743,426	\$16,229	\$15,473	4.89	\$44,548,999	\$14,055	\$13,522	3.94	\$6,748,617	\$13,319	\$12,677	5.06	\$33,445,810	\$21,643	\$20,396	6.11
Operating expenses.....	55,344,760	10,599	9,629	10.07	29,658,630	9,357	8,351	12.05	3,804,644	7,509	6,964	7.83	21,881,486	14,160	13,129	7.85
Net earnings.....	29,398,666	5,630	5,844	↓3.66	14,890,369	4,698	5,171	↑9.15	2,943,973	5,810	5,713	1.70	11,564,324	7,483	7,267	2.97
Taxes.....	5,951,411	1,140	1,048	8.78	2,899,742	915	838	9.19	541,959	1,070	995	7.54	2,509,710	1,624	1,496	8.56
Operating income.....	23,447,255	4,490	4,796	↑6.38	11,990,627	3,783	4,333	↑12.69	2,402,014	4,741	4,718	0.49	9,054,614	5,859	5,771	1.52
Operating ratio, per cent	1917, 65.31; 1916, 62.23				1917, 66.57; 1916, 61.76				1917, 56.38; 1916, 54.94				1917, 65.43; 1916, 64.37			
Av. No. miles of line represented.....	1917, 5,222; 1916, 5,176				1917, 3,170; 1916, 3,137				1917, 507; 1916, 507				1917, 1,545; 1916, 1,532			

†Decrease. NOTE.—There were twenty-nine days in February, 1916, and only twenty-eight days in February, 1917.

TABLE II—COMPARISON OF REVENUES AND EXPENSES OF ELECTRIC RAILWAYS IN SEPTEMBER, 1917 AND 1916

ACCOUNT	United States				Eastern district				Southern district				Western district			
	Amount, September, 1917	Per mile of line			Amount, September, 1917	Per mile of line			Amount, September, 1917	Per mile of line			Amount, September, 1917	Per mile of line		
		1917	1916	% Increase		1917	1916	% Increase		1917	1916	% Increase		1917	1916	% Increase
Operating revenues.....	\$14,892,903	\$1,999	\$1,893	5.60	\$9,804,837	\$1,952	\$1,860	4.95	\$1,165,550	\$1,417	\$1,363	3.96	\$3,922,516	\$2,445	\$2,253	8.52
Operating expenses.....	9,370,476	1,258	1,141	10.25	6,212,824	1,237	1,111	11.34	660,716	803	770	4.29	2,523,829	1,573	1,418	10.93
Net earnings.....	5,522,427	741	752	↑1.46	3,592,013	715	749	↓4.54	504,834	614	593	3.54	1,398,687	872	835	4.43
Operating ratio, per cent	1917, 62.93; 1916, 60.27				1917, 63.37; 1916, 59.73				1917, 56.67; 1916, 56.49				1917, 64.34; 1916, 62.94			
Av. No. miles of line represented.....	1917, 7,450; 1916, 7,358				1917, 5,023; 1916, 4,991				1917, 823; 1916, 778				1917, 1,604; 1916, 1,590			

COMPANIES REPORTING TAXES

Operating revenues.....	\$9,846,518	\$1,886	\$1,782	5.84	\$5,133,709	\$1,620	\$1,566	3.45	\$823,201	\$1,625	\$1,499	8.41	\$3,889,608	\$2,517	\$2,318	8.58
Operating expenses.....	6,283,743	1,203	1,104	8.97	3,321,700	1,048	978	7.16	462,596	913	818	11.61	2,499,447	1,617	1,456	11.06
Net earnings.....	3,562,775	683	678	0.74	1,812,009	572	588	↓2.72	360,605	712	681	4.55	1,390,161	900	862	4.41
Taxes.....	671,719	129	120	7.50	305,661	96	95	1.05	65,561	129	111	16.22	300,497	194	174	11.49
Operating income.....	2,891,056	554	558	↑0.72	1,506,348	476	493	↓3.45	295,044	583	570	2.28	1,089,664	706	688	2.62
Operating ratio, per cent	1917, 63.79; 1916, 61.95				1917, 64.69; 1916, 62.45				1917, 56.18; 1916, 54.57				1917, 64.24; 1916, 62.81			
Av. No. miles of line represented.....	1917, 5,222; 1916, 5,176				1917, 3,170; 1916, 3,137				1917, 507; 1916, 507				1917, 1,545; 1916, 1,532			

†Decrease.

increased 9.15 per cent, while the operating income of these companies decreased 12.69 per cent.

As compared with the Eastern group, the Southern and Western have done comparatively better. It must be borne in mind, however, that for some time past there has been a great curtailment in the expenditures for maintenance of way and structures and of equipment. Returns for the Southern group indicate almost no change in its operating income. The net earnings of the Western group increased 3.14 per cent and the operating income 1.52 per cent. Both groups show increases in the amount of taxes paid.

The operating ratio for the country as a whole has increased from 60.96 in 1916 to 63.93 in 1917. The operating ratio of the Eastern district has increased from 59.99 to 64.02. The operating ratios of the Southern and Western groups have also risen.

Reason for Paducah Abandonment

The Paducah (Ky.) Traction Company, as noted briefly in the *ELECTRIC RAILWAY JOURNAL* of Dec. 8, page 1049, has petitioned the City Commission to be permitted to discontinue operation over the Fisherville line. That line is paralleled by the Sixth Street line and the Union Station line for practically its entire distance. Its operation is less profitable than any of the company's other lines.

WHY THE FISHERVILLE LINE WAS SELECTED

In an effort to reduce the schedule in such directions as seemed advisable the company felt that this line offered an opportunity to save the greatest amount of operating expense with minimum loss in revenue by diverting the traffic to the other lines. It was not the intention of the company to abandon the line definitely, but merely to learn the result from discontinuing operation under the stress of present conditions. The discontinuance of the line will necessitate an amendment to the company's franchise.

ONE-MAN OPERATION SUCCESSFUL

The company is operating all its cars on a one-man basis with very satisfactory results. The number of accidents has decreased and the company has met with very little complaint on the part of the traveling public.

Withholding the Income Tax

Memorandum from Treasury Department Explains New Provisions Covering Collection of Income Tax at Source

The Treasury Department, through the office of the commissioner of internal revenue, has issued a memorandum regarding the withholding of the income tax at the source in the case of corporations. Under the new tax law of Oct. 3, 1917, the withholding agent under certain conditions is obliged to refund all tax withheld during the current year, and it will become obligatory for every bondholder to file his own return for 1917 in order to determine the individual liability.

The memorandum reads thus:

"The withholding of tax at the source from income paid to nonresident alien individuals, corporations, joint-stock companies or associations and insurance companies having no office or place of business in the United States, and the return of the tax so withheld shall be in accordance with the regulations in force on Oct. 4, 1917.

"Income paid to citizens or residents of the United States is subject to withholding of normal tax at the source only when derived from interest on bonds and mortgages, or deeds of trust, or other similar obligations of corporations, joint-stock companies, etc., containing a so-called 'tax-free' or 'no deduction' clause. No amount of income paid to a copartnership, either domestic or foreign, is subject to withholding of income tax at the source.

"In lieu of the withholding of normal tax at the source, heretofore required, from incomes paid to citizens or residents of the United States, there shall hereafter be furnished 'returns of information' in accordance with the provisions of Section 1211 of the war revenue act of Oct. 3, 1917.

"Normal tax withheld from income paid to citizens or res-

idents of the United States during the year 1917, other than interest on corporate obligations containing a so-called 'tax free' or 'no deduction' clause, may now, under Section 1212 of the war revenue act, be released and paid over to the persons entitled to receive the same.

"In each case where withholding of normal income tax at the source is now required, it shall be at the rate of 2 per cent only, except that 6 per cent is to be withheld from all payments of interest on bonds and mortgages, or deeds of trust, or other similar obligations of corporations, joint-stock companies, etc., when paid to foreign corporations, joint-stock companies, etc., having no office or place of business in the United States."

Central Passenger Railway, Atlantic City, N. J.—The New Jersey Board of Public Utility Commissioners has dismissed an application of the Central Passenger Railway asking approval of an agreement under which that company was to lease the property of the Venice Park Company, formerly owned by the Venice Park Railway. Both parties to the agreement operate electric railways in Atlantic City. In refusing to sanction the lease the commission held that compliance had not been made with the statutory provisions authorizing such leases.

Lincoln (Ill.) Municipal Railway.—The Council of Lincoln has issued a warrant from the street railway bond fund to the Lincoln Electric Railway for the transfer of certain property of that company to the city of Lincoln. The property in question is known as the extension of the railway from Stringer Avenue to the entrance of the Lincoln Chautauqua grounds. The railway in Lincoln is now owned and operated by the municipality.

Loyal Heights Railway, Seattle, Wash.—The City Council of Seattle, Wash., has voted to purchase the Loyal Heights Railway for \$40,000, this sum to be paid from the city railway extension bond issue of \$125,000. A. L. Valentine, superintendent of public utilities of the city; J. D. Ross, superintendent of lighting, and C. R. Case, superintendent of streets, have been appointed to make final arrangements for the purchase. The line will connect with the projected extension of Division A of the Seattle Municipal Railway into Ballard.

Milford & Uxbridge Street Railway, Milford, Mass.—The Massachusetts Public Service Commission has authorized the Milford & Uxbridge Street Railway to extend for not more than five years the maturity of \$335,000 of 5 per cent mortgage bonds and to increase the interest rate from 5 per cent to not more than 7 per cent, also to extend for five years the \$165,000 first mortgage bonds of the Milford, Holliston & Framingham Street Railway, which were acquired when the Milford company purchased the former company in 1902, the interest rate being increased also from 5 per cent to not more than 7 per cent. Both issues were payable on Jan. 1, 1918.

