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Prosperous Railways Necessary for Community Development

A VERY good way, perhaps the best way, of getting a proper view of the present electric railway industry is by perspective. Then the different phases appear in their proper relation and proportion. Conceive, for example, that a new city was to be planned exactly like that of any existing American city and with the same streets, buildings and distribution of population as at present. In such a community the installation of an efficient urban transportation system would be considered by any city-planning engineer as a matter of course. Indeed, it would be impossible to conceive of the proper functioning of the business, industrial and social life of the community without such means of inter-communication. It would also be recognized in any such city, we believe, that for this communication neither jitneys nor private automobiles would suffice. The main portion of the urban transportation would not only have to be supplied by electric cars but, in the present state of the art, by electric cars and systems built along practically the same lines as are now common. Nor is it possible in such a community as we are now supposed to be planning to consider that such a necessary public utility as its electric railway transportation system could perform its work properly except under such conditions of return on the investment as would encourage extensions of the system to keep pace with the demands for transportation by the community. If this is the case with a supposititious city, why is it not true with a city already in existence? The answer is simple; it is. No city can prosper unless such a vital factor of its community growth as its electric railway system is also prosperous.

Brains Are Needed in the Boiler Room These Days

EVEN before the world war began there was a growing appreciation of the importance of having intelligent men on the power firing line. For many years the boiler room was the backward element of the power plant, but that is not so to-day. Everywhere there is a rehabilitation going on, if it has not already been completed. Under present and prospective conditions the urgency of using coal intelligently is most pressing. Everything humanly possible must be done to save coal. At a recent meeting in Washington Van H. Manning, director of the United States Bureau of Mines, said some striking things in this connection. One was that of the 600,000,000 tons of coal produced in a year, 60

per cent is shoveled by 250,000 men into the furnaces of power plants and locomotives. Twenty per cent is shoveled by sixty times as many people into domestic stoves and furnaces. It is, therefore, 180 times as important to reach a fireman with conservation propaganda as it is a householder. In many power plants the coal consumption is as low as can reasonably be expected, but this is far from being the rule. Nor is it reasonable to expect an old-fashioned steam plant to produce electrical energy on, say, 2 lb. of coal or less per kilowatt-hour as the newer ones can do. But almost every fireman can save some coal if he will use his head for the proper purpose. Further, the management can put high-grade men into the boiler room, shifting the poorer ones to places where they can do less harm. At the same time the management can instill into the minds of the men the patriotic necessity for intelligent discharge of their duties and a conception of the dignity of these duties.

The Company Sections Are Doing Their Bit

THE report of the secretary-treasurer of the American Electric Railway Association printed in our issue of two weeks ago states that there were 1741 company section members in the association at the end of last month. This is no inconsiderable number, and while there are but eleven company sections as yet, the membership is rather widely distributed geographically and is in a position to exert a disproportionately large influence, due to the publicity given to the section proceedings. Any considerable increase in the number of sections is not to be anticipated during the war period, but the existing sections have a great responsibility to the industry which we believe they are endeavoring to discharge. This conviction is based upon a direct canvass of the sections, a study of the reports of the meetings and attendance at a considerable number of the meetings. In stimulating the sale of Liberty bonds, pushing the home garden movement, inviting men in the public service to address them, discussing means for enabling the companies to meet the present emergency and in many other ways the section members have been demonstrating their patriotism. The coming year will be one of great stress for electric railways in demands for extra service, in difficulties with the labor supply, in obtaining needed materials, in maintaining financial credit. We hope and expect to chronicle many a bit of evidence that the sections are giving material assistance in the carrying of these abnormal burdens.

Prompt and Sympathetic

Consideration Is Indeed Needed

IN his opening address before the National Association of Railway Commissioners, in Washington last week, President Max Thelen referred in a rather encouraging way to the possibilities of relief for utilities from some of their present-day burdens. Calling the position of the steam railroads very satisfactory, Mr. Thelen said: "The same statement cannot be made with reference to electric railways . . . and other utilities. These classes, as a whole, have not enjoyed the increase in business which has come to most of the steam railroads. To applications for authority to charge higher rates, based on large increases in operating expenses, frequently without commensurate increases in the volume of business, the various state commissions must give prompt and sympathetic consideration."

Without a doubt, electric railways are in a less fortunate condition than the steam carriers, and our suspicion that all is not so well with the latter class as Mr. Thelen asserts only emphasizes the pressing need of the electric lines. Commissioners other than Mr. Thelen are also awakening to the danger confronting not only the industry, but also the public it serves. We have in mind a general and a specific instance of this. To cite the first, the committee on public utility rates of the National Association of Railway Commissioners reported last week that "with increasing costs of operation an increase of revenue is necessary in order that electric railway service, which is very important in urban and interurban development, may not be crippled or destroyed." Furthermore, in the second instance, the Oregon Public Service Commission, in handing down the fare decision noted on another page, stated that the Portland Railway, Light & Power Company is in a critical position, facing an impairment of its already low earnings that cannot be borne under present conditions.

These recognitions of the existing electric railway situation make for hope, but one cannot refrain from wondering when the desired relief is to come. It helps, of course, to have commission support for such ideas as the abolition of unjust paving and other taxes, the use of light-weight, quick-service cars and the employment of women conductors, as evidenced in the case of the Oregon commission and the rate committee previously mentioned. Useful as such means might be in increasing revenues or decreasing expenses—we would not at all be interpreted as questioning their possible efficacy—their aggregate effect would be slight compared with the financial needs, and in most cases they could not be adopted without considerable delay and a restoration of railway credit. Furthermore, they certainly would not aid the railways to rid themselves of that great handicap to successful operation—the idea of a nickel fare eternally fixed regardless of operating costs.

It is not unnatural that commissions should show a desire to consider all methods for improving the condition of electric railways, but it is highly important

that they consider fairly and squarely the major question of higher fares. We believe that celerity in this work would be more certain if the railways themselves would state fully and clearly why a fare increase is desired, regardless of other items of relief, and why particular methods of increasing fares are being suggested, whether it be for legal reasons, as in New York, local conditions, or any other cause. The commissions realize, as the rate committee stated in Washington last week, that no fixed standard can be applied in establishing electric railway fares, and they are fully conscious of their right to exercise judgment regarding not only the amount of additional revenue to be granted, but also the means therefor to be utilized. This fact emphasizes the desirability of the collection of all the information possible on the relative effect on gross and net revenue of all of the different methods for increasing fares. We believe that the accumulation of authoritative data on these points would meet with a welcome from commissions that would be reflected in an increased promptitude of action on their part.

A Good Word for the

Constant-Speed Railway Motor

A MAMMOTH electric locomotive has recently been undergoing tests on the electrified section of the Pennsylvania Railroad between Philadelphia and Paoli. It is of the alternating-current constant-speed type, equipped with three-phase motors, and similar essentially to the locomotives in use for several years past on the Norfolk & Western Railway. This type of locomotive will probably be adopted for the mountainous section of the main line of the Pennsylvania near Altoona, Pa., a fact which indicates that most serious consideration is still being given to a type of equipment regarding the merits of which for traction purposes there has been a sharp division of opinion among engineers for many years. Elsewhere in this issue will be found an article by R. E. Hellmund, an engineer who has had extensive experience as a designer of electric railway apparatus, in which he sums up the case for the constant-speed motor from the general economic standpoint. In his opinion the outlook for this type of motor is improving, and he explains why he holds this opinion. He does not go into the technical details of the subject but, assuming the experience already gained to have demonstrated the workability of the constant-speed railway motor, he proceeds to analyze its performance from the money-earning standpoint. In view of the Pennsylvania Railroad's locomotive trials referred to, this discussion is timely.

The study of the constant-speed motor in its relation to traction requirements has necessarily centered on two principal factors, namely, the speed characteristics of the motor itself and the supply of power to the motor in suitable form. With a given frequency and number of motor poles and reasonably constant voltage, the induction motor hangs to its loads with constant speed, varying but a few per cent between full load "motor-ing" and full load regenerating. Any variation is due

to inefficiency in the motor or the control. This property is considered by some to be overwhelmingly favorable, by others the reverse. Mr. Hellmund goes into the situation in detail. In regard to power supply the constant speed motor is seriously handicapped. There must be either two overhead contact conductors as in the Cascade tunnel of the Great Northern Railway and on several European lines, or phase converters on the locomotives as on the Norfolk & Western and the new Pennsylvania locomotives.

The necessity for the use of two overhead conductors has been the barrier which has almost kept the constant-speed motor out of the railway field in this country. The commercializing of the phase converter has removed this barrier, but has put up two lesser ones in its place, the phase converter itself and the difficulty of generating and transmitting single-phase power efficiently. Of course, all technical problems involved in any or all of these barriers have been solved or are in process of solution, but they must always remain as economic factors in electrification.

It would not be fair to the constant-speed motor not to refer again to its well-known inherent regenerating property, which has furnished a weighty argument in its favor. The motor pumps power back into the line when driven above synchronous speed without the aid of auxiliary apparatus. This property is, however, less unique than formerly, owing to the satisfactory installation of regenerating direct current locomotives on a large scale on the Chicago, Milwaukee & St. Paul.

Handling Way Materials with Minimum Labor Consumption

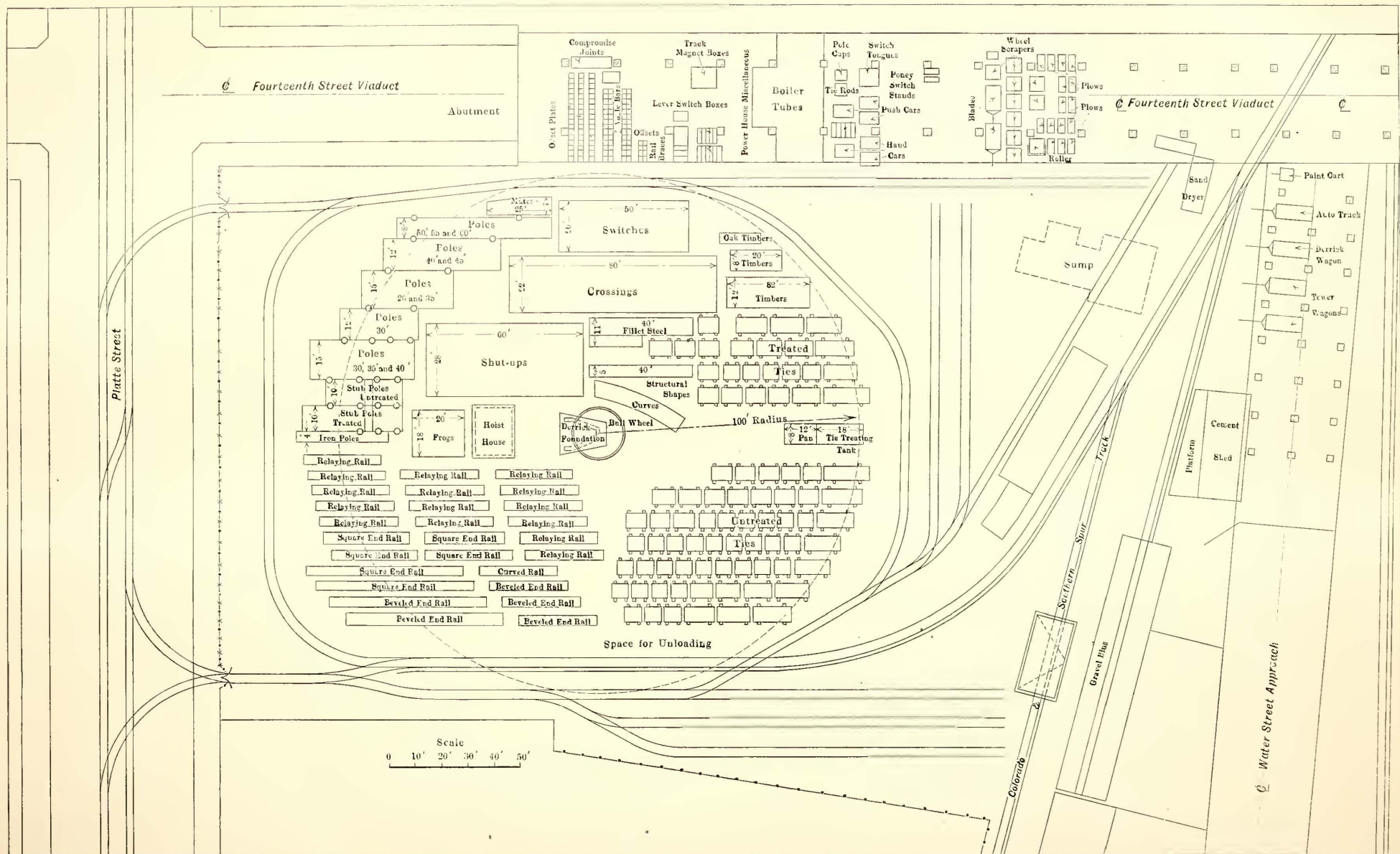
IN an earlier editorial we expressed the conviction that there was much that could be done on electric railway properties to reduce the consumption of labor as an offset to the rising costs of both labor and materials. An excellent example of the possibilities along this line is to be found in the results obtained in the new Denver storage yard, as described elsewhere in this issue by Edward A. West. His article serves to bring out many of the important points made in previous articles which have appeared in this paper. Among the notable features perhaps the most prominent is the deliberate selection of an expensive site, centrally located, mainly to bring the yard closer to the center of the railway system in order to reduce haulage charges. Such a location also requires careful planning of the space assignment for the different materials so that maximum capacity per unit of space may be secured. That this has been done is indicated by the fact that the old yard now abandoned covered $5\frac{1}{2}$ acres while the new one contains only $2\frac{1}{4}$ acres. The size of the yard also conduces to the use of a minimum amount of yard machinery. The study given to such matters as track layout, space assignment, steam road connections and the use of first-class track materials for the yard tracks indicates the thoroughness with which the whole project was handled.

The outstanding feature of this yard is the use of

one large, permanently located derrick. In almost every storage yard small derricks have been utilized usually to serve one kind of supply or material stored on a small ground area at the foot of the derrick, but so far as we are aware this is the first application of the derrick to electric railway work on so large a scale. A comparison on the basis of first cost and service performed with materials-handling machines in other yards may prove of interest. The nearest parallel to the Denver installation which we now recall made by an electric railway company is the enormous gantry crane installed in the new Cleveland storage yard, described in this paper, issue of Feb. 24, 1917. This operates on a runway, 1000 ft. long, and serves a strip of ground 120 ft. wide, or a total storage area of 120,000 sq. ft. The Denver derrick with its 100-ft. boom serves a storage area of 31,416 sq. ft.—26 per cent as great an area served, but with an investment not more than 15 per cent as large. Hence, four such derricks might be installed to serve an area 5 per cent greater than that served by the Cleveland crane, and with a total investment only 60 per cent as great. The capacity of the Cleveland crane is six or eight times that of the Denver derrick, and it could handle more material per hour than the latter. It could probably not handle as much as four of the derricks, as so many more motions are involved in its operation. All things considered, then, the large derrick would seem to be the ideal hoisting and materials-handling apparatus for the medium-sized property, and two or more could be used in large yards.

Among other features of the Denver yard worthy of comment is the unique arrangement under which the storage bins for sand and gravel were obtained. For the privilege of placing his bins on the property of the tramway company, which made a very advantageous location for him, the contractor supplied the bins for the use of the tramway and it was thus relieved of any investment for sand and gravel storage and handling. Arrangements were further made so that the tramway buys its sand and gravel from this contractor at a very reasonable price, since he does not have to handle the materials at all when they are drawn from the bins.

At a time when every possible saving in man-energy is worth striving for, the distinct labor saving achieved in the Denver yard is noteworthy. A line of work which formerly required fifteen men can now be done by three men, and this saving in man-energy assumes even greater importance than that attached to the monetary saving alone because of the great difficulty now experienced all over the country in obtaining and keeping men at work of this class. We take particular pleasure in directing the attention of managers and way engineers to the article in question, as it supplements our own past efforts in presenting the subject of handling way materials. We are more than ever convinced that these efforts have been exerted in a channel where distinct savings can be made if the proper study is given the subject by those responsible for securing the greatest possible efficiency at a time when it is most difficult to do so.



In this yard the most suitable location for each class of material has been carefully studied out. The man in charge has a blueprint similar to this illustration which shows him exactly where incoming material is to be placed and where he can find the supplies when wanted.

Denver Storage Yard—Fig. 2—Located Near Center of City, Where Land Is Expensive and Must be Used Intensively

Denver's New Storage Yard Served by a Single 100-Ft. Derrick

Location of Storage Yard Close to the Center of the City Reduces Haulage Costs—Special Storage Schemes Adopted to Utilize Available Space Efficiently—Only Three Men Required to Handle the Work

By EDWARD A. WEST
Chief Engineer Denver (Col.) Tramway

WHAT is believed to be a particularly accessible and economical track material yard has recently been completed and put into use in Denver, Col. The principal features of this storage yard are, first, the use of a single derrick placed in the center of the yard in such a manner as to have a range of utility which practically covers the complete hoisting requirements of the yard; second, the intensified and efficient use of a rather small area, and last, the location of the yard close to the center of the city and of the railway system. All three of these features tend to lessen the charge which must normally be made against the track department for interest on the land investment, for handling of materials cost, and for haulage costs.

Many electric railway companies have shown reluctance to use ground close to the center of the city for track-storage purposes, presumably because of the high value attached to it. Yet it frequently happens that a company has a piece of ground centrally located that has

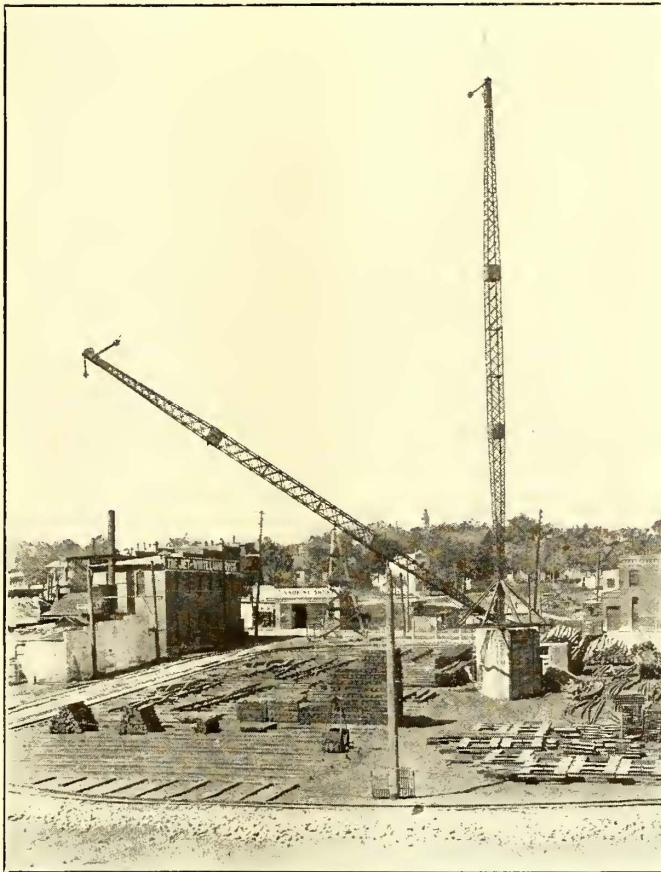
been idle for many years waiting for a price, while the company has meantime been paying high haulage costs for taking material to and from a material yard located in the outskirts of the city on less valuable ground. Up to the present time this has also been the situation with the Denver Tramway. Approximately 3 miles from the center of the city a storage yard containing approximately $5\frac{1}{2}$ acres of land and requiring fifteen men to operate it has served the purpose for many years. It was difficult to keep men long in this material yard because of the hard work which they were required to do, and rails, ties, paving blocks and cement sheds were placed here and there around the needlessly large area, wherever the whim of a yard man dictated, or in the only spot available at the moment.

While this old yard was in use a small piece of ground adjacent to the company's power house and located less than 1 mile from the heart of the business district stood idle. This had been purchased originally for the

storage of coal, but a different scheme had later been adopted. Because of the small area involved and the advantage of its central location, it was an economical plan to utilize this property for the purposes of the track department. It contains approximately 2 acres of ground, but the space beneath the Fourteenth Street viaduct along one side of the yard, and the space beneath a right-angle approach to this viaduct which extends along the back end of the yard, add about another quarter acre of ground which is also used for storage purposes.

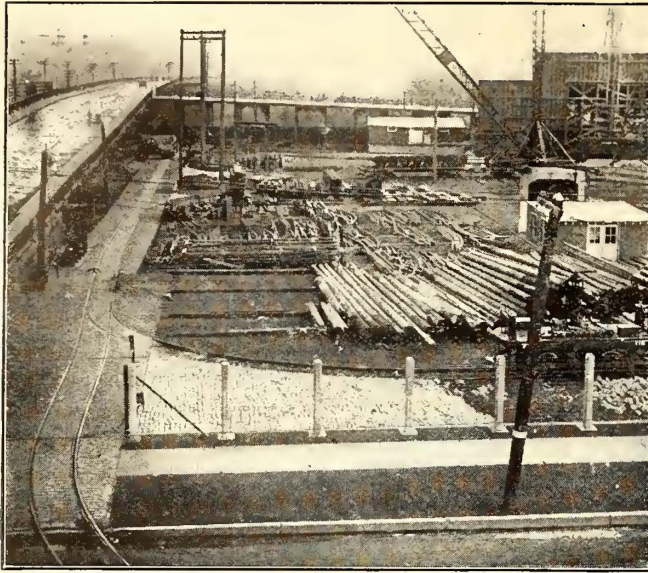
GENERAL LAYOUT OF MATERIAL YARD

As shown in the full-page drawing, a big derrick with a 100-ft. boom is located at practically the center of the yard. The space within the 100-ft. radius is reserved for



DENVER STORAGE YARD—FIG. 1—GENERAL VIEW OF YARD SHOWING DERRICK WITH 100-FT. BOOM

the most part for the heavier materials such as special work, rails, poles and ties, etc., and a track completely encircling this area served by the derrick makes possible the handling of materials into or out of cars at any point around the derrick. Entrance to the yard is made from the electric railway system at both front corners, and these tracks extend back through the yard, branching into several stub-end sidings and connecting with steam railway tracks at the rear of the yard. As the tramway tracks are for the most part 3-ft., 6-in. gage, it was necessary to install a third running rail outside of the narrow-gage track in order to bring standard-gage steam-road cars into the yard for unloading supplies. For the tracks in the yard, only first-class, 65-lb., A.S.C.E. section rail with continuous joints was used.



DENVER STORAGE YARD—FIG. 3—SHOWING PAVED DRIVEWAY, SAND AND GRAVEL BUNKERS AND METHOD OF PILING MATERIALS

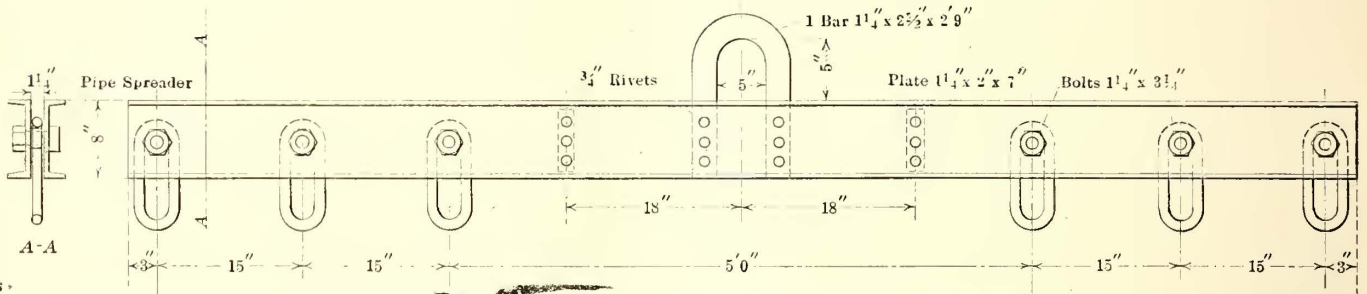
The delays, derailments and high maintenance costs which were experienced in the old storage yard, because second-hand odds and ends of rail and special work had

been used, served as a lesson in constructing the new layout.

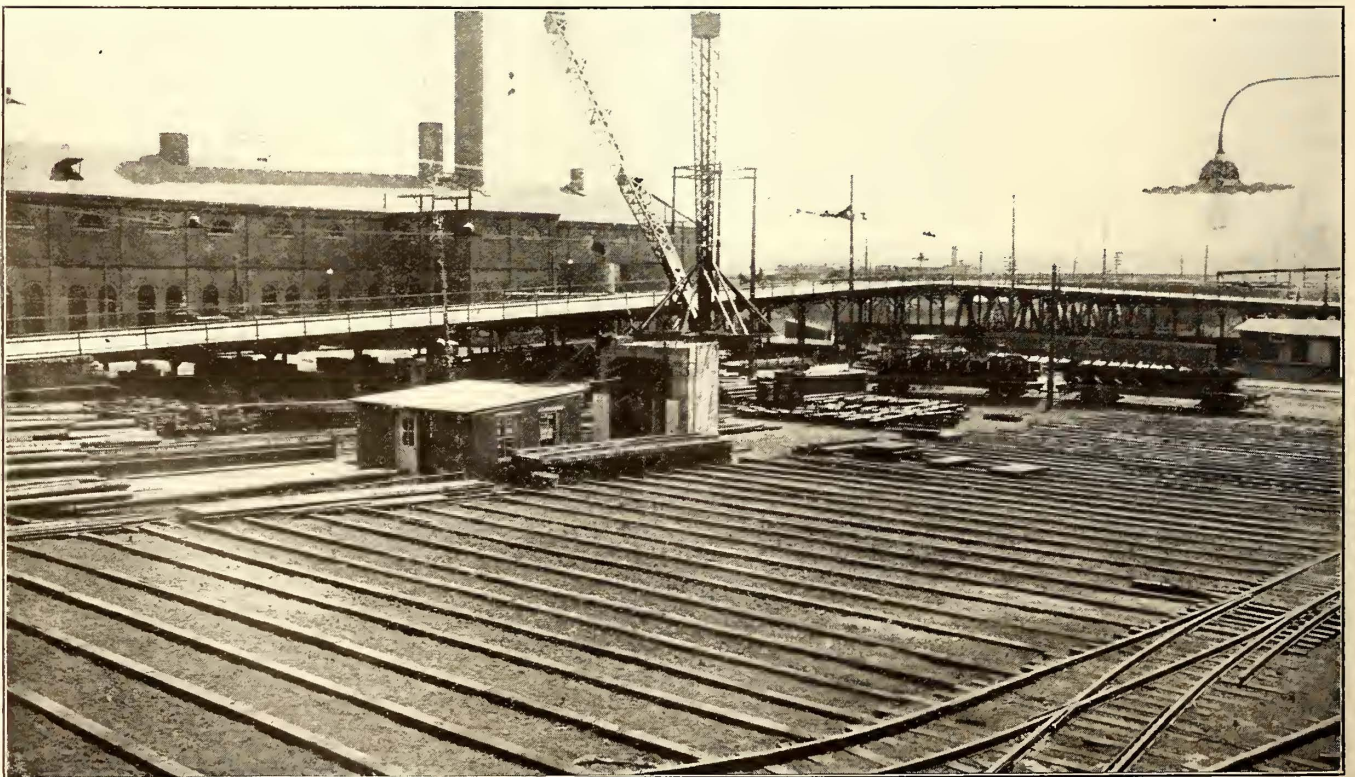
The derrick is a 5-ton machine built by the Clyde Iron Works and mounted on a V-shaped concrete foundation, as shown. The boom is 100 ft. long and is new, while the electrically driven operating mechanism is a second-hand outfit made over to suit the yard conditions. Due to the use of this derrick and the other labor-saving schemes and devices in the yard, only three men are required to take care of all work there.

The yard was completely graded and surfaced and was then equipped with mud sills, as shown in Fig. 5. These were made from second-hand ties laid end to end in lines about 8 ft. apart, and they make a foundation upon which to pile material. Old paving blocks unfit for street work were used to build a solid roadway, Fig. 3, from the street through the yard along one of the tracks, to the cement shed and gravel and sand bunkers at the rear of the property. As far as possible, all material requiring team or truck service is located along this roadway, so that it may be readily handled.

Considerable study was given to the matter of assigning space to the various materials in order to economize on space by setting aside a sufficient amount and yet not too much for each item. Allowances were made also



DENVER STORAGE YARD—FIG. 4—DETAILS OF LIFTING BEAM USED WITH DERRICK



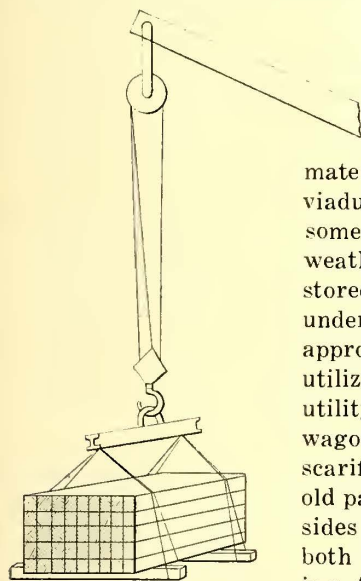
DENVER STORAGE YARD—FIG. 5—MUD SILLS FORMING A FOUNDATION ON WHICH TO PILE MATERIAL

for future expansion. In making this study the old stock records of the company were carefully gone over and data were made up to show what the average and maximum stocks of various materials were. In addition to utilizing the available space most efficiently, it was the aim to have a definite place for everything and everything in its place, so that it would not be necessary to look in several places for "that special frog which was removed six months ago and is now badly needed in a hurry." The assignment of space is shown in detail in Fig. 2, and a blueprint similar to this drawing is used by the material yard foreman in distributing supplies as they arrive at the yard.

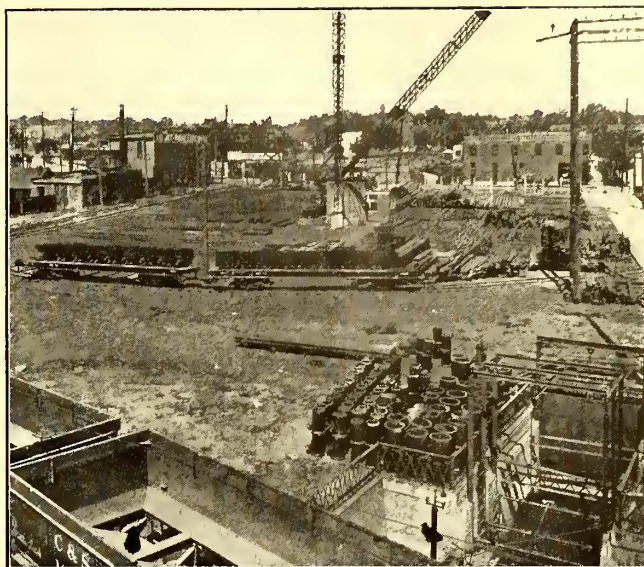
The space underneath the Fourteenth Street viaduct has been made use of to good advantage for storing rail

fastenings, spikes, bolts, switch tongues, angle bars, etc., with space assignments as shown in the drawing.

Fig. 7 also shows how material is piled under the viaduct. The viaduct provides some protection from the weather for the materials stored underneath. The space underneath the Water Street approach to the viaduct is utilized for storing various utility equipment such as line wagons, plows, scrapers and scarifiers. A foundation of old paving blocks laid on their sides has been put underneath both viaducts, thus facilitating the storage of material and equipment and affording a solid foundation for teams



DENVER STORAGE YARD — FIG. 6—METHOD OF HANDLING TIES WITH DERRICK



DENVER STORAGE YARD—FIG. 8—GENERAL VIEW OF YARD, SHOWING HOW IT IS SERVED BY LARGE DERRICK

and auto trucks to back in for loading and unloading supplies.

An idea of the capacity of this 2¼-acre storage plot is gained from the fact that besides boiler tubes, grate bars, brick, horse and auto-drawn utility equipment, etc., space has also been provided for the storing of the following amounts of poles, lumber, and the more common track materials:

2,500 tons of 30-lb. to 100-lb. section rail in 30-ft. and 60-ft. lengths.	1,500 pairs angle bar offsets.
25 shutups.	1,500 pairs compromise joints.
100 frogs.	200 mate tops.
25 crossings.	2,000 rail braces.
900 poles, 25 ft. to 60 ft. in length.	200 electric switch magnet boxes.
25,000 ties.	100 cast-iron drain boxes.
20,000 paving blocks.	100 iron switch boxes.
100,000 ft. board measure bridge timber.	100 iron pole caps.
5,000 pairs angle bars.	2,000 tie rods.
	150 switch points.
	250 switch tongues.



DENVER STORAGE YARD—FIG. 7—SHOWING MATERIAL PILED UNDER VIADUCT

The schemes devised for securing this large capacity with a comparative small ground area are illustrated by the accompanying halftones and drawings. The system of piling ties and rails is designed not only to give the maximum capacity per unit of space, but also to facilitate the handling of ties and rails with the derrick. A complete unit of ties, consisting of from six to forty-five ties, depending on the size and length, can be picked up at one lift of the derrick. The specially designed lifting beam and a derrick load of ties are shown in Fig. 4 and Fig. 6.