Morris County Traction Company, Morristown, N. J.—On the ground that the plan of financing is reasonable and in no way prejudices the public interest, the Board of Public Utility Commissioners of New Jersey on Dec. 20 approved the application of the Morris County Traction Company for permission to issue \$1,179,000 of income debenture bonds in denominations of \$1,000, payable on June 16, 1948. Interest on the principal sum is not to exceed 5 per cent. The general mortgage gold bonds are to be retired by the new debenture bonds. This change is in accordance with the plans for the financial readjustment agreed to earlier in the year. As noted in the *ELECTRIC RAILWAY JOURNAL* for June 30, the holders of the first mortgage bonds agreed to a change in the method of the payment of interest to them, while the holders of the second or general mortgage bonds agreed to the substitution of an equal amount of income bonds for their \$1,179,000 of holdings.

Mount Vernon (Ohio) Railway.—The property of the Mount Vernon Railway was sold on Dec. 15 for \$28,600. The road will be dismantled and junked. The property was placed in the hands of a receiver in 1915. It was sold in 1916, but that sale was not confirmed by the court.

Oakland, Antioch & Eastern Railway, Oakland, Cal.—The suit for foreclosure proceedings instituted by Howard D.

Smith and associates, as owners of bonds of the Oakland & Antioch Railway, against the Oakland, Antioch & Eastern Railway has been submitted in the Superior Court of Contra Costa County, after argument and after a motion for a non-suit had been entered by the defendant companies. Mortimer Fleishhacker, president of the Anglo-California Trust Company, trustee under the trust deed, testified that while he had discussed the affairs of the Oakland & Antioch Railway with security holders, he had never considered a suit to foreclose, nor had any such contingency been suggested. He said that such a course would have accomplished no useful purpose or end and would have disrupted the management. He knew from personal observation that the road had been exceedingly well managed under adverse conditions.

Southwestern Traction Company, Temple, Tex.—The property of the Southwestern Traction Company was sold at public auction on Dec. 19 under an order issued by the United States District Court, to F. F. Downs, Temple, for \$10,000 subject to \$130,000 of outstanding bonds.

Trenton & Mercer County Traction Corporation, Trenton, N. J.—Upon application of the Trenton & Mercer County Traction Corporation the New Jersey Board of Public Utilities Commissioners has modified an order made last May permitting the issuance of notes amounting to \$66,000 for the purchase of ten cars. Five of these cars were recently destroyed by fire at the carhouse of the company. Under the modified order the notes will bear 6 per cent interest instead of 5 per cent interest.

Electric Railway Monthly Earnings

BATON ROUGE (LA.) ELECTRIC COMPANY						
Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Oct., '17		\$19,338	*\$10,119	\$9,219	\$3,616	\$5,603
1 " " '16		18,509	*8,319	10,190	3,532	6,658
12 " " '17		228,746	*114,337	114,409	42,591	71,818
12 " " '16		208,536	*102,548	105,988	40,285	65,703

BROCTON & PLYMOUTH STREET RAILWAY, PLYMOUTH, MASS.						
Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Oct., '17		\$9,509	*\$10,226	†\$717	\$1,286	†\$2,003
1 " " '16		9,964	*9,306	658	1,128	†470
12 " " '17		124,190	*123,838	352	14,386	†14,034
12 " " '16		121,336	*106,240	15,096	13,264	1,832

EASTERN TEXAS ELECTRIC COMPANY, BEAUMONT, TEX.						
Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Oct., '17		\$76,333	*\$45,043	\$31,290	\$12,242	†\$21,678
1 " " '16		72,130	*37,862	34,268	8,759	25,509
12 " " '17		925,937	*511,642	414,295	131,955	†296,284
12 " " '16		817,842	*435,548	382,294	106,336	275,958

EL PASO (TEX.) ELECTRIC COMPANY						
Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Oct., '17		\$111,011	*\$65,970	\$45,041	\$6,501	\$38,540
1 " " '16		104,990	*55,576	49,414	5,286	44,128
12 " " '17		1,284,073	*777,855	506,218	64,601	441,617
12 " " '16		1,088,443	*633,775	454,668	56,891	397,777

GALVESTON & HOUSTON ELECTRIC COMPANY, GALVESTON, TEX.						
Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Oct., '17		\$197,919	*\$126,614	\$71,305	\$38,403	\$32,902
1 " " '16		171,761	*107,012	64,749	36,858	27,891
12 " " '17		2,028,899	*1,349,087	679,812	447,661	232,151
12 " " '16		1,929,671	*1,231,365	698,306	438,617	259,689

HOUGHTON COUNTY TRACTION COMPANY, HOUGHTON, MICH.						
Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Oct., '17		\$26,023	*\$17,850	\$8,173	\$5,076	\$3,097
1 " " '16		25,956	*15,756	10,200	5,240	4,960
12 " " '17		341,821	*208,704	133,118	61,631	71,487
12 " " '16		320,263	*181,911	138,352	64,478	73,874

NORTHERN TEXAS ELECTRIC COMPANY, FORT WORTH, TEX.						
Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Oct., '17		\$298,951	*\$142,029	\$156,922	\$29,148	†\$137,357
1 " " '16		205,490	*102,633	102,857	29,442	73,415
12 " " '17		2,363,682	*1,346,955	1,016,727	349,354	†676,956
12 " " '16		1,886,666	*1,146,542	740,124	345,315	394,809

PADUCAH TRACTION & LIGHT COMPANY, PADUCAH, KY.						
Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Oct., '17		\$26,210	*\$20,278	\$5,932	\$7,682	†\$1,750
1 " " '16		26,437	*17,390	9,047	7,241	1,806
12 " " '17		304,065	*232,221	71,844	88,797	†16,953
12 " " '16		310,557	*203,171	107,386	87,075	20,311

SAVANNAH (GA.) ELECTRIC COMPANY						
Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Oct., '17		\$88,589	*\$59,743	\$28,846	\$24,526	\$4,320
1 " " '16		72,246	*49,068	23,178	23,830	†652
12 " " '17		942,348	*625,264	317,084	288,969	28,125
12 " " '16		806,554	*545,425	261,129	281,513	†20,384

TAMPA (FLA.) ELECTRIC COMPANY						
Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Oct., '17		\$82,709	*\$46,814	\$35,895	\$5,501	\$30,394
1 " " '16		82,457	*43,762	38,695	4,263	34,432
12 " " '17		1,007,494	*557,897	449,597	54,532	395,065
12 " " '16		964,328	*527,078	437,250	52,269	384,981

*Includes taxes. †Deficit. ‡Includes non-operating income.

Traffic and Transportation

Dallas Jitneys Lose

Ordinance Requiring Heavy Indemnity Bonds Upheld by the Court of Civil Appeals

The Court of Civil Appeals for the Fifth Supreme Judicial District of Texas, sitting at Dallas, has upheld the ordinance enacted by the city of Dallas under the administration of Henry D. Lindsley as Mayor on Jan. 5, 1917, requiring heavy indemnity bonds from all jitney drivers in Dallas. The Court of Civil Appeals also ruled on another jitney case unfavorably to the jitney drivers. This was the case styled Henry D. Lindsley, Mayor, et al. vs. the Dallas Consolidated Electric Street Railway, in which the railway had secured an injunction in the lower courts restraining the city from enforcing the ordinance initiated by the jitney drivers and adopted by the people on the face of the returns at a referendum election. The judgment of the lower court was upheld and the injunction was continued in force.

These two decisions taken together mean that the initiated ordinance, passage of which was secured by the jitney men and which was considered as favorable for their continued operation, is declared void and the ordinance enacted by the city of Dallas with a view to eliminating the jitneys is upheld and is now the law in Dallas.

According to City Attorney Callaway, the jitneys in Dallas may continue to operate unmolested until final judgment is rendered in these cases. The city of Dallas has fifteen days in which to file motion for rehearing in the Lindsley case, and if this motion is overruled, motion for writ of error to the State Supreme Court may be filed. It is expected that final judgment may be entered inside of two months. In the meantime the jitneys will continue operation at will. Many jitney drivers, however, have already admitted that their fight is hopeless and are indisposed to carry it further.

PROVISIONS OF DALLAS ORDINANCE

The principal provisions of the ordinance that is upheld by the opinion of the Court of Civil Appeals are as follows:

"A motor bus means any automobile, auto truck or trackless motor vehicle engaged in the business of carrying passengers for hire within the city. The 'donation' plan is not excepted.

"No motor bus may run without a license. Application must be made in writing, said application to state over what route the applicant wants to operate and the length of time such license is desired.

"The motor vehicle must be examined and found safe.

"No license shall be granted until the operator of the car furnishes bond in the sum of \$2,500. Suits for damages may be brought on this bond.

"Routes may be changed upon the payment of a \$1 transfer fee. It will be unlawful for an operator to leave the route granted.

"Licenses may be secured for six months or one year at the rate of \$65 per annum. Licenses are not transferable. License fees are \$10 in addition to the \$65.

"Motor buses must be operated continuously on each day except Sundays between the hours of 7 o'clock a. m. and 11 o'clock a. m. and 3 o'clock p. m. and 7 o'clock p. m. except in cases of illness, breakdown or other accident. Jitneys can run a longer period of time but cannot reduce the hours named.

"Each motor bus must have the route painted with oil and lead on the windshield and the word 'bus' painted on the back of the car with oil and lead, the letters to be 5 in. high.

"For any person who violates the provisions of the ordinance the judge of police court may order a fine of not less than \$5 nor more than \$100.

"Upon conviction the judge of the court may declare the license forfeited. Once a license is forfeited the driver is not eligible for another such license within six months."