SAND AND GRAVEL STORAGE AND HANDLING

The sand and gravel storage bunkers which are installed at the back end of the yard and adjacent to the river belong to the Platte River Sand & Gravel Company. These are placed on the tramway company's property under a leasing agreement whereby the company has the exclusive use of the four bunkers nearest the viaduct. One of these bins is equipped with a steam coil, supplied with steam from the company's generating station on the opposite side of the viaduct and is used continuously for drying sand for use in the cars. This bunker turns out about 15 cu. yd. of dry car sand per day with no labor expense. The other bunkers are used for the storing of sand, pea gravel, large gravel and crushed rock. Sand and gravel are supplied to these bunkers by conveyors, and are taken from them by gravity. The supply is brought into the yard over the Colorado & Southern Railroad from pits at one end of the city. Bottom dump cars are employed and these are emptied into a large concrete grizzly from which the material is elevated and distributed to various bins by means of bucket conveyors.

The bunkers are so constructed that wagons, trucks and standard or narrow-gage cars can be moved underneath them and loaded by gravity. Trucks and wagons are loaded from a different level than the railway cars, so that there is no congestion or confusion in the yard and no danger of trains running down horse-drawn or auto conveyances.

A shed for the storage of cement was built along the same tracks that serve the bunkers. By means of an overhead carrier system, sacks of cement can be dropped aboard cars standing in front of the cement house at the same time other cars in the train are being loaded with sand and gravel. Only one man is required to operate the bunkers and load the cement.

A new tie-treating plant is to be installed in the yard in the near future. The tie-treating process as it is carried out in the company's old yard requires the labor of seven men, but it is expected that with the new tanks installed, the three men employed in the new yard will be able to take care of this work.

Steam mains from the generating station have been run through the yard to supply live steam to the sand dryer, the tie-treating tanks, the derrick house, and the space underneath the derrick which has been fitted up to serve as a locker and toilet room for the yard crew. The yard has also been piped throughout for water, and fire hydrants are located at various points. Night work has been made possible when necessary and the yard has been protected from theft by the installation of several high-power nitrogen lamps, making all parts of the yard plainly visible from the viaduct.

The fence surrounding the yard is of rather unique

construction. It was made by setting short pieces of scrap rail in the ground as posts and pouring concrete in forms around the rail. Heavy meshed wire was stretched along the posts before the concrete was poured. The result is a very substantial and good-looking fence, which is shown in the foreground in Fig. 3.

New Freight Terminal at New Haven

N. Y., N. H. & H. R. R. Completes Plans for Cedar Hill Yard in New Haven at Eastern End of Electrified Zone

DETAILS have been announced of the plans for the new freight terminal being constructed by the New York, New Haven & Hartford Railroad at Cedar Hill, in the eastern part of the city of New Haven, which marks the end of the company's electrified zone. In this terminal the extension of the electrification will cover only the New York-Maybrook receiving yard and three or four tracks in the Shore Line departure yard. The New York-Maybrook departure yard is already electrified to the extent necessary for the electric locomotives to handle outbound trains.

The location at Cedar Hill—which is the junction of the Shore Line, the Air Line and the Hartford Line—places the terminal between the converging routes from the West and Northwest and those diverging eastward and northward. A location west of New Haven was originally considered, but was abandoned on account of the large quantities of solid rock found by tests, as well as other difficulties. The present site is on both tide lands and upland consisting largely of sand, which provides excellent material for grading. The course of the Quinnipiac River necessitated a location along the Air Line, with a connection to the Hartford division at the northern end of the yard.

The design of the yard was determined by the economical policy of continuing existing facilities so far as practicable. It embodies among other features the separation of grades at several points and an arrangement to minimize the deadhead mileage of road power and yard power. A transfer station for less-than-carload freight will be located approximately in the center of the yard. This will be most convenient for receiving such cars from the various routes and for delivery of outbound cars from the various points from which trains will depart. A second turntable 95 ft. in length has been installed, and an additional roundhouse of eighteen stalls is under construction. Additional facilities will be provided later for inspection and care of electrical equipment. These include a small shop, inspection pits and pantograph inspection platforms. The yard is to be completed in about a year.

Notice to Subscribers Who Bind Their Copies

THE volume numbers on the front cover and on the bind of the issue of Oct. 6, 1917, of the *ELECTRIC RAILWAY JOURNAL* were erroneously printed "Vol. 51, No. 1," whereas they should have been "Vol. 50, No. 14." The proper numbers appear on the reading pages of the issue and on the covers of subsequent issues. To prevent any error when the volume for the half-year is bound, the publishers recommend that subscribers correct the numbers as they now appear on the front cover and on the bind of the issue for Oct. 6 so as to read "Vol. 50, No. 14." This can be done very readily with a pen.

Portland Company Gets Partial Relief

Oregon Commission Grants Ticket Increase and Is Not Sanguine as to Possibility of Escaping a Further Increase—Speaks Broad-Mindedly of Railway Burdens

THE application of the Portland Railway, Light & Power Company for a 6-cent fare has not been granted. Yet, as was briefly noted last week, the decision of the Oregon Public Service Commission was not altogether unfavorable to the company. Some material aid was offered in the form of authority to raise the rates for unlimited tickets and limited school-children's tickets, and moral support was given to the ideas of relief from taxation, commission recognition of wage demands, public co-operation in spreading rush-hour traffic, and one-man car operation. The opinion of the commission on these and other important topics is presented in the following abstract of the complete decision, just now available.

QUESTION OF JURISDICTION QUICKLY ANSWERED

The first question confronting the commission was as to whether or not it was clothed with authority to grant the relief sought, (1) because of the provisions of an act of the Legislative Assembly of 1901, which provides that it shall be unlawful to charge in excess of 5 cents for one continuous trip in one general direction between any two points within the corporate limits of cities having a population of more than 50,000, and (2) because of the fact that the fares were fixed by the franchises under which the company occupied the streets.

In a few words, practically as here stated, the commission expressed its conviction that the 1901 statute was repealed by implication by the public utility act of 1911, and that the franchise provisions were made subject to the sovereign power of the State to regulate rates. The State having chosen to exercise that power, and having constituted the commission to administer that function, the franchises must yield to the commission's determination. The commission saw no legal reason why it should not proceed to a determination of the case.

LATEST RATE OF RETURN ONLY 2.8 PER CENT

In a case recently decided (P. U. R., 1916, D977, and 1917, D962), the commission had determined the value for rate-making purposes of the operating properties of this utility to be, as of Dec. 31, 1916, \$46,862,971. Of this amount, \$18,233,371 was apportioned to the electric railway system. Inventories were prepared in great detail. To these were applied normal unit prices,

which were derived from independent sources and upon which the company's stocks and bonds had not even the remotest bearing. Upon this appraisal, together with the original cost, the accrued depreciation and the history of the plant and its operations, were based the conclusions of the commission. The state-

ment on page 758 for the electric railway department shows the revenues, expenses (including charges for depreciation properly assignable to that department), taxes and bridge rentals, for the five years ended June 30, 1917.

Applying the net income for the year ended June 30, 1917, to the valuation above mentioned shows a rate of return for the year of 2.8 per cent. This return represents the total amount available for the payment of both interest and dividends. Similarly, the net income for each year since the adoption of public regulation indicates the following rates of return: 1912-1913, 6 per cent; 1913-1914, 5.3 per cent; 1914-1915, 3.6 per cent; 1915-1916, 2.3 per cent; 1916-1917, 2.8 per cent.

For several years low prices and wages prevailed, but even under these conditions the profits of the company were not excessive. After the opening of the war there was a general increase in the prices of supplies and materials. The utility also found it necessary to grant increases in wages, which had amounted, on July 1, 1917, to about 10 per cent in the case of platform men, although somewhat less in other departments.

RULING ON WAGE DEMANDS

Recently the organized employees, comprising practically the entire operating and maintenance forces, presented a demand for a further increase of wages and a betterment of working conditions. The company asserted that its revenues were insufficient to permit compliance, and placed before the employees a statement of operating expenses and revenues with an invitation to verify its accuracy. Together with this action the company promised the employees that their demand would be met if sufficient revenue could be obtained for the purpose.

To obtain the extra revenue to meet the demands of its employees, therefore, was one of the reasons set forth in the application as justifying an increase in fares. Conceding the fairness of the company's action, the employees petitioned the commission to ascertain

The Basis for Hope

We desire to be plainly understood, however, as entertaining no sanguine hopes as to the possibility of escaping a further increase in fares unless the heartiest co-operation is afforded the utility. . . . The commission will keep closely in touch with the entire situation. . . . Should it, in the opinion of the commission, become necessary, further action will summarily be taken.—MAJORITY DECISION OF OREGON COMMISSION.

I firmly believe the increase in rates is absolutely necessary if a reasonably high standard of service is to be maintained and a just increase in the wages of employees granted. Delay in applying a proper remedy may necessitate a later increase in fares in excess of the 6-cent fare now suggested, and for a much longer period.—COMMISSIONER COREY, DISSENTING.

the accuracy of the utility's contention and, if it was determined to be well founded, to prescribe a remedy to enable the company to meet the demands on it.

The present hourly wage scale of the trainmen is as follows: First six months, 28 cents; second six months, 29 cents; second year, 30 cents; third year, 31 cents; fourth year, 32 cents; fifth year, 33 cents; after the fifth year, 34 cents. The basic day is ten hours, but no increase in the hourly rate is allowed for overtime.

The wages and working conditions of the trainmen in the Ankeny and Piedmont divisions, which are deemed to be fairly representative, are revealed in the accompanying table, in which the figures are all based upon week-day schedules. The rates of pay per month represent what the maximum, minimum and average runs would pay if worked thirty days per month. In actual practice this is not done, and the earnings from these runs would ordinarily be 15 per cent less.

Viewing this question from the standpoint of all parties concerned, the commission said that the granting of a shorter basic day and a reasonable increase

It is evident the situation is critical; the company is facing an impairment of its already low earnings that cannot be borne under present conditions. To meet this situation there are but five remedies: the removal of unjust burdens imposed by the public, increased efficiency, additional business, reduced service and higher rates.—OREGON COMMISSION.

in wages would be justified. However, it is not clothed with authority to fix schedules of wages. As to what would constitute a reasonable decrease in hours and increase in wages, from the standpoint of the patron, no definite figure need now be determined. The company should exercise full discretion in the fixing of wages and working conditions, and its actions should only be questioned when the resulting operating expenses reach the point where they affect the rates charged or the service rendered.

The stockholder, the commission stated, through his executive officer is in a position to protect his earnings against the unreasonable demands of employees. If the patron by the payment of a reasonable fare provides the funds to meet all reasonable operating expenses and fixed charges due to the furnishing of adequate service and the establishment of fair working conditions and wages, any depletion of earnings due to the payment of excessive wages should and does become the stockholder's responsibility.

POSITION OF COMPANY IS CRITICAL—THE REMEDIES

In addition to the outlay necessary to meet reasonable demands of its employees, the company is confronted with largely increased expenses due to the present high material prices. Aside from the materials and supplies covered by unexpired contracts, it is estimated by the company that the expenses during the ensuing year, by reason of the recent advances in prices of materials and wage increases already granted,

HOURS OF LABOR AND WAGES OF TRAINMEN ON REPRESENTATIVE DIVISIONS OF PORTLAND RAILWAY, LIGHT & POWER COMPANY

	<i>Present Runs</i>	
	Ankeny Division	Piedmont Division
Number of men having regular schedule runs...	201	302
Number of men having "first class" runs*.....	18	35
Number of men having regular runs with elapsed time over twelve hours and less than thirteen hours	71	68
Number of men having regular runs with elapsed time over thirteen hours and less than fourteen hours	87	127
Number of men having regular runs with elapsed time over fourteen hours.....	14	72
Number of men on extra list.....	50	61

<i>Present Rates and Schedules</i>		
Maximum pay per month.....	\$119.10	\$115.26
Rate per hour for above run.....	34 cents	34 cents
Elapsed time of above run.....	11:41	13:53
Working time of above run.....	7:11:41	11:19
Minimum pay per month.....	\$70.50	\$67.50
Rate per hour for above run.....	30 cents	30 cents
Elapsed time of above run.....	14:29	13:41
Working time of above run.....	7:47	7:30
Average pay per month.....	\$102.00	\$98.09

*A "first class" run is a day run quitting before 6 p. m. and without a tripper piece.

†This is an owl run with a layover which is paid for.

will greatly exceed those of 1917. A budget for 1918, as compared with actual expenditures during 1917, shows items as follows: Maintenance of way and structures—1917, \$134,991; 1918, \$247,600; maintenance of equipment—1917, \$150,691; 1918, \$260,686; traffic—1917, \$6,474; 1918, \$7,100; conducting transportation—1917, \$1,122,901; 1918, \$1,345,961; general and miscellaneous—1917, \$228,365; 1918, \$258,702; total expenses—1917, \$1,633,422; 1918, \$2,120,049. No anticipated increases in wages or material prices are reflected in these figures.

It is evident, the commission remarked, that the situation is critical. The company is facing an impairment of its already low earnings that cannot be borne under present conditions. To meet this situation there are but five remedies: the removal of unjust burdens imposed by the public, increased efficiency, additional business, reduced service and higher rates.

To the commission it seems doubtful whether any one of these alone will solve the problem. Excessive reductions in service or undue increases in rates would but invite the resumption of jitney competition, backed by public opinion, and the utility would again be facing a crisis graver, if anything, than the one which now confronts it.

1—Removal of Unjust Burdens Imposed by Public

It is the practice in Portland to require the company, when streets are improved, to meet the original cost of, and thereafter maintain, all paving between its rails and to the end of the ties. The company has to date been compelled to lay approximately \$2,000,000 of paving. Interest, depreciation and maintenance on this paving amounts to about \$225,000 per annum.

COMPARATIVE INCOME STATEMENT OF RAILWAY DEPARTMENT OF PORTLAND RAILWAY, LIGHT & POWER COMPANY

	1913	1914	1915	1916	1917
Operating revenue	\$3,272,210	\$3,225,268	\$2,794,639	\$2,612,210	\$2,787,854
Operating expense	2,120,119	2,139,579	1,962,704	2,016,763	2,019,588
Net operating revenue	\$1,152,091	\$1,085,689	\$831,935	\$595,447	\$768,266
Miscellaneous income	72,378	78,955	78,443	80,032	11,981
Gross income	\$1,224,469	\$1,164,643	\$910,378	\$675,479	\$780,247
Taxes	\$151,154	\$185,854	\$217,800	\$224,085	\$202,821
Bridge rentals	39,044	44,350	43,457	45,883	66,637
Net income	\$1,034,271	\$934,439	\$649,121	\$405,511	\$510,788

According to the commission, the question arises as to whether this paving should be installed and maintained by the car rider, when, as such, he derives no benefit therefrom, or whether the burden should be borne by the abutting property owner, who enjoys not only the benefit of the paving but any advantage which may accrue from the proximity of the car service. In its opinion since the presence of the tracks upon the street results in added cost both in the installation and in the maintenance of the paving, the car rider should bear such added expense, because he is directly responsible therefor, but beyond this additional cost he has no responsibility and should bear no burden.

In this same category the commission mentioned the franchise requirement for free transportation for certain city employees, resulting in an aggregate loss in revenue of approximately \$16,000 annually. This burden, it was said, should be borne by the taxpayer and not by the car rider. Bridge rentals and franchise fees, if they exceeded the added cost due to the existence of the railway system, also might well be shared by others.

2—Increased Efficiency

The commission felt that if the industries of Portland would co-operate with the company in spreading heavy rush-hour traffic over a longer period, a considerable saving could be made. Some of the large industries of Portland co-operated with the company in this manner, and the results were highly beneficial. The commission commended this feature and promised any assistance within its power.

On the subject of one-man car operation the board stated:

"With the exception of a small number of cars in the outlying districts, two-men cars are operated upon all the lines of this company. On lines where heavy grades are encountered, and in the congested downtown district, two platform men ordinarily are necessary to insure safety of operation and greater dispatch in the handling of traffic. When a car is loaded and has left the congested district, however, the conductor may well leave the car at an appropriate point and double back on the next car. Most of the owl cars may well be operated with a single man. These adjustments require careful planning, but the results will justify the effort."

3—Additional Business

The company estimated that the number of passengers to be transported upon its lines during the twelve months ended June 30, 1918, would be 15 per cent greater than during the preceding twelve months. Because of the increased commercial activity and the elimination of jitney service in Portland, the commission concurred in this estimate and expressed a belief that the gain might reach even a higher figure. Returns for July and August of this year indicate an increase in traffic of approximately 25 per cent over the corresponding period last year. Of course, the increase in gross earnings has been accompanied by an increase in operating expenses, but in less proportion, resulting in a net gain.

4—Reduced Service

According to the commission, frequency of service should be governed primarily by the traffic offered.

The application of this principle should be limited only by the approach of the resulting service to the minimum which will stand the test of reasonableness. As a general proposition, in the absence of unusual circumstances, the commission believed that no street cars within the city of Portland should be operated at greater than twenty-minute intervals.

Moreover, it was of the opinion that the present service in Portland in many respects is in excess of the reasonable demands of the traffic. Under the present schedule on two lines, for example, by actual count on a typical date, the company furnished 1807 empty seats between 9 a. m. and 4.30 p. m., as against 1793 seats occupied by paying passengers. Under the suggested withdrawal of three cars there would still have been more than 800 empty seats.

By slight changes in the routing of cars other savings could be accomplished. For instance, two cars now engaged in shuttle service could through this means be discontinued. Moreover, at present through service is maintained from short branch lines which might reasonably be served with shuttle cars. This

The fallacy of imposing undue public charges upon utilities as a condition precedent to their right to engage in a public service has been repeatedly demonstrated. We are not unmindful of the difficulties which would be encountered in attempting to accomplish an equitable readjustment of these and other like conditions, but they should not be insurmountable.—OREGON COMMISSION.

feature should receive careful consideration, as should also the advisability of attaching trailers to through no-stop cars and the elimination of the trippers which might become unnecessary under such a plan.

The commission said that it did not wish to be understood as suggesting an indiscriminate curtailment of service, or any reduction lowering the standard of service that the public is entitled to receive. Choosing between an increase of rates or the impairment of a reasonable service, in the absence of peculiar local conditions, the commission would unhesitatingly adjust the rates. But if the service was in excess of that reasonably required, then the service and not the rates should be adjusted.

5—Higher Rates

Under a tariff effective Feb. 22, 1916, and now in force, an unlimited ticket book containing fifty coupons, each good for one ride with full transfer privileges, is sold for \$2.25. The same tariff also names a rate of \$1 for school tickets in books of thirty-three coupons, good only for children attending public, private and Sunday schools. These rates, the commission said, are unduly low, and it authorized rates of 5 cents each for the unlimited tickets and 4 cents each for school children's tickets.

In stating that the case would still be held open, however, the commission concluded as follows:

"We feel that with the application of measures of economy along the lines here suggested, coupled with

hearty co-operation of the people of Portland, both individually and collectively through their city government, in the working out of this problem, the company may be able to meet all reasonable demands of its employees and its prospective increased expenses without resorting to further rate adjustments. Until the effect of these measures can be more accurately determined, the commission hesitates to add to the public burden by the imposition of any further increase of rates.

"We desire to be plainly understood, however, as entertaining no sanguine hopes as to the possibility of escaping a further increase in fares unless the heartiest co-operation is afforded the utility. Slight personal inconveniences and purely technical considerations must give way to broadness of mind and fairness of spirit with the ultimate object of the greatest good to the greatest number.

"The company will be required to submit monthly statements covering its railway operations, together with full information as to the action taken with regard to the suggestions herein contained. The com-

Experience has taught us that ordinarily, next to safety of operation, adequate service is of prime importance in public utility activities. Choosing between an increase of rates or the impairment of a reasonable service, in the absence of peculiar local conditions, the commission will unhesitatingly adjust the rates. On the other hand, if the service is in excess of that reasonably required, then it should be adjusted.—OREGON COMMISSION.

mission will retain jurisdiction of this matter and will keep closely in touch with the entire situation. As the actual effect of this order is demonstrated, should it, in the opinion of the commission, become necessary, further action will summarily be taken."

DISSENTING OPINION URGED TRIAL OF 6-CENT FARE

The decision of the commission was rendered by Chairman Miller and Commissioner Buchtel. In a dissenting opinion Commissioner Corey criticised the decision as not affording the prompt relief which seems necessary. He also said that a considerable reduction in car service would create a strong demand for the return of the jitneys. Continuing, Mr. Corey said:

"A 6-cent fare is open to objection on many grounds, and it may seriously be doubted whether such a fare will result in any substantial net benefit to the company. In this case, however, the change is open to less than the usual amount of objection, for the percentage of the short-haul traffic is small. The average haul being 4.5 miles, the average rate would be less than 1.5 cents per mile even with a 6-cent fare. The company is reasonably entitled to make this experiment in fares, provided no undue burden is placed upon its patrons and no more is charged for the service than it is reasonably worth.

"In order to provide for a necessary increase in revenues, I favor a reduction in service where practicable and a temporary six months' trial increase in fares to 6 cents (six rides for 35 cents), the present school


children's tickets being retained; and workingmen's week-day ride books upon the basis of fifty-two rides during one month for \$2.60. The theory is not founded upon the fact that the purchaser is a working man or belongs to any other class of individuals, but because he makes constant use of the railway facilities.

"I firmly believe the increase in rates is absolutely necessary if a reasonably high standard of service is to be maintained and a just increase in the wages of employees granted. Delay in applying a proper remedy may necessitate a later increase in fares in excess of the 6-cent fare now suggested, and for a much longer period."

Flat Wheels and Safety

The accompanying illustration, reproduced from a recent poster of the electric railway section of the

FLAT WHEELS



**Who Put the Flat Spots on the Wheels?
The Motorman?**

Leaves, drippings from automobiles, a sprinkling of rain, make greasy rails; a dose of sand, quick application of brakes—and flat spots are made. In the season for slippery rails, remember that too sudden setting of the brakes will cause your car to skid—and an accident is marked up against you. Keep constantly in mind the proper way to stop on bad rails.

**Know and Make Allowance for the Rail Condition
and Accidents Will Be Avoided**

POSTER ISSUED BY ELECTRIC RAILWAY SECTION, N. S. C.

National Safety Council, indicates the kind of appeal for co-operation which the section is making. The poster will be found on many electric railway bulletin boards.

College Representation in Doherty Organization

Fifty-five engineering colleges are represented by men in the cadet schools of the Doherty organization. The colleges which have contributed ten or more of the cadets now in the organization are as follows: Purdue University, eighteen; University of Missouri, sixteen; University of Wisconsin, sixteen; University of Kansas, fourteen; University of Colorado, thirteen; Kansas State Agricultural College, eleven; Georgia School of Technology, ten; Pennsylvania State College, ten. Since the schools, as now constituted, were organized in 1906, the organization has hired 375 men. Of these 305 or 81 per cent are still in the organization.

Do Changing Conditions Favor Constant-Speed Railway Motors?

The Author Believes that from the Standpoint of Economy the Tendency Should Be Toward Constant-Speed Operation, Especially for Roads with Heavy Traffic—He Cites as Evidence the Fact that Steam Railroads Are Electrifying Mountain Divisions in Order to Decrease Their Schedule Speeds and Thereby Make the Speed Over the Entire System More Uniform

By R. E. HELLMUND

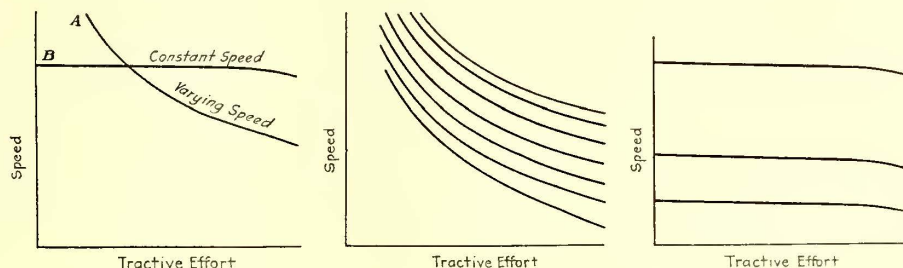
Engineer Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa.

WHEN the electric propulsion of street cars was first experimented with, both shunt and series direct-current motors were tried out. At that time little attention was given to economical operation, troubles being so numerous that any motor working with some degree of reliability was considered satisfactory. The line regulation was very poor, the voltage varying between a maximum and zero, due to the lack of rail bonding. Since the direct-current shunt motor is very sensitive to voltage fluctuations, it is not surprising that it was soon discarded for traction purposes. The series motor was adopted, and has done excellent work in practically all of its applications to electric traction. As a consequence, everybody has grown so accustomed to the idea of us-

different speed-torque curves. Such adjustments may be possible and desirable with either constant-speed or varying-speed characteristic motors, Fig. 2 and Fig. 3.

CHANGED CONDITIONS IN THE INDUSTRY

It is the purpose of this article to point out briefly that in a great many cases the constant-speed characteristic is superior to the varying-speed characteristic under present-day conditions and that the superiority of the former will increase in the future. It should be considered in this connection that the use of a varying-speed characteristic for steam locomotives as well as locomotives of other types is hardly a matter of choice but has been so far an absolute ne-



MOTOR CHARACTERISTICS—FIG. 1—SPEED CHARACTERISTIC CURVES FOR CONSTANT-SPEED AND VARYING-SPEED MOTORS. FIG. 2—SPEED-TORQUE CURVES FOR VARYING-SPEED MOTOR. FIG. 3—SPEED-TORQUE CURVES FOR CONSTANT-SPEED MOTOR

ing series motors for traction purposes that scarcely anyone doubts their superiority over motors of other types. Most people even go so far as to assume as a matter of course that the varying-speed characteristic of the series motor is the only desirable one for traction purposes. In many cases this belief is further strengthened by the fact that the steam locomotive, which has done such good work in the past, also has a varying-speed characteristic.

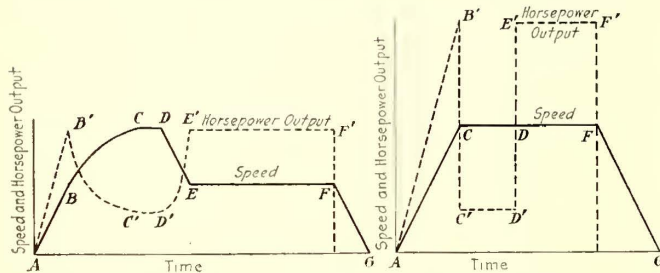
In order to preclude misunderstanding in connection with the following discussion, it should be understood that "varying-speed characteristic" in this connection means that the speed of the motor decreases inherently with increasing load (see Curve A, Fig. 1), while "constant-speed characteristic" means that the speed remains practically constant over a wide range regardless of load (Curve B, Fig. 1). Varying speed should, therefore, not be confused with adjustable speed, *i. e.*, one which can be adjusted at will for

cessity since these have no other characteristics. The capacity of the steam locomotive is to a large extent limited by the size of the boiler which can be transported, which means a constant limited horsepower and, therefore, decreased speed with increased tractive effort. In connection with electric railways it should be remembered that conditions have materially changed since the days when the series motor was adopted in preference to the constant-speed shunt motor. While the original applications were entirely limited to small trolley cars, we now have electric elevated roads, subways, trunk line electrifications, etc. As compared with the very imperfect original direct-current shunt, series and compound motors, we now have highly perfected motors of the same types, and in addition many new types with almost any desired characteristic. There are, for instance, separately excited direct-current motors, induction motors and single-phase commutator motors. The control ap-

paratus and auxiliary devices have also been highly perfected.

Other important changes have taken place with regard to the traffic conditions. While in the early days most railroads were able to take care of the traffic with the existing tracks, a great many railroads are now unable to handle the traffic with double tracks and many of them use four and six tracks along certain lines. Further changes have been brought about by different relative costs of labor and materials. The most important change is, however, that all railroads are now forced by present conditions to consider everything from a purely economic point of view whereas in the past it was possible to earn dividends as long as things could be kept running. In view of these numerous important changes it seems well worth while for any railroad contemplating electrification to consider carefully whether a varying-speed characteristic is really what is wanted or whether better economical results can be obtained with a constant-speed equipment.

The financial success or failure of a railway is entirely dependent upon its net income. The question is, therefore, how revenues and expenses may be affected



MOTOR CHARACTERISTICS—FIG. 4—SPEED-TIME AND POWER-TIME GRAPHS FOR VARYING-SPEED MOTOR. FIG. 5—SPEED-TIME AND POWER-TIME GRAPHS FOR CONSTANT-SPEED MOTOR

by the choice between varying-speed and constant-speed characteristics for the locomotives. In considering expenses the following subdivision of items may be adopted for convenience:

1. *Fixed Charges.* These are chiefly made up of interest and depreciation charges, both of which are usually assumed to be about proportional to first cost. The first cost, in turn, may be subdivided as follows:

- (a) Track, trolley or third rail construction, real estate for right of way, etc.
- (b) Rolling stock.
- (c) Power supply system, comprising generation, transmission, transformation and distribution.

Most taxes may also be considered as part of the fixed charges.

2. *Expenses for Power Generation.* This item covers expenses in connection with the power supply system, and these are about proportional to the amount of generated energy. Such expenses are chiefly affected by:

- (a) The efficiency of generation, transmission, transformation and distribution.
- (b) The efficiency of the electrical equipment of the rolling stock.
- (c) The weight of the rolling stock.
- (d) Expenses for labor in connection with the power supply system, for both operation and maintenance.

3. *Labor Expense of the Transportation Depart-*

ment. We are here principally concerned with the wages of motormen, engineers, trainmen, etc.

4. *Cost of Maintenance and Inspection.* This may be subdivided into cost for:

- (a) Tracks, signal system, etc.
- (b) Rolling stock, including its electrical equipment. (Power supply maintenance is included in item No. 2.)

5. *Expenses Caused by Lack of Reliability of Operation.* These are governed principally by the reliability and simplicity of the electrical equipment and the safety of operation.

PERFORMANCE OF THE TWO TYPES OF MOTOR COMPARED

Before discussing the influence of the speed characteristic upon the above-mentioned items, some of the principal inherent differences between constant-speed and varying-speed equipments will be pointed out, making use of Figs. 4 and 5. The full-line graph of Fig. 4 is the speed-time graph for a car with motors of varying-speed characteristic, while Fig. 5 shows the corresponding graph for one with constant-speed motors. It is assumed in Fig. 4 that a series motor is accelerated at a uniform rate from A to B, where the varying-speed motor curve is reached. From there on the speed increases, but at a reduced rate, until at C the maximum safe speed is attained. It is kept constant as long as possible (C to D). It is further assumed that at D a steep grade is reached, necessitating very much increased tractive effort. With a varying-speed characteristic the speed of the car decreases between D and E until balanced conditions between required tractive effort and motor tractive effort are reached. Thereafter the speed remains constant on the grade, until the power has to be shut off at F to accomplish a stop at G with the permissible rate of retardation between F and G. The time consumed in making the run is represented by the line AG and the distance traveled by the area ABCDEFG.

In Fig. 5 the same work done by a constant-speed motor is represented. In this case the maximum permissible speed is reached with a uniform rate of acceleration between A and C. The result is, of course, that the maximum speed is attained more quickly than in the preceding case. At this maximum speed, the foot of the grade at D is reached somewhat earlier on account of the quicker acceleration and the longer period of operation at full speed. Upon the grade maximum speed will be maintained long enough to reach point F, at which the power has to be shut off in order to effect the stop at G. Since the same distance has been traveled as before the area ACDGF is the same as the full line area in the previous figure. The time consumed in covering this distance is, however, materially reduced so that, under the assumptions made, the constant-speed motor can make a 25 per cent faster schedule speed than the varying-speed motor. The difference depends, of course, upon the particular conditions and is especially affected by the number of starts and stops to be made and by the up-grade mileage.

Incidentally it requires more powerful motors to accomplish this result, for if a train moves up-grade at higher speed more horsepower will be necessary. The dotted lines in Figs. 4 and 5 represent the horsepower

output of the motors in the two cases. A comparison between the two shows that under the assumed conditions the average horsepower over the run is 25 per cent larger, and the maximum or peak horsepower output about 85 per cent higher with the constant-speed motor. A constant-speed equipment must therefore be heavier and more expensive. On the other hand each equipment can cover a greater mileage on account of the higher schedule speed and as a consequence the number of equipments can be reduced. In a great many cases the saving accomplished by the reduction in the number of equipments is even greater than the extra expense caused by the use of more powerful motors. Although the constant-speed motor requires more powerful equipment, the total energy consumption in horsepower-hours is not materially different in the two cases, assuming, of course, the same number of ton-miles. In other words, the areas under the dotted lines in Figs. 4 and 5 are about equal.

The greater peak or maximum power used by the constant-speed equipment for a given run is likely to increase the maximum amount of power taken from the line, especially in cases where the traffic is not very dense. This, in turn, means that the constant-speed equipment may require greater expense for most parts of the power supply system. On small railways with light traffic this item may be important, while on the other hand it may be negligible on roads with large power stations and dense traffic. As already pointed out, the total energy consumption in kilowatt-hours is approximately the same no matter whether a certain tonnage is transported over a given distance at high speed or at low speed. The difference, therefore, can be only in the load factors in the two cases.

From the standpoint of safety a constant-speed equipment is superior since with power on it cannot exceed a safe maximum speed, while the varying-speed equipment has a tendency to overspeed. It is true that the constant-speed equipment climbs a grade at higher speed, but this does not introduce any material risk, because a stop can usually be accomplished quickly on an up grade.

COMPARISON OF TRAFFIC REQUIREMENTS

With the above general conclusions in mind, let us first consider a case in which the existing trackage can handle the small traffic available at the schedule speed of either a constant-speed or a varying-speed equipment. The higher schedule speed with the constant-speed motor may have the advantage of increasing the gross earnings of the road by giving quicker service. It will also reduce the time spent by the crews in operating the cars or trains, which means a saving of labor. In addition, we have increased safety.

These advantages are partly or entirely counterbalanced by the increased fixed charges which may be involved in a more costly power supply system. Moreover, while the same weights can be moved with equal energy consumption at either high or low speed, we have increased weights to move with the more powerful constant-speed equipment. This increased weight, in turn, will increase the power consumption to some extent. The increased maximum power demand which may be caused at certain times may increase the labor expense in connection with the power supply system, but, this item, as a rule, is negligible. The possible

smaller load factor may also reduce slightly the efficiency of the equipment or power supply system.

It is evident that with the assumption of light traffic a great number of details and working conditions must be considered in deciding as to which equipment will give the best results. Higher schedule speed may be a great business getter where there is keen competition, while it may be of practically no value in other cases. The variations in cost of labor, power, etc., may throw the balance in one direction or the other. If the labor is paid for on a mileage basis, for instance, no labor saving can be accomplished. There is no doubt that with the conditions which have prevailed in the past the varying-speed motor in the majority of cases gave better economical results than the constant-speed motor, or at least as good ones. This is due to the fact that most electric railways had no competition and that the expense for operating labor was relatively low. On the other hand, the costs of power and power equipment were high. All of this tended to favor the varying-speed equipment. These conditions are, however changing rapidly with increasing competition and cost of labor. Under the present war conditions the costs of power and equipment may be relatively high, but there is little doubt that both will again decrease after the war, there having been a steady decrease previously. This means that most of the items considered will change in favor of the constant-speed equipment.

While in spite of these changing tendencies it may still be doubtful in a great many cases of light traffic as to whether the one or the other speed characteristic is to be preferred, everything seems to be in favor of the constant-speed motor in most cases of very dense traffic. With many roads, especially subways, elevated roads and Eastern trunk lines, as well as mountain sections of Western trunk lines, the present traffic can barely be handled with the existing trackage. Any increased business, therefore, can only be taken care of by additional trackage, larger trains or higher schedule speeds. Since in a great many cases it is not safe to increase the maximum speeds and not practicable to increase the size of trains, the schedule speed can best be increased by using the maximum safe speeds constantly. The possible increased expense involved in the power supply system required is as a rule only a small percentage of the expenses for additional trackage. This is particularly true in densely populated sections, as well as in mountain sections. Therefore the balance swings in such cases quite in favor of the constant-speed equipment with regard to fixed charges, and in addition we have the advantage of chances for increased business, reduced cost of operating labor, and increased safety on account of definitely limited speeds, especially on down grades. The slight increase in power consumption caused by the greater weight of the equipment and lower load factor is of little practical importance as compared with the other items.

In the foregoing comparative considerations little has been said with regard to reliability and cost of maintenance, because these items depend more upon the details of the individual system chosen than they do upon the difference between constant and varying speed. The direct-current motor of varying-speed characteristic is undoubtedly superior at present in regard

to maintenance cost and reliability, for the straight-series motor equipment is simpler, more reliable and cheaper to maintain than any other direct-current equipment at present available. With alternating-current equipment, however, the reverse is true. The simplest and most rugged alternating-current motor at present is the induction motor, which happens to be of the constant-speed type. Therefore it is quite possible in a great many cases that with direct-current energy a varying-speed motor would be more economical, whereas under otherwise similar conditions the constant-speed characteristic would be preferable for alternating current.

The efficiency of the equipment also depends more upon the individual type of equipment than upon the speed characteristic. Disregarding the slight differences caused by load factor, the efficiency of most motors when running at their proper speed usually does not vary to any great extent. The principal differences in efficiency among the various systems are usually caused by the auxiliary devices and by certain losses during acceleration. A detailed discussion of this subject would require too much space and be of little value in this connection, since conditions are continually changing as the art progresses.

APPLICATION OF THE CONSTANT-SPEED MOTOR

It is evident from the previous discussion that most of the conclusions are governed by the speed characteristic of the car. This does not mean that the inherent speed characteristics of the motor and the car must necessarily be identical, it being quite possible, by means of the proper controlling devices, to obtain a constant car speed with a motor having an inherent varying-speed characteristic and sufficient capacity. With long and uniform grade sections fairly constant-speed operation may also be obtained in connection with a varying-speed motor and pusher service on the grades. It is also evident that a varying-speed motor with constant load and always running on the level will give practically constant-speed service.

Further, as pointed out in the beginning, the use of a motor of constant-speed characteristic does not necessarily limit the car or train to only one characteristic of the constant-speed type. There is no doubt that the constant safe speed on different parts of the same railway system may vary somewhat with the track condition, especially on account of curves, and that it is, therefore, desirable to be able to adjust the constant speed to various values for different sections. Constant speed in the foregoing simply means that if the speed has been adjusted for a certain maximum permissible value, it should not inherently decrease whenever the load increases as, for instance, when an up-grade is encountered.

Many railway men are under the impression that a varying-speed characteristic is desirable in order to permit the making up of time. This is altogether erroneous, for it is impossible to make up time with either a varying-speed or a constant-speed equipment if during normal operation the car is operated continually at the highest speed possible. The chances for making up lost time exist in either case only when a margin is provided in the normal schedule speed. This can best be done in either case by introducing a certain period for coasting, which incidentally increases the

efficiency of the equipment. If such a period of coasting is provided it is possible to make up time by shortening or eliminating the coasting period. Therefore ability to make up time is the same in both cases, so long as the maximum safe speeds are adhered to. The varying speed characteristic gives, of course, the possibility of exceeding the maximum safe speed, and thereby of making up time, this being done, however, at considerable risk. On the other hand the constant-speed equipment has the great advantage of not being likely to lose time as much as the varying-speed equipment. In many cases time is lost with the latter on days of heavy traffic, because the increased load reduces the speed of the vehicle and just at times when it is most objectionable.

Obviously the short space available for this article made impossible a complete and exhaustive study of the question as applying to the great variety of local conditions, but the arguments advanced should undoubtedly be sufficient to give evidence to the effect that while the varying-speed motor has done good service in the past, the present and future tendency should be towards constant-speed operation. One of the strongest evidences along this line is the fact that steam railroads are about to electrify mountain sections in order to get increased speeds and to avoid the necessity of extra tracks. This means nothing more nor less than that they feel the necessity of making the speed on the mountain sections more nearly equal to the speed on the level. In other words, they are trying to get constant speed over their entire systems.

More Bay State Window Posters

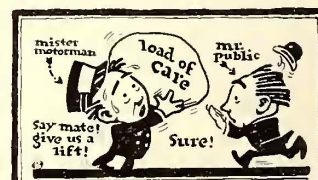
The Bay State Street Railway, Boston, Mass., is using some catchy window posters in its accident reduction and public co-operation campaign. The first of these was reproduced in the issue of the *ELECTRIC*



To The Public.

This is YOUR street railroad.
Without your backing it cannot exist.
It represents an investment of \$47,208,959.00.
It costs \$7,882,424.00 per year to operate.
High prices have increased this cost fifty to three hundred percent in the past four years.
If you want good service this cost of operation MUST be met.
If it is not met the road will run down, in time cease altogether.
Stop and think what that would mean to the community.
Why not support YOUR street railway?

P. F. SULLIVAN, President Bay State Street Railway Co.



Help The Motorman

The motorman of this car sees thousands of wagons, automobiles, bicycles and baby carriages coming and going and crossing his track every day.
He sees, and has to watch the movements of thousands of persons.
He has to stop and start his car hundreds of times.
He has grave responsibilities.
He has to be careful.
Why not help him by being careful yourself?

P. F. SULLIVAN, President Bay State Street Railway Co.

WINDOW POSTERS JUST ISSUED IN BAY STATE PUBLICITY CAMPAIGN

RAILWAY JOURNAL for Aug. 4, 1917, page 190, and two more are given herewith. The posters are 14 in. x 18 in. in size and they are printed in black on white paper. It would be a dull reader who would miss the point or the wit of these clever drawings and sentences.

The Regina (Sask.) Municipal Railway is considering the use of one-man cars. The matter of increasing fares to 5 cents straight is also before the City Council.

Rates, Service and Public Ownership

From the Electric Railway Point of View, These Were the Most Important Subjects Reported Upon by Committees at the Convention of the National Association of Railway Commissioners in Washington Last Week

FIRST, an electric railway rate on the mileage basis with a minimum charge seems to be the most promising resource available. Second, the light quick-service car developed and operated as a competitor of the automobile may soon be expected to come into general use. Third, although no report can now be written with definite conclusions for or against public ownership, the trend of the times unmistakably is in the direction of complete public control and of public ownership and operation of utilities. These three assertions will undoubtedly be, to electric railway men, the most important parts of the committee reports presented at the convention of the National Association of Railway Commissioners in Washington, D. C., on Oct. 16-19. The reports were received and filed, with practically no discussion.

ELECTRIC RAILWAY RATES

The report of the committee on public utility rates—signed by Thomas W. D. Worthen, New Hampshire; Edwin Corr, Indiana; C. L. Glasgow, Michigan; Henry R. Trumbower, Wisconsin, and E. H. Walker, Nevada—contained a subdivision on electric railway rates. This covered the following points:

1—Flat-Rate System

In the committee's opinion the flat 5-cent rate was probably fixed because early electric railway operators felt that the nickel was easy to collect and the passenger was as willing to pay this as any smaller amount. In the early days all lines were comparatively short, and the cost of carrying passengers was more or less uniform. Now, however, the chief objection that can be made against a flat-fare system is that there is no proportional relation between the amounts paid and the service rendered. If there had been a coin of a denomination close to 5 cents, above or below, the committee remarked, there would have been more of a demand for a revision of fares.

The flat-rate system has been advocated in many quarters as a means of preventing the congestion of population within a restricted area. In the committee's opinion, however, it is difficult to measure the extent to which this system has checked congestion following the great industrial development of centers of population in this country. In spite of the flat fare, American cities are obliged to contend with the problem of congested urban areas and tenement districts.

2—Transfers

It is claimed, the committee stated, that transfer passengers are more expensive to carry than cash-fare passengers because: (1) They require more time in handling and involve a larger amount of platform labor. (2) The cost of transfer printing, paper, punches, etc., is chargeable directly to this traffic. (3) Transfer pas-

sengers board and alight twice as much as cash fare passengers, and the injury and damage risks are increased without any corresponding increase in revenue. (4) Opportunity for fraud exists, particularly where a transfer is issued on a transfer.

Where the transfer privilege is extended under a flat-fare system, the committee averred, the number of short-haul passengers is reduced. In many instances, however, companies are not free to restrict transfers, because there may be specific franchise provisions governing the issuance. Moreover, if an attempt is made to curtail the privilege, a demand may be made for new lines affording through routes, which in the end will be less economical than carrying the transfer passengers. The question of issuing transfers must be considered as a local problem. In some cases the routing of cars may be so revised as to eliminate to some degree the demand for the privilege.

3—Zone System

The theory of the zone system, the committee said, contemplates a fixed minimum charge for the first zone and a fixed amount for each additional zone. According to the cost-of-service principle, the fare may be said to consist of two parts—a terminal and a movement charge. The terminal charge is a fixed amount disregarding the distance traveled; the movement charge varies directly with the distance. This charge, however, may be modified to some extent by taking into account the density of traffic in a certain area or a zone.

A common objection against the zone system is that passengers whose destination is but a short distance beyond the zone limit are discriminated against. In cases where the zone distance is fairly long and the fare a nickel, this objection is urged all the more strongly. In order to overcome such objections, there are established in some instances overlapping zones, but these are also subject to criticism.

The problem of establishing fare zones is more frequently encountered in suburban and interurban business. In many cases the first nickel zone extends to the city limits, beyond which additional nickel zones are established. Dissatisfaction is likely to arise in such cases on account of the discriminatory aspects of fixing the limits. Yet this difficulty, the committee said, can be overcome to a degree by shortening the length of the zones and putting them on a 1-cent or a 2-cent basis. Such a copper-zone system removes a great deal of the discrimination and causes the local fares to be more equitable.

4—General Statements

In concluding its remarks, the committee said: "No fixed standard can be applied in testing or establishing street railway fares, since the factors are so numerous and varied that each particular case must stand on its

own merits. Inequality of fare zones may not be discriminatory, as fares may reasonably depend on density of traffic, location of town and city boundary lines, centers of population or attractions, and other conditions.

"Increases in fares to 6, 7 and even 8 cents per fare zone have been allowed by commissions, but it is doubtful whether much larger revenue will be received, on account of the lessening of travel at the higher rate. The motor bus and truck are in every-day use for transportation of passengers and freight even for considerable distances, and they seem likely to prevent further extension of electric railway lines.

"With increasing costs of operation, an increase of revenue is necessary in order that street railway service, which is very important in urban and interurban development, may not be crippled or destroyed, and a rate on a mileage basis with a minimum charge seems to be the most promising resource available."

ELECTRIC RAILWAY SERVICE

The committee on service of public utilities stated that a large number of state commissions appear to have expended the greater portion of their time and effort in making valuations and rate adjustments without giving any particular attention to the effect of the new rates on the quality of service. While recommending the adoption of standards of service for each class of utilities, the committee did not feel that it is either possible or advisable to lay down a set of definite rules or standards that will cover all points that constitute adequate service. In its opinion, good service has to do with the entire operation of the utility, the conduct of its business and all its relations with its patrons. Such matters could not, and should not, be covered by definite rules. On the other hand, it would be a mistake for any utility to consider that its obligations to give service do not extend beyond the requirements of the state rules and laws. The report of the committee was signed by M. H. Aylesworth, Colorado; H. A. Floyd, Wyoming; J. H. Hall, Connecticut; W. D. Humphrey, Oklahoma; G. C. Mathews, Wisconsin, and J. J. Murphy, South Dakota.

In discussing particularly electric railway service, the committee stated that competition from automobiles has brought home to such utilities the demand for fast, frequent service and has led to the development of the light-weight quick-service car. The 10 to 15 per cent increase in revenue secured by the operation of such cars is almost sufficient to offset the loss from the private automobile. Aside from improved service and one-man operation, they have the advantages that they are faster than the large cars, owing to fewer stops and more power in proportion to weight; safer, owing to better design and undivided responsibility, and quieter in operation, owing to light weight. The extreme lightness, it was said, also results in a considerable reduction in power consumption and will in all probability bring about a material reduction in wear and tear.

In the present stage of development, these cars are being used on relatively light lines, but in the opinion of the committee there seems to be no fundamental reason why they should not prove advantageous on long, heavy lines, if satisfactory means are devised for coupling them quickly in trains at junction points. "Thus," the committee said, "it seems that the light,

quick-service car developed and operated as a competitor of the automobile may soon be expected to come into general use to the benefit of both the traveling public and the operating companies." On this particular point a qualification was made by Mr. Mathews, who mentioned the problem in Milwaukee of getting cars through the downtown streets during the rush hours as a very serious one and said that it is much more likely that a given volume of transportation can be gotten through these streets with large cars than with small ones.

As for the interurban field, the committee stated that no worthy competitor for the motor truck operated on good roads has been developed, and it appears that in the future the interurban railway will be frequently limited in many communities to the handling of interchange freight in connection with steam railroads.

The committee also mentioned the effect of the war upon service. In all probability, it said, the draft and the demand for agricultural and industrial workers will make it necessary in many cases to substitute women for men as conductors. With pay-as-you-enter cars and comfortable seats, there seems to be no reason why women employees should not serve as conductors on many systems without any impairment of service.

PUBLIC OWNERSHIP AND OPERATION

The report on public ownership and operation, signed by E. O. Edgerton, California; John Guiher, Iowa, and Shelby Taylor, Louisiana, disclaimed any attempt to make definite conclusions or recommendations for or against public ownership, for the committee felt that these must await a most exhaustive and careful study of all phases of the problem. In its opinion, however, based on a résumé of conditions here and abroad, the trend of the times unmistakably is in the direction of complete public control and of public ownership and operation of utilities, especially the means of communication such as railroad, telephone and telegraph. In countries at war the march in the direction of complete public control appears to be more rapid than in those leading a normal existence, but the direction is clear in both cases.

The committee said that the association should continue to study the question through a permanent committee, which should marshal all underlying facts before attempting to draw any conclusions. The work should involve the formulation of standards by which the success or failure of public ownership and operation would be measured. The recommendation for a permanent committee was adopted by the association.

OTHER MATTERS AT THE CONVENTION

The committee on statistics and accounts of public utilities said that commissions should adopt a "work-order" system for new construction, at least for the larger electric railway, lighting and telephone companies. The committee mentioned the lack of unanimity among commissions in adopting the I. C. C. classification of accounts for electric railways, and said that undoubtedly the differences of opinion would ultimately be disposed of satisfactorily through co-operation of all interests concerned. It also suggested that the federal commission should waive supervision over all electric railways except those whose freight traffic is largely interstate in character, and that state commissions should not impose upon such actual interstate carriers

the burden of conflicting accounting and statistical rules.

The committee on federal valuation recommended the continuance of the work until all the railroads had been fully appraised and the value of the several classes of property determined. The committee on capitalization and inter-corporate relations stated that there is increasing evidence of dissent from the complete reliance on valuations which has marked the experimental years of regulation. Commissions and courts are concerning themselves more and more with the distinctively reliable facts of investment and reaching conclusions which, however broadly expressed, are clearly influenced chiefly by such facts. The committee recommended the immediate adoption of legislation providing for federal control over the issuance of securities by interstate carriers (except electric railways) and giving the state commissions the right to sit with the Interstate Commerce Commission on applications therefor.

The committee on grade crossings and trespassing reported that uniformity of action by the states and co-

operation among the state commissions looking to the elimination of grade crossings had become a necessity. Federal legislation, enforceable by state and local authorities, was urged to eliminate trespassing on rights-of-way.

The association voted unanimously for the creation of a special war committee to act in an advisory capacity to the state commissions and the utilities and to transmit the desires and needs of the government in the conduct of the war. The name of the association was changed by inserting the words "And Utilities" before "Commissioners" to show that it is not solely a body of steam railroad commissioners. Washington was chosen as the place for the next convention, the date set being Nov. 12.

The officers for the ensuing year are as follows: E. C. Niles, New Hampshire, president; C. E. Elmquist, Minnesota, first vice-president; C. M. Candler, Georgia, second vice-president; James B. Walker, New York, secretary, and L. S. Boyd, librarian of the Interstate Commerce Commission, assistant secretary.

What Have the Company Sections Done During the Past Year?

A Brief Analysis Based on Reports Furnished for the Purpose by the Section Secretaries—This Brings Out the Great Value of the Educational Work Being Done as Well as the Patriotism of the Rank and File of the Electric Railway Personnel

TO many men in the electric railway industry the local company section is the American Electric Railway Association, hence the success of the sections is in a degree the success of the association. The close of the association year furnishes an opportune time to gage the degree of this success, which must largely be done through the eyes of the local officials. In view of the lack of opportunity this year for the sections to make their usual convention exhibit the editors of this paper asked the local secretaries to state what they considered the most effective features of their work during the past year, whether or not they have made any modification in their plans due to the experience of the year, and what they had observed to be the most prominent benefits of the section work to the members and to the company. The following notes are based largely upon their replies. The attempt is made to indicate the individual characteristics of the several sections as far as possible.

In general it may be said that the chief benefit of section work observable is the spirit of co-operation and friendliness which pervades the meetings. The men come together to learn something, to have their enthusiasm stimulated, to enjoy diversion in congenial company. As a result they become better friends, they come to regard the management as human, and the executive officers also come to know and appreciate the men more completely. It is apparent also that the educational element must be provided, using that term in a general sense and not confining it to lectures and class instruction although these are good. The men want

to get something tangible in addition to good fellowship, and a supply of interesting and helpful information meets this desire.

CLASS WORK A SUCCESS AT TOLEDO

The youngest section, the joint section of the Toledo Railways & Light Company, believes that educational work is of paramount importance. It successfully maintained twenty-two classes with a total enrollment of 232 members and an average attendance of nearly 200. The total membership in the four divisions of the section (railway, electric lighting, gas and heating) was 370, of which a very creditable proportion was engaged in class study. This section plans for next year to hold educational classes during the first and third weeks of each month, the subjects to be determined by the members. The second week will be occupied with departmental meetings over the entire property. During the fourth week the stated meeting of all members will be held and an unpretentious section publication issued.

TRAINMEN PROMINENT IN PUBLIC SERVICE SECTION

Last fall the Public Service Railway section experienced a remarkable growth in membership, 107 new men being added, including eighty-seven trainmen. More than one-third of the membership now consists of platform men. At a very largely attended meeting held in April more than 60 per cent of those present were trainmen and the men participating in the discussion were largely from their ranks. These men have proved to be enthusiastic members and their presence in the section

has led to a modification of the meeting programs more completely to meet their needs. That is, the topics selected were less general than formerly, and more in the field from which the men could speak on the basis of their experience. The result was that latent talent was discovered and excellent contributions to the discussion were made.

CURRENT EVENTS REPORTS PLEASED MILWAUKEE MEMBERS

One of the most effective features of the work of the Milwaukee Electric Railway & Light Company section was the practice of having "current events" papers presented by members of the several departments. These papers possess considerable news value and give the members of all departments accurate, first-hand and interesting information regarding the activity of each. The men who read these papers spoke from intimate and recent experience and were thus in a position not only to discuss their topics enthusiastically but they were also well prepared to answer any questions that might result. The section has also continued the practice of issuing monthly reviews of relevant articles in the technical press, including brief outlines of these articles. In addition to the departmental papers speakers have been invited in from outside to acquaint the local members with the latest practice in construction work, manufacturing, preparation of materials used by electric railways, etc.

The Milwaukee section has always made a great deal of entertainment, and the original one-act musical comedy, "The Garden of Romance," produced at the March meeting, was well up to the high standard set by previous performances.

COMPANY OFFICIALS ALWAYS ON HAND AT WASHINGTON

The Washington Railway & Electric Company section has suffered this year through the labor disturbances which culminated in an unfortunate strike. As a consequence but four meetings were held during the year but at these a fine spirit of good fellowship prevailed and this was enhanced by the regular presence of a number of the officials of the company. The section took advantage of their presence to gain a better conception of administrative problems and to become acquainted personally with their employers. The effort of the program committee has been to get away from cut and dried procedure, making the meetings as informal as possible. Entertainment is alternated with "shop." This section naturally takes advantage of the presence in Washington of a number of government officials to secure informal talks on general but vital subjects.

PRACTICAL OPERATING QUESTIONS WERE TAKEN UP AT DENVER

Such questions as snow fighting, track repair, forms required by motormen and conductors, etc., were considered by the local members in Denver to be the most profitable ones which could be raised at their meetings. The papers presented were never technical and the discussion was participated in by a large number of those present at the meetings. A special effort was made to develop among the men the idea that the meetings were constituted an open forum where employees could dis-

cuss their views fully and freely without in any way injuring their standing with the company. The result was that a very encouraging atmosphere of helpfulness prevailed at the meetings. Members were invited at alternate meetings to bring relatives and friends for the purpose of having a social good time. Frequently music was provided and refreshments and dancing were utilized to foster good feeling.

PROFESSOR WOODWORTH'S LECTURES SUCCESSFUL AT CHICAGO

Three lectures were delivered during the past season before the Elevated Railroads section at Chicago by Prof. P. B. Woodworth of the Armour Institute of Technology. These lectures were on the fundamental principles of electric circuits and were illustrated with appropriate experiments. The lectures proved to be just what the men wanted to give the foundation for a clearer understanding of their work. In the opinion of the local officers the lectures formed a most notable section of the year's work. In addition to the professor's lectures the section discussed a wide variety of topics, embracing, among others, Chicago transportation problems, aeronautics, signal oil, patriotism, power plant matters, electrolysis and travel. All of this has, as in the other sections, been incidental to the fostering of good fellowship.

SECTION AT PORTLAND BOOSTED LIBERTY LOAN

The Cumberland County Power & Light Company section looks back with greatest pride to its efforts to

CUMBERLAND COUNTY POWER AND LIGHT COMPANY SECTION
OF THE
AMERICAN ELECTRIC RAILWAY ASSOCIATION
OFFICE OF THE SECRETARY
PORTLAND, MAINE

BANG! BANG! BANG!

IS IT TRUE THAT THE AMERICAN PEOPLE MUST BE "BANGED AND STAGGERED" BEFORE THEY ARE ABLE TO REALIZE WHAT THEY ARE UP AGAINST?

ARE YOU A REAL AMERICAN? AN APPEAL TO YOU!

Do you realize that we are at war? If you don't, it certainly will dawn upon you very soon. But whether you realize it or not, WE ARE AT WAR. YOU ARE AT WAR. Your Country needs you! If you cannot volunteer your services, you can at least do your bit by buying a LIBERTY BOND.

DO YOU KNOW WHAT THE "LIBERTY BONDS" MEAN TO YOU? Every bond you buy is just pulling a whisker out of the Kaiser's head. ARE YOU DOING YOUR SHARE? If you can afford it, why not get a good handful? IT IS FOR YOUR OWN GOOD.

Getting down to plain facts. Fellow employees, we have JUST GOT TO WIN THIS WAR. Do you know what it means to YOU if we don't win? Wouldn't you rather voluntarily buy LIBERTY BONDS than be forced to sacrifice all you own at the Kaiser's demand? Would you want your own city to be governed by a German Burgomaster? You still want to vote, don't you? Or would you rather have the Kaiser select your officials and make your laws? THINK OF POOR BELGIUM!

Again I say, WE HAVE JUST GOT TO WIN THIS WAR. Is it not better to fight him in Europe than to have him come over here and fight us?

We are up against a big thing, and the only way we can win is to help the government all we can by buying LIBERTY BONDS. DON'T PUT IT OFF UNTIL TOMORROW. Don't say, "Let So and So do it." Every time you say that you are just helping the Kaiser block the progress of democracy. Are you going to allow the world to be ruled by tyranny? OF COURSE NOT. The answer is. BUY A LIBERTY BOND and DO IT NOW

The Company offers a very liberal inducement to all employees who wish to "do their bit." Are you going to have people say that the employees of a Company of nearly 1,000 people bought only about \$700.00 worth. Wouldn't you feel better if they said---"They bought \$700,000.00 worth?"

If you are a true red-blooded American you will not hesitate to do the right thing, and DO IT NOW. The head of your Department will be glad to take your order.

THINK IT OVER! ARE YOU DOING YOUR DUTY?

Your "Liberty Bond"

C.W. Bent
President

POSTER USED BY ONE SECTION IN BOOSTING THE FIRST LIBERTY LOAN

boost the first Liberty Loan. Taking hold but a few days before the closing of the subscription list the section sold about \$15,000 worth of bonds, mostly in small denominations. The poster used, reproduced herewith, will prove suggestive in connection with future campaigns. The section also actively supported, through a committee, the "war garden" movement. The company assisted the section committee by placing ample land at its disposal and agreeing to plow and harrow it free. Seventy-three men chose plots and crops of 500 bushels potatoes and smaller quantities of other staples are the result.

This section adopted last year the plan of having illustrated talks by representatives of the several departments who told what their own duties comprised and how the internal workings of the departments were organized. Further to improve this feature prizes are to be offered next year as a stimulus to departmental speakers to put more time and thought into their addresses. These talks were secondary last year, the main dependence of the section for speakers being upon outside sources. An explanation by an officer of the State Militia regarding military matters, a talk by

generosity of spirit. During the past year visits of members of the organization to the United States have provided sources of fresh interest to the section. At present J. C. Rockwell, manager of the electrical department, is in this country.

A specially valuable feature of the Manila programs is the assigning of topics and speakers for the meetings months in advance. This gives ample time for preparation and as manuscripts are due some time in advance of the meetings there is little danger that the program will go awry. Full and carefully edited records of the talks and discussion are preserved so that a prospective speaker can consult the files if he so desires. Generous money awards for meritorious section work have furnished a considerable stimulus to effort and are indicative of the desire of the company officers to assist the section officers.

CONNECTICUT COMPANY SECTION HOLDS MONTHLY DINNERS

Since beginning the section work the members in the Connecticut Company organization have made a practice of meeting for dinner at a hotel in one or other of

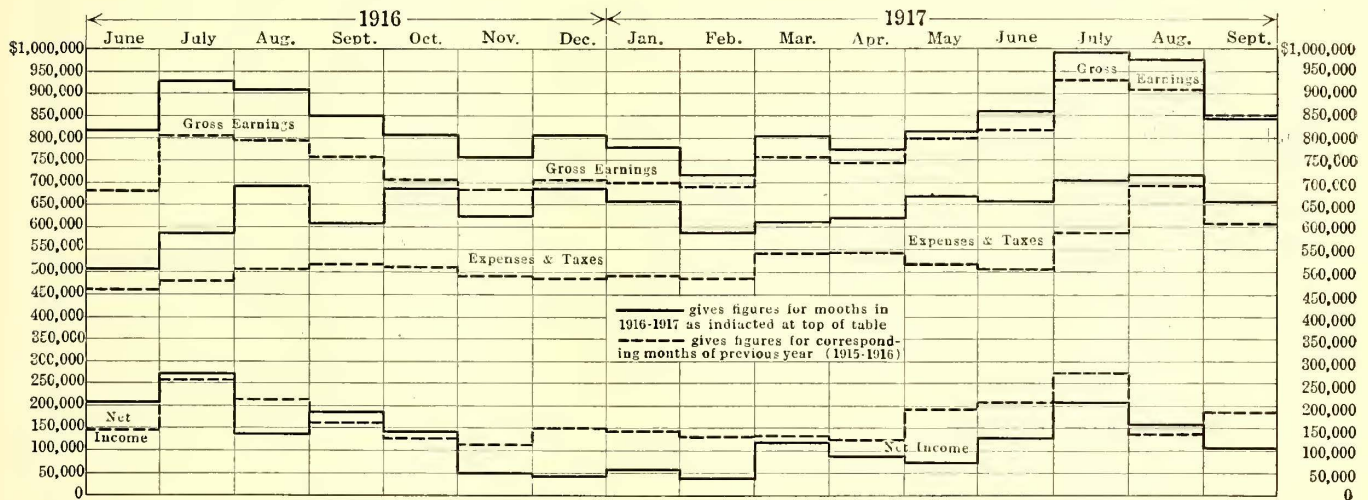


CHART OF REVENUES AND EXPENSES EXHIBITED AT CONNECTICUT COMPANY SECTION MEETING BY STATISTICIAN TO PROMOTE A CO-OPERATIVE SPIRIT

a member of the public utilities committee of the State and another by M. C. Brush, president Boston Elevated Railway, were examples of the type of program which at least partially produced an increase of a third in section membership.

MERALCO IS AN ALL-THE-YEAR-ROUND SECTION

Unlike the sections in the States the joint section of the Manila Electric Railroad & Light Corporation meets every month in the year. Possibly more than in any other section the effort has been to develop local talent in the preparation of papers. The result is seen in the award of the company section medal to one of its members last year and honorable mention at the Oct. 9 association conference to another. The experience of the electrical division of the section has been similar. The remoteness of the section from those in this country and the desire of the leaders to make the section a bond between the Filipino and his American employers have combined to give an unusual unity and coherence to the section plans. The use of both the Tagalog and English languages at the meetings conduces to homo-

the large cities served by the system, the members remaining at table during the addresses and entertainment. This has given a highly social character to the meetings and will be continued if the members feel that they can afford the expense. The holding of the meetings under the auspices of different divisions has had the effect of consolidating and unifying the interest of the men in the company as a whole. The programs were of two general types, one designed to familiarize the men with departmental and divisional problems, the other of an inspirational character. One of the most effective meetings of the year was that at which heads of departments told and illustrated the story of higher costs as these affected their individual lines of work. The statistician of the company exhibited a chart showing the financial situation as a whole.

A promising start was made last year in the line of special committee work by the section for the benefit of the company, and a report on snow fighting was very practical in its information and suggestions. While this line of work was not original with the section, it proved to be effective in bringing out the kind of dis-

cussion which is difficult to get. The Connecticut Company section is to some extent developing along the same lines as the Milwaukee section.

CAPITAL TRACTION SECTION HAD NOVEL CHRISTMAS CELEBRATION.

The cordial spirit of the Capital Traction Company section, Washington, D. C., was evident in the "stunt" meeting held prior to Christmas, 1916. A Christmas tree was the central feature, and the distribution of mirth-provoking gifts formed an important part of the program. This section is one of the youngest, last year having been its first full year, but a great deal has already been accomplished. Like its neighbor, the W. R. & E. Co. section, it utilized the presence of government officials to bring it into touch with the outside world, and the officials of the company took an active interest in the young organization. The spirit of the organization was voiced in these words by George E. Hamilton, president of the company, at the first anniversary meeting held in January, 1917:

"An organization of this kind brings us together, makes us all see what each is doing, and gives new impetus to our minds and a firmer and fuller purpose to every man who is striving to do what is right. It teaches us what a service corporation is; shows us that because we are members of this service corporation we have assumed duties that we cannot lightly consider, duties that will compel us thoughtfully to perform all of the obligations that we assume. It shows us the part that each is playing in the performance of this duty. If we learn our lesson well, if all of us engaged in this common enterprise feel and, feeling, measure up to the obligations that we assume, then indeed are we doing the work of men. This close contact teaches us more. It brings into the lives of all of us the spirit of service and teaches us what service is."