I. U. T. Fare Hearing Concluded

Final Arguments Are Confined Almost Entirely to the Question of Jurisdiction

The hearing before the Public Service Commission of Indiana on the petition of the Union Traction Company of Indiana for increased rates of fare was concluded on Dec. 20. The final arguments on the petition were devoted almost entirely to the question of jurisdiction. When the hearing closed the commission had before it two main questions, one of jurisdiction and one of whether the relief requested by the company should be granted. The motions for the dismissal of the petition were filed by attorneys representing Indianapolis, Broad Ripple, Marion, Elwood, Muncie, Fairmount and Grant County.

INDIANAPOLIS DECISION CITED

Woodburn Masson referred to the decision of the commission that it was without jurisdiction in the petition of the Indianapolis Traction & Terminal Company to increase fares to 5 cents straight, that decision being based on the failure of the company to surrender its franchise and on the fact that the 1899 law, under which Indianapolis made a franchise contract, was specific on maximum rates of fare to be charged. Mr. Masson said the same law authorized the city to contract with interurban lines.

J. E. Van Osdol, attorney for the company, assuming but not conceding that the decision of the commission in the case of the Indianapolis Traction & Terminal Company was correct, said the franchise of Indianapolis was probably the one exception in this case, in that the State law granting the franchise practically said what the contract should contain. As to Broad Ripple, he said that town had no power to contract on rates outside the corporation boundaries. He contended that in the cases of all the cities concerned in the Union Traction Company petition the Public Service Commission had emergency power to change rates whenever the necessities of the properties required it. He took the stand that the power to make franchises was permissive to cities and towns and that the State may step in and exercise its paramount authority whenever it desired to do so. He argued that cities and public service corporations were creatures of the State and could make only such contracts as would be at all times within the control of the State.

ESTIMATES OF CONSTRUCTION COST DIFFER

H. O. Garman, chief engineer of the Public Service Commission, on Dec. 20 testified as to the physical value of the property. The estimated construction cost presented by the company officials amounted to \$20,245,717. Mr. Garman's estimate was \$17,456,729. He stated that according to his calculations the present value of the system, allowing 15 per cent for depreciation, was approximately \$14,880,273. These values do not include any allowances for franchise values.

Citizens Must Select Jitneys or Trolley

In a notice served on Dec. 21 upon the Selectmen of Nahant, Mass., the Nahant & Lynn Street Railway informed the officers of the town that service would be curtailed on Jan. 1 and the discontinuance of the line considered unless relief from jitney competition was furnished. The Nahant Selectmen granted ten jitney licenses between Central Square, Lynn, and the terminal of the electric railway, the trip on the jitneys costing 10 cents. The fare on the electric railway is 14 cents, of which the Bay State Street Railway receives 6 cents for the use of a short stretch of track in Lynn and the Nahant company receives the balance. In a letter to the individual members of the Board of Selectmen the company pointed out that it could not compete with the jitneys. Notice was also given that after Dec. 31 the company would operate only twelve cars in twenty-four hours, as allowed by its charter. The company maintained a fifteen-minute schedule in summer and a headway of one hour in winter. Many privately-owned automobiles in Nahant have also been the means of cutting into the company's revenue.

Tinkle, Tinkle, Little Car

Clever Skit on the One-Man Car by the Poet of the "Post-Intelligencer"

Tinkle, tinkle, little car—if indeed that's what you are—running on the Summit line—how I wish that you were mine. I would put you in my flat as a playroom for our cat, so he couldn't catch our bird. You may think it sounds absurd; but when first the thing I spied, "Holy Smokes!" I wildly cried, "someone's child has strayed afar on his little kiddie kar."

When at length it came along, I decided I was wrong; thought it was the private bus of some plutocratic cuss, who prefers to ride alone with a street car all his own—or perhaps a circus van. Then it was the little man, seated on a stool in front, did a great magician stunt; pulled a throttle open wide, then a casement by his side folded up like some big fan. When this novel act began, down a tiny platform dropped and upon it people hopped, with their car fares in their hands. Then I saw a sight: My land!

Some had dollars, some had dimes. He makes change a dozen times, answers questions with a smile, hollers "Step up in the aisle"; pulls a lever here and there, regulating brakes and air. When he is prepared to go, shuts the bird-cage with his toe, moves a gadget with his knee—regulates the speed, you see—pulls the bell cord with his teeth, lest some folks get caught beneath. That would throw 'er off the track; maybe flop 'er on 'er back. Calls out names of every street, punches transfer with his feet. Thus he earns his daily pay, running cars out Summit Way. Worth a jitney, yea, and more, just to see him fold that door.—Seattle *Post-Intelligencer*.

Need for Economy

Assistant General Manager of the Detroit United Railway Makes Plea for Employee Co-operation

E. J. Burdick, assistant general manager of the Detroit, Mich., United Railway, has addressed to the force of the company the following letter on the need for economy:

"The condition that confronts us to-day is one that calls for earnest and thoughtful consideration on the part of each of us. I am therefore addressing this appeal to you in the hope and expectation that our company will receive your full and hearty co-operation.

"You can help.

"There isn't a man in the rank and file of the company but is in a position to lend valuable aid.

"Although we are operating many more miles of track now than a year ago in the city of Detroit with the car-mileage increased nearly 500,000 miles a month, our earnings have gone down from a daily gain of \$6,000 in January to a loss of \$2,500 at the present time. And there is no sunshine in sight.

"Business conditions have changed materially since the first of the year. Many factories find their orders decreasing. There are men walking the streets looking for work. All this has a serious effect upon us, for it takes the prosperity of others to bring prosperity to the company. When people are not working they are not buying car rides.

COAL COSTS \$1,000,000 MORE THIS YEAR

"With business on the decline and the cost of everything we use going up you readily appreciate the need of saving. We are paying more for material, for taxes, for labor, for fuel—in fact, for everything necessary in the business. For instance, coal for our power houses will cost \$1,000,000 more this year for the same amount of fuel.

"Yet our business is not as great.

"It follows that every economy must be practiced. We've got to do it exactly as the average household is obliged to exercise the greatest care.

"Save for the company just as you save for yourself. It is just as important and just as necessary. You are familiar with the work you are doing, and so a little study will enable you to determine wherein you can do your bit.

"Each and every man in every department can find ways of helping, and in doing this each one is helping himself, the company, the community and the country.

"New material is almost impossible to obtain; therefore, we must carefully guard what we have that it may last as long as possible.

"Cars and other equipment ought to be carefully used in order that accidents may be avoided.

"Our fuel supply is limited and must not be wasted. Therefore cars that are not actually needed should not be run by any department. Motormen can be of great assistance in saving by coasting wherever possible and using care in starting cars.

"Please remember that the less 'juice' used the less coal must be put in the furnace at the power houses.

"We believe the complete establishment of the rerouting and skip-stop plans will materially reduce accidents and so save money for other purposes.

"Please let us have team work by every man in the operating, mechanical, track and power departments. Let us accomplish results."

Delay Unlikely in Indianapolis Case

The Chamber of Commerce of Indianapolis on Dec. 21 filed a petition before Judge Louis B. Ewbank of the Circuit Court asking for a continuance until Jan. 7 of all hearings in the mandamus suit brought by the Indianapolis Traction & Terminal Company to compel the Public Service Commission of Indiana to assume jurisdiction in the matter of the company's petition for proposed increase in street car fares. In taking this action the Chamber of Commerce did not assume any position regarding the merits of the proposed petition, but as the present city administration had shown no disposition to demand representation in the case, the Chamber of Commerce requested this delay in order that the new city administration might decide on any action it wished to take. Judge Ewbank told the representatives of the Chamber of Commerce that he did not see how he could entertain a request from that body for a continuance of the hearing on the demurrer set for Dec. 26, and indicated that the court would go ahead with the hearing on that date.

New York Railways Warns Children

Conductors of the New York Railways, operating surface lines in New York City, on Dec. 22 began distributing to children copies of an illustrated booklet of "Mother Goose-lets," which the company has just published as part of its campaign against accidents. Theodore P. Shonts, president of the company, has addressed this letter directly to the children of New York; it is printed on the back cover of the book of rhymes:

"Dear Children: I want you to have all the fun in the world, but I don't want a car to run over you and cut off your legs or your arms. Every day boys and girls get hurt while playing in the streets of New York.

"When you play, keep away from the trolley cars. When you are on the streets look out for cars, wagons and automobiles. Do as your mother tells you. Always be careful."

Public Asked to Co-operate

The Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind., has issued an appeal to its patrons through the medium of the daily press, asking for assistance in keeping the service of the company at its present high efficiency. Among the points mentioned by the company are entering and leaving cars promptly, having the exact fare ready and transfers unfolded upon entering cars. Patrons are advised that these suggestions are necessary now on account of the additional burdens thrown upon the service on account of holiday traffic and more especially during the winter season when snow, ice and the use of tracks by wagons, trucks, and automobiles increase the handicaps under which the company must operate.

The Urbana & Champaign Railway, Gas & Electric Company, controlled by the Illinois Traction Company, is also asking the co-operation of the public in maintaining the efficiency of its service. The East St. Louis & Suburban Railway is another company which is appealing to the bar of public opinion for a fair and equitable hearing.

I. U. T. Advertises Its Service

The Union Traction Company of Indiana, Anderson, carried in the Indianapolis *News* before Christmas a very striking advertisement which was the cause of much favorable comment. The reading matter in the advertisement, which covered two-thirds of a page, was surrounded on three sides with pictures of alarm clocks the hands of which were set at different hours. For instance, there was a clock with the hands set at 5 o'clock in the afternoon, with the hour of 5 p. m. noted below as the leaving time of the Marion Flyer, the Muncie Meteor, another train to Anderson, Muncie and Fort Wayne, and still another train to Kokomo and Logansport. Other hours throughout the day were noted in a similar way. Not only did the company describe the passenger travel in detail and note the merits which this class of its service has over other modes of transportation, but it called attention to its superior facilities for handling freight to and from Indianapolis and many towns in northern Indiana, and some in southern Michigan. The protection of block signals and steel coaches and the quick and economical way the company has of handling freight through its Merchants Dispatch were also mentioned.