FLAG RAISING AT HAMPTON WILL LONG BE REMEMBERED

The activities of the Newport News & Hampton Railway, Gas & Electric Company section came to a climax at a meeting in May, when an intensely patriotic gathering assembled for a flag raising exercise at the Hampton car house. Addresses by several public men gave the members a fresh impression of the esteem in which the company is held in its section and thus promoted a spirit of local pride. The section also took an active part in encouraging the home garden movement, a whole meeting being devoted to this subject. The technical phases of electric railroading were not forgotten, however, and a number of talks on departmental matters, general principles of operation and some outside developments were included in the programs. A beginning in educational work was made also.

SUMMARY AND CONCLUSION

A composite picture like the one given herein of the activities of the sections during the past year, supplemented by a study of the minutes of the meetings printed from week to week in the Association News column and the longer abstracts of important papers will form an excellent basis for plans for the current year. Already the work is under way and a determination to carry on the section meetings in spite of all

possible discouragement is manifest. While it is not to be expected that the number of sections will increase materially during the war, those already organized can do much to contribute to the welfare of the industry while operating conditions are unsettled, as they must be for several years. A definite program will be of great assistance in this connection.

Franchise Limitations in Fare Increases

The Author Takes the Logical Position That if a Commission Can Specify Operating Conditions Not Contemplated in a Franchise It Can Increase Fares Having Franchise Limitations

BY R. W. PALMER

General Manager Auburn & Syracuse Electric Railroad,
Auburn, N. Y.

WHEN street railway franchises were accepted in the early days of railroading, the restrictions fixing the rates of fare as well as other stipulations embodied in the franchises were in keeping with the times. On this account they were reasonable as measured by other existing standards. Likewise, city taxes during the same period were based on existing conditions and the tax rates were reasonable as measured by similar standards.

When electric railway franchises containing limitation as to rates of fare were accepted public service commissions were not in existence, and all regulations were in the hands of the city authorities who granted the franchises. After public service commissions were formed, however, conditions to a certain degree were changed. For instance, among other things the commissions have the authority to order changes in schedules, providing that after due investigation they find that changes are for the public good. Likewise they have the authority to order railways to increase the amount of heat in their cars, if after investigation they find that these are insufficiently heated. The railways do not question this authority, even though the question of heating or regulating schedules was not made a part of the original franchises.

Taking into consideration the fact that the commissions have the power to change one or more conditions covering the operation of street railways within municipalities, it would appear that the same commissions also have authority to change other conditions. This includes the fixing or regulating of the fares to be charged, providing that after due investigation the railways are found to be unable to earn a reasonable return on their investment, especially after they have been required to meet a number of conditions imposed upon them by law and otherwise which were not in existence or even contemplated by either the railways or the municipalities at the time the former agreed to furnish transportation at a maximum of 5 cents.

It may be objected that some later franchises were granted to street railways for extensions, and were accepted by them with fare limitations, after public service commissions came into existence. The answer to this is that the companies were forced to accept the franchises with these restrictions if they were to secure any privileges at all, just as railroads were forced to accept a lot of unreasonable conditions before the law

granting the right of eminent domain to railroads became effective.

Passengers to-day are traveling in clean, well-lighted and well-heated cars, operated on schedules giving fast, frequent and regular service. Compare this with the conditions as they existed when the franchises were granted on a 5-cent basis. Then there were slow-moving horse cars with oil lamps at the ends, and in some instances one in the center. The cars were unheated or at best there was only an attempt to heat them with small stoves which supplied sufficient heat for the comfort only of those who were fortunate enough to be in the immediate vicinity. No sane person now would be satisfied with the old conditions of railroading, any more than he would be with oil street lamps, dirt streets, wooden sidewalks, or the lack of a sewer system, an up-to-date water works, or an efficient fire department. The old-time conditions existed when city taxes were low and when franchises fixing the fare at 5 cents were granted.

No reasonable citizen objects to an increase in tax rates if necessary to provide up-to-date conveniences, and no one would be satisfied to return to the oil-lamp and horse-car age. Therefore, providing improvements in railway service are in keeping with the times the public should be willing to pay such a rate of fare as is necessary to insure a fair return on the actual investment, even though such fare is more than that agreed upon when conditions were not comparable with those now existing.

I repeat, therefore, for purpose of emphasis that as the public service commission has the right to regulate the operation of street railways within municipalities, and to impose conditions which did not exist at the time the fare-limiting franchises were granted, it would appear that the same commission has a similar right to change other conditions, such as fixing or regulating fares, providing that after investigation such increase is found to be justified.

The Indianapolis & Louisville Traction Company, Scottsburg, Ind., has completed its garden prize contest. Gold pieces were distributed, the first prize of \$20 going to Ben Eggersman, now a soldier at Camp Zachary Taylor, near Louisville, Ky.

B. R. T. Employs Women as Guards

Fifty Girls Appointed Guards on Brooklyn Subway Trains This Week—350 May Be in Service by End of Year

THE Brooklyn (N. Y.) Rapid Transit Company has taken a very decided step toward the employment of women in the train service which is likely to develop on a large scale as the need for their services becomes more acute. Fifty girls began work on Oct. 24 as guards on the subway trains after a short period of instruction, which was devoted principally to teaching them the operation of the car doors and the stops along the line of the subway. Those now appointed work only during the rush-hour periods. They will be followed by other groups and will gradually be assigned to the regular service to fill the existing vacancies caused by the war.

For some time the company has employed women, to the number of possibly 800, as changemakers in the booths on its subway and elevated lines. It was principally from this force that the present guards have been recruited, and as they were already somewhat familiar with the work and necessarily with many of the company's rules, little additional instruction has been needed to fit them for the position of guards. It will be the policy of the company, therefore, to secure women for work on the trains by a general system of promotion. In making appointments the company will select those who seem best qualified and will then make acceptance of the position voluntary on the part of the employee. The women will receive the same rate of pay as men and they will be required to work substantially the same number of hours.

The uniform adopted is shown in the accompanying illustration. It consists of a blue cap and sacque coat of the same material as that used for the men's uniforms and skirt made from cloth of any dark color. No definite specifications were drawn for the skirt in order to lessen the demands upon the manufacturer. The coat is very plain with five large regulation buttons and military collar. The badge is worn on the cap, which is also of military style.

Although no statement as to the probable success of the women for this service can be made at this time,



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WOMAN SUBWAY GUARD AND INSTRUCTOR ON BROOKLYN RAPID TRANSIT SYSTEM—CLASS OF WOMEN RECEIVING INSTRUCTION

the company does not anticipate any difficulties, especially in view of the fact that the work is extremely simple. The car doors in the Brooklyn subway are air operated and controlled from switches at the center door. Assuming that the increasing shortage of men continues, the company may have upward of 350 women working as guards by Jan. 1, according to present plans. No plans have been made for their employment on cars of either the surface or elevated lines.

Hearing on Fare Jurisdiction

New York Commission in Albany Listens to Conflicting Views Before Rendering Any Decisions in Pending Fare Cases

BEFORE the Public Service Commission for the Second District of New York arguments were heard on Oct. 25 in Albany on two questions of law involved in the petitions of a large group of electric railways for authority to increase their rates of fare. At the outset Chairman Van Santvoord stated that the meeting was called not so much to hold a hearing as to give the parties interested an opportunity to present their viewpoints before the commission reaches its decisions in nine cases in which hearings have been held and all the evidence submitted.

The questions under discussion were: (1) Has the commission authority, after investigation and upon the principles indicated in the Ulster & Delaware case, to permit an electric railway to charge a greater rate of fare than that fixed by Section 181 of the railroad law? (2) Has the commission authority after investigation to permit an electric railway to charge a greater rate of fare than the maximum provided in the franchise granted by the municipality?

The railways were represented by Joseph K. Choate, Charles E. Hotchkiss, Martin H. Decker and Lewis E. Carr. The cities' case was argued by Richard C. S. Drummond of Auburn, chairman of the cities' steering committee; Corporation Counsel Frank Cooper of Schenectady; Corporation Counsel B. B. Cunningham of Rochester and Joseph B. Thompson, attorney for the town of Greenburg, Westchester County.

Mr. Hotchkiss argued that the commission has, should it deem fit to exercise it, the right to grant the increases sought by the petitioners. He advanced the opinion that Section 181 of the railroad law has been repealed by implication. In support of his claim that the commission has the right to set aside limitations of rates of fare stipulated in franchises granted by municipalities, he cited numerous decisions in similar cases. He contended that the commission, should it fail to find that it has power to stipulate and regulate rates of fare, would nullify State legislation. In his opinion, the rate of fare of railways should at all times be subject to the police power of the State.

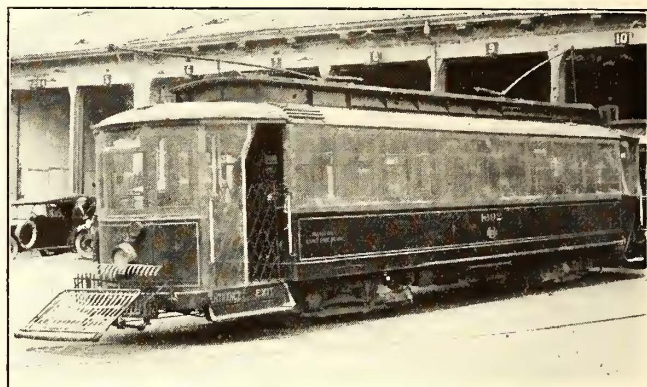
Mr. Drummond, appearing as spokesman for the cities, denied that Section 181 of the railroad law had been repealed by implication in any way whatever. He asserted that this section explicitly bars the commission from increasing the rate of fare of electric railways. In citing the Ulster & Delaware case, he maintained that Section 181 has only been affected in respect to reduced passenger transportation rates and that it, as to ordinary passenger rates, still stands unaffected. Mr. Drummond also advanced the claim that the con-

stitution of the State of New York plainly gives cities the right to consent to franchises and to barter and that neither the State legislature nor the commission has the right to abrogate the terms or stipulations of such franchises.

Cars Protected During Strike

Wire Screen Over Car Windows Found Effective in Withstanding Strike Violence in San Francisco

DURING the strike a few weeks ago of the employees of the United Railroads, San Francisco, Cal., "armored cars" were used by that company on some of its lines south of Market Street. Galvanized wire screen, tacked on the cars with staples, was found to afford excellent protection to passengers. The cars so equipped suffered no broken windows, although they were sub-



CAR WITH WINDOWS SCREENED IN DURING STRIKE

jected to severe bombardments of bricks and other objects. All of the glass was destroyed, however, on several cars not so protected.

A hole was made in the roof of the car vestibule for the trolley rope to give the crew control of the trolley from within the car. This made it unnecessary for the train crew to leave the car at ferry terminals which are stub tracked. A small hole was cut in the screen also to provide an unobstructed view for the motorman. These features are shown in the above illustration.

What Could Be Done with the Coal

The Chicago *Daily News* recently printed some calculations as to what could be done with the coal saved by the electrification of the present electrical division of the Chicago, Milwaukee & St. Paul Railway. It says: "The abolition of locomotives on one division of the coast line of that railway is shown to have saved enough coal in one year to send a United States torpedo boat destroyer on 2368 trips about the British Isles in the search for German submarines. Forty-five such destroyers on the coal conserved in the Rocky Mountain division alone could be kept steaming in a constant procession, week in and week out, for the whole year on the circuit about England, Ireland and Scotland. The annual saving on this division is sufficient to send ninety ocean liners of 13,000 tons displacement on the voyage from the United States to France. Yet this conservation of fuel is only half of that already effected on the electrified divisions, and one-third of what will be accomplished when the Cascade Mountain zone is added to the electrified mileage next year."

COMMUNICATIONS

Continued Publicity for Standard Safety Code Needed

TERRE HAUTE, INDIANAPOLIS & EASTERN TRACTION COMPANY

INDIANAPOLIS, IND., Oct. 17, 1917.

To the Editors:

I have read with considerable interest the summary of the National Electric Safety Code in the *ELECTRIC RAILWAY JOURNAL* of Sept. 15 and Sept. 22. Publicity of this kind is very necessary to the introduction of the code and I believe will be helpful to the railway men and encourage the adoption of the rules for trial.

One of the greatest obstacles to overcome in the adoption of a set of rules is the lack of familiarity with them on the part of the men directly responsible for their application, and it will be impossible to expect uniform interpretation and application until all concerned have had ample time to become familiar with the requirements.

Unfortunately at this time there appears to be insufficient activity in railway construction to demonstrate the practicability of the code, therefore this would be an opportune time for further publicity to acquaint persons interested in the code with its intentions. The summary prepared by Dr. Rosa and Mr. Canada is a step in the right direction, as it tends to act as an index or key to the code and should be read by those who have found difficulty in understanding the rules.

On our line we have issued some thirty-two copies of circular No. 54 to the various line foremen, operators at power stations and substations with the request that they read the rules carefully and submit criticisms, amendments and suggestions, but thus far no replies have been received. The writer has personally taken up the question with these men and they have stated that no reports have been made because of the fact that they have not as yet become sufficiently familiar with the code to offer any suggestions.

It is, therefore, quite evident that additional publicity along the lines of the summary referred to will be necessary to secure proper results.

A. SCHLESINGER,

Superintendent of Distribution and Substations.

The "More Service at Less Cost" Issue

THE J. G. BRILL COMPANY

SAN FRANCISCO, CAL., Oct. 13, 1917.

To the Editors:

I have been reading with unusual interest and profit the special number of the *ELECTRIC RAILWAY JOURNAL* containing various contributions by experts in the railway field on the story of the one-man, light-weight safety car.

The manner in which this subject has been handled by your editorial staff, indicating an enormous amount of time, labor and energy expended, a very keen analysis of electric railway conditions and a practical solution of the high cost of operation problem, deserves the highest possible appreciation on the part of both manufacturing and operating fields.

I had been looking forward to this special number for weeks before it appeared, feeling that this issue would in reality be a handbook for a number of us who are interested in keeping the electric railway transportation vehicle at the front of the procession, and the receipt and study of this issue have more than fulfilled my expectations. I am making this light-weight, safety car issue the subject of a special letter to every railway company in my territory, directing the operators' attention to the various articles which they cannot afford to miss studying carefully.

I wish to express my keenest appreciation to Mr. McGraw and his efficient staff for the splendid service which has been rendered the railway industry.

F. A. RICHARDS,

Pacific Coast Sales Manager.

PUGET SOUND TRACTION, LIGHT & POWER COMPANY
BELLINGHAM, WASH., Oct. 12, 1917.

To the Editors:

I wish to congratulate you on your issue of Sept. 22. Bellingham certainly got a great deal of favorable advertising, more, perhaps, than we deserve, but which shall be amply repaid if our experience here is of help to other railway companies.

L. R. COFFIN, Manager.

The Future of the One-Man Car

PHILADELPHIA HOLDING COMPANY

PHILADELPHIA, PA., Oct. 15, 1917.

To the Editors:

The data contained in your issue of Sept. 22 on one-man cars present an interesting study to both railway men and manufacturers of equipment and invite efforts to visualize the future.

In the first place, what will be the final size and passenger capacity? Or will there ever be a standard in these respects?

Reference to the list of properties given as operating one-man cars shows that, at present, the over-all length ranges from 20 ft. 0 in. to 46 ft. 6 in. The average is 31 ft. It is true that by far the greater number of the one-man cars operated at present consist of remodeled equipment, in many cases for experimental purposes only, and these cars should be largely disregarded when final limits either way are being considered.

At the same time, the average over-all length of *new* one-man cars, so far as can be learned from the *JOURNAL*'s list, is 26 ft. 11 in., which would indicate a present impression that very small cars are best for one-man operation.

The one-man car is in its infancy, and in these days when inspired prophets are supposed to be as extinct as the dodo, he would be a rash man who ventured on a prophecy as to the final shape which this handy piece of equipment will take. Taking, however, a leaf from the old Roman priests, who always played safe in such situations, an opinion may with propriety be hazarded that the trend will be toward longer bodies and in the end there will be at least three standard lengths.

So far as safety is concerned, the experience at Spokane, where 44 ft. 10 in. cars were operated on the Fourth of July without an accident, is the best kind of evidence that this important factor is not going to prove an obstacle to the use of larger cars than just now seem to be the rule.

In the final analysis it would, therefore, appear that the same factors that now determine the proper size of car to use in each case will apply equally to the one-man car. This ought enormously to increase the present accepted limits.

The next question is the extent of the probable field for the one-man car. To determine this I went through the last edition of your directory and find that 959 towns, with a population of from 3500 to 100,000, are served by electric railways, according to the directory. In this list I included only such towns as are indicated by separate mention in the directory and not the large number of towns given in the directory as being on the

routes of interurban lines. I also included towns of less than 2500 inhabitants when they were mentioned as the headquarters of a railway system. I find that about 16,500,000 people live in the towns included in this list. The population figures were taken from the directory, which is based, for the most part, on the census of 1910.

You may be interested to know also that the Corpus Christi cars went into service on or about Dec. 1, 1915, and, therefore, antedated Fort Worth cars by a year. Of course, the Corpus Christi cars were not equipped with all the control devices, but they had air brakes and safety doors.

J. R. DICKEY, Sales Manager.

American Association News

Association May Have Special Representative at Washington to Confer with Governmental Bureaus Regarding War Matters—Manila Section Secures Interest of Public Officials—Other Section Activities Reported, Including Discussion on Power Saving at Chicago

Important Meetings of Military Transportation Committee at Washington

Members of the American Association committee on military transportation met in Washington on Tuesday and Wednesday of this week, and on Tuesday there was also a long conference with Daniel Willard, chairman of the advisory committee of the Council of National Defence. The purpose of the meetings was to place before the government authorities the facilities of the electric roads and to explain the desire of the electric railway managers to aid in military transportation to the extent of their ability. The meetings were attended by L. S. Storrs, A. W. Brady, E. C. Faber, F. R. Ford, C. L. Henry, J. N. Shannahan, C. Loomis Allen, R. I. Todd, Britton I. Budd, G. T. Seely, W. H. Bloss and E. B. Burritt.

Mr. Storrs first read a letter which he had written to Mr. Willard outlining the ways in which the electric railways can assist in the movement of freight. While the cost might be more than by steam roads, the result would be satisfactory because each electric express car employed would release several freight cars. The steam roads would have no cause to fear a permanent transfer of business to the electric railways because the latter would be obliged to charge higher rates. There might be some public prejudice against the use of electric railway facilities for this purpose due to possible interference with passenger service, but this could be justified as a war measure with Mr. Willard's backing.

There was next some discussion as to the importance of having men familiar with electric railway facilities in charge of the routing of supplies, otherwise these facilities could not be used adequately. Another point brought up was in connection with the location of the proposed storage warehouses for war supplies which may be built in accordance with the suggestions of the sub-committee on storage facilities of the Council of National Defence. This sub-committee proposes the establishment of warehouses on the seaboard and also at interior points where the production of different

classes of articles centers. The electric railways naturally have a vital interest in the location of the warehouses and at the Wednesday meeting G. T. Seely was selected to represent the association in the matter. He agreed to give a reasonable amount of time if desired to the sub-committee on storage facilities of the council.

On both Tuesday and Wednesday the committee discussed the relation of the electric railways to the motor truck industry, which is bound to play an important part in transportation during the war and thereafter. The desire of the electric railways is to divide the field with the motor truck in such a way that each can do its best work for the country as a whole.

Tuesday afternoon was spent in conference with Mr. Willard, the committee having during the morning selected Mr. Brady to act as spokesman for it. This he did, explaining clearly the whole transportation situation as it affects the electric railway industry. He cited several cases of discrimination in favor of the steam railroads as against the electric railways. Mr. Willard assured the committee that he would take steps to have the whole situation thoroughly considered as far as any orders from Washington have a bearing upon it. He also outlined a plan which he had formulated to co-ordinate all of the transportation interests. The conference lasted for several hours and the problems of the hour were faced fully and frankly.

The Wednesday session was devoted to a discussion of the broad phases of the relations of electric railways to the war. It was the sense of the committee that they should have a representative in Washington to keep in touch with all branches of the service, a man to be selected who would be well qualified to furnish all needed information regarding the electric railway industry. President Stanley was requested to call a meeting of the executive committee at an early date to act upon this matter and to provide plans for raising the necessary funds. It was deemed desirable that such funds should be raised by subscription among the companies. A tenth or more of the necessary amount was subscribed at the meeting.

Lecture at Milwaukee on Wire Manufacture

Fifty members attended the meeting of The Milwaukee Railway & Light Company section held on Oct. 11, at which the principal feature was a lecture on "The Manufacture of Wire" by Dr. H. Horton of the American Steel & Wire Company, Chicago, Ill. With the aid of lantern slides the speaker covered the history of the iron industry from the discovery of iron up to the perfection of present-day steel furnaces. He was prepared to show a four-reel film covering the manufacture of wire from the mining of crude ore up to the finishing of the product, but through a misunderstanding this proved to be impossible. The usual "Review of the Technical Press," a ten-page mimeographed bibliography, was distributed.

Two Interesting Meetings at Manila

At the meeting of joint company section No. 5 held on Aug. 8 C. Nesbitt Duffy, vice-president and general manager of the Manila Electric Railroad & Light Corporation, Manila, P. I., addressed those present on the subject of public utility management. About 125 prominent citizens of Manila were in attendance besides 127 members of the section. President Santiago delivered a short address of welcome in which he explained the aims and objects of the company section. This was followed by Mr. Duffy's paper on "Management," which will be abstracted in a later issue.

Major D. P. Quinlan, judge advocate U. S. Army, spoke extemporaneously on the value of the human element and its service to the public. He said a divine responsibility rests upon fellow creatures to co-operate; that reciprocal action is demanded between employees and their superiors in all lines of endeavor. Major Quinlan was in military work in Manila at the time of the American occupation in 1898. He drew some interesting comparisons between the transportation systems there then and at the present time.

Following the speeches the members and guests were entertained with singing and dancing, two three-round boxing contests, a Japanese wrestling match, music by the "Meralco" orchestra and refreshments.

At the meeting held on Sept. 4 Secretary M. E. Chaves read in Spanish the address made by Major Quinlan at the August meeting. The guest of honor at the September meeting was Hon. Justo Lukban, M.D., Mayor of the city of Manila. He addressed the meeting in Spanish, and his address was also interpreted by the secretary in English.

Dr. Lukban paid a high tribute to the management of the Manila Electric Railroad & Light Corporation. He said that while he belonged to a political party which stands for Filipino independence, he considered the American occupation of the Philippines as being of great benefit to them. Although the Filipinos had fought unsuccessfully for their independence, yet they had much to thank the Americans for, and one of the instances of the great progress made under American rule was to be seen in the city of Manila itself with its many great improvements and particularly its street railway system. During the Spanish régime the transportation facilities in Manila passed through three epochs. The first, when the Mayor was a schoolboy, was the period of four-horse omnibuses, the second

was that of small horse-drawn cars operating very inefficiently on rails, and the third was that of the steam tramway from Pretil Bridge to Malabon. The present system came into being while Hon. W. H. Taft was governor-general. One of the conditions laid down at the time was that one-half of the capital stock was to be reserved for Filipino investors, but due to lack of confidence or initiative none of them took advantage of the opportunity.

Dr. Lukban said that in his capacity as Mayor he has always made it a point not to meddle in the affairs of "Meralco," leaving the company all the latitude possible. He took the opportunity, however, to mention that when employees desire an increase in wages they should first be sure that they have a just cause, and second that they present their case in a proper way. He advised the company's employees always to take into consideration the earnings of the company so as to determine whether or not its earnings justify compliance with the demands which they might plan to make.

Following the Mayor, C. N. Duffy, vice-president of the corporation, briefly summed up the remarks of the Mayor and explained to him that in the local organization there is no struggle between labor and capital. He took the opportunity to point out the effect of high costs of materials on a company whose output—street car rides and electric service—has its prices fixed by franchise or law. In spite of this the company, on July 1 of this year, put into effect a wage system by which the pay of employees is automatically advanced with length of service, and every occupation of the rank and file of the company has been classified. Since then a rate of wages has been fixed for each occupation and trade.

B. J. Fallon Elected President at Chicago

The topic of the meeting of the Elevated Railroads Company Section held on Oct. 23 was "Power Saving," the subject being approached from several angles. E. C. Noe, general manager, first gave data relating to the consumption of fuel in the production of electrical energy and showed how small savings could in the aggregate considerably affect the total fuel consumption. M. J. Feron, general superintendent of transportation, followed with a paper on personal experience with coasting clocks, in which he explained how he had been converted from a skeptic to an enthusiastic advocate of their use. H. A. Johnson, master mechanic, gave valuable information as to what can be accomplished through proper coasting, illustrating the principles with the aid of time-speed graphs. W. B. McKinney, engineer Railway Improvement Company, New York City, explained the purpose and mechanism of the "Rico" coasting clock, with the aid of diagrams and a sample clock.

The following were then elected to serve for one year except as indicated: President, B. J. Fallon; vice-president, R. N. Griffin; secretary-treasurer, P. V. Lyon; librarian, G. H. Pierce; director for two years, H. A. Johnson; director for one year, J. A. Jarvis.

Among other features of the meeting the most prominent was a talk on the liberty loan by W. V. Griffin, secretary and treasurer of the Elevated Railroads. The work of a local charity was also explained. The attendance at the meeting was about a hundred.

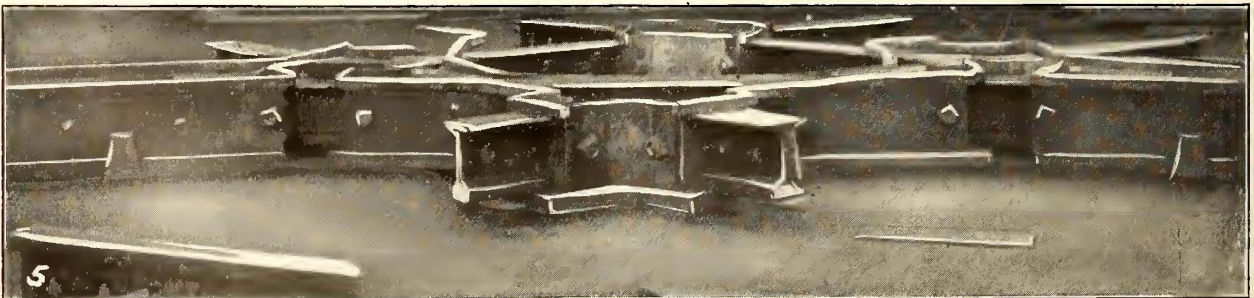
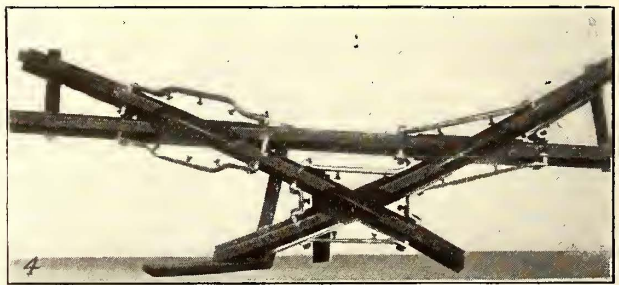
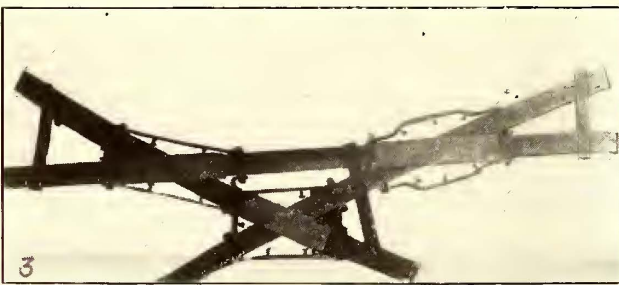
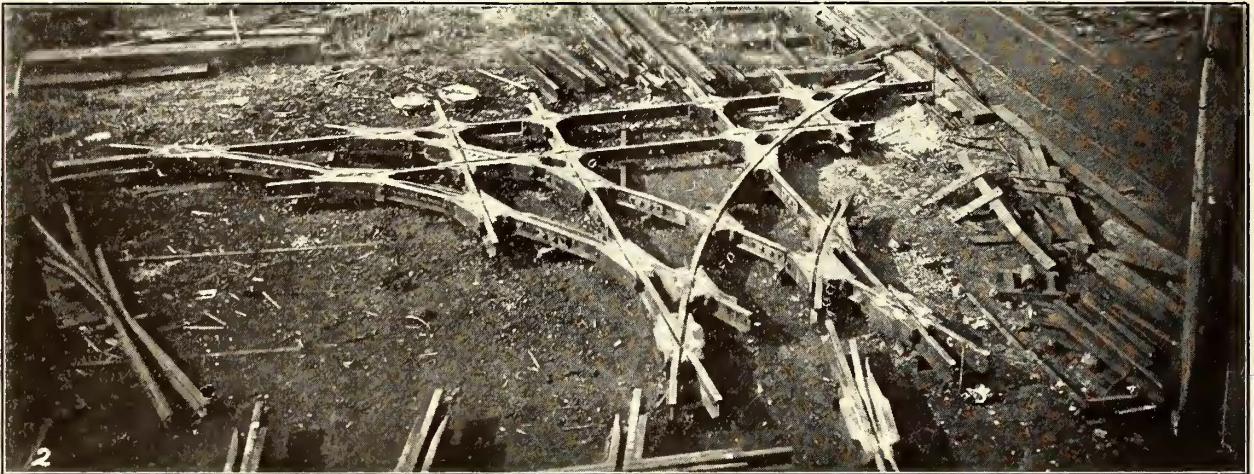
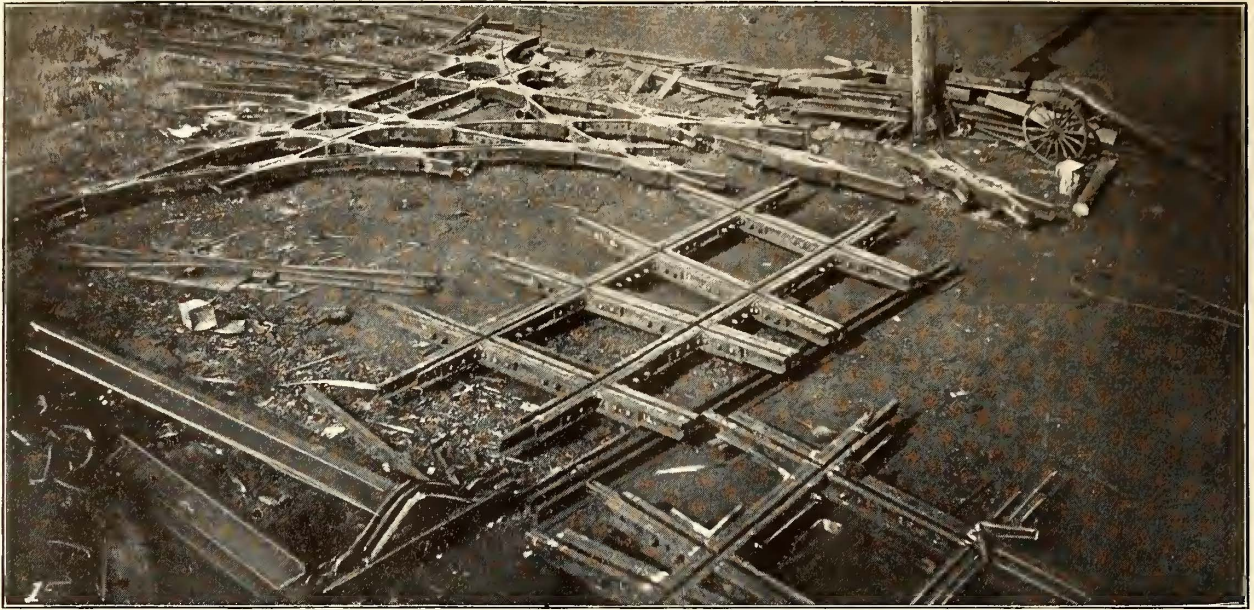


Fig. 1—Home-made special work, showing bolted steam and interurban crossing in center of picture.
 Fig. 2—Double crossover and turnout made without chillers.

Figs. 3 and 4—Forms made of welded steel base plates and bolted side plates.
 Fig. 5—Special work ready to be poured.

Special Work Made by Portland Railway, Light & Power Company Without Cast-Iron Forms

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

Railway Manufactures Special Work Without Cast-Iron Forms

Cost of Pattern Work and Cast Iron Avoided by
Using Steel Shapes Which Are Bolted and
Welded in Place

BY F. P. MAIZE

Master Mechanic Portland Railway, Light & Power Company,
Portland, Ore.

The Portland Railway, Light & Power Company has been manufacturing special work for a number of years, and recently some changes have been introduced that improve the special work so that it has a greater life. A large saving has also been effected in cost of manufacture. Several pieces made recently are shown in Fig. 1. The bolted steam and interurban crossing seen in the center of the picture is made of 80-lb. T-rail. The fillers are made of cast steel, and the short rails are reinforced with boiler plate, being electrically welded to the base of the rail. The joints as well as the nuts are also electrically welded.

In Fig. 2 is a section of a double cross-over and turn-out for city cars. The cast-welded work with manganese center was formerly made by casting in chillers, or cast-iron forms, and as nearly every piece was different it was necessary to make a great many new chillers. On this cross-over the expense of new forms was saved in the following manner: The rails were held together by welding plates on the base of the rail, Fig. 3, and the sides were formed with ½-in. mild steel pieces bolted through the rail, Fig. 4. Anchor pins were put in to strengthen the sides. The base plates also reinforced the sides so that less metal was necessary in the casting. A piece of this special work set up and ready to be poured except for banking the sand around it is shown in Fig. 5. As the rails

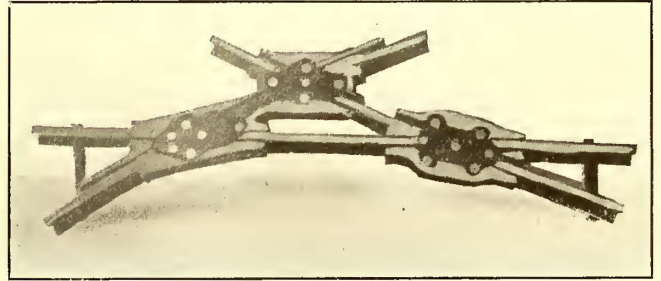
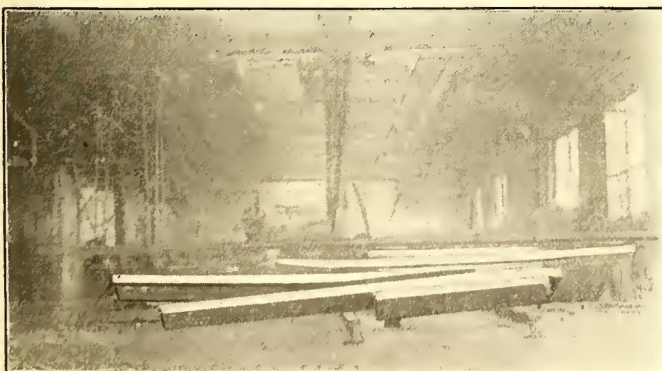


FIG. 6—HARD-SPOT REINFORCEMENT FOR MANGANESE CENTERS

were held rigidly together it was not necessary to clamp them when casting, and we had no trouble with the rails warping out of shape. The manganese centers were bolted and wedged and poured with spelter, which was reinforced with hard spots, as shown in Fig. 6. These spots were faced off, making a hard, true bearing for the bottom of the center. By making the special work in this way instead of using chillers we have saved 7650 lb. of cast iron and 450 hours of pattern work on the cross-over illustrated in Fig. 2.

To repair a standard mate on which the through rail was broken off, as shown in Fig. 7, we drilled holes through the cast iron and drove in tapered wedges to break the casting away from the rail. We then put in a new rail and drilled extra bolt holes through the casting. The broken casting was finally electrically welded, resulting in the repaired mate which is shown in Fig. 8.

We have found that special work repaired in this way wears longer than the new work, as in the new work the rail is made softer by the large body of cast iron which by cooling slowly tends to anneal the rail and thus reduces its wearing qualities.



FIGS. 7 AND 8—STANDARD SWITCH-MATE WITH BROKEN THROUGH-RAIL, AND AFTER BEING REPAIRED

Step Mechanism That Does Not Foul Snow

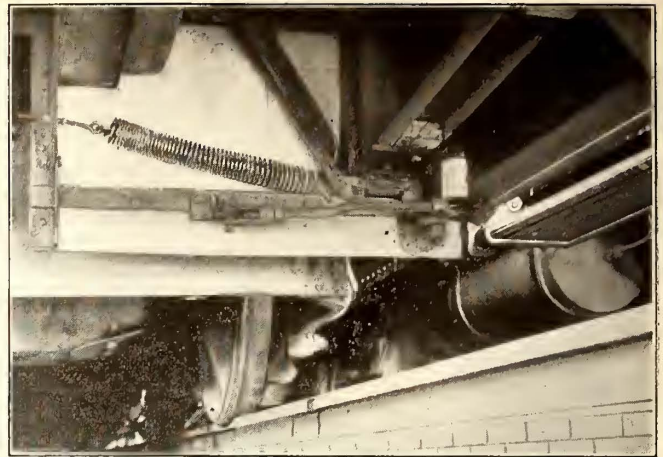
Device Arranged so That None of the Operating Levers Extend Below the Lower Step

BY KEITH MACLEOD

Engineer of Equipment Montreal (Que.) Tramways

When the Montreal Tramways decided to inclose the rear platforms of their standard city cars, one of the problems encountered was the design of a step mechanism which would minimize the trouble due to the ice and snow which accumulates on practically all exposed parts of equipment. As it was necessary to have two steps between the ground and the platform floor the lower step only was folded.

In adhering as closely as possible to standard step heights the clearance provided under the sides of the step was only about 12 in., and it was necessary to have all the mechanism above this level in order to give sufficient clearance for snow. This was done by a system of levers and guides arranged to operate the step from a point above the center of the shaft on which the step swings. The forward door shaft carries an adjustable lever which connects the shaft through a rod to a horizontal connecting rod which operates the step. A slotted guide is arranged to receive the free end of this connecting rod, allowing it to slide horizontally. While there is considerable vertical motion at the outer end of the step connecting rod, there is none at the guide. A coil spring is connected as shown in the drawing to balance the weight of the step in its lowered position.



VIEW OF STEP OPERATING MECHANISM FROM BENEATH CAR

proof ball bearings attached to the fixed part of the step as shown.

Two supports are provided for the step when lowered. One is a quadrant-shaped iron which hooks behind an angle iron fastened to the side of the step. The other support is on the other end and is obtained by the connecting rod resting on the ball bearing housing, the latter being suitably shaped for this purpose.

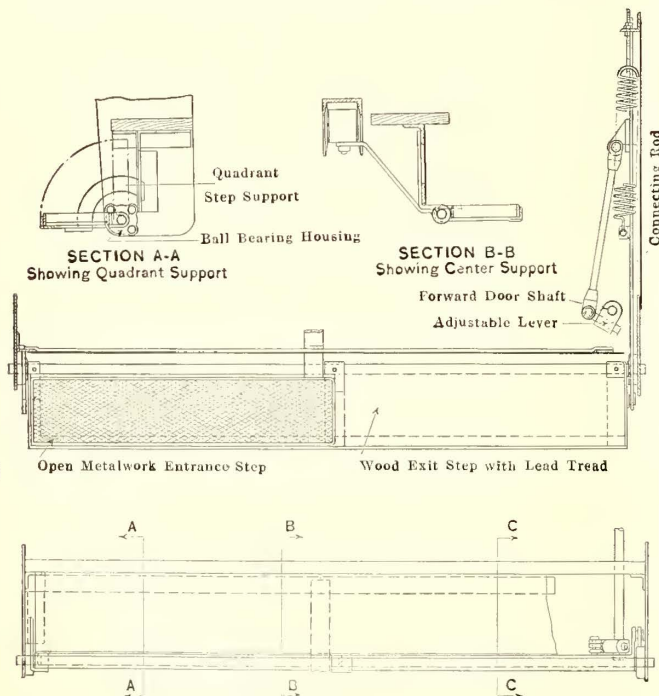
A sheet steel guard shown in the picture is placed in front of the mechanism so as to protect it as far as possible from wheel splash. The whole mechanism is designed with a view of adapting all parts to the various types of cars to which folding steps will be applied. The operating mechanism is actuated by the National Pneumatic Company's air engines as described in the *ELECTRIC RAILWAY JOURNAL* for Aug. 18, 1917, page 262.

Hard and Tough Gears Produced by Special Heat Treatment

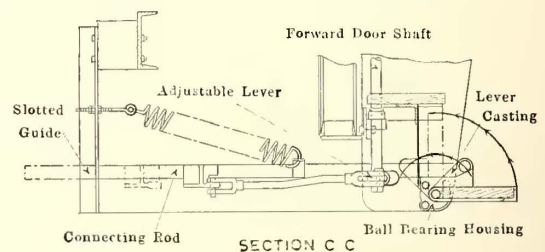
BY W. H. PHILLIPS

Research Engineer R. D. Nuttall Company, Pittsburgh, Pa.

With many industries of the country working over capacity, the necessity for reliability of machine parts was never so desirable, or the consequences of breakdown so costly as at present. The gear situation is one in particular which will bear careful study by railway



DETAILS OF STEP OPERATING MECHANISM



men as it is very possible that they may be able to make certain changes in the type of gearing used which will increase reliability of service and effect an economy at the same time.

Steel gears may be divided into two general classes, the alloy steels and the carbon steels. Alloys of nickel, chrome-vanadium and similar elements with the steel produce a very strong, tough gear which, however, due

The step frame is composed of angle iron with suitable steps to receive an open metal-work step for the entrance side and a wood step with a lead tread for the exit side. The step-connecting rod is connected to the step by a lever casting which forms part of the step frame. This lever casting is pinned to one end of the step shaft, and the angle-iron frame is pinned to the other end of the shaft. The shaft operates in dust-

to its high cost, is practicable for only a few special uses. Hence the great field of gearing is served by carbon steel products. Since it is possible by heat treatment to increase the life of carbon steel gears by as much as 200 to 400 per cent with a cost increase of but 25 to 50 per cent these processes have received much attention. There are now three general classes of treatment, viz: oil treatment, case hardening and special treatment. Gears of the first two classes mentioned have helped in solving many problems, and each has its advantages for certain services. There are conditions encountered, however, in which these two grades are not applicable, and therefore a third grade has been developed in an effort to combine the best qualities found in the other two grades.

Services in which the gear must transmit a uniformly high torque without sudden jars or dynamic blows require a surface hardness such as found in the case hardened product. Here the question is one of wear alone. In other applications where the load is uniformly low but with occasional shocks a gear with only medium hardness but with high ductility, such as the oil treated gear, is required. However, in a larger number of installations the service imposes heavy duty with its resultant wear as well as shocks with the liability of breakage. It is for such service that the third class or special grades have been developed.

It was found that by slight changes in the chemical structure of carbon steel a combination could be obtained which when subjected to a special treatment produces hardness at the surface of the steel tooth from three to four times that of untreated steel. This hardness grades off slightly toward the center of the tooth where the steel is from two and one-half to three times as hard as untreated steel. The reduction in hardness is in a straight line ratio, and each fiber of the steel from the surface to the center, or neutral axis, of the tooth is stressed in proportion to its ability to carry the load. The ductility of this steel is comparatively high and is in inverse ratio to the strength. The metal is homogeneous, there being no line of demarcation between any two fibers, and while the surface of the tooth is hard it is also tough and will not check nor spall. It is often advisable to treat the pinion only, as it is the weaker and harder-worked member. A pinion so treated, due to the nature of the hardness, is not liable to cause excessive wear on the meshing untreated gear.

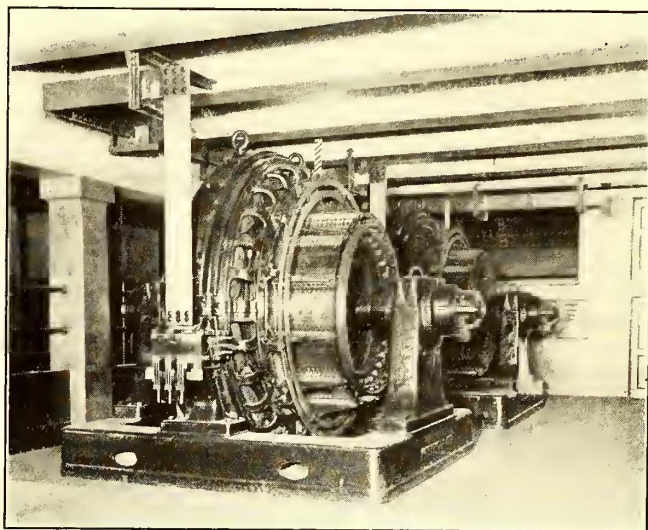
If by increasing the cost of gearing from 25 to 50 per cent a gear is produced that will more than triple the life of the untreated steel gear and at the same time eliminate breakage with its consequential damage, there can be no doubt of its economy. For example, assume that an untreated gear costs \$20 and runs one year. The treated gear will cost \$30 and run three years. This shows a saving of \$30 on initial cost alone. The hazard of breakage with its consequences is an unknown factor, but it may be a serious one.

According to a paragraph in the *London Times*, the German War Office has decided to stop the tramway service at Crefeld, and place the tramway material at the disposal of the army. Similar measures are contemplated in other industrial centers in western Germany.

Boston Substation Built Between Subway and Surface Tracks

Cheaper to Build Substation in This Space than to Fill In—Apparatus Transported on Subway Cars and Lifted Through Floor Opening

Marking another step in the plan of changing over its supply system from direct to alternating current the Boston Elevated Railway a short time ago placed in operation its Dewey Square substation. A unique feature of this station is its location between the roof of the Boston Subway and the street surface, a space that otherwise would have been filled in, and it is said that it was more economical to build a station here than to fill in the space. The point at which the station is located is at South Station, the terminal of the New York, New Haven & Hartford and Boston & Albany Railroads. This point is the center of an unusually dense traffic movement, and when the time came to locate a substation to feed this territory where real estate is naturally very high-priced, a happy solution was afforded when the Rapid Transit Commissioners

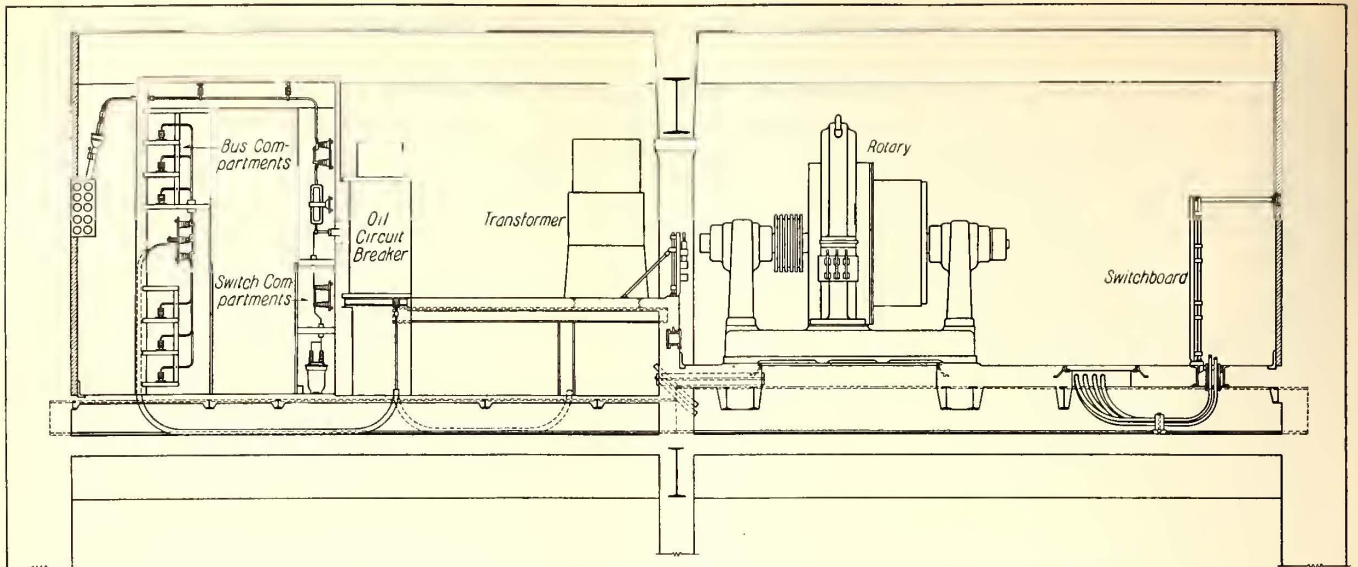


ROTARY CONVERTERS IN BOSTON UNDERGROUND SUBSTATION

built the South Station depot of the subway, making it possible to locate the substation there.

The station has a floor space approximately 83 ft. x 56 ft., and a height of about 16 ft. As may be seen from the accompanying drawings, the apparatus is very compactly arranged and yet there is ample room for the three 3000-kw. rotary converters which represent the ultimate capacity of the station. Two of these have already been installed. At the time of installation the apparatus was loaded on cars and brought in on the subway tracks to a point directly underneath the substation, and from there it was lifted by cranes up through openings provided in the floor.

Alternating current is brought into the station at 13,200 volts and 25 cycles. There are two sets of three 1050-kw. Westinghouse air-blast transformers in which the voltage is stepped down to the rotary potential of 452 volts. The conversion to direct current is effected by two 3000-kw. 25-cycle, 600-volt, 250-r.p.m. six-phase Westinghouse rotary converters. Incoming and outgoing lines are controlled by a thirty-three-panel slate switchboard mounted on the same floor with the convert-



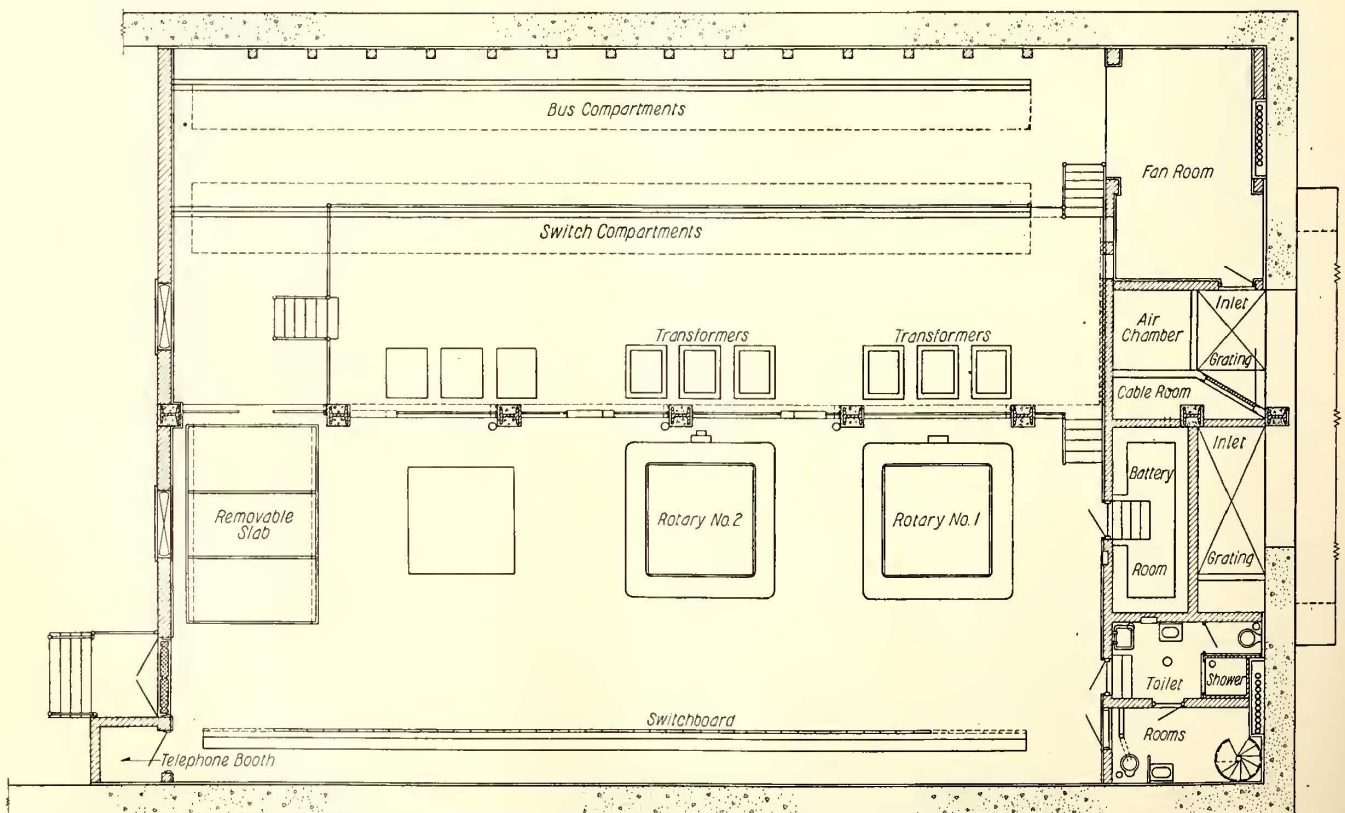
ELEVATION OF SUBSTATION SHOWING BUS COMPARTMENTS, AND TRANSFORMER AND ROTARY ROOMS

ers. The oil circuit breakers for the control of the high-tension circuits are located back of the transformers on the same floor and are controlled by the panel board which is equipped with the usual complement of meters, switches and relays.

Three high-tension lines enter the station, two being feeders from the power plant and one used for feeding out from the station. There are at present nineteen direct-current feeders but about thirty feeders will ultimately be required properly to take care of this district. Each outgoing direct-current feeder is equipped with a watt-hour meter. This is done primarily to assist the accounting department in keeping track of the supply of energy to different sections. The current from the neg-

ative terminal of the rotary converter is carried directly from the rotary to the cable room by a bus shown in an accompanying illustration. For the operation of the oil switches a storage battery having a capacity of 120 amp.-hr. is provided. This is located in a separate well-lighted and ventilated room.

A feature of the station is the ventilation. Air is taken from the subway, the ventilation of which is unusually good, and forced by blowers through the air-blast transformers and out into the station rooms. From there it is again drawn into the subway by exhaust fans. This system has insured a good ventilation for the transformers and an ample change of air for the substation.



PLAN OF SUBSTATION SHOWING COMPACT ARRANGEMENT OF APPARATUS

Cost Data on Special Work Renewals—V

By M. BERNARD

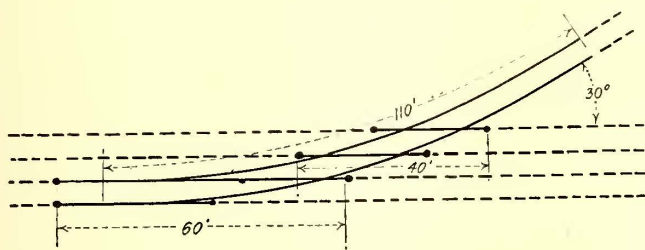
Assistant Engineer Way & Structures Department,
Brooklyn (N. Y.) Rapid Transit System

This is the fifth plate of the series of Cost Data on Special Work Renewals. The previous plates were published in the issues for July 21, page 108; Aug. 18, page 279; Sept. 8, page 406, and Sept. 29, page 588.

Fig. 15—Single Track Outer Branch-off (30 Deg.)

Length—210 ft. single track

Construction removed—9-in. girder rail—8-in. granite on sand
New construction—9-in. girder rail—8-in. granite on concrete

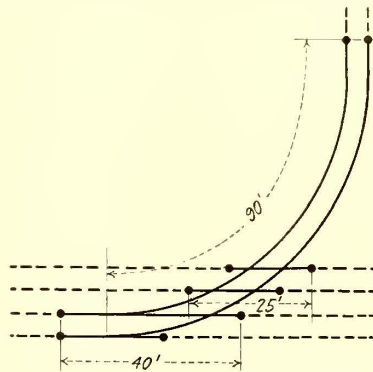


	Light Traffic	Average Traffic	Heavy Traffic
Labor	\$420.00	\$530.00	\$640.00
Handling	135.00	150.00	170.00
Miscellaneous	75.00	90.00	105.00
Total (except materials) .	\$630.00	\$770.00	\$915.00
Cost per single track foot . .	3.00	3.67	4.36

Fig. 16—Single Track Outer Branch-off (90 Deg.)

Length—155 ft. single track

Construction removed—9-in. girder rail—8-in. granite on sand
New construction—9-in. girder rail—8-in. granite on concrete

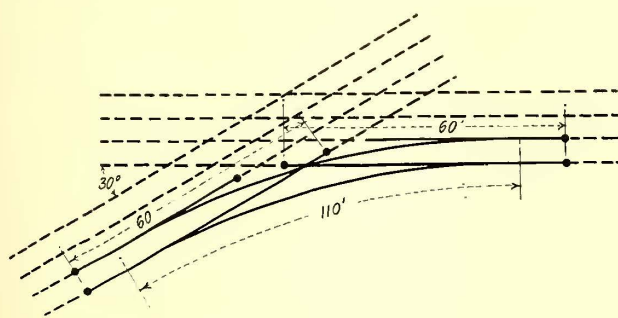


	Light Traffic	Average Traffic	Heavy Traffic
Labor	\$300.00	\$370.00	\$445.00
Handling	95.00	105.00	120.00
Miscellaneous	50.00	60.00	70.00
Total (except materials) .	\$445.00	\$535.00	\$635.00
Cost per single track foot . .	2.87	3.45	4.10

Fig. 17—Single Track Inner Connecting Curve Including Three-way Frog (30 Deg.)

Length—230 ft. single track

Construction removed—9-in. girder rail—8-in. granite on sand
New construction—9-in. girder rail—8-in. granite on concrete

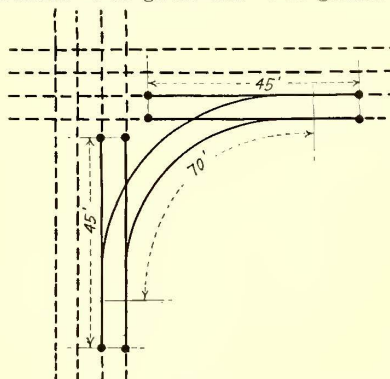


	Light Traffic	Average Traffic	Heavy Traffic
Labor	\$400.00	\$505.00	\$610.00
Handling	130.00	145.00	175.00
Miscellaneous	60.00	75.00	90.00
Total (except materials) .	\$590.00	\$725.00	\$875.00
Cost per single track foot . .	2.56	3.11	3.80

Fig. 18—Single Track Inner Connecting Curve (90 Deg.)

Length—160 ft. single track

Construction removed—9-in. girder rail—8-in. granite on sand
New construction—9-in. girder rail—8-in. granite on concrete



	Light Traffic	Average Traffic	Heavy Traffic
Labor	\$265.00	\$330.00	\$400.00
Handling	90.00	100.00	120.00
Miscellaneous	35.00	45.00	55.00
Total (except materials) .	\$390.00	\$475.00	\$575.00
Cost per single track foot . .	2.44	2.97	3.59

Hard-center construction used. *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 wages.

High-Speed Saw Used for Cutting Track Rails

With the continual increases in the cost of rails electric railways are finding it more and more practical to reclaim rails which are badly worn at the joints by cutting off the bad ends. There are also numerous other cases in which rails have to be cut to fit certain locations. On large-sized properties, therefore, it is essential that a means be provided for doing this sawing as rapidly as possible.

For some months the Boston (Mass.) Elevated Railway has been sawing rails at its South Boston yard by means of a high-speed friction saw, manufactured by Joseph T. Ryerson & Son, Chicago, Ill., and shown in the illustrations. While the machine is as yet a novelty in electric railway work, the results obtained show a low cost of operation, and the work is done in a much shorter time than is required with the other types of circular saws.

The machine consists of a heavy cast-iron box, on top of which a horizontal sliding table is mounted on roller bearings. This table carries the circular cutting disk and its driving motor. The table which holds the rail is stationary and is of such a height that the rail will be below the horizontal center line of the saw. The action of the saw is to press the work against the table, and for this reason no clamps are necessary. The saw itself is a soft steel disk $\frac{1}{4}$ in. thick and 52 in. in diameter. It is hollow ground and nicked on the edge to increase the friction and to provide a clearance for the blade to pass through the rail. The disk is driven at a peripheral speed of about 25,000 ft. per minute and is held against the work by a pneumatic feed.

During the cutting operation the disk is cooled by jets of water which play upon it from orifices in pipes located in the inclosing hood. The water is collected in a small well from which it is pumped back to the machine. One man operates the machine, and the rails are usually set on the operating table by a traveling crane. One blade will average about 650 cuts before replacement is necessary.

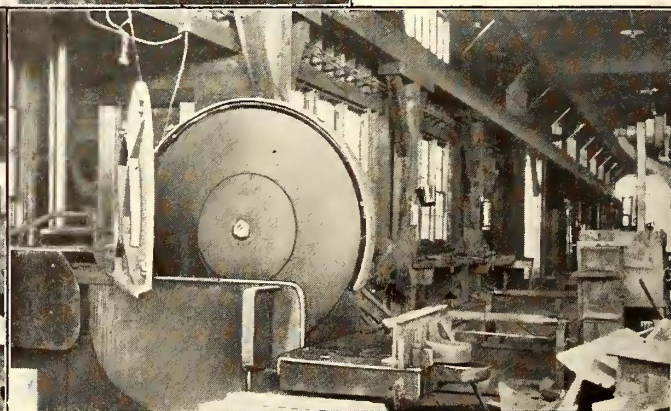
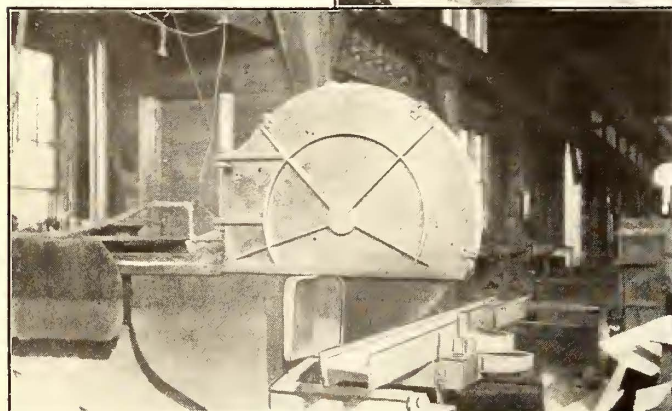
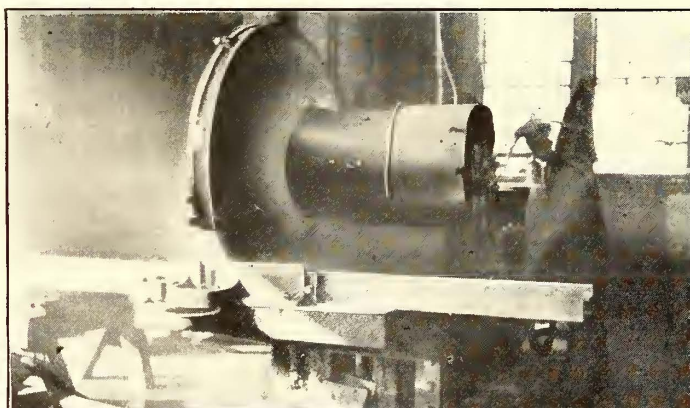
To illustrate the speed at which the machine will operate the following cutting periods were timed on the saw in the Boston Elevated yard:

Type of Rail	Weight	Time
9-in. girder guard rail.....	150 lb.	2 min. 23 sec.
9-in. girder rail.....	132 lb.	2 min. 5 sec.
9-in. girder rail.....	95 lb.	1 min. 25 sec.
7-in. girder guard rail.....	140 lb.	2 min. 13 sec.
7-in. girder rail.....	122 lb.	1 min. 30 sec.
8-in. T-rail.....	79 lb.	1 min. 6 sec.
7-in. T-rail.....	70 lb.	1 min. 1 sec.
A.S.C.E. T-rail.....	85 lb.	1 min. 7 sec.
3 $\frac{5}{8}$ -in. T-rail.....	36 lb.	0 min. 30 sec.

Spectacular and Utilitarian Floodlighting Compared

Floodlighting the coal yards of The Milwaukee Electric Railway & Light Company so that the coal can be handled at night was illustrated in the Sept. 8, 1917, issue of this paper, page 385, and there is no doubt that this system of lighting is becoming more and more popular. However, as it has been very extensively used for the illumination of monuments, public buildings, fountains, and for similar artistic purposes, the name "floodlighting" is associated in many minds with the artistic rather than the practical objects which can be obtained by it. For this reason the Electric Service Supplies Company, makers of the Golden Glow and white light projectors, have called attention to the two distinct classes of floodlighting, at the same time pointing out that there is a different kind of light best suited for each class.

For spectacular effects, where the object as a whole is the main consideration, white light should preferably be used. It should not, however, be used on objects requiring the disclosure of very fine detail or on objects on which the eye is to rest continuously. For the latter class of objects the Golden Glow light is recommended. This light is already familiar to electric railway men as a headlight. It is greenish-yellow in color and the advantage in using it is that the high-frequency light rays which are unpleasant and blinding have been largely eliminated through the use of a glass which absorbs them.



THREE VIEWS OF HIGH-SPEED SAW SHOWING HOW THE RAILS ARE CUT AND THE CUTTING DISK IS REMOVED

News of Electric Railways

Traffic and Transportation

Financial and Corporate

Personal Mention

Construction News

St. Louis Grant Near Completion

Council Committee Near the End of Its Work on the Compromise of Differences Between the City and the United Railways

The public utilities committee of the Board of Aldermen of St. Louis, Mo., decided on Oct. 16 not to include in the United Railways settlement ordinance any provision by which the company may obtain from the board of control any blanket franchise to construct subway or elevated lines. The committee intimated after a lengthy discussion of the settlement bill which it is drafting that it will reduce the powers of the board of control to the authorization of surface extensions of existing lines. Under the terms of the amended bill subways, elevated lines and new surface lines can be constructed by the railways only after obtaining a special franchise ordinance from the Board of Aldermen. The settlement ordinance that is being remodeled provided that the United Railways could build new surface, elevated or subway lines in any part of the city on a permit by the board of control. The board of control was to consist of one member representing the city, one appointed by the company, and in case of disagreement, a third member to be selected by the Court of Appeals. The action of the utilities committee means that the old bill will be amended in these important particulars:

HOW THE BILL HAS BEEN AMENDED

1. Instead of a fifty-year franchise, the company will get an extension of not more than thirty-one years to 1948, when the Central Traction franchise expires.
2. The company will get no additional franchise rights to build lines on streets not now occupied, except such extensions of existing lines as may be ordered by the board of control.
3. Instead of paying a tax of 3 per cent on its gross earnings, in lieu of mill tax and all other special taxes, some other basis of special tax will be suggested.
4. The company will be required to agree to sell its lines to the city for \$60,000,000 plus the cost of future expenditures, and to reduce the face value of its bonds and capital stock to this amount.