Women on B. R. T. Surface Cars

Several Now Being Introduced in Brooklyn Add to Large Number Already in Transportation Service in Greater New York

The possibilities of women for platform work become increasingly evident with their introduction as surface car conductors by the Brooklyn (N. Y.) Rapid Transit Company, which has had women in service as subway guards for the last two months. This action, of course, is the result of a general shortage of labor caused by the war, about 500 trainmen of the company now being in government service. About a dozen conductresses are already working independent runs, besides about twice that number acquiring experience on the cars and receiving instruction.

The first women conductors are being assigned to the low-level, center-entrance, pay-as-you-enter cars, of which the company has about 100, operating on the Flatbush Avenue line. Their fitness for the work and the demands of the service will determine whether they will be employed subsequently on other cars. Applications are received in the regular way and the women begin at the same rate of pay as the men in the same position. Special accommodations for their convenience have been provided at the Flatbush Depot. The age limits are twenty and forty-five years.

The women whose applications are accepted and who have passed certain physical requirements are placed in the school, which is in charge of J. J. Duffy, chief instructor. In the classroom they are taught to make out accident reports, day sheets and route, register and time cards, and are made familiar with the car equipment with the help of a three-quarter length model of one of the low-level cars. After two days those who qualify work on trial runs for about three days, assisted by an instructor.

The conductress on these cars, in addition to making change and operating the doors, changes the entrance railings and curved end seats when the motorman changes cabs at the end of the line, and also has charge of the heating, lighting and ventilating of the car. Fares are collected as the passengers enter, the conductress being stationed in the center well at a pedestal which has a change table on top. On the side of the pedestal are mounted push buttons for opening and closing the doors, to signal the motorman and to ring up cash fares and transfers. The doors are air operated and can be closed also with a foot trip.

The uniform selected consists of a cap and a sacque coat made of blue cloth like that worn by the men. The skirt is not made of special material. The coat is trimmed with brass buttons and has a small military collar. This uniform is quite similar to that worn by the company's women subway guards, illustrated in an article in the *ELECTRIC RAILWAY JOURNAL* for Oct. 27, page 771. It was considered suitable in this service also, inasmuch as the conductress's duties do not necessitate her leaving the car.

Stay in Rochester Fare Case

An order has been granted upon the application of B. B. Cunningham, Corporation Counsel of the city of Rochester, and served upon the Public Service Commission for the Second District of New York and the New York State Railways to show cause why an alternative writ of prohibition should not be issued directing the commission and the railway to suspend further proceedings in the matter of the application of the New York State Railways for authority to increase its passenger fares in the city of Rochester. The order was served upon Chairman Van Santvoord of the Commission on Dec. 26. It was granted on Dec. 24 by Supreme Court Justice Adolph J. Rodenbeck of Rochester.

The serving of this order stays all further proceedings by the Public Service Commission in this matter until a determination of the motion made by Attorney Cunningham has been reached by the courts. The application is returnable in a special term of the Supreme Court to be held in Troy on Jan. 19. For this reason this rate increase case, which was set for hearing on Dec. 26, before the Public Service Commission, has been taken off the calendar.

Increase in Rockford Suburban Fare.—The Rockford & Interurban Railway, Rockford, Ill., has increased the fare from Rockford to Freeport from 50 cents to 54 cents, making the rate 2 cents a mile.

Increase in Fare in Pittsburgh to be Asked.—In announcing the increase in the wages of its motormen and conductors, to which reference is made elsewhere in this issue, the Pittsburgh (Pa.) Railways gave notice that it would petition the Public Service Commission of Pennsylvania for permission to increase the fare from 5 cents to 5.55 cents when a book of eighteen tickets for \$1 is purchased, or a straight 6-cent rate for single fares.

Another Cleveland Fare Increase.—J. J. Stanley, president of the Cleveland (Ohio) Railway, announced on Dec. 24 that fare rate C of the Tayler franchise will go into effect on Dec. 27. That means that the 1 cent charged for transfers will not be rebated. Rate D has been in effect only since Dec. 15, but Mr. Stanley stated that this had yielded no more income than the old rate E and that it was necessary to increase the income before the deficit in the interest fund grew too large.

One-Man Cars for Dallas.—The city of Dallas, Tex., through the City Commission, N. M. Baker, supervisor of public utilities, has approved the proposal of the Dallas Railway to install one-man cars on several lines in Dallas. The use of the cars was approved after an investigation of the operation of similar cars in Fort Worth. The Dallas Railway has ordered twelve one-man cars, which it will put in service on several of the most congested lines as an experiment. If these are found to be satisfactory other cars will be ordered.

Bay State Publicity Is Appreciated.—In testifying at a recent fare hearing before the Public Service Commission of Massachusetts, Robert S. Goff, vice-president of the Bay State Street Railway, described how the company, through its weekly bulletin, *Your Street Railway Service*, is endeavoring to make its case clear to the public. The circulation is about 100,000 copies a week, of which 10,000 are mailed. Recently, Mr. Goff said, a Selectman of one of the towns voluntarily stated that he looked forward to the coming of each week's bulletin and thought that the publication was a step in the right direction.

Clerks in Washington Start Work Earlier.—Secretary of the Interior Lane has changed the hours of work of all employees in the Interior Department building in Washington, D. C., effective Jan. 1, so as to run from 8.45 a. m. to 4.15 p. m. instead of from 9 a. m. to 4.30 p. m. This change was made after consideration had been given to figures showing the times of day at which the cars of the Washington Railway & Electric Company and the Capital Traction Company patronized by employees in the new Interior Department building are most greatly crowded. It is believed that the change will relieve congestion to some extent.

Fatal Accident in Pittsburgh.—Fourteen persons were killed and many other passengers on a Knoxville car of the Pittsburgh (Pa.) Railways were hurt on Dec. 24, when the car ran away in a tunnel which connects the south side business district with the south hills. After a dash of almost a mile through the tube the car emerged at Carson Street and turned over on its side. A statement issued by the company said: "The car was of the most modern and substantial construction and equipped with every modern device for the safety of passengers. We have been unable yet to learn just how the accident happened."

Error in Transmitting Fare Story by Telegraph.—In the article, "Decision in Indianapolis Fare Case" reported in the *ELECTRIC RAILWAY JOURNAL* of Dec. 15, page 1095, there was an error in the second paragraph from the bottom of the page, made in the transcription of the telegraphic message. As printed the sentence referring to the street railway situation at the time of the franchise grant reads "was a desperate one because of the recent fare law and the uncertain court decisions." This should read "was a desperate one because of the 3-cent fare law and the uncertain court decisions." This is, of course, a matter of importance in considering the argument presented.

Chicago Surface Lines Holds Christmas Party.—A novel plan was adopted this year for the Christmas party of the Chicago Surface Lines by devoting it entirely to the children of Surface Lines' employees. The party was held in the afternoon of Dec. 22 and was attended by nearly 800 employees and their children. No employee was admitted without a child. The entertainment was provided principally by employees, and a Santa Claus distributed presents from a Christmas tree. There were singing and dancing and various stunts to amuse the children. Following the fixed program as carried out in the auditorium of the Surface Lines' Club, there was story telling by several ladies in different rooms about the club house.

Fare Increase Case Held Over.—At the second hearing on the petition of the Aurora, Elgin & Chicago Railroad for a fare increase, held on Dec. 20, the Mayors of Maywood, Aurora and Elgin and other objectors took an active part in the opposition. Mr. Bulkeley, Chicago, retained as attorney by the Mayors, took the position that he had just been engaged on the case and that he had not had time to look into the matter. He asked that the hearing be held over until he could have time to go over the evidence presented by the company, examine witnesses, etc. He requested that the matter be put over for thirty days. With this encouragement, several other objectors took a similar position and the commission decided that another hearing of the case should be held on Jan. 11.

Application for Fare Increase in Fort Wayne.—The Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind., on Dec. 21 filed a petition with the Public Service Commission asking for permission to increase passenger rates in Fort Wayne to a straight 5-cent fare. The company says that for the last five years its earnings have not been sufficient to pay operating costs and taxes and "even 4 per cent" on the physical value of the property used in the Fort Wayne city service. The rate of fare is now six tickets for 25 cents. A date for the hearing before the public service commission has not yet been set. The petition is of the same general character as that filed some time ago by the Indianapolis Traction & Terminal Company and by the Union Traction Company of Indiana.

Shop Early Appeal in Seattle.—The Puget Sound Traction, Light & Power Company, the Seattle & Rainier Valley Railway and the Seattle Municipal Railway have started a definite campaign to educate the women shoppers to complete their shopping and start for home before 4 o'clock. The rush hour in Seattle has been moved from 5 o'clock to 4 o'clock, due to the tremendous growth of the Seattle ship-building industry. More than 30,000 workers are employed in this and allied industries, whose working day ends at 4 o'clock, and it has become a problem to provide transportation for the men. "Car Full" signs are now common on the coaches that cross Pike Street (the northern part of the retail district), and the cars are often loaded to capacity before they reach the shopping district.

Personal Mention

J. M. Mellor has been appointed acting manager of the Hartford & Springfield Street Railway, Warehouse Point, Conn., effective Jan. 1, to succeed J. S. Goodwin, whose appointment to the Connecticut Company is noted elsewhere in this column.

Bion J. Arnold, Chicago, prominent consulting engineer, has been commissioned a lieutenant-colonel in the aviation section of the Signal Corps and assigned to foreign service. He was called into active service on Dec. 22, when he proceeded to Washington. It is understood that he will be assigned to service in France in the very near future.