FURTHER PROGRESS ON OCT. 18

On Oct. 18 the committee decided to eliminate the mill tax and the franchise tax and substitute a 3 per cent tax on gross earnings, plus 25 per cent of the net earnings above 7 per cent on a \$60,000,000 valuation, and 50 per cent of net earnings above 8 per cent. The committee also decided on Oct. 18 to pay the expenses of its member of a board of control and to divide the expense of a third member, whenever one is appointed by the Court of Appeals, to break a deadlock between the city's and the company's member.

The question of withdrawing the blanket franchise to the United Railways to construct subways and elevated lines in any part of the city on a permit from the board of control was debated on Oct. 18 a second time. The committee may make a few minor changes in the new bill as agreed upon, but the only matter of importance that was undecided after the meeting on Oct. 18 was whether the city could exact a definite increase in cars during rush hours, in accordance with traffic increase, in view of the fact that the power to regulate service is now vested solely in the Missouri Public Service Commission.

It was decided at the meeting on Oct. 18 to invite Richard McCulloch, president and general manager of the United Railways, to meet the committee on Oct. 23 to comment on the proposed new measure.

Chattanooga Strike Renewed

Union Repudiates Organizer Who, It Charges, Deceived President Mahon with Respect to Settlement Terms

Almost immediately after the agreement settling the strike of the employees of the Chattanooga Railway & Light Company, Chattanooga, Tenn., the work was begun of signing up the men individually under the terms of the contract noted in the *ELECTRIC RAILWAY JOURNAL* of Oct. 20, page 732. This process was made difficult for the company, however, by the labor leaders, and on Oct. 13 the company in self-protection sought an injunction to restrain the officers of the local union and J. H. Reardon, who succeeded Chris Cline as the Amalgamated organizer at Chattanooga, from interfering with the 215 employees who had executed the individual contracts with the company. It was charged in the application to the court that the men named by the company had conspired to induce the employees who had executed the contracts to break them and quit the service.

Further misgivings that all was not well were furnished by the failure of the union officials to appoint an arbitrator to represent them on the board of three which was to decide in regard to the return of the men who had been refused reinstatement by the company. On Oct. 15 the representatives of the local union who had been to Detroit to talk over the situation with W. D. Mahon, international president, returned to Chattanooga. The appearance of these men in the city was followed by two meetings of the union behind closed doors. The next day, Oct. 16, the men went out on strike again, without official warning to the company or the public.

COMPANY STATES ITS CASE

F. W. Hoover, vice-president of the company, promptly announced that the cars would be kept in the carhouses until a new force could be organized from local Chattanooga men. The *Times* asked Mr. Hoover to come to its office and make a statement. That paper quoted him editorially as saying that he had been ready from the first to arbitrate the cases of those whom he had refused to take back into the employ of the company; that he had not required any man since the settlement to sign any agreement or paper "not to join the union," and that he had carried out his contract with the men to the letter. The *Times* demanded that the issue be faced promptly and courageously.

About the time the men were turning in their cars Chancellor W. B. Garvin granted an injunction restraining the men from "combining together to breach their several contracts."

THE UNION'S CONFESSION

On Oct. 17 a statement was issued by Judge Bancroft Murray, attorney for the union, in which he set forth the reasons for the strike. There was no charge that the company had broken faith in refusing to reinstate officials of the union. The strike was laid to Organizer Cline's alleged deception of President Mahon and the union, under which the men were said to have been led to accept a settlement in violation of the association's national constitution. The statement said that "it was never supposed by the officers and members of the union that the company would refuse to take back all the officers and committeemen, but that the excepted few who were not to be taken back was meant to apply to such employees as had been discharged by the company before the strike."

E. D. Reed, general superintendent of the company, announced on Oct. 21 that the men would have until 4 p.m. on Oct. 22 to report for duty. Mr. Hoover announced that 100 men were being trained to replace those on strike. He made no prediction about resuming service.

Wichita Differences Settled

Company and City Agree on Payments to Be Made Out of Net Earnings of the Future

The differences which have existed between the Wichita Railroad & Light Company, Wichita, Kan., a subsidiary of the Illinois Traction System, and the city have been settled by the company agreeing to pay \$50,000 to the city as the amount due to it as its share of the net earnings of the company in past years. The case grew out of the law enacted in 1903 by the State Legislature, providing that as a consideration for franchise rights certain public utility corporations should pay into the city treasury a percentage of their net receipts if more than 10 per cent were earned by the company on its investments in plant and equipment.

The city declared that for a number of years since 1909 the company earned an amount sufficiently large to warrant a claim for a share in the net earnings. Demand for a settlement was served on the company in 1914. The company considered the request of the city to be excessive and, as payment was not made, suit was filed in the district court in February, 1916, by the city in order that, first, the proper construction might be placed on the law, and, second, a rule laid down making it possible to calculate the sum properly due to the city. The suit was removed by the company to the Federal Court. Judge Pollack of that court then referred the whole controversy to Judge Sluss, who was authorized to take all the testimony as referee and report to the court in regard to the law and facts. On this report the court was to render a final decision.

RULES TO GOVERN FUTURE SETTLEMENTS

The agreement now reached between the City Commissioners and the company covers the whole ground. It provides both for the amount to be paid for the accrued years and lays down the rules to be used for future calculations. Both the city and the company made concessions. According to the settlement, the company may convey to the city a tract of land consisting of 12 acres lying immediately west of the Riverside Park Zoo and obtain credit therefor at \$15,000. The company further agrees to build before Jan. 1 an extension of its line south on Douglas Avenue to the Orient shops and to extend its Emporia Avenue line to Harry Street. That portion of the agreement relating to future calculations provides that the assessed valuation of the company's property as determined annually by the State Tax Commission is to be accepted as the amount of its investment. Settlements will be made annually hereafter on April 1 for the calendar year preceding. The city is to have the right to inspect the company's books of account and its other records.

Signal Corps Needs Electrical Men

The Illinois State Council of Defense has appointed an advisory committee of the electrical industry which has been assigned the duty of interesting electrical men of draft age and subject to call in the possibilities for their services in connection with the army signal corps. The committee has thought that if electrical men knew the requirements and advantages of this service and would prepare themselves for it, when called in the draft, they would be more readily classified and could make themselves eligible for work in this division of the army.

In promoting this idea, the advisory committee of the electrical industry has prepared an attractive signal corps folder, printed in red, white and blue, which is being widely distributed, not as a call for volunteers but rather as an appeal to the men subject to draft. This folder contains some general information about the signal corps work and calls attention to the fact that more complete information may be had by applying at the office of the committee at 120 West Adams Street, Chicago. Louis A. Ferguson, of the Commonwealth Edison Company, Chicago, is chairman, and Henry M. Byllesby and Bernard E. Sunny are members of the consulting board, while the officers of the advisory committee are Harry L. Grant, chairman; Homer E. Niesz, vice-chairman; Arthur S. Huey, treasurer, and Alva H. Krom, secretary.

Portland (Ore.) Wages Fixed

Arbitration Board Reports in Favor of Eight-Hour Day and Twenty-Cent-a-Day Increase in Pay

The board of arbitration appointed to settle the question of shorter hours and increased wages for the trainmen of the Portland Railway, Light & Power Company, Portland, Ore., has announced its finding. The men will receive the basic eight-hour day. The new schedule of wages is as follows: for service less than one year, 38 cents an hour; for carmen employed more than one year and less than two years, 40 cents an hour; for carmen employed for more than two years, 45 cents an hour. A provision for overtime is also made on a time and a half over eight and one-half hours' basis. The old wage schedule was 28 to 34 cents, with no overtime arrangement. The decision of the arbitration board holds until June 1, 1918, but if, after Jan. 1 conditions are unbearable, the matter can again be arbitrated.

While the decision of the arbitration board stated that the men were entitled to a basic eight-hour day and increased wages, the members were agreed that the financial condition of the company cannot afford these things, and strongly intimated that the company will have to receive relief from the Public Service Commission.

In the meantime, the company will keep the Public Service Commission advised constantly as to the progress of affairs, as directed by the commission itself. All of the suggestions for retrenchment and economies made by the commission will be carried out as far as the company can go without serious impairment to the service.

M. O. Bug Bites Tammany Candidate

Wigwam Looks with Loving Eyes on \$1,600,000,000 of Private Property

In the present municipal campaign in New York City Tammany is pledged to municipal ownership of public utilities. The platform of the city Democratic party declares that "we are in favor of public ownership and operation of all public utilities, including traction, gas, electric light and power and the telephone." Judge John F. Hylan, the Tammany candidate, loses no opportunity to impress upon his hearers this program of the party he represents. His words vary from time to time, but he sounds continuously the tocsin of the coming of the time when municipal ownership shall do away with "immense profit to a small group of individuals."

In few other municipal elections in New York have so many issues been involved. On that account the grandiose municipal ownership program that Tammany and its candidates "are in favor of" has not received all the attention that it deserves from the thoughtful. Out of the welter of the mud of the campaign, however, has arisen a man with both the time and the inclination to show what the Tammany municipal ownership program means. He is ex-Corporation Counsel William Bruce Ellison. Against the Tammany candidate's talk without figuring Mr. Ellison has set his figures without talking. Here are some of his facts, taken almost at random:

It would cost the city of New York from \$1,600,000,000 to \$2,000,000,000 to acquire for municipal ownership and operation all of the public utilities in the city. The present bonded indebtedness of the city is \$1,054,907,915. There are 140 utility companies doing business in the greater city. It would cost the city at least \$840,000,000 to acquire the physical property of the chief local utilities alone, excluding companies which do a large business outside of the city. The estimates follow:

Gas property	\$150,000,000
Electric plants	110,000,000
Electric subways	30,000,000
Water works	6,500,000
Electric railways	180,000,000
Elevated roads and subways (company's investment only)	361,000,000
Steam and refrigerating plants	2,500,000

Judge Hylan says that "we must take over the great public utility properties of this city." The flood of loose talk by him will probably continue, but Mr. Ellison has done a public service by showing how unbridgeable is the gap in this instance between desire and achievement.

Another Philadelphia Hearing Held

The joint committee of finance and street railways of the Councils of Philadelphia, Pa., on Oct. 19, held another meeting on the terms of the lease of the high-speed rapid transit lines to the Philadelphia Rapid Transit Company. Charles L. Fluck, president of the Northwestern Business Men's Association, made a long speech which contained some suggested amendments to the proposed lease. In the course of his remarks Mr. Fluck attacked A. Merritt Taylor, former director of city transit of Philadelphia, who is opposed to the wording of certain of the clauses of the measure now before Councils. It appeared that Mr. Taylor and Mr. Fluck had worked in harmony for several years on rapid transit matters, but that in 1915 Mr. Fluck withdrew his support from Mr. Taylor because Mr. Taylor had agreed to accept \$6,000,000 from Councils for beginning the rapid transit work instead of insisting upon his original request of \$30,000,000. Mr. Trainer, one of the Councilmen, came to the defence of Mr. Taylor by saying that Mr. Taylor had fought hard to get the whole amount, but that the appropriation of \$30,000,000 had been found impossible at that time. Mr. Seger, another member of Council, asked Mr. Fluck to consider what the present status would have been if no appropriation had been made.

Mr. Taylor announced at the meeting that he would take the transit lease into the courts unless exchange tickets were abolished. He made this statement following a remark by another speaker who called for the abolition of the tickets.

At the beginning of the meeting Councilman Seger said that he understood that Mr. Taylor and his counsel were to confer with Dr. William Draper Lewis, counsel for the city, and with City Transit Director Twining, and offer amendments to the proposed lease. Dr. Lewis said that certain clarifying amendments had been submitted, but that he had not had an opportunity to examine them and other suggestions carefully and to formulate his own ideas.

Wage Conferences in Kansas City

Kansas City Railways and Its Men Begin Negotiations Looking Toward Revised Wage and Working Conditions

Committees of employees and officials of the Kansas City (Mo.) Railways began on Oct. 22 their conferences on the subjects of wages and working conditions. The working conditions are being considered first. Many matters have already been settled harmoniously.

WHAT THE EMPLOYEES WANTED

The employees presented their suggestions for new wage scales and changes in conditions about three weeks ago. These were far beyond the possibility of acceptance by the company. The employees' presentation referred occasionally to the "association," although the company could not under its franchise, or the agreement by which the strike was settled, treat with the union as such. About ten days after the employees presented their requests, Clyde Taylor, vice-president of the company, announced, at meetings of employees called for the purpose, voluntary increases in wages for trainmen. His statement at that time, Oct. 15, suggested that the increases were all the company could afford to give now, and that it was hoped long controversies over the schedules presented by the men could be avoided by taking up the matter in that way.

In their presentation the employees had asked for 35 cents an hour for beginners, and 45 cents an hour after the third year of service. This would have meant an increase of 59.7 per cent in trainmen's wages, and with overtime, reporting time and other working changes asked by the men would have increased the present platform expense by 71.58 per cent. The employees' presentation also asked increases amounting to 31 per cent in other departments, the total advance over the payroll costs to the company for the year being estimated at \$1,457,744, or 53.5 per cent.

The company's voluntary increase to the men would have meant an increased cost of operating of nearly \$500,000, almost to the limit of the surplus after fixed charges earned by the company as shown by figures of city accountants. It

has been made plain that if the men get this additional advantage the city will probably not receive any income soon to be expended by the company on permanent improvements. In addition to the advances to trainmen of 3 cents an hour, the company has raised the wages of electrical men 2 cents an hour, while shopmen, carhouse men, car cleaners and mechanics have received an advance of 3 cents an hour. The increases are retroactive to Oct. 1.

Chicago Transit Program Revived

This Time It Is Proposed to Draw a Merger and Subway Ordinance, and Then Seek Enabling Legislation, Thus Reversing Previous Process

The proposition of a new franchise ordinance for Chicago, including a merger of the elevated and surface lines, is being revived in meetings of the local transportation committee of the City Council. At a meeting of this committee on Sept. 26, it was decided to put the matter before the Council in the hope of reviving the merger transportation scheme, which involved the building of a subway.

At a meeting on Oct. 22 the City Council ordered the local transportation committee to draw up a suitable ordinance. This will probably be followed by a series of hearings for the public and companies extending over several months. This time the ordinance will be drawn and the enabling legislation sought. This is in contrast with the previous attempt at a merger, when it was stated that the cart was placed before the horse by the enabling legislation being sought before a definite ordinance had been drawn.

When the local transportation committee has drawn the ordinance, the measure will then go before the City Council for approval. This will be followed by submitting the matter to popular vote, probably in April or at a special election before that time. If approved by the people of Chicago, the matter will then be put up to the State Legislature at Springfield. The first opportunity to do this will be at the opening of the Assembly in January, 1919, unless there is a special session before that time.

The enabling legislation that is required is for a longer term franchise than twenty years, for home rule, for authority of the city to build subways, and for authority to merge the elevated and surface lines.

Municipal Extensions Hard Sledding

Seattle Not Over-Hilarious About Further Municipal Railway Extensions

Work on the extension of Seattle's municipal railway system into Ballard, by the extension of Division A, is being rushed by the streets and sewers department under supervision of Superintendent Case, and by order of Mayor Gill. It is expected that the line will be ready for operation not later than Jan. 1. It is believed that construction of the line into Ballard will convert the municipal system from a losing into a profitable venture.

The latest development in the fight of Mayor Gill and a majority of the Council over the extension is a threatened suit by the Chamber of Commerce and Commercial Club, to enjoin the city from further "illegal" expenditure on the railway. The suit will be instituted immediately if the plan meets with the approval of the members' council of the chamber. The trustees of the chamber authorized the bureau of taxation to institute injunction proceedings, following a report from the bureau protesting against the incurring of any more debt by the city, under existing conditions, without a vote of the people, and recommending that extension work on Division A be enjoined.

Following the recent opinion by Walter F. Meier, assistant corporation counsel, that money could not be legally transferred from the light depreciation fund to the street railway fund for such a purpose, and that money could not be taken from the general fund to build a railroad until the people had approved such an expenditure at an election, Mayor Gill issued orders instructing C. R. Case, superintendent of streets, to proceed with the work, using funds appropriated from the street department. When the work is completed Mr. Case will bill the utilities department, which will pay the street department.

San Francisco Strike Settled

On the night of Oct. 18 the United Railroads, San Francisco, operated owl cars all night and in other ways gave service entirely normal. Oct. 17 was set by the company as the last day on which strikers would be returned to their old positions without loss of seniority and corresponding wage scale. For several days prior to this date, many strikers applied for reinstatement and were accepted. About 250 strikers are now back on the platform jobs. Most of the men who have not returned to the company have left town or have sought other employment. It is reported that about 200 men were drafted.

At a night meeting of the strikers held on Oct. 18, the total attendance, including women, was only 315, indicating the rapid thinning down of the ranks. Three of the ten charter members of the new union have applied to the company for reinstatement. This is taken to indicate that the union movement "died out from the top down." No concessions whatever were made on the part of the company to the men who deserted their cars in their effort to force the company to meet their demands.

Three Divisions for I. C. C.

Under authority recently granted by Congress the Interstate Commerce Commission on Oct. 17 divided itself into three sections to facilitate the work of disposing of its ever-growing docket.

The first division, consisting of Commissioners McChord, Meyer and Aitchison, is charged with the conduct of the work of the bureau of valuation, "other than considering and deciding proceedings relating to the valuation of carriers' property."

The second division, consisting of Commissioners Clark, Daniels and Woolley, is charged with action upon certain rate applications and requests for suspensions, the transportation of explosives and dangerous articles and tariffs carrying released rates.

The third division, consisting of Commissioners Harlan, Hall and Anderson, is charged with the disposition of all board of review cases which have been submitted "and those not hereafter orally argued before the commission or any division thereof."

All three divisions will alternate in hearing cases set for argument, each division hearing arguments for one month.

Danville Arbitrators Selected

In connection with the arbitration proceedings which were agreed upon in the settlement of the strike of trainmen on the Danville Street Railway & Light Company, Danville, Ill., reviewed in the *ELECTRIC RAILWAY JOURNAL* for Oct. 13, Percy Mollineaux, Danville, a railway machinist, has been selected by the trainmen as their arbitrator. L. E. Fischer, consulting engineer, St. Louis, Mo., has been selected to represent the company. These two men are to select the third member of the board.

Operating Negotiations Halted

The negotiations between the city of Tacoma, Wash., and the Tacoma Railway & Power Company for the operation of the new municipal railway to the tideflats were recently brought to a halt by the question of liability in case of accident, after Louis H. Bean, general manager of the company, had submitted a written contract setting forth the terms under which the company would assume control of the road. The matter was finally referred to the city attorney to draw up a new contract, in which the city will specify under what conditions it will assume liability for accident. The contract submitted by Mr. Bean provides for the operation of the line at cost for a period of two years. The power supplied will be charged against the city at a rate of 0.75 cent per kilowatt-hour. An additional 15 per cent will be charged for labor and material, the city also to pay the cost of moving cars to and from the carhouses. The company will turn over to the city for its use during the two years all of its carhouses, shops and laborers. The contract further stipulates that if at any time during the life of the contract the city desires to take over the St.

Paul Avenue line in conjunction with its municipal line, it will pay to the company a sum equal to 12 per cent on the company's investment of \$10,087, to cover the interest, depreciation and taxes on the property. This will be in addition to the cost of operation.

Increase in Wages in Spartanburg.—The South Carolina Light, Power & Railways Company, Spartanburg, S. C., has increased the pay of its motormen and conductors 3 cents an hour. The increase was voluntary on the part of the company.

Loop Rental Opposed.—The City Council of Buffalo, N. Y., has practically agreed to charge the International Railway \$16,875 a year rent for looping a single track around the Lafayette Square in Main Street, which was recommended by the Public Service Commission in its recent report on traffic conditions on the Buffalo lines of the company. The proposed rental charge is opposed by Thomas Penney, vice-president and general counsel for the railway company.

Power and Equipment Departments Separated.—At the request of George W. Dunlap, superintendent of power and equipment of the International Railway, Buffalo, N. Y., the power and equipment departments have been separated. The change was made on account of the very great increase in the business of the company, and, incidentally, because of the extensive additions to the steam plant and large increase in the number of substations, together with increased responsibility because of the new high-speed line to Niagara Falls. Mr. Dunlap has elected to assume charge of the power department.

Electricians and Other Mechanics Wanted for U. S. Service.—The Quartermasters' Enlisted Reserve Corps, with recruiting headquarters at 357 Broadway, New York, has received a new authorization to enlist men in their civilian trades in the army for duty in this country and abroad. Among the men needed at this time are electricians, iron workers, auto mechanics, general mechanics, chauffeurs and stenographers. Enlistment is open to citizens of the United States or to those who may have declared their intention to become citizens. Applicants must be between the ages of eighteen and forty-five years and have no one dependent upon them for support.

Franchise Acceptance Approved by Dallas.—The Commissioners of the City of Dallas, Tex., have approved the acceptance by the Northern Texas Traction Company, a Stone & Webster property, of the franchise granted by the city of Dallas reaffirming and re-enacting the rights and privileges granted to the Northern Texas Traction Company to build, construct and operate a double-track interurban railway and an overhead trolley along certain streets and alleys in the city of Dallas. The franchise was asked by the Strickland-Hobson interests and the Northern Texas Traction Company, and was made a part of the lease contract entered into between these two interests whereby the Strickland-Hobson interests take over the operation of the electric railways in Oak Cliff, a suburb of Dallas.

Appeal in Strike Damage Suit Case.—The International Railway, Buffalo, N. Y., has taken an appeal from the order denying it a new trial in its action against the county of Erie arising out of the strike on its lines in 1913. The company in its action demanded damages for injury to its physical property and for loss of revenue aggregating, with interest, more than \$130,000. The company secured a judgment against the county for \$2,862 for damages to its physical property and a "no-cause" verdict for its loss of business. The company contended that the county did not furnish adequate police and military protection. The county authorities have also filed an appeal, claiming no judgment should have been taken against the county. The progress of the suit has been referred to before in this paper.

M. O. Agitation in Tulsa.—Agitation has been started in Tulsa, Okla., with the aim of having the city government purchase the Tulsa Street Railway and the Oklahoma Union Railway, consolidate the two and operate a municipally-owned street railway system. The charter of the city of Tulsa contains a provision for municipally-owned utilities, and the franchises granted the two companies contain clauses providing that the city may take over the property at a

reasonable valuation at any time after the population of the city shall have reached the 65,000 mark. This mark was passed last year, and these provisions in the charters are now in effect. It is believed that the question will be submitted to the people in a referendum election to be called in the near future.

Conference on Use of Bridge.—A conference will be held in the near future between city officials and officers of the Puget Sound Traction, Light & Power Company, Seattle, Wash., to consider plans for the use by the company of the new bridge across West Waterway, near Spokane Street, now nearing completion. Under the terms of the company's franchise, it is required to pay a portion of the cost of a permanent bridge at Spokane Street, and allowed the use of any temporary structure that may be maintained, prior to the building of a permanent bridge. It is now the plan for the city to condemn a railway right-of-way leading to the new bridge, the company to pay the cost of the property taken, and in return to receive a franchise and use of the right-of-way until a permanent bridge is built.

New Wage Scale in Duluth.—Herbert Warren, vice-president and general manager of the Duluth (Minn.) Street Railway, on Sept. 30 announced an increase in the wages of trainmen of about 10 per cent, dating from Oct. 1. The new scale is as follows: First year, 29 cents an hour; second year, 31 cents; third year, 32 cents; fourth year, 33 cents; fifth year, 34 cents; sixth year and thereafter, 35 cents. The minimum guarantee is \$2.50 a day. New men formerly received 25 cents. The previous maximum wage was 32 cents an hour plus a 5 per cent war bonus. New men have been getting a 10 per cent war bonus plus their regular wage. The war bonus will now be discontinued for motormen and conductors. This is said to be the third time within a year that the wages have been advanced.

Advances in Wages in Fresno and Stockton.—The Fresno (Cal.) Traction Company has increased the wages of platform men who had been in the company's employ for five years and more. The maximum has been 32 cents an hour. The new scale makes an advance of 1 cent an hour for men who have been in the service five years and 2 cents an hour for men who have been with the company ten years or more. The wage schedule follows: First year, 29 cents; second year, 30 cents; third year, 31 cents; fourth year, 32 cents; fifth year, 33 cents; sixth year and over, 34 cents. The Stockton Electric Railroad, controlled by the same interests that own the Fresno property, has also increased the pay of its men. The old rate in Stockton has been from 29 cents for beginners to 32 cents an hour for the men longest in service. The men longest in the service will also benefit most by the advance at Stockton.

"Newt" Bolen Gets Another Gift.—The closing of the baseball season on the Public Service Railway, Newark, N. J., was celebrated with a testimonial reception to the championship baseball team from the South Orange Division in the new auditorium on Orange Street near Broad, Newark, on the evening of Oct. 24. There was a vaudeville program followed by dancing. Each carhouse sent a large delegation. The price of tickets was 25 cents each, just barely enough to cover expenses, so as to bring the entertainment within the reach of all. Each member of the winning team was presented with a gold watch. The South Orange men lost only one of nine games in a seven-team league. The competition among the seven teams called into play the best efforts of the schedule makers of the railway. Newton W. Bolen, general superintendent of the Public Service Railway and president of the Public Service Railway Athletic Association, was presented with a solid gold fob inscribed with the Public Service emblem, "Safety, Loyalty and Courtesy."

Obstacles to Seattle Elevated Line.—Another obstacle to the construction of the proposed elevated railway by the city of Seattle, Wash., on Railroad Avenue has developed in the refusal of the Chicago, Milwaukee & St. Paul Railway, the Great Northern Railway and the Oregon-Washington Railroad & Navigation Company to relinquish their franchise on Railroad Avenue. The track which it was proposed to vacate in favor of the elevated railway occupies the most westerly position on Railroad Avenue. Acting under the

authority of a resolution adopted by the Council, A. L. Valentine, superintendent of utilities, took the matter of abandonment up with the companies. They replied that owing to the traffic congestion at this point and the inadequacy of the transfer arrangements if the tracks mentioned were given up, they could not be abandoned. The new railway will probably be forced to occupy the franchise space granted to the Port of Seattle from Washington Street to West Spokane Street.

Indiana Commission's Work for Year.—The Public Service Commission of Indiana closed its fiscal year on Sept. 30, with three separate lines of work accomplished, according to an announcement by E. I. Lewis, chairman of the commission. The first of these matters has been the payment of all outstanding bills against the commission and the return to the State of \$50,000, which has been saved from the total appropriation of \$115,000 for the fiscal year just ended. The next accomplishment was the final disposal of the last of the electric light surcharge cases which have been holding the attention of the commission since the Indiana Electric Light Association filed a blanket petition asking the commission to grant its members authority to add a 30 per cent surcharge to each bill for service to customers, because of the abnormal cost due to the war. The third conclusive action taken by the commission during the year was final disposition of the petitions under which steam and hot water heating companies asked for war-time relief. Twelve such companies were granted relief.

Hearing on Lease of Railroad for Rapid Transit Purposes.—The Public Service Commission for the First District of New York has set Oct. 31, at 10.30 a. m. as the date and hour for a public hearing on the form of agreement between the city of New York and the Long Island Railroad covering the proposed lease of trackage rights on the Whitestone and Port Washington branches of the railroad as an extension of the Corona rapid transit line to Whitestone Landing and to Little Neck. Points still at issue between the city and the company involve a question of whether the city shall have the right to permit the operating company to carry small freight and express packages, and over the question of rental. The railroad company demands a rental beginning at \$125,000 for the first year and gradually increasing through a period of ten years, until the sum of \$211,000 is reached. The Public Service Commission contends that this will be paid if earned, while the railroad contends that it must be paid whether earned or not. The commission hopes that by the date of the public hearing these differences will have been adjusted.

Trenton Opposed to Trolley Poles.—In replying to an ordinance adopted by the City Commission of Trenton, N. J., requesting the removal of trolley poles on several thoroughfares, the directors of the Trenton Street Railway, Mercer County Traction Company, Trenton, Hamilton & Ewing Traction Company and the Trenton & Mercer County Traction Corporation claim that the poles were erected more than twenty-five years ago under an ordinance authorizing the Trenton Horse Railroad to use electricity as motive power. This ordinance was set aside by the Supreme Court in the case of Green vs. Trenton, and subsequently the city of Trenton enacted another ordinance to obviate the defects of the prior ordinance validating the change to electricity, which was held valid by the Court of Errors and Appeals in the case of Roebing vs. Trenton Passenger Railway. The company claims that the erection and use of the poles were sanctioned by the second ordinance, and that without these it would be impossible to convey electricity from the power house to the streets on which the lines of railway have been constructed. The company claims the poles have been in use for twenty-five years and have been taxed by the city. The City Commission has notified the New Jersey & Pennsylvania Traction Company that unless its poles, wires and cables are removed from certain streets by Dec. 15 the city will take steps to have the officers and directors indicted by the Mercer County Grand Jury on the ground that they are maintaining a public nuisance. The poles, cables and wires in question are on Calhoun Street and are not used by the company.

Financial and Corporate

Annual Reports

Manila Electric Railroad & Lighting Corporation

The statement of income, profit and loss of the Manila Electric Railroad & Lighting Corporation, Manila, P. I., for the year ended Dec. 31, 1916, follows:

Gross earnings	\$1,594,078
Operating expenses and taxes	835,424
Net earnings	\$758,654
Interest on bonds	\$262,616
Other interest	2,417
Total	\$265,033
Net income	\$493,621
Reserves:	
For sinking funds	\$43,783
For replacements and renewals	80,000
Total	\$123,783
Surplus	\$369,838
Dividends	300,000
Balance for year	\$69,838

The gross earnings for 1916 showed an increase of \$99,291, or 6.64 per cent over those of 1915. The operating expenses and taxes rose \$72,465, or 9.5 per cent, so that the net earnings from operation gained \$26,825, or 3.67 per cent. The balance after interest charges and sinking fund requirements showed an increase of \$24,483, or 5.76 per cent. The total surplus as of Dec. 31, 1916, was \$1,680,740.

The gross receipts in the railway department for the first six months of the year were slightly less than for the corresponding period of 1915, but during the last six months the passenger revenues increased on an average \$6,000 a month. The final total increase for the year was \$31,450. The indications, it is said, are for continued improvement.

During 1915, on account of the very discouraging conditions in Manila, the maintenance work was restricted to a minimum, but in 1916 this deferred maintenance was partly compensated for. This resulted in increased operating expenses. The extra expenditures were principally on cars and tracks, and they were abnormally high on account of the constantly increasing cost of materials and the almost prohibitive ocean freight rates.

In the early part of 1916 the property was inspected and a comprehensive plan mapped out for replacements and renewals. Owing to the war conditions, however, less than half of the original amount estimated for 1916 was expended, the total amounting to only \$106,778. The general plan, however, will be adhered to as closely as conditions will permit. The amount estimated for the complete program of rehabilitation from 1916 to 1919 is approximately \$750,000. It is estimated that this can be furnished as required from the reserves and surplus of the company without changing the present dividend rate, provided business conditions continue prosperous. On Dec. 31, 1916, the balance of the replacement and renewal reserve was \$650,000.

Christchurch Tramway

The expected diminution of travel on the lines of the Christchurch (New Zealand) Tramway, owing to the war, has not materialized. According to the report of this company for the year ended March 31, 1917, the growth of its business has been in no way checked. The increase in 1916-1917 was much greater than in the year immediately preceding. The revenue at £150,000 for 1916-1917 was an increase of 7.67 per cent over the returns in 1913-1914, before the war. Similarly, the number of passengers carried at 19,094,115 was a gain of 17.31 per cent, the car-miles at 2,521,978 an increase of 7.03 per cent and the operating expenses at £85,746 an increase of 11.47 per cent.

That the increase in revenue has not kept pace with the increase in passengers carried is due to the fact that more

people are using the cheap concession tickets than formerly. The increase in operating expenses has been brought about by the increased cost of repair materials, the increasing age of the undertaking and increases in wages. For the last year the increase in capital expenditures on construction and equipment account amounted to £14,278.

The tramway board has continued its policy of subsidizing the military pay of tramway volunteers. It has also continued to grant free passes to returned soldiers and has rendered further assistance to Red Cross and similar efforts. The value of such contributions in the last year was £2,919.

New South Wales Government Railways and Tramways

The results of operation of the government railways and tramways of New South Wales, Australia, for the year ended June 30, 1917, was a deficit of £412,253, as compared to a deficit of £137,457 the year before. A large part of this deficit in the last fiscal year arose from the fact that tramway operation showed a loss of £18,189 instead of a gain of £86,292 as in 1916. The tramway earnings amounted to £2,008,539, with working expenses of £1,691,367 and interest of £335,361. The total expenditures charged to tramway capital account in 1917 were £143,206.

The tramway earnings in the last year increased £16,911, or 0.85 per cent, while the working expenses rose £88,717, or 5.5 per cent. Wage board awards and other conditions not controllable by the administration entailed the expenditure of £162,933 during the year. In view of the continuous upward tendency of wages, the increasing cost of materials and the higher interest rate which will have to be paid, the report states that a general increase in fares to balance the revenue and expenditure accounts is unavoidable. The tramways carried 295,303,714 passengers in 1917, as compared to 292,021,774 in 1916, and operated 25,361,992 tram-miles, as compared to 26,451,442.