Charles H. Chapman, who has been manager of the lines of the Connecticut Company at Bridgeport, has been transferred by the company to Waterbury, where he will succeed H. L. Wales, who retires from the company on account of ill health. Mr. Chapman has been at Bridgeport as superintendent and manager since June, 1907. Before that he was superintendent of the lines of the company at Middletown.

John J. Dempsey, superintendent of elevated transportation of the Brooklyn (N. Y.) Rapid Transit Company, was elected vice-president of the company on Dec. 27 to succeed S. W. Huff, who on Jan. 1 becomes president of the Third Avenue Railroad, New York. Mr. Dempsey started his railroad career as a boy with the Lehigh Valley Railroad. In 1894 he severed his connection as telegraph operator with that company to take a position as telegraph operator with the Brooklyn (N. Y.) Union Elevated Railroad. He remained with this company until June, 1897, when he resigned to return to the Lehigh Valley Railroad as telegraph operator, from which position he was promoted to yardmaster. In



J. J. DEMPSEY

1900 he left the Lehigh Valley Road and re-entered the employ of the Brooklyn Rapid Transit Company as assistant dispatcher. He was successively advanced from assistant dispatcher to dispatcher, trainmaster, chief dispatcher, assistant superintendent and finally superintendent of transportation of the New York Consolidated Railroad (Brooklyn Rapid Transit System). Mr. Dempsey has also been elected a vice-president of the operating subsidiaries of the Brooklyn Rapid Transit Company, including the Brooklyn Heights Railroad; Brooklyn, Queens County & Suburban Railway and others. He has served on a number of committees of the American Electric Railway Association and was president of the New York Electric Railway Association in 1915-1916. He is now a member of the executive committee of the American Electric Railway Transportation & Traffic Association.

W. J. Canada, who has had a leading part in the development and application of the National Electrical Safety Code, has resigned his position as engineer with the United States Bureau of Standards and has joined the staff of the American International Shipbuilding Corporation, with headquarters at Philadelphia, Pa. At one time Mr. Canada was superintendent of motive power of the Appleyard lines in Ohio, and later was electrical and hydraulic engineer for the Rocky Mountain Fire Underwriters' Association. He has been actively connected with a number of associations and committees organized to reduce accident and fire hazards, serving a term as president of the Western Association of Electrical Inspectors. When the Bureau of Standards became interested in safety work Mr. Canada joined its staff through the civil service, and has spent several years of conscientious and faithful work in bringing about the

co-operation of numerous interests affected by the Safety Code. This work has brought him into contact with state public utility commissions, public utility officials and others whose respect he has gained and holds.

J. S. Goodwin has resigned as secretary, manager and purchasing agent of the Hartford & Springfield Street Railway, Warehouse Point, Conn., to become manager of the lines of the Connecticut Company at Bridgeport. Mr. Goodwin was born in Beverly, Mass., in 1877. He entered railway work in 1895 as a motorman on the Gloucester, Essex & Beverly Street Railway, now a part of the Bay State Street Railway. He was subsequently employed as a motorman for a short time with the Rhode Island Company, Providence, R. I. In 1901 he entered the employ of the Hartford & Springfield Street Railway as a motorman. He was later appointed a dispatcher of the company. In 1906 he

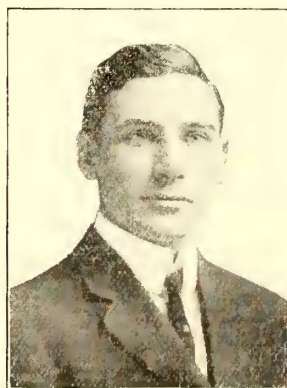


J. S. GOODWIN

was advanced to chief dispatcher and served in that capacity until February, 1914, when he was made secretary and superintendent of the company. He was subsequently made general manager of the company.

W. G. McAdoo, appointed by President Wilson as director of railroads, will direct the organization of railroad control by the government from the Treasury Department and will continue to be Secretary of the Treasury. No idea of the plan of organization contemplated by Mr. McAdoo had been made public up to Dec. 28. Mr. McAdoo was named by President Wilson as Secretary of the Treasury in 1913. Previous to that he was president of the Hudson & Manhattan Railroad operating between New York and New Jersey under the Hudson River. Mr. McAdoo was born in Marietta, Ga., on Oct. 31, 1863, and was admitted to the bar at Chattanooga, Tenn., when he was twenty-one. In 1892 he began the practice of law in New York, and four years later he formed a partnership with William McAdoo, formerly police commissioner of New York. Ten years after he took up his residence in New York Mr. McAdoo launched the enterprise of burrowing under the Hudson River to link the cities on the New Jersey shore with the shopping district of Manhattan. He set a very high standard of service for the employees of the Hudson & Manhattan Railroad and that property attracted unusual attention by the practical results which were obtained with the policy "The Public Be Pleased."

C. H. Andrews, assistant to the president and chief engineer of the North Carolina Public Service Company, Greensboro, N. C., has been appointed general superintendent of the Southern Utilities Company, which operates electric light and power, gas and ice properties throughout Florida, under the management of The J. G. White Corporation, New York, N. Y. He will assume his new duties on Jan. 1. Mr. Andrews was graduated from Purdue University, Lafayette, Ind., in 1908, receiving the degree of Bachelor of Science in Electrical Engineering. After graduation he entered the employ of the Public Service Corporation of New Jersey, Newark, serving in the meter department of that company. In 1909 he became connected with the North



C. H. ANDREWS

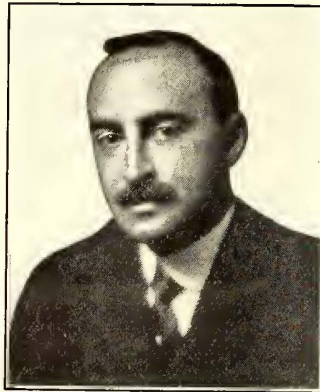
Carolina Public Service Company, and soon thereafter he was appointed superintendent of the light and power department. Later on he was made departmental manager of new business. In 1911 he was promoted to the position of assist-

ant general manager, in charge of electric, gas and street railway utilities in Greensboro and High Point, N. C., and in 1917 his position was made assistant to the president and chief engineer. In connection with his general duties, Mr. Andrews has devoted much time with success to studying the question of rates and their application. He is a member of the American Institute of Electrical Engineers and of the American Gas Institute.

H. L. Wales has resigned as manager of the lines of the Connecticut Company at Waterbury on account of ill health.

R. L. Easter has been promoted from the position of master mechanic to that of general manager of the Greenville Railway & Light Company, Greenville, Tex. He entered the employ of the company in 1911, and two years later was appointed cashier. In 1916 he became master mechanic of the company, which position he held until appointed general manager.

William A. Del Mar has resigned as assistant electrical engineer of the Interborough Rapid Transit Company, New York, N. Y., to become chief engineer of the Electric Cable Company and the Habirshaw Electric Cable Company, Inc., New York, N. Y. Mr. Del Mar is a native of San Francisco. He was graduated in 1900 from the City and Guilds' College of London. After completing a course in the testing department of the General Electric Company, he became associated successively with the Manhattan Railway, the New York Central Railroad and the Interborough Rapid Transit Company. He made a specialty of transmission and distribution work while with the New York Central Railroad and was selected by the late H. G. Stott to design the distribution system of the new Interborough subways and to re-design those of the old subways and elevated lines. Mr. Del Mar is author of a book on wires and cables entitled "Electric Power Conductors" and of the articles on wires and cables in Pender's handbook. He was for several years chairman of the wire and cable committee of the Association of Railway Electrical Engineers, and in that capacity was active in the standardization of specifications for wires and cables. He is also secretary of the joint rubber insulation committee, which has prepared standard specifications and an analytical procedure for high-grade rubber insulation. He has been a member of the standards committee of the American Institute of Electrical Engineers since 1913, and has taken an active part in its work, especially in matters relating to railroad standards and wires and cables. He is chairman of both the sub-committee on railway standards and the sub-committee on wires and cables. In the latter capacity he is assisting the Navy Department in the design of cables for the new electrically driven warships. Mr. Del Mar is also a member of the board of directors of the American Institute of Electrical Engineers. In his new position Mr. Del Mar will have charge of engineering work and will establish a research laboratory for investigating problems relating to wires, cables and insulating materials.



W. A. DEL MAR

Obituary

Arthur L. Wheeler, vice-president of the J. D. Este Company, Philadelphia, Pa., died in that city on Dec. 20. Mr. Wheeler was forty-four years old. Following his graduation from Princeton in 1896 he entered the banking firm of Winthrop Smith & Company.

E. A. Heron, who was president of the Oakland Traction Company before its reorganization as the San Francisco-Oakland Terminal Railways, died on Dec. 5 at his home in Oakland, Cal., after a short illness. Mr. Heron was born in Galena, Ill., sixty-five years ago.

Construction News

Construction News Notes are classified under each heading alphabetically by States.

An asterisk (*) indicates a project not previously reported.

FRANCHISES

Los Angeles, Cal.—An ordinance has been adopted by the Board of Supervisors granting a forty-year franchise to the Pacific Electric Railway for the construction and maintenance of an electric railway along certain public roads and highways in Los Angeles County.

Brookfield, Mass.—The Worcester & Warren Street Railway has received a franchise from the selectmen of Brookfield to conduct a trolley freight and express business.

Lorain, Ohio.—The City Council of Lorain has rejected the Franchise recently submitted by the Lake Shore Electric Railway and the Lorain Street Railway, a subsidiary.

Aliquippa, Pa.—The Woodlawn & Southern Railway has received a franchise from the City Council for the construction of a line on South Hopewell Avenue from the Woodlawn-Aliquippa borough line to the Pittsburgh & Lake Erie Railroad subway.

TRACK AND ROADWAY

Fort Smith Light & Traction Company, Fort Smith, Ark.—This company will rebuild about 1 mile of track.

Northern Electric Railway, Chico, Cal.—Improvements resulting in the expenditure of more than \$27,000 will be made by the Northern Electric Company on its line on C Street between Twenty-fifth and Thirty-first Streets. The 60-lb. T-rails will be replaced with 127-lb. grooved rails. It is stated that the T-rails will be replaced with grooved rails throughout the entire system.

Sacramento Valley Electric Railroad, Dixon, Cal.—This company reports that its line is being dismantled and the 12 miles of roadbed, right-of-way and ballast, its fences and bridges are for sale.

Cienfuegos, Palmer & Cruces Electric Railway & Power Company, Cienfuegos, Cuba.—A report from this company states that it has under construction extensions to Cruces, Cumanayagua and Carlota Mine.

Miami (Fla.) Traction Company.—A report from the Miami Traction Company states that it will build 4 miles of new track between Miami and Miami Beach during 1918.

Columbus (Ga.) Railroad.—About 2 miles of track will be rebuilt by the Columbus Railroad in 1918.

Caldwell (Idaho) Traction Company.—Through the subscription of \$15,000 by the citizens of Wilder the electrification of the Caldwell Traction Company's branch from Caldwell to Wilder is now assured. This sum completes the loan of \$25,000 made by the business men of Caldwell to the company to insure the early electrification of the line which is held to be essential to the continuance of the rapid development of the great agricultural country embraced in the territory to be traversed by the road. The work of electrifying the road is to be finished some time next year. With the completion of the work the traffic service of the road will also be enlarged.

Louisville, Ky.—A measure described as a grade crossing ordinance has been introduced in the Louisville City Council, providing that the city shall determine when and what grade crossings shall be abolished. Where steam railway lines and street railway lines intersect, the cost of construction of the underpasses, overpasses, etc., shall be borne 75 per cent by the steam line and 25 per cent by the electric line, according to the draft before the Council. When no electric crossing is involved the city will assume the 25 per cent. The measure was referred to a committee without action.

Union Street Railway, New Bedford, Mass.—This company reports that it will reconstruct 1½ miles of track next year.

Plymouth & Sandwich Street Railway, Plymouth, Mass.—A report from the Plymouth & Sandwich Street Railway states that during 1918 it will place in service about 4½ miles of track between the village of Sagamore and the village of Bourne, both in the town of Bourne.

Grand Rapids (Mich.) Railway—It is reported that a cross-town extension to the northeastern section of the city is being considered by the Grand Rapids Railway.

McComb & Magnolia Railway & Light Company, McComb, Miss.—Merle R. Walker, secretary of the McComb & Magnolia Railway & Light Company, advises that about 8 miles of track will be built by the company during the coming year on its proposed line to connect Summit, McComb, Fernwood and Magnolia. [July 28, '17.]

Southwest Missouri Railroad, Webb City, Mo.—This company reports that in 1918 it will place in service 8 miles of track between Baxter Springs, Kan., and Picher, Okla.

Public Service Railway, Newark, N. J.—The Public Service Railway proposes to negotiate through Thomas N. McCarter, president of the company, with the federal and municipal authorities for the construction of an electric railway from Newark to the Port Newark terminal to accommodate the ship-building interests on the bay shore.

Buffalo & Depew Railway, Buffalo, N. Y.—During 1918 the Buffalo & Depew Railway will place in service 2½ miles of new track, consisting of an extension from Depew to Lancaster, ½ mile, and from Depew to Bowmansville, 2 miles.

International Railway, Buffalo, N. Y.—A report from the International Railway states that in 1918 the company will place in service 34 miles of new line between Buffalo and Niagara Falls. The company will rebuild 10 miles of line.

Hudson Valley Railway, Glens Falls, N. Y.—This company will rebuild 1.18 miles of city track.

Northern Ohio Traction & Light Company, Akron, Ohio.—This company reports that during 1918 it will place in service 6 miles of new track and will rebuild 2½ miles of track.

Cincinnati (Ohio) Traction Company.—A report from the Cincinnati Traction Company states that during 1918 it will place in service 2.44 miles of new track and will rebuild 8 miles of track.

Ardmore (Okla.) Railway.—This company plans to place in service 2 miles of new track in 1918.

Oklahoma (Okla.) Railway.—This company will reconstruct 1 mile of track next year.

Tulsa (Okla.) Street Railway.—This company is double-tracking all of its lines in Tulsa, and has ordered new cars of modern type to take the place of the old cars now in service. The improvements being made will cost about \$200,000.

London (Ont.) Street Railway.—This company reports it will rebuild 1½ miles of track.

Harrisburg (Pa.) Railways.—This company will probably rebuild 1 mile of track.

Lykens Valley Railway, Williamstown, Pa.—This company will construct an extension from Tower City to Reiner City and will reconstruct 2½ miles of track.

Levis County Railway, Levis, Que.—This company will reconstruct 1½ miles of track next year.

Columbia Railway & Navigation Company, Columbia, S. C.—Surveys have been completed by the Columbia Railway & Navigation Company for its proposed interurban line from Columbia to Greenwood, via Lexington and Saluda, about 75 miles. Construction of the line has been deferred on account of financial, material and labor conditions. G. A. Guignard, Columbia, president. [Dec. 16, '16.]

Bryan & Central Texas Interurban Railway, Bryan, Tex.—This company reports that during 1918 it will build 4 miles of new track between Newsome and Wilcox.

Dallas (Tex.) Railway.—The City Commission of Dallas has issued a formal order to the Dallas Railway to relay its track on Seventh Street in Oak Cliff, from Bishop Avenue to Tyler Street, placing heavier steel on concrete foundation. The city will pave this street and the work is to be done in co-operation.

Dallas (Tex.) Southwestern Railway.—Interurban cars will be operating over the Dallas Southwestern Traction Company from Dallas to Irving by July 1, 1918, according to George Kadane, vice-president and general manager of the Creek Construction Company, which has the contract for construction of the road. The line will extend from Dallas to Irving via Cement City and Eagle Ford, thence to Cleburne via Grand Prairie and Mansfield. Most of the Grade for the road through the Trinity River bottoms has been completed, this work having been pushed before the rainy season sets in, and work will begin on the bridge over the Trinity at Dallas about Jan. 15. Material has been ordered for this and other bridges on the line, and trolley poles and trolley wire is now on hand for the line. [Dec. 8, '17.]

Seattle (Wash.) Municipal Railway.—Plans for an elevated railway on Washington Street, Whatcom Avenue and Railroad Avenue from First Avenue to Spokane Street have been approved by the City Council and it has practically been determined to submit to the voters next March a proposition to utilize \$375,000 of bonds authorized in 1911 for the purchase of the property of the Seattle, Renton & Southern Railway.

Norfolk & Western Railway, Bluefield, W. Va.—A report from the Norfolk & Western Railway states that it will build approximately 16 miles of new track from Kimball to Farm and Wilcoe, W. Va., during 1918.

SHOPS AND BUILDINGS

Fort Wayne & Decatur Traction Company, Decatur, Ind.—Work has been begun by the Fort Wayne & Decatur Traction Company on the construction of a new freight station at the rear of its new passenger station at the corner of Monroe and Jackson streets.

Bay State Street Railway, Boston, Mass.—The carhouse of the Bay State Street Railway, which has been in constant use by the company for thirty-eight years, will be abandoned by the company. The cars will be distributed between the West Lynn and Yoma carhouses.

Trenton & Mercer County Traction Corporation, Trenton, N. J.—Work will be begun at once by the Trenton & Mercer County Traction Corporation on the reconstruction of its carhouse recently damaged by fire. The work of rebuilding the cars that can be used again will also be begun at once.

POWER HOUSES AND SUBSTATIONS

Union Traction Company of Indiana, Anderson, Ind.—The power station of the Muncie & Portland Traction Company, being operated by the Union Traction Company of Indiana, will be discontinued, and power will hereafter be derived from the Muncie station.

St. Joseph Railway, Light, Heat & Power Company, St. Joseph, Mo.—A new 5000-kw. bleeder type General Electric turbine has been placed in operation at the St. Joseph plant of the St. Joseph Railway Light, Heat & Power Company. This type of turbine permits a maximum steam extraction of 40,000 lb. of steam an hour at 5-lb. pressure for steam heating purposes. A 7000 sq. ft. Alberger surface condenser is used to maintain the vacuum. The turbine is designed to operate on 150-lb. pressure, using dry saturated steam, and will have a water rate of about 16 lb. per kilowatt-hour when the vacuum is 28 in.

Brooklyn (N. Y.) Rapid Transit Company.—Plans have been filed by the Transit Development Company, a subsidiary of the Brooklyn Rapid Transit Company, for an addition to its electric generating system at Kent Avenue and Division Street, known as the Eastern district plant.

Sarnia (Ont.) Street Railway, Ltd.—This company reports that it has purchased one 500-kw. rotary, which will be delivered in January.

Charleston Consolidated Railway & Lighting Company, Charleston, S. C.—This company reports that it is just completing a 3450-kva., 2300 to 6600-volt transformer house.

Olympia Light & Power Company, Olympia, Wash.—This company reports that it is installing an additional 400-kw. a.c. generator in its power plant.