The total operating staff on June 30, 1917, numbered 45,079, of whom 5890 were serving with the expeditionary forces. The tramway employees constitute about one-fifth of the staff. Payments amounting to £113,217 were made during the year to soldiers' dependents to cover the difference between their railway pay and their military pay.

Mortalities Increase

New Jersey, Kentucky, Tennessee, California, New York and Texas Roads Give Up the Fight

The Board of Public Utility Commissioners of New Jersey has dismissed the proceedings brought by the city of Cape May to compel the continued operation of the Cape May, Delaware Bay & Sewell's Point Railroad and the Ocean Street Passenger Railway between Sewell's Point and Cape May Point. The physical property of the railroad, though not the franchises, has been sold to junk dealers, and the sale has been confirmed by the Court of Chancery in receivership proceedings. The question as to the necessity of the approval of the sale by the utility commission, in view of the chancery decree, was not passed upon by the board. That body dismissed the petition upon other grounds.

COMPANY WENT BEHIND \$20,000 ANNUALLY

The testimony showed that for many years the Cape May, Delaware Bay & Sewell's Point Railroad was operated at an annual average deficit of about \$20,000. It was shown that the road was in need of immediate rehabilitation which would require the expenditure of large sums. The rolling stock was in disrepair and the power station was also in lack of repair. One of the arguments advanced against abandonment was that the road would be of value to the government because of the location of a naval and aviation station on the line.

The Cape May, Delaware Bay & Sewell's Point Railroad operated 20 miles of track. The road connected Cape May and Cape May Point and controlled and operated the Ocean Street Passenger Railway, a line 1.5 miles long in Cape May. A receiver was appointed for the company in Sep-

tember, 1916. Service was discontinued in October, 1916. The property was sold on April 2, 1917. Efforts to have the steam railroads in the same territory take over and operate the electric railway failed.

WHAT THE BRISTOL COMPANY SUFFERED

An account from one of the daily papers in regard to the trials of the Bristol (Tenn.) Traction Company follows:

"The Bristol Traction Company, following the recent sale of its properties under foreclosure, has suspended service. Fred Dulaney, the manager, stated that this action was due to the fact that it had been impossible to make the lines pay expenses in recent years. The extensive development in automobile and motor truck service has had the effect of withdrawing patronage from the line until the management declared it would not be justified in undertaking further service to the public until reorganization is effected. It is the purpose of the present owners to yield to the temptation to take the present high prices of junk for the rails and equipment."

SUSPENSIONS, SALES AND SACRIFICES ELSEWHERE

The Sacramento Valley Electric Railway, Dixon, Cal., an 11-mile line operated under lease by the Oakland, Antioch & Eastern Railroad, is to be abandoned and junked. Stockholders met in Woodland recently and decided upon this procedure. Homer G. Brown, president of the company, proposed that an effort be made to raise the amount of the road's indebtedness among the stockholders. According to the Willow Transcript those who favored this plan were in the minority "and the plan of Attorney Walter Shelton, representing the creditors, of junking the road met with instant favor."

The Southern Traction Company, Inc., Bowling Green, Ky., contemplates advertising for sale "for a reasonable price" 5 miles of 60-lb. T standard rails and all equipment.

The property and franchises of the Catskill (N. Y.) Traction Company were sold under mortgage foreclosure at Catskill on Oct. 24 to Joseph Joseph & Brothers Company, New York, junk dealers, for \$27,900. The company has been operating 5 miles of electric railway between Catskill and Leeds.

Operation of the Amarillo (Tex.) Street Railway has been suspended, following instructions from G. G. Brownell, who purchased the property at public auction six weeks ago. Eleven of the company's cars were ordered placed in the car-house under guard, motormen were discharged and no cars have been operated since the order went into effect. The Amarillo Street Railway has been in the hands of Guy A. Faller, Amarillo, as federal receiver since 1916.

Electric Railway Statistics

Comparison of Returns for July, 1917, with Those for 1916 Shows that Additional Revenue Is Needed

A comparison of electric railway statistics for July, 1917, with figures for the corresponding month of 1916, made by the information bureau of the American Electric Railway Association, indicates a continued rise in operating expenses. This condition is noticeable throughout the country and particularly in the East.

Data for July, 1917, representing 8486 miles of line of electric railways scattered throughout the country, figured on the per mile of line basis, indicate an increase in operating revenues of 4.86 per cent and in operating expenses of 10.61 per cent, and a decrease in net earnings of 3.85 per cent. Data representing approximately 70 per cent of the above-stated mileage indicate an increase in the amount of taxes paid of 7.55 per cent and a decrease in operating income of 6.81 per cent.

The returns from the city and interurban electric railways, as shown in detail in the accompanying table, 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.

Returns for the Southern group apparently show a slight degree of improvement over the corresponding period of the previous year, while returns for the Eastern and Western are unsatisfactory. Data for the former district, representing 5577 miles of line, indicate an increase in operating revenues of 5.25 per cent and in operating expenses of 12.22 per cent, and a decrease in net earnings of 5.81 per cent. Returns representing approximately 70 per cent of the mileage show an increase in the amount of taxes paid of 8.99 per cent and a decrease in operating income to the extent of 11.09 per cent.

Returns for the Western group, representing 1905 miles of line, show an increase in operating revenues of 5.40 per cent and in operating expenses of 9.34 per cent, and a decrease in net earnings of 0.81 per cent. Returns representing approximately 95 per cent of the mileage indicate an increase in the amount of taxes paid of 5.80 per cent and a decrease in net income of 2.56 per cent.

The operating ratio for the country as a whole increased from 60.93 in 1916 to 64.21 in 1917. The operating ratio of the Eastern District increased from 61.36 in 1916 to 65.42 in 1917.

COMPARISON OF REVENUES AND EXPENSES OF ELECTRIC RAILWAYS FOR JULY, 1917 AND 1916

ACCOUNT	UNITED STATES				EASTERN DISTRICT				SOUTHERN DISTRICT				WESTERN DISTRICT			
	Amount, July, 1917	Per Mile of Line		Increase Over 1916, per Cent	Amount, July, 1917	Per Mile of Line		Increase Over 1916, per Cent	Amount, July, 1917	Per Mile of Line		Increase Over 1916, per Cent	Amount, July, 1917	Per Mile of Line		Increase Over 1916, per Cent
		1917	1916			1917	1916			1917	1916			1917	1916	
Operating revenues	\$15,982,202	\$1,883	\$1,794	4.96	\$10,722,993	\$1,923	\$1,827	5.25	\$1,430,584	\$1,424	\$1,386	2.74	\$3,828,715	\$2,009	\$1,906	5.40
Operating expenses	10,261,030	1,209	1,093	10.61	7,013,869	1,258	1,121	12.22	814,936	811	790	2.66	2,432,225	1,276	1,167	9.34
Net earnings	5,721,262	674	701	†3.85	3,709,124	665	706	†5.81	615,648	613	596	2.85	1,396,490	733	739	†0.81
Operating ratio, per cent.	1917, 64.21; 1916, 60.93				1917, 65.42; 1916, 61.36				1917, 56.95; 1916, 57.00				1917, 63.51; 1916, 61.23			
Average number of miles of line represented.	1917, 8,486; 1916, 8,374				1917, 5,577; 1916, 5,544				1917, 1,004; 1916, 956				1917, 1,905; 1916, 1,874			

COMPANIES REPORTING TAXES

Operating revenues	\$10,476,642	\$1,747	\$1,676	4.24	\$5,925,188	\$1,616	\$1,567	3.13	\$773,114	\$1,526	\$1,441	5.90	\$3,778,340	\$2,069	\$1,964	5.35
Operating expenses	6,759,361	1,127	1,027	9.74	3,921,896	1,070	973	9.97	439,373	867	804	7.84	2,398,092	1,313	1,200	9.42
Net earnings	3,717,281	620	649	†4.47	2,003,292	546	594	†8.08	333,741	659	637	3.45	1,380,248	756	764	†1.05
Taxes	681,264	114	106	7.55	354,065	97	89	8.99	60,904	120	111	8.11	266,295	146	138	5.80
Operating income	3,036,017	506	543	†6.81	1,649,227	449	505	†11.09	272,837	539	526	2.47	1,113,953	610	626	†2.56
Operating ratio, per cent.	1917, 64.51; 1916, 61.28				1917, 66.21; 1916, 62.09				1917, 56.82; 1916, 55.79				1917, 63.46; 1916, 61.10			
Average number of miles of line represented.	1917, 5,999; 1916, 5,936				1917, 3,666; 1916, 3,633				1917, 507; 1916, 507				1917, 1,826; 1916, 1,796			

†Decrease.

Louisville (Ky.) Railway.—Amended articles of incorporation have been filed at Louisville, Ky., by the Louisville Railway, increasing its preferred stock \$1,000,000 and its common stock to \$3,000,000, making the total issue \$3,500,000 of 5 per cent cumulative preferred stock and \$8,456,500 of common. This increase is for the purpose of carrying out the plan to dissolve the Louisville Traction Company and exchange its shares for shares of the Louisville Railway, as outlined previously in the ELECTRIC RAILWAY JOURNAL. The traction company has received assents of much more than two-thirds of the shareholders to the plan and it will be carried out at a stockholders' meeting to be held in Jersey City about Nov. 15. The plan provides for the exchange of the preferred on a basis of share for share and the common stock on a basis of 100 shares of the Louisville Traction Company for seventy shares of the Louisville Railway stock.

New England Investment & Security Company, Springfield, Mass.—The trustees of the New England Investment & Security Company having approved the plan to exchange first preferred stock of the Worcester Consolidated Street Railway for preferred shares of the New England Investment & Security Company share for share, the plan has been declared operative. The Merchants' National Bank of Boston has received from the trustees the amount of first preferred stock of the Worcester Consolidated Street Railway necessary to carry out the exchange. An item in regard to the proposed exchange of securities was published in the issue of the ELECTRIC RAILWAY JOURNAL of April 28, page 799.

New York, New Haven & Hartford Railroad, New Haven, Conn.—The stockholders of the New York, New Haven & Hartford Railroad at a special meeting in New Haven on Oct. 24 authorized the directors to issue 450,000 shares of 7 per cent preferred stock at par. The issue proposed would take up floating indebtedness now represented by notes to the amount of \$45,000,000, for which collateral of \$96,512,516 book value has been pledged.

San Francisco-Oakland Terminal Railways, Oakland, Cal.—Funds have been deposited by the San Francisco-Oakland Terminal Railways with the National Park Bank, New York, N. Y., and the Wells-Fargo Nevada National Bank, San Francisco, Cal., to meet the coupons due on Jan. 7, 1917, on the first consolidated 6 per cent bonds of the Oakland Transit Company.

Washington, Baltimore & Annapolis Electric Railroad, Baltimore, Md.—The Washington, Baltimore & Annapolis Electric Railroad has declared an initial dividend of 3 per cent on the common stock, payable on Oct. 31 to stock of record of Oct. 25.

Electric Railway Monthly Earnings

ATLANTIC SHORE RAILWAY, SANFORD, ME.						
Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income	
1m., Sept., '17	\$18,378	\$12,044	\$6,334	\$431	\$5,903	
1 " " '16	36,528	24,800	11,728	664	11,064	
CITIES SERVICE COMPANY, NEW YORK, N. Y.						
1m., Sept., '17	\$1,594,961	\$28,588	\$1,566,373	\$227	\$1,566,146	
1 " " '16	722,054	21,531	700,523	340	700,183	
12 " " '17	18,169,849	327,646	17,842,203	3,151	17,839,052	
12 " " '16	7,522,547	226,667	7,295,880	380,510	6,915,370	
KANSAS CITY (MO.) RAILWAYS						
1m., Sept., '17	\$684,799	*\$513,268	\$171,531	\$130,105	†\$39,646	
1 " " '16	667,388	*440,364	227,024	130,451	†41,845	
3 " " '17	1,895,368	*1,540,663	354,700	394,733	†45,357	
3 " " '16	1,986,015	*1,365,744	620,271	386,570	†110,215	
LEHIGH VALLEY TRANSIT COMPANY, ALLENTOWN, PA.						
1m., Sept., '17	\$269,787	*\$176,138	\$93,649	\$50,943	†\$54,729	
1 " " '16	234,154	*139,799	94,355	60,584	†53,150	
10 " " '17	2,369,920	*1,595,944	773,976	509,570	†\$77,972	
10 " " '16	2,046,128	*1,244,685	801,443	525,553	†\$89,652	
PHILADELPHIA (PA.) RAPID TRANSIT COMPANY						
1m., Sept., '17	\$2,419,584	\$1,389,338	\$1,030,246	\$811,165	†\$219,081	
1 " " '16	2,226,059	1,210,784	1,015,275	814,410	200,864	
3 " " '17	7,293,659	4,223,780	3,069,879	2,434,936	634,943	
3 " " '16	6,590,825	3,655,733	2,935,092	2,444,689	490,403	
REPUBLIC RAILWAY & LIGHT COMPANY, YOUNGSTOWN, OHIO						
1m., Sept., '17	\$426,250	*\$280,674	\$145,576	\$87,100	†\$63,948	
1 " " '16	334,443	*183,689	150,754	69,022	†62,177	
12 " " '17	4,536,528	*2,944,934	1,591,594	957,608	†683,362	
12 " " '16	3,817,024	*2,220,241	1,596,783	791,164	†\$80,721	

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

Traffic and Transportation

War Fare Tax Explained

Detroit (Mich.) United Railway Outlines What the War Tax on Interurban Fares and on Freight Will Mean to Its Customers

The Detroit (Mich.) United Railway in *Electric Railway Service* for Oct. 19, published by it, made an announcement in regard to the war tax on interurban fares and freight which will go into effect on Nov. 1. The company said in part:

"It is our duty to announce to the customers of the Detroit United Lines that from and after Nov. 1 a war tax will be collected on certain interurban passenger fares and upon all freight shipments.

"These taxes are imposed under orders of the United States government by reason of certain provisions of the federal revenue law recently passed by Congress and signed by President Wilson.

"Under the act the taxes mentioned are to be paid by the person paying for the service rendered and remittance is made by the transportation company to the government.

WAR TAXES IN BRIEF FORM

"Putting them in brief form the war taxes concerning public utilities, and as affecting our customers, are as follows:

"1. Three per cent of the amount paid for the transportation of freight.

"2. Eight per cent of the amount paid for passenger fares in excess of 35 cents.

"We solicit your earnest co-operation by prompt payment on demand of these war taxes to the end that business, both freight and passenger, may be expedited. These are taxes that you must pay; we are only the collecting agency for the government. We ourselves have war taxes to pay.

"To the freight shippers we would say that the war tax on freight must be paid by whoever pays the shipping charges.

"In the matter of passenger fares nothing will be gained through storing up paid fares in advance of Nov. 1. The government has protected itself against this by ordering the collection of the tax on such tickets when presented.

"On all tickets sold at our several waiting rooms on and after Nov. 1 our agents will collect the proper tax at the time of the sale, where, of course, the fare is in excess of 35 cents. Similarly where cash fare is paid on the cars the conductor will at the same time collect the proper amount of war tax.

"This extra charge upon passengers will not be burdensome to customers of the Detroit United Lines owing to our exceedingly low rates of interurban fares. In no case for a one-way ride will the additional cost be 10 cents, as indicated by the following table of fares and taxes:

From Detroit To	Passenger Fare	War Tax
Toledo	\$.80	\$.06
Monroe .....	.50	.04
Jackson	1.00	.08
Ann Arbor .....	.45	.04
Port Huron .....	.90	.07
Marine City .....	.65	.05
Flint	1.00	.08
Oxford .....	.55	.04

"You will note from this that riders between Detroit and such points as Pontiac, Birmingham, Wayne, Ypsilanti, Northville and Mount Clemens do not come under the scope of the act.

"While the table indicates the tax rate from Detroit to other points it should be remembered that the rate applies from any point on the line to any other point where the fare paid is more than 35 cents.

"Do not argue with the conductor or the agent but pay promptly and keep out of serious trouble with the federal authorities."

Trenton Fare Case Appealed

Six-for-a-Quarter Decision Carried by the Trenton & Mercer County Traction Corporation to the Court of Errors and Appeals

The Trenton & Mercer County Traction Corporation, Trenton, N. J., appealed on Oct. 22 to the Court of Errors and Appeals from the order of the Board of Public Utility Commissioners, which denied permission to the company to abolish the six-for-a-quarter tickets. In its brief the company sets forth fifty-one contentions why the decision against it is not in accordance with the law, and why the general public should be compelled to pay a straight fare of 5 cents.

Among other things the company contends that the utility board in fixing the value of the property of the company at \$3,212,000 placed the value at a sum "far below the reasonable and fair value of said property devoted to public service and actually employed in the transportation of passengers." This argument is in line with the contention offered at the time the matter was before the board and later before the Supreme Court in the appeal for a writ of certiorari to review the action of the utility commission.

The company contends that the Board of Public Utility Commissioners was without jurisdiction in the matter; that the change in fare would not actually amount to an increase, and that the commission did not allow for a fair return on the outstanding stock. It is further maintained that the inhabitants of Trenton had no authority to pass the ordinance of Oct. 22, 1909, providing for the sale of strip tickets, and that because the company did not enter into any agreement to that effect the city cannot compel the railway to be bound by the provisions of that law. On the other hand, it is contended that even if an agreement had been entered into, the company would not be required to adhere to the provisions of it.

The decision of the board was rendered on Dec. 13, 1915. A few months later an appeal for a writ of certiorari was made to the Supreme Court. The application was refused. The matter is now before the highest State tribunal.

Increased Rates for California Road

Railroad Commission Authorizes Well-Managed 43-Mile Road to Increase Passenger and Freight Charges

The Railroad Commission of California has authorized the Petaluma & Santa Rosa Railway, operating 43 miles of electric railway, to make certain increases in its passenger fares and freight rates.

OPERATING EXPENSES AND INTEREST BARELY MADE

The testimony and exhibits introduced at the several hearings held before Commissioner Harvey D. Loveland show that in 1916 the company barely made operating expenses and interest on its bonds and floating debts. The bond issues as of Dec. 31, 1916, amounted to \$832,000. Of this amount \$250,000 represented second mortgage bonds, which became due on April 1, 1915, and although the company has been able to meet the interest on these bonds out of its earnings, it has not found it possible to reissue them. The trust deed covering the first mortgage bonds provides for a sinking fund to be set aside each year, but the railroad has found it impossible since 1914 to meet the obligations of this trust deed. It was also shown that at the time operations were commenced in 1904 it cost \$18,864 for labor, commissary and fuel to operate one boat, while for the year 1914 the cost was \$25,908 and for the year 1917 estimated at \$30,489, or an increase of 61 per cent in the thirteen-year period. All other items of operating expense have increased in proportion.

FARE TO OUTLYING POINTS MADE TEN CENTS

Authority to change passenger fare was granted so that the minimum charge between any two points outside the limits of Petaluma, Sebastopol and Santa Rosa will be 10 cents instead of 5 cents; that the sale of \$5 worth of transportation for \$4.25 will be entirely discontinued and that

the scrip book representing \$10 worth of transportation heretofore sold for \$7.50 will be increased to \$9.

The proposed increases in freight rates are nominal except between Petaluma and San Francisco, where the company sought authority to bring about changes which would increase its revenue by some \$20,000. The commission decided that the total increase asked between Petaluma and San Francisco has not been justified and authorized a class scale making material reductions over those proposed.

The income of the road, from both freight and passengers, has steadily declined. In 1914 the gross passenger revenue was \$99,349; in 1916, \$78,614, and for 1917 it is estimated at \$74,710. The gross freight revenue in 1914 was \$196,302; in 1916, \$180,899, and for 1917 it is estimated at \$189,298. The net income of the road in 1913 was \$53,167, while in 1916 it was \$10,916.

The commission says that the company appears to have been carefully and efficiently managed. The postponement of repairs to roadbed, steamers and car equipment are cited as the reasons for the prevention of an actual operating deficit during the last two years.

I. T. S. Applies for Mileage Basis Fares

The Illinois Traction System, Peoria, Ill., has filed with the Interstate Commerce Commission and the Illinois Public Utilities Commission application for permission to submit proofs of tariffs for the purpose of substituting for its present system of zone fares a system of passenger fares based on mileage. Two cents per mile will be the basis for the proposed new ticket fares, with 3 cents per mile where the passenger boarding the train at an open agency station pays cash fare on the train. Passengers boarding the train at a non-agency station or stop will receive the benefit of the 2-cents-per-mile ticket fare.

In its application the company points to the fact that the change in method of fare collection will remove many discriminations which the zone system set up. For example, under the 5-cent zone system passengers riding between points located in two-fare zones are charged a 10-cent fare regardless of distance traveled, while passengers riding through one full zone are charged only 5 cents and thus receive the benefit of a longer ride for less money. It is also pointed out that while in some isolated cases the new method of collection will increase fares, in most instances it will mean a decrease of fare for the passengers.

In asking permission to charge a 3-cent cash train fare the company states that in addition to encouraging the purchase of tickets at open ticket offices this method will greatly relieve conductors of the detail of collecting the government war tax on all fares above 35 cents which are collected on trains.

Another Pennsylvania Fare Increase

The Pittsburgh & Beaver Street Railway, operating between Conway and Leetsdale, Pa., put 6-cent fares into effect on Oct. 12, after advertising the change for more than three months. The company is, however, selling tickets at the rate of seventeen for \$1 at two of the banks in its territory. It previously had in effect a ticket that sold at the rate of twenty-one for \$1, and as long as these tickets are presented by the original purchasers the conductors will accept them, provided the payment of 1 cent in cash is also made.

There are three zones. No through fares are collected. Each collection is made and accounted for the same as a 5-cent fare collection would be handled. Spaces on the trip sheet provide for accounting for fares collected in the three 6-cent zones separate from the one 5-cent zone which the cars of the company traverse while on the tracks of the Beaver Valley Traction Company.

While the change was the subject of considerable discussion in the territory through which the company operates, no formal complaint was filed until Oct. 11, the day before the 6-cent fare went into effect. The solicitor of the borough of Baden explained that this was done, not because the need of a 6-cent fare was not recognized, but because of the proposed change of schedule. In Ambridge, Leetsdale and Baden opposition to proposed scheduled changes, reducing the service from twenty to thirty minutes, has developed.

Skip Stop Explained

Toledo Railways & Light Company Tells What It Is Trying to Accomplish Under the New System

A resolution has been introduced in the City Council of Toledo, Ohio, asking that the Toledo Railways & Light Company be restrained from making further reduction in the service. This refers to the lines on which the skip-stop plan has been adopted and others where the company intends to introduce it at an early date. The resolution, which refers more to the service than to the skip-stop plan, declares that several cars have been taken off the lines where the plan is now in operation and that the patrons are complaining of the service. It was referred to the committee on railways and telegraphs. In regard to the matter F. R. Coates, president of the company, issued the following statement:

"The skip-stop policy was adopted to better the service on our railway system. This same policy has been in force in Cleveland for a number of years with excellent results. Detroit for the last year has been gradually adopting the skip-stop system and we are informed that the same is satisfactory to the patrons of the company.

"The Toledo Railways & Light Company started this system in order to get the car riders to their destination more rapidly. On Cherry Street, where the skip stop was first put into effect, those using the cars are now familiar with the system and are satisfied with the results obtained, as we understand it.

"Summit and Broadway was the second line to adopt the skip stop. We have found since the use of the system there that it could be improved. These improvements will be made at once. Time has been saved on this line. A slight reduction in the number of cars was made, principally owing to the fact that the length of the line has been reduced by cutting out the run between the LaSalle Street switch and the Casino, all Summit and Broadway cars now turning at the LaSalle Street 'Y.'

"On the Belt lines we find that, owing to weather conditions, service is not being rendered as it should be. This service we are going to improve immediately.

"I have made the statement that cars will stop at all streets, in one direction at least. We are endeavoring to carry out this idea to the letter as nearly as we can, but in a number of instances streets are not continuous and equally spaced. In such cases we will observe this principle as nearly as possible.

"We sincerely trust that the public will afford us an opportunity to demonstrate that we want to give them the best service. We should like to have from our patrons any suggestions that will tend toward the improvement of the system. These we prefer to have sent to us in the form of a letter. We will be only too glad to consider such communications and will, if possible, try to meet the wishes so expressed."

Cantonment Lines Congested

Relief in Sight for Electric Railways Serving Camps Under the New Dismissal Regulations

Greatly increased demand on the facilities of the Louisville (Ky.) Railway to Camp Zachary Taylor, the National Army cantonment at Louisville, has been created by a new system of furloughs for the men in training. Until the new order went into effect furloughs were restricted to Wednesdays, Saturdays and Sundays, and at no time were more than half of the men permitted to leave the camp confines. On such days the additional fares of the line to the camp were increased by about 12,000 and there was difficulty in handling the rush. Under the new rules about three-fourths of the entire command will be permitted to leave at once and the hours are extended.

The problem of congestion in handling the traffic from Des Moines to Camp Dodge has reached a partial solution. Since the camp was opened six weeks ago all soldiers have received city leave at one time, three days a week. As a result on the three days the Inter Urban Railway was over-

whelmed with traffic, whereas on the remaining days the cars were running half filled. The various divisions of the conscript army will now be granted city leave on different days in the week so that the bulk of the traffic will be distributed more evenly over the full seven days of the week.

I. C. C. Rate Hearing Nov. 5

The Interstate Commerce Commission notified the Eastern railroads on Oct. 22 that the reopening of the 15 per cent rate advance case should not be deferred and on its own initiative set the first hearing for Nov. 5. The counsel for the Eastern roads had suggested to the commission that hearings be held sixty days hence, to give the railroads an opportunity to present statements of their earnings for September and October, the returns of which had fallen off greatly from those of preceding months. The position of the commission is shown in a letter sent to George Stuart Patterson, of counsel for the carriers, by George B. McGinty, secretary of the commission. In this letter Mr. McGinty said in part:

"The gist of your suggestion of Oct. 17 is that the situation above referred to has now arisen; it is suggested that operating revenues do not now adequately overcome mounting costs. If this be so, the commission's stated purpose of meeting that situation will not have been attained by adopting your suggestion of a hearing sixty or ninety days hence. The commission is emphatically of the opinion that the evidence necessary to establish the full truth should be presented, without delay, in order that the carriers may be maintained in a position to do their full war duty."

One-Man Cars in Rome.—The Rome Railway & Light Company, Rome, Ga., is putting on one-man cars. H. J. Arnold, superintendent of the company, has explained to the public that the change is dictated by the need for economy.

Mayor Signs Fare Protest Rescution.—Mayor Frank A. Hagarty of Hartford, Conn., on Oct. 22 signed the resolution adopted at the meeting of the Common Council on Oct. 15, calling upon Corporation Counsel Francis W. Cole to arrange with the Public Utilities Commission for a hearing on the 6-cent fare of the Connecticut Company.

Jitneys on Sufferance.—The Public Service Commission of Pennsylvania has granted certificates to fourteen jitney operators to operate between Sharon and Farrell for three years, with leave to apply then for a longer period unless the Mahoning & Shenango Railway & Light Company shall by that time construct a double track railway between the two towns. This is the first time such provision has been inserted in a certificate granted by the commission.

Worcester Awaits Further One-Man Car Experience.—Henry C. Page, general manager of the Worcester (Mass.) Consolidated Street Railway, is reported to have stated that the officials of that company have discussed the matter of the use of one-man cars on some of the Worcester lines, but that the company is waiting to learn the results obtained by the Bay State Street Railway with the one-man cars which it has been authorized by the Public Service Commission to install on certain lines of that system.

Skip Stop Extended to All Buffalo Lines.—Officials of the International Railway, Buffalo, N. Y., are enthusiastic over the successful operation of the skip stop, which has now been extended to every line in the city of Buffalo and on the Kenmore-Tonawanda interurban line through the village of Kenmore. The company is now considering several rerouting plans recently recommended by Charles R. Barnes, electric railway inspector of the Public Service Commission for the Second District, in his report on local traffic conditions.

Matrons Installed by Government in Railway Stations.—As an accommodation to the friends and relatives who visit soldiers quartered at Camp Zachary Taylor, Louisville, Ky., the government has installed matrons in the interurban stations of the Louisville Railway and the Louisville & Southern Indiana Traction Company. Signs have been erected in the stations telling where the matrons may

be found, and conductors have been instructed to refer passengers to these matrons for information as to how to get to the camp, where to lodge, etc.

Improvements in Service Ordered.—The Public Service Commission of West Virginia has ordered the Wheeling Traction Company to improve its service by adding more equipment or by improving that now in use. The complaint in which the decision was rendered set forth that particularly during the rush hours the service was inadequate on the north and south routes. The commission held that it was possible for the company to provide adequate service by adding small cars or supplementing the small cars now in use with large cars on these routes.

Appearances Noted at Seattle Fare Review Hearing.—Walter F. Meier, assistant corporation counsel of Seattle, Wash., will represent the city at the hearing on the writ of review granted by the Thurston County Superior Court at Olympia with respect to the order of the State Public Service Commission eliminating 4-cent tickets on the railway lines of the Puget Sound Traction, Light & Power Company in Seattle. W. V. Tanner, attorney general, will appear for the commission at the hearing. The original ruling of the commission was reviewed in the *ELECTRIC RAILWAY JOURNAL* for Sept. 22, page 552.

Labor Shortage at Buffalo.—Considerable difficulty is being encountered by the International Railway, Buffalo, N. Y., in securing sufficient platform employees to keep all of its runs in operation on its Buffalo, Niagara Falls and Lockport lines. A large number of employees have been called for service in the new National Army and others have enlisted voluntarily in various branches of the government military service. E. J. Dickson, vice-president of the company, in a recent interview, said that despite the shortage of help no efforts have been made to secure women trainmen. Women are being employed, however, in the company's shops as car cleaners, etc.

Car-Heating Regulation Modified to Save Coal.—An order in the interests of conserving the coal supply as it is affected by car-heating has been issued by the Public Service Commission of Massachusetts, under the signature of Chairman Macleod. In 1907 the Railroad Commission, predecessors of the present board, issued an order to the effect that between Oct. 15 and April 15, yearly, when the outside temperature is less than 40 deg. Fahr., the temperature of box cars on street railways must be maintained at not less than 40 nor more than 60 deg. Fahr., except during emergencies. The new order suspends all car-heating, unless necessary in the judgment of operating company, from Oct. 15 to Nov. 30, inclusive, during the current year.

Fare Increase Refused.—The Mayor and Commissioners of Laurel, Miss., have rejected the petition of the Laurel Light & Railway Company to increase its city fare to 6 cents. The request to the city grew out of the strike of trainmen of the company, reviewed briefly in the *ELECTRIC RAILWAY JOURNAL* of Sept. 15, page 456. The men received a small increase under the settlement terms and were to get a further advance if the appeal of the company for an increase in fares was allowed. A local Laurel paper says: "The action of the commissioners was taken on the strength of public opinion, which seems strongly opposed to an advance in transportation rates, and no attempt was made to pass on the merits, financial or otherwise, of the proposition embodied in the petition."

Jitney Bond Arranged.—The City Council of Portland, Ore., has advised the Portland Trackless Car Company, Stephen J. Carver, principal owner, that the company will be allowed to operate in that city under its franchise, providing a cash bond of \$10,000 and a personal bond of \$25,000 are filed in lieu of the \$35,000 in surety bonds required. Mr. Carver recently notified the city that he was unable to obtain a surety bond, but offered personal bonds with himself and wife and J. L. Sprinkle as bondsmen. Investigation showed that the parties had resources many times in excess of the amount of the bonds, but that Mr. Sprinkle resided in Montana, and in case suit was brought against the concern it might be difficult to secure service. The company has accepted the offer of the city, and cars will begin operation as soon as bonds have been formally approved by the Mayor.

Personal Mention

F. A. Gallagher, superintendent of the Springfield (Mo.) Traction Company, has resigned.

James E. Quan, formerly chairman of the Public Utilities Commission of Illinois, has been elected president of the Greenwich (Conn.) National Bank.

L. A. Ramsey, secretary of the City Light & Water Company, Amarillo, Tex., has been made secretary of the Bartlesville (Okla.) Inter-Urban Railway.

S. R. Dunbar, purchasing agent of the Union Traction Company of Indiana, Anderson, has been appointed editor of *Safety*, a monthly publication issued by that company.

Edwin Wagner, secretary of the Bartlesville (Okla.) Inter-Urban Railway, has been made assistant secretary and treasurer of the Dominion Gas Company in the Buffalo office.

Arthur H. Sooy has resigned as superintendent of the Bridgeton & Millville Traction Company, Bridgeton, N. J., to enter the motor car field, becoming interested in the Ford and Buick agencies at Bridgeton.

E. D. Chassell, a member of the Iowa Railroad Commissioner, has resigned to accept the position of secretary-treasurer of the Farm Mortgage Bankers' Association of America with headquarters in Chicago.

O. M. Hartshorn, heretofore secretary of the Pueblo Gas & Fuel Company, Pueblo, Col., has been appointed successor to L. A. Ramsey as secretary of the City Light & Water Company, Amarillo, Tex.

Charles A. Baldwin has retired as superintendent of transportation of the Union Traction Company of Indiana, Anderson, Ind., and will do special work for the company. He has been in the service of the Union Traction Company for fifteen years.

William J. Faulkner, superintendent of the Arkansas Valley Interurban Railway, Wichita, Kan., has resigned to take a position with the O. A. Boyle Commission Company. Mr. Faulkner has been superintendent of the railway company since its organization about ten years ago.