Manufactures and Markets

Discussions of Market and Trade Conditions for the Manufacturer, Salesman and Purchasing Agent
 Rolling Stock Purchases Market Quotations Business Announcements

Eastern Purchasing Agents' View of Railway Supply Market

Prices, Now Considerably Higher Than Normal, Thought to Be at Peak—Deliveries Both Some Factories

While prices on every description of railway equipment supplies and material have steadily advanced for the last three years, there has been no increase within a couple of months in the New York territory. If revision upward in other parts of the country are announced, competent authorities declare, though they may appear new, or else were made on account of local conditions, the figures given have governed purchases here for two or three months at least. Prices on nearly every article used in equipment or maintenance are said, by the purchasing agents of the principal railways in this section, to be at peak. Possibly there may be another mark up after Jan. 1 on a few things, which will be due to anticipated acute conditions. Manufacturers, however, realize there is a danger line in such a proceeding, and therefore they are rather loath to add to the burden which the electric traction companies are now carrying. As a matter of fact, the producers would prefer to cut the figures than to raise them.

PRICE INCREASES SINCE 1914

As an illustration of how prices on a number of standard articles have advanced since 1914 to 1917, the appended table is submitted. It was compiled by the purchasing agent of one of the largest transportation systems in the world, who considers the figures very conservative. In addition to its steam equipment, the company owns, manages and maintains a number of traction lines. Its purchases are on a very huge scale. The figures are part of a private report from the buying department for the personal information of the company's president. In tabulated form the figures, interesting and impressive, are as follows:

	1914	1915	1916	1917
Cross-ties, white oak	\$0.95	\$0.92	\$1.10	\$1.25-\$1.30
Cross-ties, yellow pine	.75	.80	1.15	1.25- 1.30
Spruce lumber		27.50	31.65	40.00
Waste, cotton	.06½	.06½	.10	.12½
Waste, wool	.11	.12	.16	.22
Cast iron wheels, 33 in.	7.00	7.00	8.50	12.30
Solid steel wheels, 33 in.	18.00	18.00	20.50	37.50
White lead	.06½	.06½	.09½	.12¾
Malleable iron castings	.04	.05	.06¾	.12¾
Gasoline	.11	.11	.23	.23
Copper	.1532- .36
Rails	28.00	28.00	33.00	40.00

It must be borne in mind that the report is of January, 1917, and the prices for the current year, bearing the date January, 1918, are now in the course of preparation. During the past twelve months, therefore, the trend upward in some instances ranges from 50 to 100 per cent. White oak ties are now quoted at \$1.35 to \$1.40, maybe even higher. Yellow pine ties from \$1.45 to \$1.50. Besides, cross-ties are scarce and hard to get, and so is ash lumber, which is in demand for car interior work. Cotton waste has gone to 25 cents a pound; wool waste of best quality is now 44 cents as against 22 cents a year ago. Cast iron car wheels 30 in. in diameter are quoted at \$16 as of December, and then only one bid was received by the company which is in the market for a large lot. Steel wheels, according to the same source of information, are 68 per cent higher than before the war. The average increase on all railway material during the year is 22 per cent.

This company as well as others use great quantities of lumber, and they are finding it exceedingly difficult to meet requirements at any price almost. Some of their contracts,

especially with Southern mills and lumbermen, are in a perilous condition on account of the high prices. The purchasing agent referred to stated that on a recent order for eight or ten cars of lumber his company had received two. Where the remainder was they had no means of knowing. A couple of firms in this line with which it had dealings had about abrogated their contracts and were going out of business, confessing they were in a hazardous position in respect to a future supply of stock.

Relaying rails, formerly sold at \$15, now command \$70 a ton, with no guarantee of delivering under a year. A request for quotations on gears and pinions submitted to manufacturers two weeks ago, had met with not a single response. No contract would be accepted or delivery promise made. An attempt to buy a lot of fire-box material was met by the producers with a flat declaration that no steel was to be had for such a purpose and therefore the order was unacceptable. On cast iron wheels one bid was received. In truth, anything and everything, of either iron or steel, was a difficult problem to negotiate. Copper wire could be had in two or three weeks delivery. Rubber covered wire had been bought at 29 cents. On a late order for 100 miles of hard wire, to be delivered in six weeks, 28 cents was paid. The present price of bare copper wire, of the right quality, is acceptable to the railway buyers, who know current conditions. The official selling figure and attitude, so these people intimated, was something of a fiction when one was in the market for wire. The price was arranged between the parties to the transaction to the mutual satisfaction of both, with the governmental regulation a hazy factor.

DELIVERIES THE SOURCE OF MOST TROUBLE

After all, the most bothersome and troublesome condition is that of deliveries. The car builders are from six to eight months behind, with no perceptible sign of improvement. This is reported as holding up the placing of a number of important orders for new rolling stock. It appears that when a purchasing agent is now in the market his first inquiry is not for price but promise of delivering. Price is secondary, if not negligible. As one railway official expressed it, "We pay the price asked. Of course, it is not reasonable; for nowadays there is no such thing as a reasonable price." Up to the present the companies bought where the best price could be had, from a responsible manufacturer, of course, whether he was in Chicago, St. Louis or New Orleans. Now, owing to the freight congestion, everything possible is purchased in New York or nearby points in order to insure shipment and delivery. Railway officers admit they have paid a bonus to further shipments and expedite deliveries.

Several companies controlling traction properties in various parts of the country and abroad, with headquarters in New York, do their principal buying under a blanket contract. The local managers also purchase what they need in minor accessories. The original price probably was the prevailing quotations six months or a year ago; but they are finding it exceedingly difficult to obtain their requirements. Delivery is the great obstacle, and the use of express instead of freight shipments does not always solve the problem. An order for transformers was recently accepted for April, 1918, delivery, providing no government priority order intervened. In that event everything went overboard, and the delivery would be postponed indefinitely. One of these companies, when they make a shipment to a property, send a man along to push it through, and frequently he goes clear across the continent or to the West Indies. It is easier to freight West than East; and it is almost impossible to secure "bottoms" for foreign shipments.

New Competition Among the Fuse Manufacturers

Standard Producers to Place Refillable Types on Market in the Near Future, Probably During the Coming Week

The revelations of the last two weeks have brought to a head the intention of manufacturers of standard or non-refillable fuses to put on the market types of refillable fuses also which have been in the process of development for some time. The Chicago Fuse Company, one of the manufacturers of the standard line, expects to bring out a refillable type within the next two or three days. Last week the Economy organization gave notice to the trade that it had purchased the Detroit fuse, one of the well-known standard types.

While the other fuse manufacturers have not as yet disclosed their program, so far as could be learned on inquiry all makers of the one-time type of fuse expect to bring out shortly, probably by the first of the year, a renewable or refillable type. In fact, reports say, they had been working continually along these lines. Just what the selling policies of the various companies interested may be is not yet definitely known. It is believed, however, that prices and sales activities will remain undisturbed, for the present at least.

The presumption is that with a greater number of both types in the market a greatly increased production will follow. Under the stress of competition this may lead to a revision of prices downward. In the meantime considerable jockeying is said to be going on between the fuse concerns to ascertain what schedule will be adopted by other manufacturers.

New York Railways Securing Window Glass Supply

Possibility of Higher Prices After First of New Year, with Present Indications Pointing to a Curtailment of Supply

Railway companies not caring to run any risks in a threatened, if not impending, shortage in car window glass, are placing heavy orders for as early delivery as can be made. Prices as yet have not advanced as frequently or in the same ratio as on other railway necessities. One of the largest companies in the country stated to the **ELECTRIC RAILWAY JOURNAL** that a 5 per cent increase was made three months ago but none since. Another company of prominence and a heavy buyer said there had been no change at all. Then again a window glass manufacturer, controlling a group of tank factories and producing roughly 50 per cent of the glass sold in the United States, reported the advance was made in October and averaged about 10 per cent.

SHORTAGE OF FUEL SERIOUS PROBLEM

It was understood that the window glass manufacturers were to "blow in" on Dec. 8. Only 10 per cent of them started. The concern above mentioned has ten plants, of from one to three tanks capacity each. One tank represents a factory in itself, and while all their works are not now in operation, the majority did not start up until Friday of last week, though a number are run continuously. According to an official of this large company, the reason of their late beginning to turn out car and every other variety of window glass and being compelled at times to curtail production and sometimes close down altogether is lack of fuel. As he phrased it, the window glass situation is chaotic. The industry is not only short of fuel, but also of raw material. They are under no obligation to any foreign country for the latter, as it is entirely of domestic origin. There is a mountain of sand in every state in the Union, he stated, but the embargoes and freight congestion on all lines prevent shipments.

Last week the same gentleman was at one of the company's plants in Pittsburgh. There was a dearth of fuel; but 200,000 ft. of wood was "somewhere" in transit, but

not a stick in the factory. No priority order from the Board of War Industries can be obtained to allow shipments of this kind to come through and therefore only the consideration to be received from the transportation companies can be depended upon.

When a further advance may be made is not known now, but if it came along about the opening of the new year it would be no surprise. Prices have not been withdrawn, and no quotations are made. Each order is passed on its individual merits and the usual requirements of the buyer are considered in connection therewith. Railway purchasing agents are not buying any lower or cheaper grade of glass for car windows. The quality is held up, but the demand is inclined to specialties in size, appearance and grade.

In the East orders are placed through the jobbing houses and seldom direct with the manufacturer. The traction companies in and around New York City have been placing orders of a heavier caliber than usual on account of a possible shortage caused by lesser production. One road has ordered 50,000 sq. ft. of car window glass to be in storage in New York, and to be taken at the convenience of the road, as a precautionary measure along these lines. Maybe other orders of significant size will be uncovered as on delivery with the same contingency in view. The American Glass Window Company is making up the big order mentioned, with the Interborough Rapid Transit Company and New York Railways Company as the buyers. The delivery is to be in six months.

Incandescent Lamp Price Increase Announced

New Prices on These Goods Which Are to Go Into Effect Jan. 1, 1918, Show Advances in the Neighborhood of 10 per Cent

On Wednesday a new price list on Mazda and graphitized-filament incandescent lamps, dated Dec. 22 and effective Jan. 1, 1918, was announced, bearing, as was predicted here several months ago, an increase generally around 10 per cent.