J. H. McClure, general manager of the Citizens' Traction Company, Oil City, Pa., has been elected a director and vice-president in charge of operation of the Youngstown & Suburban Railway, Youngstown, Ohio. These new duties will not conflict with his management of the Oil City property.

Edward J. Cooney, executive assistant of the Rhode Island Company, Providence, R. I., in charge of publicity, and editor of that company's weekly publication, *The Trollier*, has been enlisted in the food administration movement to spread the doctrine of conservation among the public service employees.

Crad Brazl, who has been associated for five years with the auditing department of the Arkansas Valley Railway, Light & Power Company, Pueblo, Col., has been appointed auditor of the Ottumwa Railway & Light Company, Ottumwa, Iowa, succeeding George F. Storms, resigned. Both companies are operated by H. M. Byllesby & Company.

Walter N. Kernan, vice-president and general counsel of the New York State Railways, New York, N. Y., has resigned to take up the work of the Knights of Columbus committee on war activities in Europe. Mr. Kernan will be in complete charge of the foreign work of that order and will have a large staff of assistants and field secretaries who will have charge of the recreation work in camps at the front.

E. D. Smith, chief engineer of the United Railways, St. Louis, Mo., has been appointed a member of the City Plan Commission by the Police Service Commission of the State. The former commission is composed of engineers and architects who are responsible for the planning of the city improvements. It has before it now the work of widening a portion of Washington Avenue which is to cost more than \$500,000.

R. Harold Smith, formerly engineer of the Ogden, Logan & Idaho Railway, Ogden, Utah, and more recently general manager of the Goldsboro Electric Railway, Goldsboro, N. C., has been made superintendent of the Bridgeton & Millville Traction Company, Bridgeton, N. J. This road is a subsidiary of the American Railways. It includes the city lines in Bridgeton and the two suburban lines to Millville and Port Norris, N. J.

Maurice E. McCormick, assistant general manager of the Bangor Railway & Electric Company, Bangor, Me., has resigned to accept a similar position with the New Brunswick Power Company at St. John, N. B. The latter company controls the railway, lighting, power and gas system in the city of St. John, which has a population of approximately 60,000, and surrounding villages. Mr. McCormick has been employed by the Bangor Railway & Electric Company for the last twenty years. He worked up from service in the carhouses through various positions to that of assistant general manager.

Joseph W. Alsop has been appointed to fill the vacancy on the Public Utilities Commission of Connecticut made by the death of John H. Hale. Mr. Alsop is at present a member of the Connecticut State Council of Defense and of the State Committee on Food Supply. Mr. Alsop was born in Middletown, Conn., in 1876. He received his education in the University of Berlin, Germany, and in the Sheffield Scientific School of Yale University. He has served two consecutive terms in the State Senate and was chairman of the Senate committee on roads, bridges and rivers and a member of the committee on claims.

E. E. Armstrong has succeeded D. G. Brandt as general superintendent of the Bartlesville (Okla.) Inter-Urban Railway and the Bartlesville Gas & Oil Company. Mr. Armstrong's past connections have been entirely with H. L. Doherty & Company, which operates those properties. After he was graduated from the electrical engineering department of the University of Missouri in 1913 he entered the Doherty organization through a connection with the Denver Gas & Electric Light Company, Denver, Col. He remained in Denver until the spring of 1915, when he was transferred to the Toledo Railways & Light Company, Toledo, Ohio. The following year he was sent to the New York office and remained there until his recent appointment.

Obituary

S. J. Rosamond, formerly superintendent of the Water, Light & Transit Company, Carrollton, Mo., died recently of heart failure.

Robert D. Miller, assistant treasurer of the Public Service Corporation of New Jersey, Newark, died on Oct. 23 at his home in Elizabeth, N. J. Mr. Miller was in his seventieth year.

R. K. Warren, who was for several years secretary and treasurer of the Mobile (Ala.) Street Railroad and president of the Spring Hill Railroad, died recently at the home of his mother in Independence, Mo.

Percy L. Cobb, an electrical engineer associated for the last year with the Interstate Commerce Commission, Division of Valuation of Railroads, died at Portland, Me., on Oct. 11, of typhoid fever. Mr. Cobb was a graduate of Stevens Institute of Technology. He was at one time connected both with the New York, New Haven & Hartford and Pennsylvania Railroads as instructing electrical engineer.

John Howard Hale, a member of the Connecticut Public Utilities Commission, died at his home at Glastonbury, Conn., on Oct. 12. Mr. Hale was one of the foremost horticulturists and peach growers in the United States and was a former president of the American Pomological Society. He was a member of the Connecticut General Assembly in 1893 and 1894.

Guy E. Mitchell, general manager of the municipal gas and electric lighting department of Westfield, Mass., died in that city on Oct. 18. Mr. Mitchell was formerly engaged in consulting work in New York City and in electric railway development in the Berkshire district, associated with the late R. D. Gillett of Westfield. He was a native of Lowell, Mass., and a graduate of the Massachusetts Institute of Technology.

Construction News

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

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

RECENT INCORPORATIONS

Frankfort & Shelbyville Electric Traction Company, Shelbyville, Ky.—Incorporated to operate electric railways in the State of Kentucky. Capital stock, \$750,000. Incorporators: F. D. Buck, M. L. Horthy and K. E. Longfield, Wilmington, Del. [Oct. 13, '17.]

***Manitoba & Ontario Railway, Brereton Station, Man.**—Application will be made to the Parliament of Canada at its present session for an act to incorporate the Manitoba & Ontario Railway to construct and operate a line from Brereton Station, Man., to a point on the English River, Ontario. H. A. Stewart, Brockville, solicitor for the applicants.

***Cascade Scenic Railway, Winnipeg, Man.**—Incorporated to construct a scenic railway in Banff. Headquarters, Winnipeg. The provisional directors are as follows: T. R. Decan, ex-Mayor of Winnipeg; H. B. Lyall, E. J. Burleigh, J. A. McCullough and Edward Anderson.

FRANCHISES

Dayton, Ohio.—The City Railway has received a franchise from the County Commissioners to construct an extension of its Kammer Avenue division from the present terminus to Hoover Avenue in the West End.

St. Catharines, Ont.—A by-law has been passed by the City Council authorizing the Niagara, St. Catharines & Toronto Railway to construct an extension of its local line in St. Catharines.

Chester, Pa.—The Southern Pennsylvania Traction Company has received permission from the City Council to relocate its track on Edgmont Avenue.

Philadelphia, Pa.—The committee on street railways of the City Councils of Philadelphia voted on Oct. 18 that numerous errors in the wording and arrangement of the bill providing for the construction of a new crosstown line on Fifty-sixth Street by the Philadelphia Rapid Transit Company would have to be removed before it could safely be sent to the Councils for passage. A sub-committee was named to confer with City Solicitor Connelly and Director Twining in order to put the measure in proper shape.

Seattle, Wash.—Mayor H. C. Gill has approved the bill recently passed by the City Council adopting a plan for an extension of the city car line by the building of an elevated railway on Washington Street, Railroad Avenue, Whatcom Avenue and Spokane Street, from First Avenue South to the West Waterway.

TRACK AND ROADWAY

Clear Lake Suspended Monorail Railroad, Hopland, Cal.—The directors of the Clear Lake Suspended Monorail Railroad, which proposes to build a railroad from Hopland to Lakeport, have filed an amended application for permission to build before the Railroad Commission of California. Permission is asked to issue \$500,000 in bonds and \$150,000 in stock to cover the contract price to build the road, and for an additional sum to ratify a previous issue of stock, and \$25,000 stock for purchase of a terminal site in Lakeport. The commission is also asked to approve the new survey of the route, made in July, which traverses the mountain range between Hopland and Lakeport, 22½ miles, at a maximum grade of 3.3 per cent on the Lake County side, where the heavier haul will come, and 4½ per cent on the Mendocino County side. [June 24, '16.]

Rockford City Traction Company, Rockford, Ill.—The Rockford City Traction Company has announced the opening of a 2½-mile extension to Camp Grant. The fare from Rockford to Camp Grant will be 10 cents and no transfers will be honored or issued.

Inter Urban Railway, Des Moines, Ia.—The Inter Urban Railway will double-track its line from Des Moines to Camp Dodge, 11 miles. The company has reached an agreement with army officials by which soldiers in uniform will pay a 15-cent rate to Des Moines instead of 10 cents and expects to begin work on the construction at once. It is hoped to complete about 4 miles of the double track this fall and to finish the work next spring. The problem of securing rails is causing the company considerable concern.

Wichita Railroad & Light Company, Wichita, Kan.—In accordance with an agreement reached between the city of Wichita and the Wichita Railroad & Light Company, the railway will construct an extension of its lines south from Douglas Avenue to the Orient shops before Jan. 1, and an extension to Harry Street, probably by Oct. 1, 1918.

West Jersey & Seashore Railroad, Camden, N. J.—Plans are being made by the West Jersey & Seashore Railroad for the immediate installation of an electric signaling system at its Bellevue Avenue station, Hammonten.

Public Service Corporation, Newark, N. J.—The Board of Works Commission has granted the Public Service Corporation permission to install its wires underground in Schiller Street, east of the Jersey Central tracks, to Port Avenue, and in Port Avenue from Schiller Street to Third Street, Elizabeth.

Buffalo (N. Y.) Southern Railway.—Formal notice has been served on Nathan A. Bundy, receiver for the Buffalo Southern Railway, by the Public Service Commission for the Second District of New York, that the company must immediately provide additional cars, improve its tracks between the Buffalo city line and Hamburg, Orchard Park, Ebenezer and Gardenville and secure a reserve supply of electric power. The order specifies that two cars must be bought immediately. The improvements would mean an expenditure of almost \$20,000. Bondholders say the line does not earn sufficient money to warrant the additional expenditure, and John W. Ryan, attorney for the receiver, says he will bring mortgage foreclosure proceedings. Two offers to buy the line have been made to the receiver by individuals who plan to junk the properties.

International Railway, Buffalo, N. Y.—Construction work has been begun by the International Railway on its double-track extension of the Elmwood Avenue line from Hertel Avenue to the north city line, ½ mile. The line will serve the new \$1,000,000 addition to the Curtiss aeroplane factory and other large war industries in this section. The company is also contemplating the construction of a modern passenger loading terminal in this vicinity.

Piedmont & Northern Railway, Charlotte, N. C.—The construction of an extension from Greenville to Camp Sevier is being considered by the Piedmont & Northern Railway.

Southern Public Utilities Company, Charlotte, N. C.—Two lines of double track are now being completed by the Southern Public Utilities Company between Camp Greene and Charlotte. Z. V. Taylor, president of the company, has stated that the camp lines are a part of the city system of Charlotte and the same fare and regulations will prevail on these tracks as on the other divisions of the company in Charlotte.

Brandon (Ont.) Municipal Railway.—It is reported that the Brandon Municipal Railway will construct an extension to Lake Piercy at an estimated cost of \$55,000.

Niagara, St. Catharines & Toronto Railway, St. Catharines, Ont.—The Niagara, St. Catharines & Toronto Railway, a subsidiary of the Canadian Northern Railway, will be bought by the Canadian government if the bill recently passed by the House of Commons is approved by the Senate. The electric line connects St. Catharines and Niagara Falls, Ont., and Niagara-on-the-Lake and Welland, Ont. The electric line will be a nucleus of Sir Adam Beck's hydro-radial lines in the Canadian-Niagara frontier district. For several years the Dominion government has been making vigorous efforts to acquire electric lines in the Niagara district so as to connect Toronto, Ont., with the Niagara frontier at Niagara Falls, Ont., and Buffalo via the new International Railway line now under construction.

Dallas (Tex.) Southwestern Traction Company.—The Creek Construction Company, F. R. Perkins, 303 Gaston

Building, Dallas, is in the market for 70-lb. relaying rails and new rails of the same weight, to be used in the construction of the line of the Dallas Southwestern Traction Company. [Oct. 22, '17.]

***Eastern Traction Company, Houston, Tex.**—A company is being organized to construct an interurban electric line from Houston to Orange via Beaumont, thence south to Lake Charles, La. Ed Kennedy, Houston, and associates are the promoters of the line. Financial support in the way of bonuses, also rights-of-way and sites for terminals are being given by the towns along the route.

Bamberger Electric Railway, Salt Lake City, Utah.—Automatic electric block safety signals will be installed by the Bamberger Electric Railway on its line between Salt Lake City and Ogden.

Salt Lake & Utah Railroad, Salt Lake City, Utah.—Operation has been begun on this company's new extension to Magna.

Lynchburg Traction & Light Company, Lynchburg, Va.—Work has been begun by this company double-tracking the upper end of Main Street from the carhouse to Fourth Street and on Fifth Street from Main to Church Street.

Seattle (Wash.) Municipal Railway.—The Board of Public Works of Seattle recently awarded a contract to the Seattle Frog & Switch Company for \$6,518, for supplies for Division A of the Municipal Railway.

Tacoma (Wash.) Municipal Railway.—L. H. Bean, manager of the Tacoma Railway & Power Company, has agreed to operate the city's new tideflats car line on conditions named by the City Council.

Milwaukee Electric Railway & Light Company, Milwaukee, Wis.—The Commissioner of Public Works of Milwaukee has ordered the discontinuance of the use of the Sixteenth Avenue viaduct by the Milwaukee Electric Railway & Light Company as the viaduct is considered unsafe for interurban service. New switches and curves will be put in at National and Twenty-second Avenues and Twenty-seventh and Clybourne Streets and the cars diverted to the Twenty-seventh Street viaduct.

SHOPS AND BUILDINGS

New York, New Haven & Hartford Railroad, New Haven, Conn.—The Thompson-Starrett Company, New York, has received a contract from the New York, New Haven & Hartford Railroad for the construction of a new station at New Haven. The work will be carried out on a cost plus percentage basis.

Lexington, Ky.—Mayor Rogers and the City Commission of Lexington are considering plans for an interurban railway station on East Main Street. A three-story building is proposed, with tracks entering from Main Street and extending to a lot at the rear, where space would be provided for a loop on which to make turns.

Public Service Railway, Newark, N. J.—This company will construct a one-story frame storage building 48 ft. x 72 ft. at Passaic Wharf and Avenue R to cost \$2,500.

New York Municipal Railway Corporation, Brooklyn, N. Y.—Bids will be received by the New York Municipal Railway Corporation until Nov. 1 for the installation of lighting, heating and train-announcing systems for stations on its Culver line in Brooklyn. Plans and further information may be obtained on application to the office of the chief engineer, room 602, 85 Clinton Street.

Eastern Texas Electric Company, Beaumont, Tex.—The new interurban terminal at Port Arthur has been completed by Stone & Webster, and the offices of the Port Arthur Light & Power Company and the ticket office of the Jefferson County Traction Company have been moved to the new structure.

POWER HOUSES AND SUBSTATIONS

Omaha & Council Bluffs Street Railway, Omaha, Neb.—A permit has been granted the Omaha & Council Bluffs Street Railway for the construction of a one-story power house on Randolph Street, between Drake Street and the river, to cost \$15,000. William Baumeister has the contract for the building.

Manufactures and Markets

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

Supply and Demand on Pacific Coast

Extensive Interest in One-Man Cars, Rolling Stock for Sale—Normal Demand for Equipment and Supplies

Unlike Eastern conditions, in the territory west of the Rocky Mountains provision is not being made at this time of year for snow and sleet-fighting apparatus and car-heating equipment. Only very modest electric heating outfits are used even in the coldest sections of the Northwest, and companies in Central and Southern parts of the coast provide no artificial heating the year round. The approach of the rainy season, however, has led to the strengthening of overhead construction and the usual inspection of structures and bridges with the incidental fall maintenance. Temporary window sash are being installed in the open section of the so-called "California type" cars, and the recently adopted cloth curtains are already in evidence on several systems.

The most notable recent development in matters affecting equipment is the general tendency toward one-man cars. One manufacturer alone is now building for five Pacific Coast companies seventy-seven one-man cars, all of the same standard design. Sixty-seven of these are for use on the Stone & Webster properties in the Puget Sound district. Railway companies from San Diego to Vancouver are or have been studying the possibility of more successful competition with the automobile by the use of one-man cars.

One result of the widespread adoption of the one-man car idea has been an attempt made by many companies to rebuild obsolete rolling stock so that it can be handled by a single operator. This has been rather unsatisfactory, however, because the old equipment is invariably heavy, and even when rebuilt, under expensive labor conditions, so that one-man operation is feasible, the weight of the cars has prevented the desired power economies. This general experience is now reflected in the amount of second-hand equipment for sale by Pacific Coast electric railways.

Very little construction is under way, which reduces the demand for track and overhead materials to that quantity normally required in maintenance work. The demand on such materials for maintenance purposes is normal, or perhaps slightly more than normal at the present time, because work which could be deferred has for some time been postponed in the hope that prices would moderate. Several dealers, noting an increase of purchases in the last thirty to sixty days, have pointed out that this probably is caused by work delayed on account of prices up to the time when construction was imperative.

The same problem of meeting automobile competition, which has been paramount on the Pacific Coast for some time, continues to be the greatest difficulty confronting the electric railways. In California, for example, there is one automobile for every twelve persons.

The jitney situation, however, has been very materially improved through favorable legislation, and in many cities the jitney has been eliminated entirely. On the private automobile problem, much more difficult of solution, the greatest progress has been made by increasing the street car service. Where service has been improved the tendency to use private automobiles has decreased, and this has afforded much encouragement to railway operators.

New cars and railway motors are now quoted for six to eight months' delivery, and the manufacturers' agents are asking the companies to co-operate with them by anticipating their needs and stating them fairly. With the order a few months in advance, the factory can work it in when it can be handled most effectively. On the other hand, orders too far in advance are not solicited because of the likelihood of price changes. The distance from material markets and

excessive delays likely in transit are such that Pacific Coast railway operators are becoming accustomed to anticipating their requirements six to twelve months in advance.

On tie plates, while the larger companies are quoting five to eight months' deliveries, a few smaller companies are quoting shipment in three to four months. The price is strong and movement fair. Rail benders have advanced 25 per cent in the last two months, rail braces 15 per cent, and light steel handcar wheels 20 per cent. Deliveries on the latter are two to three months. Trolley poles cannot be promised for delivery in less than fifteen months, but the price remains the same as last February.

Trolley wheels are not active, although deliveries are good. This is probably accounted for by the fact that many Pacific Coast companies are now making their own trolley wheels. Trolley rope has advanced 10 per cent in the last three months, probably because of the government's demands on the cotton market. Thus the present price is about 63 cents for rope that sold before the war for 36 cents. One result of this is that several companies are using window sash cord, whose cost is about half the better grade. With favorable weather, however, its life is estimated to be half as long. Pole line material is quoted for thirty to sixty-day delivery, but orders are light.

The upward trend in prices, as indicated by the foregoing, is general throughout all lines and over the entire coast. The feeling seems to be that prices have not yet reached the top. Price increases have come so steadily that it is not unusual to correct estimates every few weeks on work that has not been definitely ordered immediately after first estimate.

Market for Pneumatic Tampers Growing Rapidly

Railways Are Generally Interested Owing Primarily to the Condition That Prevails in the Labor Market

The demand for air tampers in the steam railroad and electric railway work is rapidly increasing. The Eastern steam railroads were the first to appreciate the advantages of this means of tamping track and they are now using these machines in large numbers. The New York Central, for instance, has already equipped or ordered equipment for the greater portion of its lines. The Pennsylvania Railroad is also using the tamping tools extensively. It is said that every steam and electric railway entering New York City is using pneumatic tampers.

The Western roads are more recently showing considerable interest in this method of maintaining their roadbeds and of bringing new construction to grade. The majority of them either have outfits on trial or have passed the experimental stage and purchased one or more of the outfits. The electric railways, urban and interurban, are rapidly substituting pneumatic tamping for hand work, principally for the reasons that the labor saving is apparent and that labor is very hard to obtain. On interurban lines the tamping operation is of primary importance, while on city work, the ability of the tamping machines when fitted with special picks, to break up asphalt or concrete paving, is of great importance in inducing the railways to make use of the device.

The Twin City Rapid Transit Company, the Milwaukee Electric Railway & Light Company, the Tri-City Railway & Light Company of Davenport, the Grand Rapids (Mich.) Railway, the Omaha & Council Bluffs Street Railway and other Western electric railways are making use of the pneumatic tamping outfits and report savings in mainten-

ance and tamping costs. The Chicago Surface Lines is trying out four tools in connection with extensive reconstruction work on Twelfth Street, where the tools are being used both for cutting concrete and for tamping ballast.

During the past summer there has been a demand for these tools which has kept the factories running to their capacity all the time. This resulted in a delivery period as long as four months during the early part of the summer, with a shortening of this period as the close of the construction season approached. The principal demand, of course, comes in the late winter and early spring, and those companies which are anxious to have outfits delivered to them for the early spring must place their orders early in the winter to assure timely delivery.

Manufacturers Justified in Forcing Standardization

Railway Men Can Also Hasten Benefits by Not Buying New Devices Only Slightly Different from Old Standards

By S. R. DUNBAR

Purchasing Agent Union Traction Company of Indiana, Anderson, Ind.

Standardization is an important question—one that does not require any discussion beyond the ways and means of accomplishment. Progress must necessarily be slow if the matter is left to the railway men to solve. But because of the unusual times we are living in, and the consequently strong advantages to be gained from an immediate furthering of standardization, it would seem that the manufacturers should themselves undertake to promote the cause by endeavoring to convince buyers and engineers that there are too many articles now on the market which serve either identically or practically the same object. The large manufacturers have continually brought out articles which have been only slight improvements or simple alterations of previous designs to meet special conditions, real or imaginary, on different properties. Thus a demand has been created and maintained for many designs of the same device.

Our government at this time asks us not to put money into new enterprises which will not further the prosecution of the war. Large manufacturers cannot altogether control the production of new devices, but before they themselves start making a new device they should be sure that it furnishes a material and important improvement and economy over previous designs. There always will be and should be smaller manufacturers of new devices. Here is the opportunity for the railway engineers and buyers to discourage multiplicity of articles serving practically the same purpose, by doing as the manufacturers should do, particularly at this time; that is, they should refuse to consider a new device unless it unquestionably shows a marked improvement in economy over the old standard.

Possibly the main reason for the slow progress of standardization in the past has been the fact that there is a great deal of old equipment in use by railway companies which they cannot afford to discard and for which the manufacturers must therefore continue to make the parts. Only in comparatively few instances is it possible to throw away old equipment and save enough money through reduced maintenance expense to pay the interest on the additional investment. However, much can be accomplished if the manufacturers would persistently endeavor to convince buyers and engineers of the advantages of reducing the number of articles which are now being offered to take care of the same conditions. Under present conditions in the manufacturing world, it would seem to be entirely justifiable for the manufacturers even to refuse to furnish such articles as they can, after thorough investigation, convince themselves are not needed because of the existence of superior articles which serve the same purposes. Many manufacturers have sold out their old stocks of practically obsolete materials and now it would seem entirely practicable for them to discontinue the manufacture of those articles which can be done without at very little inconvenience to the user, and thus utilize this effort in concentrating upon the badly needed standard supplies.

Wood Timbers May Come in for More Extensive Use

Cost of Steel Shapes and Long-Delayed Deliveries Make Wood Construction Tempting

The very high prices and uncertain delivery of steel shapes and reinforcing materials have acted to remind the designer and engineer that wood structures have distinct advantages in standard construction under present market conditions. Recent reports show instances in which substantial heavy timber highway bridges could be built at a cost less than the difference between the cost of a steel bridge at present prices and at normal-time prices. The same comparison would very likely hold true, referred to a railway bridge.

Mill construction buildings may be built at a saving of 20 to 25 per cent as compared with the cost of the same building in reinforced concrete, with an additional saving of about 25 per cent in time required for erection, according to the National Lumber Manufacturers' Association.

Japanese Mission Here

A special mission representing the Imperial Japanese Railways has arrived on the Pacific Coast and will undertake at once a study of American transportation and industrial conditions. Secretary Redfield has arranged for the entertainment of the mission until it reaches Washington and has designated a Japanese-speaking representative of the Bureau of Foreign and Domestic Commerce to conduct the members personally on their trip across the country. The object of the visit is to investigate the present transportation conditions in the United States, to inspect the principal industrial plants and mines, to study the loading and unloading of cotton, and to observe the methods employed in the large railroad sorting yards.

The Imperial Japanese Railways are represented on the mission by Jiro Nakamura, assistant traffic manager; Akio Kasama, secretary and purchasing agent; Dr. Yasujiro Shima, director of machinery and rolling stock; and S. Kobayashi, resident engineer at New York.

NEW YORK METAL MARKET PRICES

	Oct. 17	Oct. 24
Prime Lake, cents per lb.....	23 1/2	23 1/2
Electrolytic, cents per lb.....	22 1/2	23 1/2
Copper wire base, cents per lb.....	35	32
Lead, cents per lb.....	7	6 1/4
Nickel, cents per lb.....	50	52
Spelter, cents per lb.....	8 1/4	8 1/4
Tin, Straits, cents per lb.....	61	62 1/2
Aluminum, 98 to 99 per cent, cents per lb.....	37	37

OLD METAL PRICES—NEW YORK

	Oct. 17	Oct. 24
Heavy copper, cents per lb.....	23 1/2	23 1/2
Light copper, cents per lb.....	23 1/4	20 1/2
Red brass, cents per lb.....	19	19
Yellow brass, cents per lb.....	16 1/4	16 1/4
Lead, heavy, cents per lb.....	7	5 3/4
Zinc, cents per lb.....	6	5 3/4
Steel car axles, Chicago, per net ton.....	\$41.00	\$41.00
Old car wheels, Chicago, per gross ton.....	\$27.00	\$27.00
Steel rails (scrap), Chicago, per gross ton.....	\$34.00	\$33.00
Steel rails (relaying), Chicago, per gross ton.....	\$55.00	\$55.00
Machine shop turnings, Chicago, per net ton.....	\$15.50	\$15.50

RAILWAY MATERIALS

	Oct. 17	Oct. 24
Rubber-covered wire base, New York, cents per lb.	35	34-35
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.....	\$4.00	\$4.00
Railroad spikes, 9/16 in., Pittsburgh, per 100 lb.....	\$5.50	\$5.50
Steel bars, Pittsburgh, per 100 lb.....	\$4.50	\$5.00
Sheet iron, black (24 gage), Pittsburgh, per 100 lb.	\$9.55	\$9.55
Sheet iron, galvanized (24 gage), Pittsburgh, per 100 lb.....	\$8.85	\$8.85
Galvanized barbed wire, Pittsburgh, cents per lb.	4.85	4.85
Galvanized wire, ordinary, Pittsburgh, cents per lb.	4.65	4.65
Cement (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.	\$1.17	\$1.17
Linseed oil (boiled, 5 bbl. lots), New York, per gal.	\$1.19	\$1.18
White lead (100 lb. keg), New York, cents per gal.	12	12
Turpentine (bbl. lots), New York, cents per gal.	51	51

Rail Bond Prices Reduced

Instead of an advance on rail bonds being announced on Oct. 1, as mentioned in the *ELECTRIC RAILWAY JOURNAL* of Oct. 13, the discount was changed from 10 to 17½ per cent on that date. This means a decrease in bond prices rather than an increase.

ROLLING STOCK

Edmonton (Alta.) Municipal Railway has accepted the Smiley Company's tender of \$4,060 for eighty new car wheels, as recommended by the City Commissioners.

Calgary (Alta.) Municipal Railway, through the City Commissioners, has placed an order for fifty new car wheels of manganese steel, to cost \$2,537.50, with the United States Steel Corporation.

Brooklyn (N. Y.) Rapid Transit Company, which is in the market for 250 pressed-steel center-entrance cars, as noted in the *ELECTRIC RAILWAY JOURNAL* of Sept. 8, instead of opening the bids submitted on Oct. 15, as was expected, postponed the entire matter without date. This action was taken by the company pending the litigation being carried on with the Public Service Commission for the First District, and on which argument was heard last week in the Supreme Court of the State of New York, Appellate Division, First Department. Decision was reserved.

International Railway Company, Buffalo, N. Y., has placed the first of the order for 100 front-entrance center-exit Peter Witt cars with the Kuhlmann Car Company, Cleveland, Ohio. All of the cars will be sent to Buffalo under their own power over electric lines between Cleveland and Buffalo. The new type of car will be exhibited on a dead track in Niagara Street, near Shelton Square, in the heart of the business section of Buffalo so that it can be inspected by the public before it is placed in service. The company expects to have most of the new cars in operation before Dec. 1.

TRADE NOTES

C. H. Koehler has resigned as engineer of the Economy Electric Devices Company, Chicago, Ill.

Garfield (N. J.) Manufacturing Company is the new company name of the Hemming Manufacturing Company.

Ward Electric Company, Mount Vernon, N. Y., is now represented in St. Louis, Mo., by the Morse Engineering Company.

Laclede-Christy Clay Products Company, St. Louis, Mo., has its general offices in suite 1673 Railway Exchange Building, which will hereafter be headquarters.

Holden & White, Inc., has been appointed sales agent for the air rectifier manufactured by the National Safety Device & Manufacturing Company, for the states of Indiana, Ohio, Illinois, Wisconsin, Iowa and Nebraska.

General Electric Company, Schenectady, N. Y., is having plans prepared for the construction of a new two-story drop forge shop, about 85 ft. x 400 ft. The company will also build a new one-story and basement substation, 48 ft. x 100 ft.

Condensite Company of America, Bloomfield, N. J., has formulated certain provisions regarding shipments in order to facilitate work being done for the government. The company is assured by the Council of National Defense that merchandise so identified will be given preference by transportation companies.

Consolidated Car Heating Company, Albany, N. Y., writes that it can deliver car heaters more quickly than was stated in a review in this department, published Oct. 13, in referring to car heaters. In fact, owing to a careful gaging of orders and deliveries of the raw materials used in the manufacture of its electric heaters, it is prepared to make prompt delivery.

Atlantic Welding Company, New York, and Lincoln Bonding Company, Cleveland, have made a joint sales agreement whereby each company and its agents will act as sales agent for the other in addition to exploiting its own products. The specialty of the Atlantic Company covers Universal welding

equipments for many classes of rail welding, including the Gailor joint; that of the Lincoln company bonding machine of dynamometer type and Lincoln type bonds therefor.

Westinghouse Air Brake Company, Wilmerding, Pa., at its annual meeting Oct. 18, had under review the business of the company, which closely reflects the general conditions of affairs. While the volume of business has been large, the difficulty of securing adequate labor and sufficient material has been and remains acute. Prices paid for supplies of all kinds have advanced so far beyond previous quotations that experience in forecasting the future has been of little avail; and taxation is unprecedented. The net profit for the year is \$6,388,426.88, as compared with \$9,396,103.48 in 1916, and \$1,575,838.50 in 1915. The brake business of this year exceeded that of the last year by 20 per cent. The Union Switch & Signal Company, a subsidiary, has made rapid progress in the rehabilitation of its Swissvale plant, partially destroyed by fire Feb. 10. It is expected the new shops will be in full operation by the close of the year. The temporary buildings have, however, been utilized to the fullest extent. The current demand for brake equipment exceeds the company's immediate productive capacity. Including business booked for export, the value and volume of unfilled orders on hand surpasses the normal figure at this season of the year.

NEW ADVERTISING LITERATURE

General Electric Company, Schenectady, N. Y.: Bulletin No. 45,505 describes in detail and illustrates interestingly the company's induction voltage regulators.

Worthington Pump & Machinery Corporation, New York, N. Y.: Bulletin No. W-308 has been prepared descriptive of the company's Worthington duplex piston pattern pumps for general service.

Armstrong Cork & Insulating Company, Pittsburgh, Pa.: A folder, "Nonpareil Insulating Brick for Boiler Settings," is now ready for distribution, and copies will be forwarded to applicants free of charge.

E. I. du Pont de Nemours Company, Wilmington Del.: A booklet, from this and associated companies, contains a list of all their manufactured products, but does not indicate who uses them nor how they are used. It will be sent upon application.

Department of Commerce, Washington, D. C.: Under the supervision of W. M. Steuart, chief statistician for manufactures, a special pamphlet "On Electrical Machinery, Apparatus and Supplies" has been prepared and is now ready for distribution. The statistics presented with the accompanying comments are interesting.

John A. Roebling's Sons Company, Trenton, N. J.: Revised edition of its well-known pocket book, "Wire in Electric Construction," containing data of value to the electrical engineer. The data are of a general nature and are in no way selected to advertise Roebling products. The book comprises about 150 pages and is bound in cloth.

Franklin (Pa.) Manufacturing Company: What is considered to be the "first word" on "Journal Box Packings," prepared by this company for free distribution and designated as catalog FC 6-17, gives the history and describes in detail the proper treatment and handling of this important subject. The pamphlet, which is artistically illustrated, is mentioned as surely the first endeavor to submit any scientific discussion of a matter of interest to railway mechanical men on equipment and operation. Some of the points brought out are rather unexpected.

Lewis & Roth Company, Philadelphia, Pa.: Bulletin No. 21, descriptive of its electric switches. The bulletin is said to be the most complete ever issued for this line of apparatus, 1013 combinations of disconnecting switches being listed. The book shows care in preparation and contains sixty pages of useful information. The arrangement is orderly, eliminating need for hunting for wanted items. This company has also prepared bulletin No. 20, descriptive of its switchboard and structural devices and fittings. The list contains a complete outline of drawings, weights, catalog numbers, etc., which are necessary in the proper selection of materials.