On Schedule 5, which includes vacuum lamps for electric railway service to be used on 525-650 volts, five in series, the new prices are as follows:

Watts	LIST PRICE	
	Clear	Frosted
23-36	\$0.30	\$0.33
56	0.35	0.39
94	0.70	0.77

The increases are 3 cents per lamp on the 23 and 36-watt sizes, 1 cent on the 56-watt and 5 cents on the 94-watt size.

ROLLING STOCK

Aberdeen (S. D.) Railroad Company has a McGuire-Cummins snowplow ordered for December delivery.

Trenton & Mercer County Traction Corporation, Trenton, N. J., is rebuilding seven of the ten cars damaged by a recent fire.

Tri-City Railway Company of Iowa, Davenport, Iowa, had a couple of cars damaged by fire, a few weeks ago, to the extent of \$4,500.

Seattle (Wash.) Municipal Street Railway has ordered six one-man cars, to be operated on an extension of Division A to the north city limits, which is under construction.

Bristol & Plainville Tramway Company, Bristol, Conn., has received two of the new cars ordered in the spring from the Wason Manufacturing Company, Springfield, Mass. The cars are of the convertible type.

Union Railway Company, New York, N. Y., a subsidiary of the Third Avenue Railway, has been recommended to purchase six snowplows by the Public Service Commission of the First District. The commission points out that the type of sweepers now used by the company are not sufficient in number or efficient during a heavy fall of snow to clear its tracks.

TRADE NOTES

International Signal Company, Brooklyn, N. Y., is the new name of the National Electric Signaling Company, which will continue the manufacture and operation of radio telegraph and radio telephone apparatus under the patents owned by the original company. The receivership of the latter, due to differences between the stockholders, has been amicably adjusted and closed.

Walter A. Zelnicker Supply Company, St. Louis, has secured the services of L. B. Moses, who has been closely associated with the railway trade since 1903, when he left the position of assistant to the president of the Knasas City Southern Railway. Since 1911 Mr. Moses was sales manager of the Kettle River Company of Minneapolis, Minn. Mr. Moses joins the Zelnicker organization as second vice-president, in charge of the rail department, with headquarters at the company's main offices in St. Louis.

International Steel Tie Company, Cleveland, Ohio, since Dec. 1 has booked 10,000 ties for the Cleveland Railway Company, which means 12 miles of track. It has also on order 2000 ties for the Arkansas Valley Railway, Light & Power Company, Pueblo, Col., and about 1000 ties for the Denver (Col.) Tramway. The company has sufficient material on hand to build about 100,000 ties. During the last year deliveries have been made as demanded; that is, steel twin ties in from one to two weeks, and the company expects to be able to continue such delivery in 1918. November was the largest month in the history of the International company's business in booking tonnage.

Economy Fuse & Manufacturing Company, Chicago, Ill., has purchased the entire fuse business of the Detroit Fuse & Manufacturing Company, makers of the "Arkless" inclosed fuses. The transaction includes the conveyance of all merchandise, materials, machinery, tools, designs, patents, good-will and unfilled orders. The physical assets of Detroit Fuse & Manufacturing Company, in so far as they pertained to the making of fuses, have been shipped to the Chicago plant of Economy Fuse & Manufacturing Company, where the manufacture of "Arkless" fuses will be continued, production being, as heretofore, under the label service of Underwriters' Laboratories, Inc. The "Square D" line of inclosed safety switches remains the property of the Detroit Fuse & Manufacturing Company.

NEW ADVERTISING LITERATURE

Denton Engineering & Construction Company, Kansas City, Mo.: A booklet is being distributed outlining this firm's electrical service and its facilities for handling repair and construction work.

Lefax, Inc., Philadelphia, Pa.: The products of various companies in the trade are described in catalog sheets now being distributed that are punched and indexed for filing in the Lefax data books.

Railway Utility Company, Chicago, Ill.: "Announcement of Importance to Railways" is an illustrated circular explaining the working trade agreement on patent car heating and regulating appliances between this company and the Thermo-Electric Regulator Company. The devices in question are also shown and described.

Portland Cement Association, Chicago, Ill.: A pamphlet, finely illustrated, entitled "Concrete Highway Bridges," in which is described the use of concrete for this particular purpose. A list of free booklets and bulletins on the use and advantages of concrete published by the association is included, as well as standard bridge and culvert plans.

I. P. Morris Company, Philadelphia, Pa.: Bulletin No. 4 is descriptive of its hydraulic turbines. This complete and well-illustrated bulletin includes a general history of the firm, shop views, a list of wheels built by this company, efficiency curves of turbines, an article on "The Efficient Use of Water Power," and a number of plant illustrations giving views of I. P. Morris turbines.

Ajax Metal Company, Philadelphia, Pa.: "Ajax Bearings, Castings and Babbitt Metal for Railway Equipment" is the title of a sixteen-page catalog recently issued in which are

set forth the advantages and disadvantages of the various alloys as applied to railway requirements. The company has also prepared a concise circular on the advantages of Ajax plastic bronze. Copies of the catalog or the circular may be had by writing.

Condit Electrical Manufacturing Company, South Boston, Mass.: "Useful Information for the Application of Electrical Protective Devices" is a substantially bound volume, with flexible covers, which presents, in compact and convenient form, information of practical value to the engineer and electrician. It is not intended, however, to cover broadly the various fields of the electrical art. Besides general definitions, which are intended to be practically descriptive rather than scientifically rigid, terms as applied to rotating machines, switches, circuit breakers and auxiliary apparatus are also given in the same simple and clear manner. In addition various tables for readily and easily determining any desired electrical condition, general wiring and other formulas are also furnished. A complete index adds greatly to the value of this practical and valuable little work.

Edgar Allen & Company, Ltd., Sheffield, England: A new issue of their pamphlet "The Making of a Tramway Point," in which is incorporated "Thirty Years of Tramway Practice, 1883 to 1913." The whole industry of making tramway points and crossings is illustrated in the pamphlet by a series of twenty pictures, showing page by page the making of a tramway point or track switch. The history begins with its inception in the drawing office; then follows the making of the pattern, the finished pattern, its insertion into the mold in the foundry, the making of the various cores that go with it, the casting, fettling, trueing and grinding processes, and afterwards the finished product. Each picture tells its own story, so that it is easy when one has examined all the pictures to understand exactly how a tramway point is made. The illustrations are accompanied by a reproduction of the paper by Fred Bland of this company which was read at the Tramways' Association Congress in 1913, and which gave a detailed history of the introduction of tramways, the development of the rails and points and crossings, reviewing the progress from the most primitive kind of crossing to the recent types which are now cast in manganese steel. A copy will be sent to anyone interested on application to the company at Sheffield.

NEW YORK METAL MARKET PRICES

	Dec. 19	Dec. 24
Prime Lake, cents per lb.	23 1/2	23 1/2
Electrolytic, cents per lb.	23 1/2	23 1/2
Copper wire base, cents per lb.	29	27
Lead, cents per lb.	6.40	6 1/2
Nickel, cents per lb.	50	50
Spelter, cents per lb.	7.75	6.35
Tin, Straits, cents per lb.	*85.50	*85.50
Aluminum, 98 to 99 per cent, cents per lb.	36	36

OLD METAL PRICES—NEW YORK

	Dec. 19	Dec. 24
Heavy copper, cents per lb.	22	22
Light copper, cents per lb.	19 1/2	19 1/2
Red brass, cents per lb.	17 1/2	17 1/2
Yellow brass, cents per lb.	14 1/2	14 1/2
Lead, heavy, cents per lb.	5 1/2	5 1/2
Zinc, cents per lb.	5	5
Steel car axles, Chicago, per net ton.	\$44.50	\$44.00
Old carwheels, Chicago, per gross ton.	\$32.50	\$34.00
Steel rails (scrap), Chicago, per gross ton.	\$34.50	\$34.50
Steel rails (relaying), Chicago, per gross ton.	\$55.00	\$55.00
Machine shop turnings, Chicago, per net ton.	\$17.25	\$17.25

RAILWAY MATERIALS

	Dec. 19	Dec. 24
Rubber-covered wire base, New York, cents per lb.	\$2-34	\$2-34
Rails, heavy, Bessemer, Pittsburgh.	\$38.00	\$38.00
Rails, heavy, O. H. Pittsburgh, per gross ton.	\$40.00	\$40.00
Wire nails, Pittsburgh, per 100 lb.	\$3.50	\$3.50
Railroad spikes, 9/16 in., Pittsburgh, per 100 lb.	\$5.50	\$3.90
Steel bars, Pittsburgh, per 100 lb.	\$5.00	\$4.50
Sheet iron, black (24 gage), Pittsburgh, per 100 lb.	\$5.80	\$5.80
Sheet iron, galvanized (24 gage), Pittsburgh, per 100 lb.	\$4.85	\$4.85
Galvanized barbed wire, Pittsburgh, cents per lb.	\$4.35	\$4.35
Galvanized wire, ordinary, Pittsburgh, cents per lb.	\$3.95	\$3.95
Cements (carload lots), New York, per bbl.	\$2.22	\$2.22
Cement (carload lots), Chicago, per bbl.	\$2.31	\$2.31
Cement (carload lots), Seattle, per bbl.	\$2.65	\$2.65
Linseed oil (raw, 5 bbl. lots), New York, per gal.	\$1.23	\$1.26
Linseed oil (boiled, 5 bbl. lots), New York, per gal.	\$1.24	\$1.27
White lead (100 lb. keg), New York, cents per gal.	10	10
Turpentine (bbl. lots), New York, cents per gal.	47 1/2	47 1/2

*None offering.